

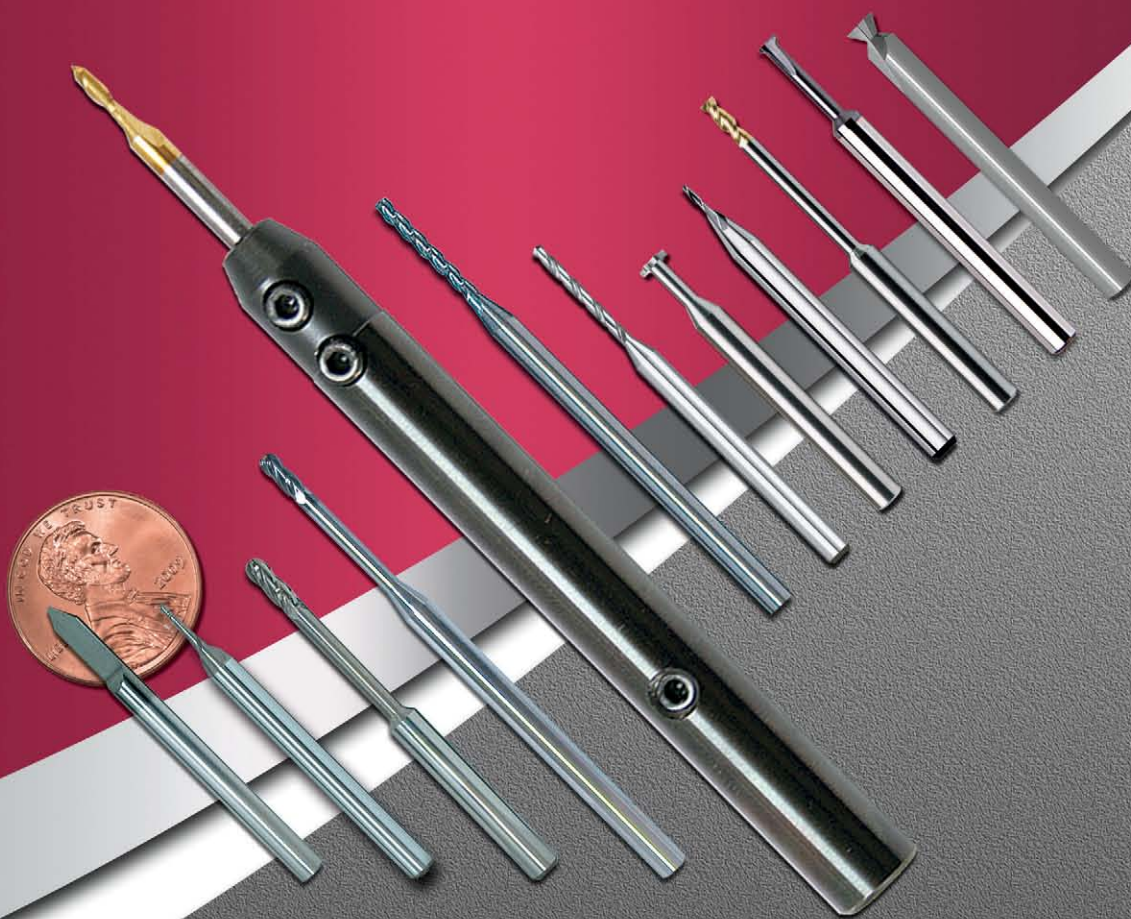
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Made in USA

# **Microcut**

*Sharp Ideas for Carbide Cutting Tools*



***Special Application  
Carbide Micro Cutting Tools***

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# Microcut

Microcut is a manufacturer and distributor of miniature and micro-sized carbide cutting tools. We also offer High Performance carbide end mills and special application rotary cutting tools, including custom designed tooling.

Operating from facilities in the updated historic mill complex on the Jones River in Kingston, Massachusetts, Microcut specializes in CNC manufactured cutting tools and worldwide distribution of miniature and small cutting tools for use by mold builders and production machining facilities. Microcut's staff enjoys working and fulfilling our customer's orders in the charm of a historical building that set the standard for quality manufacturing and product distribution from previous generations.

Microcut's large inventory warehouse assures *Same Day Shipment* of all stocked items, while many special products or modified standards are available with short lead times.

All products are available through selected U.S. Industrial Distributors or direct from the Factory in certain geographical areas and countries.

We appreciate your business and look forward to serving you with all your cutting tool requirements.

Our Thanks, ***The Microcut Staff***



## **ORDERING & TERMS**

MICROCUT products may be ordered through your local cutting tool distributor. To find your local distributor, use our **Online Distributor Locator** found at [www.microcutUSA.com](http://www.microcutUSA.com).

**Terms:** Freight F.O.B. Kingston, MA. No returns accepted without our permission and must be accompanied by an RGA number. Returns subject to a 25% re-stocking charge. No requests for returns accepted after 15 days from date of invoice. Prices and specifications subject to change without notice.

**NOTE:** Special Cutting Tools and Special Long Reach Cutters are custom made and nonreturnable.

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| Tool #  | Description     | Price    | Available |
|---------|-----------------|----------|-----------|
| 82015   | .015" 2 FL EM   | \$18.20  | 76        |
| 84020   | .020" 4 FL EM   | \$18.20  | 39        |
| 74062   | .062" LG RCH    | \$26.75  | 31        |
| 57093   | .093" 5 FL EM   | \$25.75  | 17        |
| 28025   | 1/8" KEYSEAT    | \$34.95  | 11        |
| 48203   | #3 Thread Mill  | \$85.45  | 7         |
| LF1162  | .062" Lg Shk EM | \$28.90  | 87        |
| ACH1250 | 1/8" Ext Holder | \$199.50 | 27        |
| 10077   | #77 Micro Drill | \$14.90  | 38        |
| 77250   | 1/4" CVD EM     | \$84.75  | 19        |



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# DECIMAL - 2-FLUTE

## Square & Ball End - UNCOATED - .002" to .031"



Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 82002       | -        | .002"           | .006"         | 1/8"           | 1-1/2"          | \$38.15    | -        |
| 82003       | -        | .003"           | .009"         | 1/8"           | 1-1/2"          | \$32.80    | -        |
| 82004       | -        | .004"           | .012"         | 1/8"           | 1-1/2"          | \$28.50    | -        |
| 82005       | 82005B   | .005"           | .015"         | 1/8"           | 1-1/2"          | \$25.55    | \$37.10  |
| 82006       | 82006B   | .006"           | .018"         | 1/8"           | 1-1/2"          | \$25.55    | \$37.10  |
| 82007       | 82007B   | .007"           | .021"         | 1/8"           | 1-1/2"          | \$25.25    | \$37.10  |
| 82008       | 82008B   | .008"           | .024"         | 1/8"           | 1-1/2"          | \$25.25    | \$37.10  |
| 82009       | 82009B   | .009"           | .027"         | 1/8"           | 1-1/2"          | \$25.25    | \$37.10  |
| 82010       | 82010B   | .010"           | .030"         | 1/8"           | 1-1/2"          | \$20.70    | \$29.55  |
| 82011       | 82011B   | .011"           | .033"         | 1/8"           | 1-1/2"          | \$20.70    | \$29.55  |
| 82012       | 82012B   | .012"           | .036"         | 1/8"           | 1-1/2"          | \$20.70    | \$29.55  |
| 82013       | 82013B   | .013"           | .039"         | 1/8"           | 1-1/2"          | \$20.70    | \$29.55  |
| 82014       | 82014B   | .014"           | .042"         | 1/8"           | 1-1/2"          | \$20.70    | \$29.55  |
| 82015       | 82015B   | .015"           | .045"         | 1/8"           | 1-1/2"          | \$18.20    | \$24.65  |
| 82016       | 82016B   | .016"           | .048"         | 1/8"           | 1-1/2"          | \$18.20    | \$24.65  |
| 82017       | 82017B   | .017"           | .051"         | 1/8"           | 1-1/2"          | \$18.20    | \$24.65  |
| 82018       | 82018B   | .018"           | .054"         | 1/8"           | 1-1/2"          | \$18.20    | \$24.65  |
| 82019       | 82019B   | .019"           | .057"         | 1/8"           | 1-1/2"          | \$18.20    | \$24.65  |
| 82020       | 82020B   | .020"           | .060"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.90  |
| 82021       | 82021B   | .021"           | .063"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.90  |
| 82022       | 82022B   | .022"           | .066"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.90  |
| 82023       | 82023B   | .023"           | .069"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.90  |
| 82024       | 82024B   | .024"           | .072"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.90  |
| 82025       | 82025B   | .025"           | .075"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.45  |
| 82026       | 82026B   | .026"           | .078"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.45  |
| 82027       | 82027B   | .027"           | .081"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.45  |
| 82028       | 82028B   | .028"           | .084"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.45  |
| 82029       | 82029B   | .029"           | .087"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.45  |
| 82030       | 82030B   | .030"           | .090"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |
| 82031       | 82031B   | .031"           | .093"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |
| 82031L      | 82031LB  | .031"           | .125"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |

Continued Next Page

# DECIMAL - 2-FLUTE



## Square & Ball End - UNCOATED - .032" to .061"



Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 82032       | 82032B   | .032"           | .096"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |
| 82033       | 82033B   | .033"           | .099"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |
| 82034       | 82034B   | .034"           | .102"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |
| 82035       | 82035B   | .035"           | .105"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82036       | 82036B   | .036"           | .108"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82037       | 82037B   | .037"           | .111"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82038       | 82038B   | .038"           | .114"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82039       | 82039B   | .039"           | .117"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82040       | 82040B   | .040"           | .120"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82041       | 82041B   | .041"           | .123"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82042       | 82042B   | .042"           | .126"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82043       | 82043B   | .043"           | .129"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82044       | 82044B   | .044"           | .132"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82045       | 82045B   | .045"           | .135"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82046       | 82046B   | .046"           | .138"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82047       | 82047B   | .047"           | .141"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82048       | 82048B   | .048"           | .144"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82049       | 82049B   | .049"           | .147"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82050       | 82050B   | .050"           | .150"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82051       | 82051B   | .051"           | .153"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82052       | 82052B   | .052"           | .156"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82053       | 82053B   | .053"           | .159"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82054       | 82054B   | .054"           | .162"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82055       | 82055B   | .055"           | .165"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82056       | 82056B   | .056"           | .168"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82057       | 82057B   | .057"           | .171"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82058       | 82058B   | .058"           | .174"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82059       | 82059B   | .059"           | .177"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 82060       | 82060B   | .060"           | .180"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82061       | 82061B   | .061"           | .183"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |

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# DECIMAL - 2-FLUTE

## Square & Ball End - UNCOATED - .062" to .125"



Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 82062       | 82062B   | .062"           | .186"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82062L      | 82062LB  | .062"           | .250"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82063       | 82063B   | .063"           | .189"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82064       | 82064B   | .064"           | .192"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82065       | 82065B   | .065"           | .195"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82066       | 82066B   | .066"           | .198"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82067       | 82067B   | .067"           | .201"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82068       | 82068B   | .068"           | .204"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82069       | 82069B   | .069"           | .207"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82070       | 82070B   | .070"           | .210"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82071       | 82071B   | .071"           | .213"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82072       | 82072B   | .072"           | .216"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82073       | 82073B   | .073"           | .219"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82074       | 82074B   | .074"           | .222"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82075       | 82075B   | .075"           | .225"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82078       | 82078B   | .078"           | .234"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82080       | 82080B   | .080"           | .240"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82082       | 82082B   | .082"           | .246"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82085       | 82085B   | .085"           | .255"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82090       | 82090B   | .090"           | .270"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82093       | 82093B   | .093"           | .279"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82093L      | 82093LB  | .093"           | .375"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82095       | 82095B   | .095"           | .285"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82098       | 82098B   | .098"           | .294"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82100       | 82100B   | .100"           | .300"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82105       | 82105B   | .105"           | .315"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82110       | 82110B   | .110"           | .330"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82115       | 82115B   | .115"           | .345"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82118       | 82118B   | .118"           | .354"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82120       | 82120B   | .120"           | .360"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 82125       | 82125B   | .125"           | .500"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |

# LONG REACH - 2-FLUTE



## Square & Ball End - UNCOATED - .010" to .125"



Neck is reduced for clearance.

Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 72010       | 72010B   | .010"           | .030"         | .075"          | 1/8"           | 1-1/2"          | \$37.35    | \$48.90  |
| 72012       | 72012B   | .012"           | .036"         | .075"          | 1/8"           | 1-1/2"          | \$35.20    | \$45.70  |
| 72015       | 72015B   | .015"           | .045"         | .125"          | 1/8"           | 1-1/2"          | \$30.65    | \$39.25  |
| 72018       | 72018B   | .018"           | .054"         | .125"          | 1/8"           | 1-1/2"          | \$30.65    | \$39.25  |
| 72020       | 72020B   | .020"           | .060"         | .165"          | 1/8"           | 1-1/2"          | \$29.55    | \$37.10  |
| 72022       | 72022B   | .022"           | .066"         | .165"          | 1/8"           | 1-1/2"          | \$29.55    | \$37.10  |
| 72025       | 72025B   | .025"           | .075"         | .205"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72028       | 72028B   | .028"           | .084"         | .205"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72030       | 72030B   | .030"           | .090"         | .250"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72031       | 72031B   | .031"           | .093"         | .250"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72031L      | 72031LB  | .031"           | .125"         | .250"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72033       | 72033B   | .033"           | .099"         | .250"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72035       | 72035B   | .035"           | .105"         | .285"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72040       | 72040B   | .040"           | .120"         | .350"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72042       | 72042B   | .042"           | .126"         | .350"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 72045       | 72045B   | .045"           | .135"         | .400"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72047       | 72047B   | .047"           | .141"         | .400"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72050       | 72050B   | .050"           | .150"         | .450"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72052       | 72052B   | .052"           | .156"         | .450"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72055       | 72055B   | .055"           | .165"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72060       | 72060B   | .060"           | .180"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72062       | 72062B   | .062"           | .186"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72062L      | 72062LB  | .062"           | .250"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72065       | 72065B   | .065"           | .195"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72070       | 72070B   | .070"           | .210"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72072       | 72072B   | .072"           | .216"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72075       | 72075B   | .075"           | .225"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72078       | 72078B   | .078"           | .234"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72080       | 72080B   | .080"           | .240"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72090       | 72090B   | .090"           | .270"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72093       | 72093B   | .093"           | .279"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72093L      | 72093LB  | .093"           | .375"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72100       | 72100B   | .100"           | .300"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 72125       | 72125B   | .125"           | .500"         | .650"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |



# DECIMAL - 2-FLUTE

## Square & Ball End - AITiN COATED - .010" to .125"



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 82010TL     | 82010BTL | .010"           | .030"         | 1/8"           | 1-1/2"          | \$25.00    | \$33.85  |
| 82012TL     | 82012BTL | .012"           | .036"         | 1/8"           | 1-1/2"          | \$25.00    | \$33.85  |
| 82015TL     | 82015BTL | .015"           | .045"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 82018TL     | 82018BTL | .018"           | .054"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 82020TL     | 82020BTL | .020"           | .060"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 82022TL     | 82022BTL | .022"           | .066"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 82025TL     | 82025BTL | .025"           | .075"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 82027TL     | 82027BTL | .027"           | .081"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 82030TL     | 82030BTL | .030"           | .090"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 82031TL     | 82031BTL | .031"           | .093"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 82035TL     | 82035BTL | .035"           | .105"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82038TL     | 82038BTL | .038"           | .114"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82040TL     | 82040BTL | .040"           | .120"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82045TL     | 82045BTL | .045"           | .135"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82047TL     | 82047BTL | .047"           | .141"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82050TL     | 82050BTL | .050"           | .150"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82052TL     | 82052BTL | .052"           | .156"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82055TL     | 82055BTL | .055"           | .165"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82059TL     | 82059BTL | .059"           | .177"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 82060TL     | 82060BTL | .060"           | .180"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82062TL     | 82062BTL | .062"           | .186"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82065TL     | 82065BTL | .065"           | .195"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82067TL     | 82067BTL | .067"           | .201"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82070TL     | 82070BTL | .070"           | .210"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82072TL     | 82072BTL | .072"           | .216"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82075TL     | 82075BTL | .075"           | .225"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82078TL     | 82078BTL | .078"           | .234"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82080TL     | 82080BTL | .080"           | .240"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82085TL     | 82085BTL | .085"           | .255"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82090TL     | 82090BTL | .090"           | .270"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82093TL     | 82093BTL | .093"           | .279"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82098TL     | 82098BTL | .098"           | .294"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82100TL     | 82100BTL | .100"           | .300"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 82125TL     | 82125BTL | .125"           | .500"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |

# LONG REACH - 2-FLUTE



Square & Ball End - **AlTiN COATED** - .010" to .125"



Neck is reduced for clearance.

Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 72010TL     | 72010BTL | .010"           | .030"         | .075"          | 1/8"           | 1-1/2"          | \$41.65    | \$53.20  |
| 72012TL     | 72012BTL | .012"           | .036"         | .075"          | 1/8"           | 1-1/2"          | \$41.65    | \$53.20  |
| 72015TL     | 72015BTL | .015"           | .045"         | .125"          | 1/8"           | 1-1/2"          | \$36.00    | \$44.60  |
| 72018TL     | 72018BTL | .018"           | .054"         | .125"          | 1/8"           | 1-1/2"          | \$36.00    | \$44.60  |
| 72020TL     | 72020BTL | .020"           | .060"         | .165"          | 1/8"           | 1-1/2"          | \$33.85    | \$41.40  |
| 72022TL     | 72022BTL | .022"           | .066"         | .165"          | 1/8"           | 1-1/2"          | \$33.85    | \$41.40  |
| 72025TL     | 72025BTL | .025"           | .075"         | .205"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72028TL     | 72028BTL | .028"           | .084"         | .205"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72030TL     | 72030BTL | .030"           | .090"         | .250"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72031TL     | 72031BTL | .031"           | .093"         | .250"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72033TL     | 72033BTL | .033"           | .099"         | .250"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72035TL     | 72035BTL | .035"           | .105"         | .285"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72038TL     | 72038BTL | .038"           | .114"         | .285"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72040TL     | 72040BTL | .040"           | .120"         | .350"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72042TL     | 72042BTL | .042"           | .126"         | .350"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 72045TL     | 72045BTL | .045"           | .135"         | .400"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72047TL     | 72047BTL | .047"           | .141"         | .400"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72050TL     | 72050BTL | .050"           | .150"         | .450"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72052TL     | 72052BTL | .052"           | .156"         | .450"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72055TL     | 72055BTL | .055"           | .165"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72060TL     | 72060BTL | .060"           | .180"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72062TL     | 72062BTL | .062"           | .186"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72065TL     | 72065BTL | .065"           | .195"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72070TL     | 72070BTL | .070"           | .210"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72072TL     | 72072BTL | .072"           | .216"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72075TL     | 72075BTL | .075"           | .225"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72078TL     | 72078BTL | .078"           | .234"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72080TL     | 72080BTL | .080"           | .240"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72090TL     | 72090BTL | .090"           | .270"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72093TL     | 72093BTL | .093"           | .279"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72100TL     | 72100BTL | .100"           | .300"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 72125TL     | 72125BTL | .125"           | .500"         | .650"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |

# STUB LENGTH - 2-FLUTE



## Square & Ball End - UNCOATED - .005" to .125"



Flute Length = 1.5 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 81005       | 81005B   | .005"           | .007"         | 1/8"           | 1-1/2"          | \$25.75    | \$37.55  |
| 81006       | 81006B   | .006"           | .009"         | 1/8"           | 1-1/2"          | \$25.75    | \$37.55  |
| 81007       | 81007B   | .007"           | .010"         | 1/8"           | 1-1/2"          | \$25.75    | \$37.55  |
| 81008       | 81008B   | .008"           | .012"         | 1/8"           | 1-1/2"          | \$25.75    | \$37.55  |
| 81009       | 81009B   | .009"           | .013"         | 1/8"           | 1-1/2"          | \$25.75    | \$37.55  |
| 81010       | 81010B   | .010"           | .015"         | 1/8"           | 1-1/2"          | \$20.70    | \$30.05  |
| 81012       | 81012B   | .012"           | .018"         | 1/8"           | 1-1/2"          | \$20.70    | \$30.05  |
| 81015       | 81015B   | .015"           | .022"         | 1/8"           | 1-1/2"          | \$18.20    | \$25.25  |
| 81018       | 81018B   | .018"           | .027"         | 1/8"           | 1-1/2"          | \$18.20    | \$25.25  |
| 81020       | 81020B   | .020"           | .030"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.10  |
| 81022       | 81022B   | .022"           | .033"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.10  |
| 81025       | 81025B   | .025"           | .037"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.70  |
| 81027       | 81027B   | .027"           | .041"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.70  |
| 81030       | 81030B   | .030"           | .045"         | 1/8"           | 1-1/2"          | \$16.05    | \$20.35  |
| 81031       | 81031B   | .031"           | .046"         | 1/8"           | 1-1/2"          | \$16.05    | \$20.35  |
| 81035       | 81035B   | .035"           | .052"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 81040       | 81040B   | .040"           | .060"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 81045       | 81045B   | .045"           | .067"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 81047       | 81047B   | .047"           | .070"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 81050       | 81050B   | .050"           | .075"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 81055       | 81055B   | .055"           | .082"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 81060       | 81060B   | .060"           | .090"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 81062       | 81062B   | .062"           | .093"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81065       | 81065B   | .065"           | .098"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81070       | 81070B   | .070"           | .105"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81075       | 81075B   | .075"           | .113"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81078       | 81078B   | .078"           | .117"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81080       | 81080B   | .080"           | .120"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81085       | 81085B   | .085"           | .127"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81090       | 81090B   | .090"           | .135"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81093       | 81093B   | .093"           | .140"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81100       | 81100B   | .100"           | .150"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 81125       | 81125B   | .125"           | .250"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |

# STUB LENGTH - LONG RCH - 2-FLUTE



## Square & Ball End - UNCOATED - .015" to .125"



**MINIMUM 3 TOOLS  
EACH SIZE  
AS LISTED BELOW**

**Shipped  
Within 24-48  
Hours**

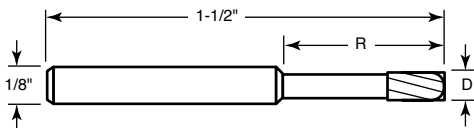
**Tools are custom manufactured to order and are nonreturnable.**

Flute Length = 1.5 x Diameter or as specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 76215       | 76215B   | .015"           | .022"         | .100"          | 1/8"           | 1-1/2"          | \$30.65    | \$38.15  |
| 76220       | 76220B   | .020"           | .030"         | .120"          | 1/8"           | 1-1/2"          | \$29.55    | \$36.00  |
| 76225       | 76225B   | .025"           | .037"         | .150"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76230       | 76230B   | .030"           | .045"         | .180"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76231       | 76231B   | .031"           | .046"         | .183"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76235       | 76235B   | .035"           | .052"         | .210"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76240       | 76240B   | .040"           | .060"         | .220"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76245       | 76245B   | .045"           | .067"         | .270"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76247       | 76247B   | .047"           | .070"         | .280"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76250       | 76250B   | .050"           | .075"         | .300"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76255       | 76255B   | .055"           | .082"         | .330"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76260       | 76260B   | .060"           | .090"         | .360"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76262       | 76262B   | .062"           | .093"         | .375"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76265       | 76265B   | .065"           | .098"         | .390"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76270       | 76270B   | .070"           | .105"         | .420"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76275       | 76275B   | .075"           | .113"         | .450"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76278       | 76278B   | .078"           | .117"         | .470"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76280       | 76280B   | .080"           | .120"         | .480"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76285       | 76285B   | .085"           | .127"         | .510"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76290       | 76290B   | .090"           | .135"         | .540"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76293       | 76293B   | .093"           | .140"         | .560"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76200       | 76200B   | .100"           | .150"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76212       | 76212B   | .125"           | .250"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |

### ORDER SPECIAL Square & Ball LONG REACH MICRO ENDMILLS

To order special long reach micro endmills please specify:



1. Specify:  Square End or  Ball End.
2. Diameter (D): \_\_\_\_\_
3. Flute Length (F): \_\_\_\_\_
4. Overall Reach (R): \_\_\_\_\_
5. Quantity (Minimum 6): \_\_\_\_\_
6. Specify:  2-Flute or  4-Flute.

**Special Reaches Shipped within 24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

# STUB LENGTH - 2-FLUTE



Square & Ball End - **AlTiN COATED** - .005" to .125"



Length of Cut = 1.5 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          |                 |               |                |                 | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | Square End | Ball End |
| 81005TL     | 81005BTL | .005"           | .007"         | 1/8"           | 1-1/2"          | \$32.20    | \$41.85  |
| 81006TL     | 81006BTL | .006"           | .009"         | 1/8"           | 1-1/2"          | \$32.20    | \$41.85  |
| 81007TL     | 81007BTL | .007"           | .010"         | 1/8"           | 1-1/2"          | \$32.20    | \$41.85  |
| 81008TL     | 81008BTL | .008"           | .012"         | 1/8"           | 1-1/2"          | \$32.20    | \$41.85  |
| 81009TL     | 81009BTL | .009"           | .013"         | 1/8"           | 1-1/2"          | \$32.20    | \$41.85  |
| 81010TL     | 81010BTL | .010"           | .015"         | 1/8"           | 1-1/2"          | \$25.00    | \$35.20  |
| 81012TL     | 81012BTL | .012"           | .018"         | 1/8"           | 1-1/2"          | \$25.00    | \$35.20  |
| 81015TL     | 81015BTL | .015"           | .022"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 81018TL     | 81018BTL | .018"           | .027"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 81020TL     | 81020BTL | .020"           | .030"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 81022TL     | 81022BTL | .022"           | .033"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 81025TL     | 81025BTL | .025"           | .037"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 81027TL     | 81027BTL | .027"           | .041"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 81030TL     | 81030BTL | .030"           | .045"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 81031TL     | 81031BTL | .031"           | .046"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 81035TL     | 81035BTL | .035"           | .052"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 81040TL     | 81040BTL | .040"           | .060"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 81045TL     | 81045BTL | .045"           | .067"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 81047TL     | 81047BTL | .047"           | .070"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 81050TL     | 81050BTL | .050"           | .075"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 81055TL     | 81055BTL | .055"           | .082"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 81060TL     | 81060BTL | .060"           | .090"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 81062TL     | 81062BTL | .062"           | .093"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81065TL     | 81065BTL | .065"           | .098"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81070TL     | 81070BTL | .070"           | .105"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81075TL     | 81075BTL | .075"           | .113"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81078TL     | 81078BTL | .078"           | .117"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81080TL     | 81080BTL | .080"           | .120"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81085TL     | 81085BTL | .085"           | .127"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81090TL     | 81090BTL | .090"           | .135"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81093TL     | 81093BTL | .093"           | .140"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81100TL     | 81100BTL | .100"           | .150"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 81125TL     | 81125BTL | .125"           | .250"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |

# STUB LENGTH – LONG RCH – 2-FLUTE



Square & Ball End - **AlTiN COATED** - .015" to .125"



**MINIMUM 3 TOOLS  
EACH SIZE  
AS LISTED BELOW**

**Shipped  
Within 24-48  
Hours**

**Tools are custom manufactured to order and are nonreturnable.**

Length of Cut = 1.5 x Diameter or as Specified – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 76315       | 76315B   | .015"           | .022"         | .100"          | 1/8"           | 1-1/2"          | \$34.95    | \$42.45  |
| 76320       | 76320B   | .020"           | .030"         | .120"          | 1/8"           | 1-1/2"          | \$33.85    | \$40.30  |
| 76325       | 76325B   | .025"           | .037"         | .150"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76330       | 76330B   | .030"           | .045"         | .180"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76331       | 76331B   | .031"           | .046"         | .183"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76335       | 76335B   | .035"           | .052"         | .210"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76340       | 76340B   | .040"           | .060"         | .220"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.15  |
| 76345       | 76345B   | .045"           | .067"         | .270"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76347       | 76347B   | .047"           | .070"         | .280"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76350       | 76350B   | .050"           | .075"         | .300"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76355       | 76355B   | .055"           | .082"         | .330"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76360       | 76360B   | .060"           | .090"         | .360"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76362       | 76362B   | .062"           | .093"         | .375"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76365       | 76365B   | .065"           | .098"         | .390"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76370       | 76370B   | .070"           | .105"         | .420"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76375       | 76375B   | .075"           | .113"         | .450"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76378       | 76378B   | .078"           | .117"         | .470"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76380       | 76380B   | .080"           | .120"         | .480"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76385       | 76385B   | .085"           | .127"         | .510"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76390       | 76390B   | .090"           | .135"         | .540"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76393       | 76393B   | .093"           | .140"         | .560"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76300       | 76300B   | .100"           | .150"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76312       | 76312B   | .125"           | .250"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |

Special long reach end mills quoted on request. Minimum 6 pieces per size.

**Ships within 24-48 hours or less.**

**Tools are custom manufactured to order and are nonreturnable.**

**New!! Express Service**

Ships same day as ordered. Call for details, price and availability. Minimum order 6 tools per size.





# DECIMAL - 3-FLUTE

Square End - UNCOATED & AITiN COATED - .010" to .125"



Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |               |                |                 | Not Coated | AITiN Coated |
| 83010       | 83410        | .010"           | .030"         | 1/8"           | 1-1/2"          | \$22.45    | \$27.85      |
| 83015       | 83415        | .015"           | .045"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20      |
| 83020       | 83420        | .020"           | .060"         | 1/8"           | 1-1/2"          | \$18.80    | \$23.10      |
| 83025       | 83425        | .025"           | .075"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05      |
| 83030       | 83430        | .030"           | .090"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05      |
| 83031       | 83431        | .031"           | .093"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05      |
| 83035       | 83435        | .035"           | .105"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83040       | 83440        | .040"           | .120"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83045       | 83445        | .045"           | .135"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83047       | 83447        | .047"           | .141"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83050       | 83450        | .050"           | .150"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83060       | 83460        | .060"           | .180"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83062       | 83462        | .062"           | .186"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83065       | 83465        | .065"           | .195"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83070       | 83470        | .070"           | .210"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83075       | 83475        | .075"           | .225"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83078       | 83478        | .078"           | .234"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83090       | 83490        | .090"           | .270"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83093       | 83493        | .093"           | .279"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83000       | 83400        | .100"           | .300"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83012       | 83412        | .125"           | .375"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |

Miniature Keyseat Cutters. See pages 78 and 79.



# DECIMAL - LONG REACH - 3-FLUTE



Square End - **UNCOATED & AITiN COATED** - .015" to .125"



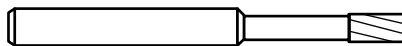
**MINIMUM 3 TOOLS  
EACH SIZE  
AS LISTED BELOW**



**Tools are custom manufactured to order and are nonreturnable.**

Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|---------------|----------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |               |                |                |                 | Not Coated | AITiN Coated |
| 83315       | 83215        | .015"           | .045"         | .125"          | 1/8"           | 1-1/2"          | \$30.65    | \$34.95      |
| 83320       | 83220        | .020"           | .060"         | .165"          | 1/8"           | 1-1/2"          | \$29.55    | \$33.85      |
| 83325       | 83225        | .025"           | .075"         | .205"          | 1/8"           | 1-1/2"          | \$28.50    | \$32.80      |
| 83330       | 83230        | .030"           | .090"         | .250"          | 1/8"           | 1-1/2"          | \$28.50    | \$32.80      |
| 83331       | 83231        | .031"           | .093"         | .250"          | 1/8"           | 1-1/2"          | \$28.50    | \$32.80      |
| 83335       | 83235        | .035"           | .105"         | .285"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83340       | 83240        | .040"           | .120"         | .350"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83345       | 83245        | .045"           | .135"         | .400"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83347       | 83247        | .047"           | .141"         | .400"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83350       | 83250        | .050"           | .150"         | .450"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83360       | 83260        | .060"           | .180"         | .500"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83362       | 83262        | .062"           | .186"         | .500"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83365       | 83265        | .065"           | .195"         | .500"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83370       | 83270        | .070"           | .210"         | .500"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83375       | 83275        | .075"           | .225"         | .550"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83378       | 83278        | .078"           | .234"         | .550"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83390       | 83290        | .090"           | .270"         | .600"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83393       | 83293        | .093"           | .279"         | .600"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83300       | 83200        | .100"           | .300"         | .600"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83312       | 83212        | .125"           | .375"         | .600"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |



Special long reach end mills quoted on request. Minimum 6 pieces per size.

**Ships within 24-48 hours.**

**Tools are custom manufactured to order and are nonreturnable.**

**New!! Express Service**

Ships same day as ordered. Call for details, price and availability.

Minimum order 6 tools per size.





# STUB LENGTH - 3-FLUTE

Square End - UNCOATED & AITiN COATED - .010" to .125"



Length of Cut = 1.5 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |               |                |                 | Not Coated | AITiN Coated |
| 83110       | 83510        | .010"           | .015"         | 1/8"           | 1-1/2"          | \$22.45    | \$27.85      |
| 83115       | 83515        | .015"           | .022"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20      |
| 83120       | 83520        | .020"           | .030"         | 1/8"           | 1-1/2"          | \$18.80    | \$23.10      |
| 83125       | 83525        | .025"           | .037"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05      |
| 83130       | 83530        | .030"           | .045"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05      |
| 83131       | 83531        | .031"           | .046"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05      |
| 83135       | 83535        | .035"           | .052"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83140       | 83540        | .040"           | .060"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83145       | 83545        | .045"           | .067"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83147       | 83547        | .047"           | .070"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83150       | 83550        | .050"           | .075"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83160       | 83560        | .060"           | .090"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90      |
| 83162       | 83562        | .062"           | .125"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83165       | 83565        | .065"           | .098"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83170       | 83570        | .070"           | .105"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83175       | 83575        | .075"           | .113"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83178       | 83578        | .078"           | .156"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83190       | 83590        | .090"           | .135"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83193       | 83593        | .093"           | .187"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83100       | 83500        | .100"           | .150"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |
| 83112       | 83512        | .125"           | .250"         | 1/8"           | 1-1/2"          | \$14.80    | \$19.10      |

Need corner rounding end mills? See pages 84 to 88.



# STUB LENGTH - LONG RCH - 3-FLUTE



Square End - **UNCOATED & AITiN COATED** - .015" to .125"



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

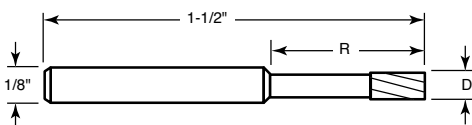
**Tools are custom manufactured to order and are nonreturnable.**

Length of Cut = 1.5 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|---------------|----------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |               |                |                |                 | Not Coated | AITiN Coated |
| 83615       | 83715        | .015"           | .022"         | .100"          | 1/8"           | 1-1/2"          | \$30.65    | \$34.95      |
| 83620       | 83720        | .020"           | .030"         | .120"          | 1/8"           | 1-1/2"          | \$29.55    | \$33.85      |
| 83625       | 83725        | .025"           | .037"         | .150"          | 1/8"           | 1-1/2"          | \$28.50    | \$32.80      |
| 83630       | 83730        | .030"           | .045"         | .180"          | 1/8"           | 1-1/2"          | \$28.50    | \$32.80      |
| 83631       | 83731        | .031"           | .046"         | .183"          | 1/8"           | 1-1/2"          | \$28.50    | \$32.80      |
| 83635       | 83735        | .035"           | .052"         | .210"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83640       | 83740        | .040"           | .060"         | .220"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83645       | 83745        | .045"           | .067"         | .270"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83647       | 83747        | .047"           | .070"         | .280"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83650       | 83750        | .050"           | .075"         | .300"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83660       | 83760        | .060"           | .090"         | .330"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83662       | 83762        | .062"           | .125"         | .360"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83665       | 83765        | .065"           | .098"         | .375"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83670       | 83770        | .070"           | .105"         | .390"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83675       | 83775        | .075"           | .113"         | .420"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83678       | 83778        | .078"           | .156"         | .450"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83690       | 83790        | .090"           | .135"         | .540"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83693       | 83793        | .093"           | .187"         | .560"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83600       | 83700        | .100"           | .150"         | .600"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |
| 83612       | 83712        | .125"           | .250"         | .650"          | 1/8"           | 1-1/2"          | \$27.40    | \$31.70      |

## ORDER SPECIAL 3-Flute Square End LONG REACH END MILLS

To order special long reach end mills please specify:



1. Square End.
2. Diameter (D): \_\_\_\_\_ From above chart.
3. Overall Reach (R): \_\_\_\_\_
4. Quantity (Minimum 6): \_\_\_\_\_
5. 3-Flute.

**Special Reaches Shipped within 24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**



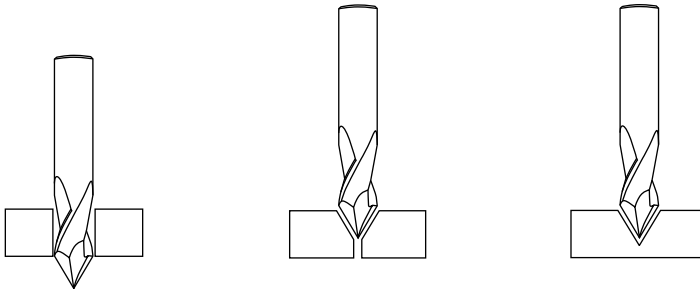
# LONG SHANK - LONG FLUTE - 3-FLUTE

**Square & Ball End - UNCOATED - .015" to .125"**

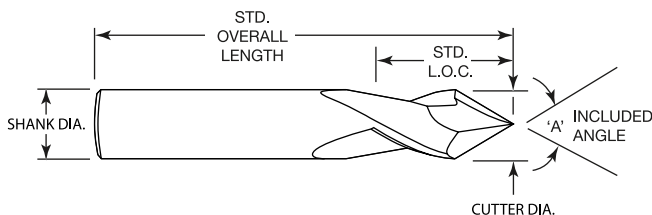


Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter     | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|---------------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                     |               |                |                 | Square End | Ball End |
| LF1015      | LF1015B  | <b>.015" (1/64)</b> | .075"         | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1020      | LF1020B  | <b>.020"</b>        | .100"         | 1/8"           | 2-1/2"          | \$24.90    | \$28.90  |
| LF1025      | LF1025B  | <b>.025"</b>        | .125"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF1031      | LF1031B  | <b>.031" (1/32)</b> | .150"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF1040      | LF1040B  | <b>.040"</b>        | .200"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF1047      | LF1047B  | <b>.047" (3/64)</b> | .250"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF1062S     | LF1062SB | <b>.062" (1/16)</b> | .312"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF1062      | LF1062B  | <b>.062" (1/16)</b> | .500"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF1070      | LF1070B  | <b>.070"</b>        | .500"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF1078      | LF1078B  | <b>.078" (5/64)</b> | .500"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF1093      | LF1093B  | <b>.093" (3/32)</b> | .500"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF1093L     | LF1093LB | <b>.093" (3/32)</b> | .750"         | 1/8"           | 2-1/2"          | \$23.90    | \$27.90  |
| LF1012      | LF1012B  | <b>.125" (1/8)</b>  | .750"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |



**Need drill mills? See pages 90 to 93.**



# 3-FLUTE - LONG SHANK - LONG FLUTE



Square & Ball End - **AlTiN COATED** - .015" to .125"

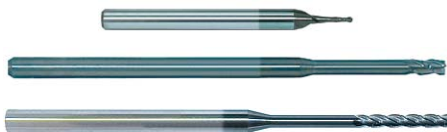


Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| LF2015      | LF2015B  | .015" (1/64)    | .075"         | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2020      | LF2020B  | .020"           | .100"         | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF2025      | LF2025B  | .025"           | .125"         | 1/8"           | 2-1/2"          | \$26.90    | \$30.90  |
| LF2031      | LF2031B  | .031" (1/32)    | .150"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| LF2040      | LF2040B  | .040"           | .200"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| LF2047      | LF2047B  | .047" (3/64)    | .250"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| LF2062S     | LF2062SB | .062" (1/16)    | .312"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| LF2062      | LF2062B  | .062" (1/16)    | .500"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| LF2070      | LF2070B  | .070"           | .500"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| LF2078      | LF2078B  | .078" (5/64)    | .500"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| LF2093      | LF2093B  | .093" (3/32)    | .500"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| LF2093L     | LF2093LB | .093" (3/32)    | .750"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF2012      | LF2012B  | .125" (1/8)     | .750"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |

Need Diamond End Mills for machining graphite, aluminum or plastics? See pages 118 to 137.

"GRX" series of amorphous diamond coated mills lower tooling costs and improve productivity over uncoated carbide.





# LG FLT - LG REACH DECIMAL - 3-FLUTE

## Square & Ball End - UNCOATED - 2-1/2" OAL



Tools feature an undercut neck for clearance.



**MINIMUM 3 TOOLS EACH SIZE AS LISTED BELOW**



| TOOL NUMBER |           | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|-----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End  |                 |               |                |                |                 | Square End | Ball End |
| LF1115S     | LF1115BS  | .015" (1/64)    | .075"         | .125"          | 1/8"           | 2-1/2"          | \$33.90    | \$39.90  |
| LF1115      | LF1115B   | .015" (1/64)    | .075"         | .150"          | 1/8"           | 2-1/2"          | \$33.90    | \$39.90  |
| LF1120S     | LF1120BS  | .020"           | .100"         | .150"          | 1/8"           | 2-1/2"          | \$29.90    | \$35.90  |
| LF1120      | LF1120B   | .020"           | .100"         | .200"          | 1/8"           | 2-1/2"          | \$31.90    | \$37.90  |
| LF1125S     | LF1125BS  | .025"           | .125"         | .200"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1125      | LF1125B   | .025"           | .125"         | .250"          | 1/8"           | 2-1/2"          | \$29.90    | \$33.90  |
| LF1131      | LF1131B   | .031" (1/32)    | .150"         | .250"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1131L     | LF1131LB  | .031" (1/32)    | .150"         | .300"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| LF1140      | LF1140B   | .040"           | .200"         | .350"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1147      | LF1147B   | .047" (3/64)    | .250"         | .400"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1147L     | LF1147LB  | .047" (3/64)    | .250"         | .500"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF1162S     | LF1162BS  | .062" (1/16)    | .500"         | .650"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1162      | LF1162B   | .062" (1/16)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1162L     | LF1162LB  | .062" (1/16)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$30.90    | \$34.90  |
| LF1162XL    | LF1162XLB | .062" (1/16)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF1170      | LF1170B   | .070"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1178      | LF1178B   | .078" (5/64)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1178L     | LF1178LB  | .078" (5/64)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$30.90    | \$34.90  |
| LF1178XL    | LF1178XLB | .078" (5/64)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF1193S     | LF1193BS  | .093" (3/32)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF1193      | LF1193B   | .093" (3/32)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$30.90    | \$34.90  |
| LF1193XL    | LF1193XLB | .093" (3/32)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF1112      | LF1112B   | .125" (1/8)     | .750"         | 1.25"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |

**Don't see the reach you want?? Call customer service.**

**Shorter reaches available at No Extra Charge and ship in 24-48 Hours.**

**Longer Reaches need to be quoted by our Sales Department and ship in 24-48 hours after receipt of order.**

**Minimum quantity is 3 tools per size.**

**All products on this page are made to order and are non-returnable.**

# LG FLUTE - LG REACH - 3-FLUTE



**Square & Ball End - AITiN COATED - 2-1/2" OAL**



Tools feature an undercut neck for clearance.



**MINIMUM 3 TOOLS  
EACH SIZE  
AS LISTED BELOW**

**Shipped  
Within 24-48  
Hours**

| TOOL NUMBER |           | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|-----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End  |                 |               |                |                |                 | Square End | Ball End |
| LF2115S     | LF2115BS  | .015" (1/64)    | .075"         | .125"          | 1/8"           | 2-1/2"          | \$37.90    | \$43.90  |
| LF2115      | LF2115B   | .015" (1/64)    | .075"         | .150"          | 1/8"           | 2-1/2"          | \$37.90    | \$43.90  |
| LF2120S     | LF2120BS  | .020"           | .100"         | .150"          | 1/8"           | 2-1/2"          | \$33.90    | \$39.90  |
| LF2120      | LF2120B   | .020"           | .100"         | .200"          | 1/8"           | 2-1/2"          | \$35.90    | \$41.90  |
| LF2125S     | LF2125BS  | .025"           | .125"         | .200"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2125      | LF2125B   | .025"           | .125"         | .250"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF2131      | LF2131B   | .031" (1/32)    | .150"         | .250"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2131L     | LF2131LB  | .031" (1/32)    | .150"         | .300"          | 1/8"           | 2-1/2"          | \$35.90    | \$39.90  |
| LF2140      | LF2140B   | .040"           | .200"         | .350"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2147      | LF2147B   | .047" (3/64)    | .250"         | .400"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2147L     | LF2147LB  | .047" (3/64)    | .250"         | .500"          | 1/8"           | 2-1/2"          | \$36.90    | \$40.90  |
| LF2162S     | LF2162BS  | .062" (1/16)    | .500"         | .650"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2162      | LF2162B   | .062" (1/16)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2162L     | LF2162LB  | .062" (1/16)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$34.90    | \$38.90  |
| LF2162XL    | LF2162XLB | .062" (1/16)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$36.90    | \$40.90  |
| LF2170      | LF2170B   | .070"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2178      | LF2178B   | .078" (5/64)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2178L     | LF2178LB  | .078" (5/64)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$34.90    | \$38.90  |
| LF2178XL    | LF2178XLB | .078" (5/64)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$36.90    | \$40.90  |
| LF2193S     | LF2193BS  | .093" (3/32)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |
| LF2193      | LF2193B   | .093" (3/32)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$34.90    | \$38.90  |
| LF2193L     | LF2193LB  | .093" (3/32)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$36.90    | \$40.90  |
| LF2112S     | LF2112BS  | .125" (1/8)     | .750"         | 1.25"          | 1/8"           | 2-1/2"          | \$32.90    | \$36.90  |

**Minimum quantity is 3 tools per size.**

**All products on this page are made to order and are non-returnable.**



# STUB FLUTE – LONG SHANK – 3-FLUTE

**Square & Ball End - UNCOATED - 2-1/2" OAL**

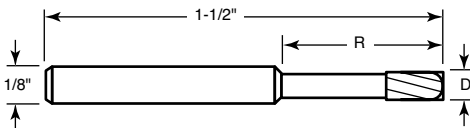


Length of Cut = 1.5 x Diameter – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| SF1015      | SF1015B  | .015"           | .022"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF1020      | SF1020B  | .020"           | .030"         | 1/8"           | 2-1/2"          | \$23.90    | \$27.90  |
| SF1025      | SF1025B  | .025"           | .037"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF1031      | SF1031B  | .031"           | .046"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF1040      | SF1040B  | .040"           | .060"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF1047      | SF1047B  | .047"           | .070"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF1062      | SF1062B  | .062"           | .094"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF1070      | SF1070B  | .070"           | .105"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF1078      | SF1078B  | .078"           | .117"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF1093      | SF1093B  | .093"           | .139"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF1012      | SF1012B  | .125"           | .187"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |

## ORDER SPECIAL Stub 3-Flute Square & Ball End LONG REACH, LONG SHANK MILLS

To order special long reach end mills please specify:



1. Specify:  Square End or  Ball End.
2. Diameter (D): \_\_\_\_\_ From chart above.
3. Overall Reach (R): \_\_\_\_\_
4. Quantity (Minimum 6): \_\_\_\_\_

3-Flute 

**Special Reaches Shipped within 24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

# STUB FLUTE – LONG SHANK – 3-FLUTE



Square & Ball End - **AlTiN COATED** - 2-1/2" OAL



Length of Cut = 1.5 x Diameter – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| SF2015      | SF2015B  | .015"           | .022"         | 1/8"           | 2-1/2"          | \$29.90    | \$33.90  |
| SF2020      | SF2020B  | .020"           | .030"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF2025      | SF2025B  | .025"           | .037"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF2031      | SF2031B  | .031"           | .046"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF2040      | SF2040B  | .040"           | .060"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF2047      | SF2047B  | .047"           | .070"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF2062      | SF2062B  | .062"           | .094"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF2070      | SF2070B  | .070"           | .105"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF2078      | SF2078B  | .078"           | .117"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF2093      | SF2093B  | .093"           | .139"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF2012      | SF2012B  | .125"           | .187"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |

## END MILL EXTENSION HOLDERS

I.D. CONCENTRIC WITHIN .0003"- I.D. HOLE SIZE +.00015/-0



| Tool Number | I.D. Hole Size | Shank Diameter | Over All Length | Price Each |
|-------------|----------------|----------------|-----------------|------------|
| ACH1250     | .1250"         | 3/8"           | 3-1/4"          | \$199.50   |
| ACH1250L    | .1250"         | 3/8"           | 6"              | \$265.50   |
| ACH1875     | .1875"         | 1/2"           | 3-1/2"          | \$199.50   |
| ACH1875L    | .1875"         | 1/2"           | 5"              | \$215.50   |
| ACH2500     | .2500"         | 5/8"           | 4-1/4"          | \$199.50   |
| ACH2500L    | .2500"         | 5/8"           | 6"              | \$219.50   |



# STUB - LG SHANK - LG REACH - 3-FLT

Square & Ball End - UNCOATED - 2-1/2" OAL



MINIMUM  
3 TOOLS  
EACH SIZE



| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 1115-075    | 1215-075 | .015"           | .022"         | .075"          | 1/8"           | 2-1/2"          | \$31.50    | \$37.50  |
| 1115-100    | 1215-100 | .015"           | .022"         | .100"          | 1/8"           | 2-1/2"          | \$31.50    | \$37.50  |
| 1115-100    | 1215-100 | .015"           | .022"         | .125"          | 1/8"           | 2-1/2"          | \$32.50    | \$38.50  |
| 1115-150    | 1215-150 | .015"           | .022"         | .150"          | 1/8"           | 2-1/2"          | \$34.50    | \$40.50  |
| 1120-100    | 1220-100 | .020"           | .030"         | .100"          | 1/8"           | 2-1/2"          | \$29.90    | \$35.90  |
| 1120-150    | 1220-150 | .020"           | .030"         | .150"          | 1/8"           | 2-1/2"          | \$29.90    | \$35.90  |
| 1120-200    | 1220-200 | .020"           | .030"         | .200"          | 1/8"           | 2-1/2"          | \$33.90    | \$39.90  |
| 1125-125    | 1225-125 | .025"           | .037"         | .125"          | 1/8"           | 2-1/2"          | \$28.90    | \$34.90  |
| 1125-200    | 1225-200 | .025"           | .037"         | .200"          | 1/8"           | 2-1/2"          | \$28.90    | \$34.90  |
| 1125-250    | 1225-250 | .025"           | .037"         | .250"          | 1/8"           | 2-1/2"          | \$33.90    | \$39.90  |
| 1131-150    | 1231-150 | .031"           | .046"         | .150"          | 1/8"           | 2-1/2"          | \$28.50    | \$34.50  |
| 1131-200    | 1231-200 | .031"           | .046"         | .200"          | 1/8"           | 2-1/2"          | \$28.50    | \$34.50  |
| 1131-250    | 1231-250 | .031"           | .046"         | .250"          | 1/8"           | 2-1/2"          | \$30.50    | \$36.50  |
| 1131-300    | 1231-300 | .031"           | .046"         | .300"          | 1/8"           | 2-1/2"          | \$32.50    | \$38.50  |
| 1140-200    | 1240-200 | .040"           | .060"         | .200"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1140-300    | 1240-300 | .040"           | .060"         | .300"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1140-400    | 1240-400 | .040"           | .060"         | .400"          | 1/8"           | 2-1/2"          | \$29.50    | \$34.50  |
| 1147-250    | 1247-250 | .047"           | .070"         | .250"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1147-350    | 1247-350 | .047"           | .070"         | .350"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1147-450    | 1247-450 | .047"           | .070"         | .450"          | 1/8"           | 2-1/2"          | \$29.50    | \$34.50  |
| 1162-300    | 1262-300 | .062"           | .093"         | .300"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1162-400    | 1262-400 | .062"           | .093"         | .400"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1162-500    | 1262-500 | .062"           | .093"         | .500"          | 1/8"           | 2-1/2"          | \$29.50    | \$34.50  |
| 1162-600    | 1262-600 | .062"           | .093"         | .600"          | 1/8"           | 2-1/2"          | \$30.50    | \$35.50  |
| 1162-750    | 1262-750 | .062"           | .093"         | .750"          | 1/8"           | 2-1/2"          | \$32.50    | \$37.50  |
| 1170-300    | 1270-300 | .070"           | .105"         | .300"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1170-400    | 1270-400 | .070"           | .105"         | .400"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1170-500    | 1270-500 | .070"           | .105"         | .500"          | 1/8"           | 2-1/2"          | \$29.50    | \$34.50  |
| 1178-400    | 1278-400 | .078"           | .117"         | .400"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1178-500    | 1278-500 | .078"           | .117"         | .500"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1178-600    | 1278-600 | .078"           | .117"         | .600"          | 1/8"           | 2-1/2"          | \$29.50    | \$34.50  |
| 1178-750    | 1278-750 | .078"           | .117"         | .750"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 1193-500    | 1293-500 | .093"           | .139"         | .500"          | 1/8"           | 2-1/2"          | \$27.50    | \$32.50  |
| 1193-600    | 1293-600 | .093"           | .139"         | .600"          | 1/8"           | 2-1/2"          | \$29.50    | \$34.50  |
| 1193-750    | 1293-750 | .093"           | .139"         | .750"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 1193-100    | 1293-100 | .093"           | .139"         | 1.000"         | 1/8"           | 2-1/2"          | \$34.50    | \$39.50  |
| 1125-750    | 1225-750 | .125"           | .187"         | .750"          | 1/8"           | 2-1/2"          | \$29.50    | \$34.50  |
| 1125-100    | 1225-100 | .125"           | .187"         | 1.000"         | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |

Tools are custom manufactured to order and are nonreturnable.

# STUB - LG SHANK - LG REACH - 3-FLT



**Square & Ball End - AITiN COATED - 2-1/2" OAL**



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 2115-075    | 2215-075 | .015"           | .022"         | .075"          | 1/8"           | 2-1/2"          | \$35.50    | \$41.50  |
| 2115-100    | 2215-100 | .015"           | .022"         | .100"          | 1/8"           | 2-1/2"          | \$35.50    | \$41.50  |
| 2115-100    | 2215-100 | .015"           | .022"         | .125"          | 1/8"           | 2-1/2"          | \$36.50    | \$42.50  |
| 2115-150    | 2215-150 | .015"           | .022"         | .150"          | 1/8"           | 2-1/2"          | \$38.50    | \$44.50  |
| 2120-100    | 2220-100 | .020"           | .030"         | .100"          | 1/8"           | 2-1/2"          | \$33.90    | \$39.90  |
| 2120-150    | 2220-150 | .020"           | .030"         | .150"          | 1/8"           | 2-1/2"          | \$33.90    | \$39.90  |
| 2120-200    | 2220-200 | .020"           | .030"         | .200"          | 1/8"           | 2-1/2"          | \$37.90    | \$43.90  |
| 2125-125    | 2225-125 | .025"           | .037"         | .125"          | 1/8"           | 2-1/2"          | \$32.90    | \$38.90  |
| 2125-200    | 2225-200 | .025"           | .037"         | .200"          | 1/8"           | 2-1/2"          | \$32.90    | \$38.90  |
| 2125-250    | 2225-250 | .025"           | .037"         | .250"          | 1/8"           | 2-1/2"          | \$37.90    | \$43.90  |
| 2131-150    | 2231-150 | .031"           | .046"         | .150"          | 1/8"           | 2-1/2"          | \$32.50    | \$38.50  |
| 2131-200    | 2231-200 | .031"           | .046"         | .200"          | 1/8"           | 2-1/2"          | \$32.50    | \$38.50  |
| 2131-250    | 2231-250 | .031"           | .046"         | .250"          | 1/8"           | 2-1/2"          | \$34.50    | \$40.50  |
| 2131-300    | 2231-300 | .031"           | .046"         | .300"          | 1/8"           | 2-1/2"          | \$36.50    | \$42.50  |
| 2140-200    | 2240-200 | .040"           | .060"         | .200"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2140-300    | 2240-300 | .040"           | .060"         | .300"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2140-400    | 2240-400 | .040"           | .060"         | .400"          | 1/8"           | 2-1/2"          | \$33.50    | \$38.50  |
| 2147-250    | 2247-250 | .047"           | .070"         | .250"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2147-350    | 2247-350 | .047"           | .070"         | .350"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2147-450    | 2247-450 | .047"           | .070"         | .450"          | 1/8"           | 2-1/2"          | \$33.50    | \$38.50  |
| 2162-300    | 2262-300 | .062"           | .093"         | .300"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2162-400    | 2262-400 | .062"           | .093"         | .400"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2162-500    | 2262-500 | .062"           | .093"         | .500"          | 1/8"           | 2-1/2"          | \$33.50    | \$38.50  |
| 2162-600    | 2262-600 | .062"           | .093"         | .600"          | 1/8"           | 2-1/2"          | \$34.50    | \$39.50  |
| 2162-750    | 2262-750 | .062"           | .093"         | .750"          | 1/8"           | 2-1/2"          | \$36.50    | \$41.50  |
| 2170-300    | 2270-300 | .070"           | .105"         | .300"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2170-400    | 2270-400 | .070"           | .105"         | .400"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2170-500    | 2270-500 | .070"           | .105"         | .500"          | 1/8"           | 2-1/2"          | \$33.50    | \$38.50  |
| 2178-400    | 2278-400 | .078"           | .117"         | .400"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2178-500    | 2278-500 | .078"           | .117"         | .500"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2178-600    | 2278-600 | .078"           | .117"         | .600"          | 1/8"           | 2-1/2"          | \$33.50    | \$38.50  |
| 2178-750    | 2278-750 | .078"           | .117"         | .750"          | 1/8"           | 2-1/2"          | \$35.50    | \$41.50  |
| 2193-500    | 2293-500 | .093"           | .139"         | .500"          | 1/8"           | 2-1/2"          | \$31.50    | \$36.50  |
| 2193-600    | 2293-600 | .093"           | .139"         | .600"          | 1/8"           | 2-1/2"          | \$33.50    | \$38.50  |
| 2193-750    | 2293-750 | .093"           | .139"         | .750"          | 1/8"           | 2-1/2"          | \$35.50    | \$40.50  |
| 2193-100    | 2293-100 | .093"           | .139"         | 1.000"         | 1/8"           | 2-1/2"          | \$38.50    | \$43.50  |
| 2125-750    | 2225-750 | .125"           | .187"         | .750"          | 1/8"           | 2-1/2"          | \$33.50    | \$38.50  |
| 2125-100    | 2225-100 | .125"           | .187"         | 1.000"         | 1/8"           | 2-1/2"          | \$35.50    | \$41.50  |

**Tools are custom manufactured to order and are nonreturnable.**

**TOLL FREE 866-426-3300  
FAX 781-582-8095**

**Microcut**



# STUB - CORNER RAD - LG SHK - 3-FLT

## Corner Radius - UNCOATED & AITiN COATED 2-1/2" OAL - LOC = 1.5 x DIA.

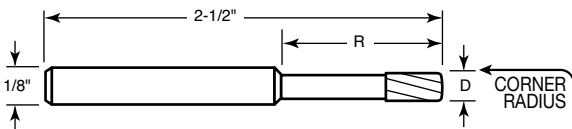


Flute Length = 1.5 x Diameter or as specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Dia.<br>+/- .0005" | Corner Radius<br>+/- .001" | Length of Cut<br>+.005" -.000" | Shank Dia. | Over All Length | PRICE EACH |              |
|-------------|--------------|---------------------------|----------------------------|--------------------------------|------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                           |                            |                                |            |                 | Not Coated | AITiN Coated |
| SR1031      | SR2031       | .031"                     | .005"                      | .046"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1040      | SR2040       | .040"                     | .005"                      | .060"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1047      | SR2047       | .047"                     | .005"                      | .070"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1062      | SR2062       | .062"                     | .005"                      | .094"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1062-1    | SR2062-1     | .062"                     | .010"                      | .094"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1070      | SR2070       | .070"                     | .005"                      | .105"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1078      | SR2078       | .078"                     | .005"                      | .117"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1078-1    | SR2078-1     | .078"                     | .010"                      | .117"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1093      | SR2093       | .093"                     | .005"                      | .139"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1093-1    | SR2093-1     | .093"                     | .010"                      | .139"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1125      | SR2125       | .125"                     | .005"                      | .187"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |
| SR1125-1    | SR2125-1     | .125"                     | .010"                      | .187"                          | 1/8"       | 2-1/2"          | \$27.90    | \$31.90      |

### ORDER SPECIAL 3-Flute Square & Ball End LONG REACH, LONG SHANK MILLS

To order special long reach end mills please specify:



1. Diameter (D): \_\_\_\_\_ From chart above.
2. Corner Rad.: \_\_\_\_\_ From chart above.
3. Overall Reach (R): \_\_\_\_\_
4. Quantity (Minimum 6): \_\_\_\_\_

3-Flute



**Special Reaches Shipped within 24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

# STUB - CORNER RAD - LG SHK & RCH - 3-FLT



## Corner Radius - UNCOATED & AITiN COATED

2-1/2" OAL - LOC = 1.5 x DIA.



**MINIMUM  
3 TOOLS  
EACH SIZE**



**Tools are custom manufactured to order and are nonreturnable.**

Flute Length = 1.5 x Diameter or as specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter<br>+/- .0005" | Corner Radius<br>+/- .001" | Length of Cut<br>+.005"<br>-.000" | Reach From Tip | Shank Dia. | Over All Length | PRICE EACH |              |
|-------------|--------------|-------------------------------|----------------------------|-----------------------------------|----------------|------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                               |                            |                                   |                |            |                 | Not Coated | AITiN Coated |
| SLR1031     | SLR2031      | .031"                         | .005"                      | .046"                             | .150"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1031L    | SLR2031L     | .031"                         | .005"                      | .046"                             | .250"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1040     | SLR2040      | .040"                         | .005"                      | .060"                             | .200"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1047     | SLR2047      | .047"                         | .005"                      | .070"                             | .250"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1047L    | SLR2047L     | .047"                         | .005"                      | .070"                             | .350"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1062     | SLR2062      | .062"                         | .005"                      | .094"                             | .300"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1062L    | SLR2062L     | .062"                         | .005"                      | .094"                             | .500"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1062-1   | SLR2062-1    | .062"                         | .010"                      | .094"                             | .300"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1062L1   | SLR2062L1    | .062"                         | .010"                      | .094"                             | .500"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1070     | SLR2070      | .070"                         | .005"                      | .105"                             | .350"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1078     | SLR2078      | .078"                         | .005"                      | .117"                             | .400"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1078L    | SLR2078L     | .078"                         | .005"                      | .117"                             | .550"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1078-1   | SLR2078-1    | .078"                         | .010"                      | .117"                             | .400"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1078L1   | SLR2078L1    | .078"                         | .010"                      | .117"                             | .550"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1093     | SLR2093      | .093"                         | .005"                      | .139"                             | .500"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1093L    | SLR2093L     | .093"                         | .005"                      | .139"                             | .750"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1093-1   | SLR2093-1    | .093"                         | .010"                      | .139"                             | .500"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1093L1   | SLR2093L1    | .093"                         | .010"                      | .139"                             | .750"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1125     | SLR2125      | .125"                         | .005"                      | .187"                             | .750"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1125L    | SLR2125L     | .125"                         | .005"                      | .187"                             | 1.00"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1125-1   | SLR2125-1    | .125"                         | .010"                      | .187"                             | .750"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |
| SLR1125L1   | SLR2125L1    | .125"                         | .010"                      | .187"                             | 1.00"          | 1/8"       | 2-1/2"          | \$33.90    | \$37.90      |



# DECIMAL - 4-FLUTE

## Square & Ball End - UNCOATED - .010" to .067"



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 84010       | 84010B   | .010"           | .030"         | 1/8"           | 1-1/2"          | \$20.70    | \$29.55  |
| 84012       | 84012B   | .012"           | .036"         | 1/8"           | 1-1/2"          | \$20.70    | \$29.55  |
| 84015       | 84015B   | .015"           | .045"         | 1/8"           | 1-1/2"          | \$18.20    | \$24.65  |
| 84018       | 84018B   | .018"           | .054"         | 1/8"           | 1-1/2"          | \$18.20    | \$24.65  |
| 84020       | 84020B   | .020"           | .060"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.60  |
| 84022       | 84022B   | .022"           | .066"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.60  |
| 84025       | 84025B   | .025"           | .075"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.45  |
| 84027       | 84027B   | .028"           | .084"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.45  |
| 84030       | 84030B   | .030"           | .090"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |
| 84031       | 84031B   | .031"           | .093"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |
| 84031L      | 84031LB  | .031"           | .125"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |
| 84035       | 84035B   | .035"           | .105"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84037       | 84037B   | .037"           | .111"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84039       | 84039B   | .039"           | .117"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84040       | 84040B   | .040"           | .120"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84042       | 84042B   | .042"           | .126"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84045       | 84045B   | .045"           | .135"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84047       | 84047B   | .047"           | .141"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84050       | 84050B   | .050"           | .150"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84052       | 84052B   | .052"           | .156"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84055       | 84055B   | .055"           | .165"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84057       | 84057B   | .057"           | .171"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84059       | 84059B   | .059"           | .177"         | 1/8"           | 1-1/2"          | \$13.90    | \$18.20  |
| 84060       | 84060B   | .060"           | .180"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84062       | 84062B   | .062"           | .187"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84062L      | 84062LB  | .062"           | .250"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84065       | 84065B   | .065"           | .195"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84067       | 84067B   | .067"           | .201"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |

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# DECIMAL - 4-FLUTE



## Square & Ball End - UNCOATED - .070" to .125"

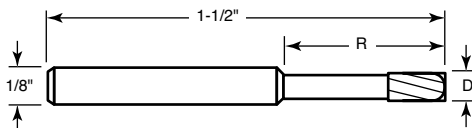


Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 84070       | 84070B   | .070"           | .210"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84072       | 84072B   | .072"           | .216"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84075       | 84075B   | .075"           | .225"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84078       | 84078B   | .078"           | .234"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84080       | 84080B   | .080"           | .240"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84085       | 84085B   | .085"           | .265"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84090       | 84090B   | .090"           | .270"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84093       | 84093B   | .093"           | .279"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84093L      | 84093LB  | .093"           | .375"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84095       | 84095B   | .095"           | .285"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84098       | 84098B   | .098"           | .294"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84100       | 84100B   | .100"           | .300"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84105       | 84105B   | .105"           | .315"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84110       | 84110B   | .110"           | .330"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84115       | 84115B   | .115"           | .345"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84118       | 84118B   | .118"           | .354"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84120       | 84120B   | .120"           | .360"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 84125       | 84125B   | .125"           | .500"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |

### ORDER SPECIAL Square & Ball End LONG REACH MILLS

To order special long reach end mills please specify:



1. Specify:  Square End or  Ball End.
2. Diameter (D): \_\_\_\_\_
3. Overall Reach (R): \_\_\_\_\_
4. Quantity (Minimum 6): \_\_\_\_\_
5. Specify:  2-Flute or  4-Flute.

**Special Reaches Shipped within 24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**



# DECIMAL - 4-FLUTE

Square & Ball End - **AITiN COATED** - .010" to .067"



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 88010       | 88010B   | .010"           | .030"         | 1/8"           | 1-1/2"          | \$25.00    | \$33.85  |
| 88012       | 88012B   | .012"           | .036"         | 1/8"           | 1-1/2"          | \$25.00    | \$33.85  |
| 88015       | 88015B   | .015"           | .045"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 88018       | 88018B   | .018"           | .054"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 88020       | 88020B   | .020"           | .060"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 88022       | 88022B   | .022"           | .066"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 88025       | 88025B   | .025"           | .075"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 88027       | 88027B   | .027"           | .081"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 88030       | 88030B   | .030"           | .090"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 88031       | 88031B   | .031"           | .093"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 88031L      | 88031LB  | .031"           | .125"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 88035       | 88035B   | .035"           | .105"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88037       | 88037B   | .037"           | .111"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88039       | 88039B   | .039"           | .117"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88040       | 88040B   | .040"           | .120"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88042       | 88042B   | .042"           | .126"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88045       | 88045B   | .045"           | .135"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88047       | 88047B   | .047"           | .141"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88050       | 88050B   | .050"           | .150"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88052       | 88052B   | .052"           | .156"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88055       | 88055B   | .055"           | .165"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88057       | 88057B   | .057"           | .171"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88059       | 88059B   | .059"           | .177"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 88060       | 88060B   | .060"           | .180"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88062       | 88062B   | .062"           | .186"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88062L      | 88062LB  | .062"           | .250"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88065       | 88065B   | .065"           | .195"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88067       | 88067B   | .067"           | .201"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |

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# DECIMAL - 4-FLUTE



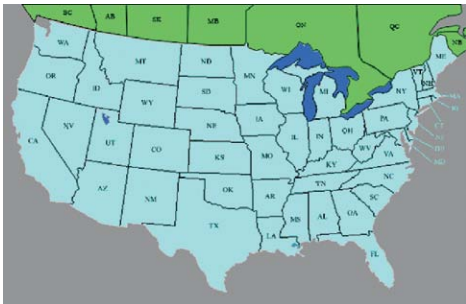
## SQUARE & BALL END - AITiN COATED - .070" to .125"



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 88070       | 88070B   | .070"           | .210"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88072       | 88072B   | .072"           | .216"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88075       | 88075B   | .075"           | .225"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88078       | 88078B   | .078"           | .234"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88080       | 88080B   | .080"           | .240"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88085       | 88085B   | .085"           | .255"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88090       | 88090B   | .090"           | .270"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88093       | 88093B   | .093"           | .279"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88093L      | 88093LB  | .093"           | .375"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88095       | 88095B   | .095"           | .285"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88098       | 88098B   | .098"           | .294"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88100       | 88100B   | .100"           | .300"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88105       | 88105B   | .105"           | .315"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88110       | 88110B   | .110"           | .330"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88115       | 88115B   | .115"           | .345"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88118       | 88118B   | .118"           | .354"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88120       | 88120B   | .120"           | .360"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 88125       | 88125B   | .125"           | .500"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |

### Locate Your Distributor



Microcut products are sold by cutting tool distributors in the U.S. and Canada. These distributors are selected because of their expertise in cutting tools and are available to assist you in your standard and special cutting tools. It's easy to locate a local distributor. Just visit our website at [www.microcutUSA.com](http://www.microcutUSA.com) and select "Locate a Distributor". Enter your Zip code, or select your state in the U.S. or province in Canada and chose a distributor that can process your order quickly and forward it on to the Microcut Sales Dept. We will process your order and ship the tools directly to you on the same day from our warehouse, or manufacture the specialty product as listed in the catalog within the lead time published or quoted.



# LONG REACH - 4-FLUTE

## SQUARE & BALL END - UNCOATED - .010" to .125"



Neck is reduced for clearance.

Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Dia. | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |             |               |                |                |                 | Square End | Ball End |
| 74010       | 74010B   | .010"       | .030"         | .075"          | 1/8"           | 1-1/2"          | \$37.35    | \$48.90  |
| 74012       | 74012B   | .012"       | .036"         | .075"          | 1/8"           | 1-1/2"          | \$35.20    | \$45.70  |
| 74015       | 74015B   | .015"       | .045"         | .125"          | 1/8"           | 1-1/2"          | \$30.65    | \$39.25  |
| 74018       | 74018B   | .018"       | .054"         | .125"          | 1/8"           | 1-1/2"          | \$30.65    | \$39.25  |
| 74020       | 74020B   | .020"       | .060"         | .165"          | 1/8"           | 1-1/2"          | \$29.55    | \$37.10  |
| 74022       | 74022B   | .022"       | .066"         | .165"          | 1/8"           | 1-1/2"          | \$29.55    | \$37.10  |
| 74025       | 74025B   | .025"       | .075"         | .205"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74028       | 74028B   | .028"       | .084"         | .205"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74030       | 74030B   | .030"       | .090"         | .250"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74031       | 74031B   | .031"       | .093"         | .250"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74031L      | 74031LB  | .031"       | .125"         | .250"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74033       | 74033B   | .033"       | .099"         | .250"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74035       | 74035B   | .035"       | .105"         | .285"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74040       | 74040B   | .040"       | .120"         | .350"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74042       | 74042B   | .042"       | .126"         | .350"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.95  |
| 74045       | 74045B   | .045"       | .135"         | .400"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74047       | 74047B   | .047"       | .141"         | .400"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74050       | 74050B   | .050"       | .150"         | .450"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74052       | 74052B   | .052"       | .156"         | .450"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74055       | 74055B   | .055"       | .165"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74060       | 74060B   | .060"       | .180"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74062       | 74062B   | .062"       | .187"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74062L      | 74062LB  | .062"       | .250"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74065       | 74065B   | .065"       | .195"         | .500"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74070       | 74070B   | .070"       | .210"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74072       | 74072B   | .072"       | .216"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74075       | 74075B   | .075"       | .225"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74078       | 74078B   | .078"       | .234"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74080       | 74080B   | .080"       | .240"         | .550"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74090       | 74090B   | .090"       | .270"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74093       | 74093B   | .093"       | .279"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74093L      | 74093LB  | .093"       | .375"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74100       | 74100B   | .100"       | .300"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |
| 74125       | 74125B   | .125"       | .500"         | .650"          | 1/8"           | 1-1/2"          | \$26.75    | \$33.05  |

# LONG REACH - 4-FLUTE



**Square & Ball End - AITiN COATED - .010" to .125"**



Neck is reduced for clearance.

Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Dia. | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |             |               |                |                |                 | Square End | Ball End |
| 74010TL     | 74010BTL | .010"       | .030"         | .075"          | 1/8"           | 1-1/2"          | \$41.65    | \$53.20  |
| 74012TL     | 74012BTL | .012"       | .036"         | .075"          | 1/8"           | 1-1/2"          | \$39.50    | \$51.05  |
| 74015TL     | 74015BTL | .015"       | .045"         | .125"          | 1/8"           | 1-1/2"          | \$34.95    | \$43.55  |
| 74018TL     | 74018BTL | .018"       | .054"         | .125"          | 1/8"           | 1-1/2"          | \$34.95    | \$43.55  |
| 74020TL     | 74020BTL | .020"       | .060"         | .165"          | 1/8"           | 1-1/2"          | \$33.85    | \$41.40  |
| 74022TL     | 74022BTL | .022"       | .066"         | .165"          | 1/8"           | 1-1/2"          | \$33.85    | \$41.40  |
| 74025TL     | 74025BTL | .025"       | .075"         | .205"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74028TL     | 74028BTL | .028"       | .084"         | .205"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74030TL     | 74030BTL | .030"       | .090"         | .250"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74031TL     | 74031BTL | .031"       | .093"         | .250"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74031LT     | 74031LBT | .031"       | .125"         | .250"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74033TL     | 74033BTL | .033"       | .099"         | .250"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74035TL     | 74035BTL | .035"       | .105"         | .285"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74040TL     | 74040BTL | .040"       | .120"         | .350"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74042TL     | 74042BTL | .042"       | .126"         | .350"          | 1/8"           | 1-1/2"          | \$32.15    | \$39.25  |
| 74045TL     | 74045BTL | .045"       | .135"         | .400"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74047TL     | 74047BTL | .047"       | .141"         | .400"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74050TL     | 74050BTL | .050"       | .150"         | .450"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74052TL     | 74052BTL | .052"       | .156"         | .450"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74055TL     | 74055BTL | .055"       | .165"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74060TL     | 74060BTL | .060"       | .180"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74062TL     | 74062BTL | .062"       | .187"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74062LT     | 74062LBT | .062"       | .250"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74065TL     | 74065BTL | .065"       | .195"         | .500"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74070TL     | 74070BTL | .070"       | .210"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74072TL     | 74072BTL | .072"       | .216"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74075TL     | 74075BTL | .075"       | .225"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74078TL     | 74078BTL | .078"       | .234"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74080TL     | 74080BTL | .080"       | .240"         | .550"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74090TL     | 74090BTL | .090"       | .270"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74093TL     | 74093BTL | .093"       | .279"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74093LT     | 74093LBT | .093"       | .375"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74100TL     | 74100BTL | .100"       | .300"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |
| 74125TL     | 74125BTL | .125"       | .500"         | .650"          | 1/8"           | 1-1/2"          | \$31.05    | \$37.35  |



# STUB LENGTH - 4-FLUTE

**Square & Ball End - UNCOATED - .010" to .125"**



Length of Cut = 1.5 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 85010       | 85010B   | .010"           | .015"         | 1/8"           | 1-1/2"          | \$20.95    | \$29.55  |
| 85012       | 85012B   | .012"           | .018"         | 1/8"           | 1-1/2"          | \$20.95    | \$29.55  |
| 85015       | 85015B   | .015"           | .022"         | 1/8"           | 1-1/2"          | \$18.20    | \$25.25  |
| 85018       | 85018B   | .018"           | .027"         | 1/8"           | 1-1/2"          | \$18.20    | \$25.25  |
| 85020       | 85020B   | .020"           | .030"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.10  |
| 85022       | 85022B   | .022"           | .033"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.10  |
| 85025       | 85025B   | .025"           | .037"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.70  |
| 85027       | 85027B   | .027"           | .041"         | 1/8"           | 1-1/2"          | \$16.05    | \$21.70  |
| 85030       | 85030B   | .030"           | .045"         | 1/8"           | 1-1/2"          | \$16.05    | \$20.35  |
| 85031       | 85031B   | .031"           | .046"         | 1/8"           | 1-1/2"          | \$16.05    | \$20.35  |
| 85035       | 85035B   | .035"           | .052"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 85040       | 85040B   | .040"           | .060"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 85045       | 85045B   | .045"           | .067"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 85047       | 85047B   | .047"           | .070"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 85050       | 85050B   | .050"           | .075"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 85055       | 85055B   | .055"           | .082"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 85060       | 85060B   | .060"           | .090"         | 1/8"           | 1-1/2"          | \$14.00    | \$18.30  |
| 85062       | 85062B   | .062"           | .093"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85065       | 85065B   | .065"           | .098"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85070       | 85070B   | .070"           | .105"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85075       | 85075B   | .075"           | .113"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85078       | 85078B   | .078"           | .117"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85080       | 85080B   | .080"           | .120"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85085       | 85085B   | .085"           | .128"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85090       | 85090B   | .090"           | .135"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85093       | 85093B   | .093"           | .187"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85100       | 85100B   | .100"           | .150"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |
| 85125       | 85125B   | .125"           | .250"         | 1/8"           | 1-1/2"          | \$13.45    | \$17.75  |

# STUB LENGTH - LONG RCH - 4-FLUTE



## Square & Ball End - UNCOATED - .015" to .125"



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

Length of Cut = 1.5 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

**Tools are custom manufactured to order and are nonreturnable.**

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 76415       | 76415B   | .015"           | .022"         | .100"          | 1/8"           | 1-1/2"          | \$30.65    | \$38.15  |
| 76420       | 76420B   | .020"           | .030"         | .120"          | 1/8"           | 1-1/2"          | \$29.55    | \$36.00  |
| 76425       | 76425B   | .025"           | .037"         | .150"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76430       | 76430B   | .030"           | .045"         | .180"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76431       | 76431B   | .031"           | .046"         | .183"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76435       | 76435B   | .035"           | .052"         | .210"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76440       | 76440B   | .040"           | .060"         | .220"          | 1/8"           | 1-1/2"          | \$27.85    | \$34.30  |
| 76445       | 76445B   | .045"           | .067"         | .270"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76447       | 76447B   | .047"           | .070"         | .280"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76450       | 76450B   | .050"           | .075"         | .300"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76455       | 76455B   | .055"           | .082"         | .330"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76460       | 76460B   | .060"           | .090"         | .360"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76462       | 76462B   | .062"           | .093"         | .375"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76465       | 76465B   | .065"           | .098"         | .390"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76470       | 76470B   | .070"           | .105"         | .420"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76475       | 76475B   | .075"           | .113"         | .450"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76478       | 76478B   | .078"           | .117"         | .470"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76480       | 76480B   | .080"           | .120"         | .480"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76485       | 76485B   | .085"           | .128"         | .510"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76490       | 76490B   | .090"           | .135"         | .540"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76493       | 76493B   | .093"           | .140"         | .560"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76400       | 76400B   | .100"           | .150"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |
| 76412       | 76412B   | .125"           | .250"         | .600"          | 1/8"           | 1-1/2"          | \$26.75    | \$32.15  |

Special long reach end mills quoted on request. Minimum 6 pieces per size.

**Ships within 24-48 hours.**

**Tools are custom manufactured to order and are nonreturnable.**

**New!! Express Service**

Ships same day as ordered. Call for details, price and availability.

Minimum order 6 tools per size.





# STUB LENGTH - 4-FLUTE

Square & Ball End - **AlTiN COATED** - .010" to .125"



Length of Cut = 1.5 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 85010TL     | 85010BTL | .010"           | .015"         | 1/8"           | 1-1/2"          | \$25.25    | \$33.85  |
| 85012TL     | 85012BTL | .012"           | .018"         | 1/8"           | 1-1/2"          | \$25.25    | \$33.85  |
| 85015TL     | 85015BTL | .015"           | .022"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 85018TL     | 85018BTL | .018"           | .027"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 85020TL     | 85020BTL | .020"           | .030"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 85022TL     | 85022BTL | .022"           | .033"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 85025TL     | 85025BTL | .025"           | .037"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 85027TL     | 85027BTL | .027"           | .041"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 85030TL     | 85030BTL | .030"           | .045"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 85031TL     | 85031BTL | .031"           | .046"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 85035TL     | 85035BTL | .035"           | .052"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 85040TL     | 85040BTL | .040"           | .060"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 85045TL     | 85045BTL | .045"           | .067"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 85047TL     | 85047BTL | .047"           | .070"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 85050TL     | 85050BTL | .050"           | .075"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 85055TL     | 85055BTL | .055"           | .082"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 85060TL     | 85060BTL | .060"           | .090"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85062TL     | 85062BTL | .062"           | .093"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85065TL     | 85065BTL | .065"           | .098"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85070TL     | 85070BTL | .070"           | .105"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85075TL     | 85075BTL | .075"           | .113"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85078TL     | 85078BTL | .078"           | .117"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85080TL     | 85080BTL | .080"           | .120"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85085TL     | 85085BTL | .085"           | .128"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85090TL     | 85090BTL | .090"           | .135"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85093TL     | 85093BTL | .093"           | .140"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85100TL     | 85100BTL | .100"           | .150"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 85125TL     | 85125BTL | .125"           | .250"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |

# STUB LENGTH - LONG RCH - 4-FLUTE



**Square & Ball End - AITiN COATED - .015" to .125"**



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

Length of Cut = 1.5 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

**Tools are custom manufactured to order and are nonreturnable.**

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 76515       | 76515B   | .015"           | .022"         | .100"          | 1/8"           | 1-1/2"          | \$34.95    | \$42.45  |
| 76520       | 76520B   | .020"           | .030"         | .120"          | 1/8"           | 1-1/2"          | \$33.85    | \$40.30  |
| 76525       | 76525B   | .025"           | .037"         | .150"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76530       | 76530B   | .030"           | .045"         | .180"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76531       | 76531B   | .031"           | .046"         | .183"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76535       | 76535B   | .035"           | .052"         | .210"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76540       | 76540B   | .040"           | .060"         | .220"          | 1/8"           | 1-1/2"          | \$32.15    | \$38.60  |
| 76545       | 76545B   | .045"           | .067"         | .270"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76547       | 76547B   | .047"           | .070"         | .280"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76550       | 76550B   | .050"           | .075"         | .300"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76555       | 76555B   | .055"           | .082"         | .330"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76560       | 76560B   | .060"           | .090"         | .360"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76562       | 76562B   | .062"           | .093"         | .375"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76565       | 76565B   | .065"           | .098"         | .390"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76570       | 76570B   | .070"           | .105"         | .420"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76575       | 76575B   | .075"           | .113"         | .450"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76578       | 76578B   | .078"           | .117"         | .470"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76580       | 76580B   | .080"           | .120"         | .480"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76585       | 76585B   | .085"           | .128"         | .510"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76590       | 76590B   | .090"           | .135"         | .540"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76593       | 76593B   | .093"           | .140"         | .560"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76500       | 76500B   | .100"           | .150"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |
| 76512       | 76512B   | .125"           | .250"         | .600"          | 1/8"           | 1-1/2"          | \$31.05    | \$36.45  |

Special long reach end mills quoted on request. Minimum 6 pieces per size.

**Ships within 24-48 hours.**

**Tools are custom manufactured to order and are nonreturnable.**

**New!! Express Service**

Ships same day as ordered. Call for details, price and availability.

Minimum order 6 tools per size.





# TICN COATED - 4-FLUTE

**Square & Ball End - TICN COATED - .015" to .125"**



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 86015       | 86015B   | .015"           | .045"         | 1/8"           | 1-1/2"          | \$22.50    | \$28.95  |
| 86020       | 86020B   | .020"           | .060"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 86025       | 86025B   | .025"           | .075"         | 1/8"           | 1-1/2"          | \$20.35    | \$25.75  |
| 86030       | 86030B   | .030"           | .090"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 86031       | 86031B   | .031"           | .093"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 86031L      | 86031LB  | .031"           | .125"         | 1/8"           | 1-1/2"          | \$19.90    | \$24.20  |
| 86035       | 86035B   | .035"           | .105"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 86040       | 86040B   | .040"           | .120"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 86045       | 86045B   | .045"           | .135"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 86047       | 86047B   | .047"           | .141"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 86050       | 86050B   | .050"           | .150"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 86055       | 86055B   | .055"           | .165"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50  |
| 86060       | 86060B   | .060"           | .180"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86062       | 86062B   | .062"           | .186"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86062L      | 86062LB  | .062"           | .250"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86065       | 86065B   | .065"           | .195"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86070       | 86070B   | .070"           | .210"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86075       | 86075B   | .075"           | .225"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86078       | 86078B   | .078"           | .234"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86080       | 86080B   | .080"           | .240"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86090       | 86090B   | .090"           | .270"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86093       | 86093B   | .093"           | .279"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86093L      | 86093LB  | .093"           | .375"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86100       | 86100B   | .100"           | .300"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |
| 86125       | 86125B   | .125"           | .500"         | 1/8"           | 1-1/2"          | \$17.75    | \$22.05  |

Special long reach end mills quoted on request. Minimum 6 pieces per size.

**Ships within 24-48 hours.**

**Tools are custom manufactured to order and are nonreturnable.**

# MULTI-STEP - LONG REACH - 4-FLUTE



## Square & Ball End - UNCOATED - .010" to .031"



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Dia. | Length of Cut | R <sub>1</sub> Reach From Tip | R <sub>2</sub> Reach From Tip | Neck Dia. "C" | Shank Dia. | Over All Length | PRICE EACH |          |
|-------------|----------|-------------|---------------|-------------------------------|-------------------------------|---------------|------------|-----------------|------------|----------|
| Square End  | Ball End |             |               |                               |                               |               |            |                 | Square End | Ball End |
| 74410       | 74410B   | .010"       | .030"         | .075"                         | .150"                         | .030"         | 1/8"       | 1-1/2"          | \$48.10    | \$59.65  |
| 74415       | 74415B   | .015"       | .045"         | .125"                         | .225"                         | .040"         | 1/8"       | 1-1/2"          | \$40.30    | \$46.75  |
| 74420       | 74420B   | .020"       | .060"         | .165"                         | .265"                         | .040"         | 1/8"       | 1-1/2"          | \$39.25    | \$45.70  |
| 74425       | 74425B   | .025"       | .075"         | .205"                         | .305"                         | .050"         | 1/8"       | 1-1/2"          | \$38.15    | \$43.55  |
| 74430       | 74430B   | .030"       | .090"         | .250"                         | .350"                         | .060"         | 1/8"       | 1-1/2"          | \$37.10    | \$41.40  |
| 74431       | 74431B   | .031"       | .125"         | .250"                         | .350"                         | .062"         | 1/8"       | 1-1/2"          | \$37.10    | \$41.40  |

**Tools are custom manufactured to order and are non-returnable. Tools ship in 24-48 Hours.**

Designed for deep pocket milling where there is sufficient clearance for a larger secondary neck.

Multi neck design increases the reach capabilities for standard reach tools.

Special sizes available-see below for no charge alterations.

\*Reach 'R<sub>2</sub>' and diameter 'C' may be altered to customer specifications at no additional charge if it falls within the parameters setup by engineering at Microcut. Send your request by using the form below and Microcut will advise if your tool meets our criteria for no-charge alterations.

## Square & Ball End - AITiN COATED - .010" to .031"



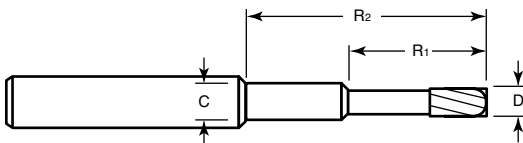
**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Dia. | Length of Cut | R <sub>1</sub> Reach From Tip | R <sub>2</sub> Reach From Tip | Neck Dia. "C" | Shank Dia. | Over All Length | PRICE EACH |          |
|-------------|----------|-------------|---------------|-------------------------------|-------------------------------|---------------|------------|-----------------|------------|----------|
| Square End  | Ball End |             |               |                               |                               |               |            |                 | Square End | Ball End |
| 74310       | 74310B   | .010"       | .030"         | .075"                         | .150"                         | .030"         | 1/8"       | 1-1/2"          | \$54.55    | \$65.05  |
| 74315       | 74315B   | .015"       | .045"         | .125"                         | .225"                         | .040"         | 1/8"       | 1-1/2"          | \$44.60    | \$51.05  |
| 74320       | 74320B   | .020"       | .060"         | .165"                         | .265"                         | .040"         | 1/8"       | 1-1/2"          | \$43.55    | \$50.00  |
| 74325       | 74325B   | .025"       | .075"         | .205"                         | .305"                         | .050"         | 1/8"       | 1-1/2"          | \$42.45    | \$47.85  |
| 74330       | 74330B   | .030"       | .090"         | .250"                         | .350"                         | .060"         | 1/8"       | 1-1/2"          | \$41.40    | \$45.70  |
| 74331       | 74331B   | .031"       | .125"         | .250"                         | .350"                         | .062"         | 1/8"       | 1-1/2"          | \$41.40    | \$45.70  |

### ORDER SPECIAL Multi-Step LONG REACH END MILLS



1. Specify:  Square End or  Ball End.
2. Diameter (D): \_\_\_\_\_ From above charts.
3. Reach (R1): \_\_\_\_\_
4. Reach (R2): \_\_\_\_\_
5. Neck Diameter (C): \_\_\_\_\_
6. Quantity (Minimum 3): \_\_\_\_\_

**Tools are custom manufactured to order and are non-returnable. Tools ship in 24-48 Hours.**



# METRIC - 2-FLUTE

## Square End - UNCOATED - AITiN COATED 0.2mm to 3.0mm



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter (mm) | Length of Cut (mm) | Shank Diameter (mm) | Over All Length (mm) | PRICE EACH |              |
|-------------|--------------|----------------------|--------------------|---------------------|----------------------|------------|--------------|
| Not Coated  | AITiN Coated |                      |                    |                     |                      | Not Coated | AITiN Coated |
| 51202       | 51302        | 0.2                  | 0.4                | 3                   | 38                   | \$35.90    | \$42.90      |
| 51203       | 51303        | 0.3                  | 0.9                | 3                   | 38                   | \$31.50    | \$37.50      |
| 51204       | 51304        | 0.4                  | 1.2                | 3                   | 38                   | \$22.50    | \$28.50      |
| 51205       | 51305        | 0.5                  | 1.5                | 3                   | 38                   | \$21.50    | \$27.50      |
| 51206       | 51306        | 0.6                  | 1.8                | 3                   | 38                   | \$21.50    | \$26.50      |
| 51207       | 51307        | 0.7                  | 2.1                | 3                   | 38                   | \$19.50    | \$24.50      |
| 51208       | 51308        | 0.8                  | 2.4                | 3                   | 38                   | \$19.50    | \$24.50      |
| 51209       | 51309        | 0.9                  | 2.7                | 3                   | 38                   | \$19.50    | \$24.50      |
| 51210       | 51310        | 1.0                  | 3.0                | 3                   | 38                   | \$14.50    | \$18.80      |
| 51215       | 51315        | 1.5                  | 4.5                | 3                   | 38                   | \$14.50    | \$18.80      |
| 51220       | 51320        | 2.0                  | 9.0                | 3                   | 38                   | \$13.45    | \$17.75      |
| 51225       | 51325        | 2.5                  | 12.0               | 3                   | 38                   | \$13.45    | \$17.75      |
| 51230       | 51330        | 3.0                  | 12.0               | 3                   | 38                   | \$13.45    | \$17.75      |

Most Miniature metric cutting diameters are also available on 1/8" diameter shanks. Call for exact specifications.

## Ball End - UNCOATED - AITiN COATED 1.0mm to 3.0mm



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter (mm) | Length of Cut (mm) | Shank Diameter (mm) | Over All Length (mm) | PRICE EACH |              |
|-------------|--------------|----------------------|--------------------|---------------------|----------------------|------------|--------------|
| Not Coated  | AITiN Coated |                      |                    |                     |                      | Not Coated | AITiN Coated |
| 51210B      | 51310B       | 1.0                  | 3.0                | 3                   | 38                   | \$18.50    | \$22.50      |
| 51215B      | 51315B       | 1.5                  | 4.5                | 3                   | 38                   | \$18.50    | \$22.50      |
| 51220B      | 51320B       | 2.0                  | 9.0                | 3                   | 38                   | \$18.50    | \$22.50      |
| 51225B      | 51325B       | 2.5                  | 12.0               | 3                   | 38                   | \$18.50    | \$22.50      |
| 51230B      | 51330B       | 3.0                  | 12.0               | 3                   | 38                   | \$16.50    | \$20.50      |



See  
Metric End Mill  
Extension Holders  
on page 43.

# METRIC - 4-FLUTE



## Square End - UNCOATED - AITiN COATED 0.5mm to 6.0mm



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter (mm) | Length of Cut (mm) | Shank Diameter (mm) | Over All Length (mm) | PRICE EACH |              |
|-------------|--------------|----------------------|--------------------|---------------------|----------------------|------------|--------------|
| Not Coated  | AITiN Coated |                      |                    |                     |                      | Not Coated | AITiN Coated |
| 51405       | 51505        | 0.5                  | 1.5                | 3                   | 38                   | \$21.50    | \$27.50      |
| 51410       | 51510        | 1.0                  | 3.0                | 3                   | 38                   | \$13.50    | \$17.50      |
| 51415       | 51515        | 1.5                  | 4.2                | 3                   | 38                   | \$13.50    | \$17.50      |
| 51420       | 51520        | 2.0                  | 6.0                | 3                   | 38                   | \$13.50    | \$17.50      |
| 51425       | 51525        | 2.5                  | 8.0                | 3                   | 38                   | \$13.50    | \$17.50      |
| 51430       | 51530        | 3.0                  | 12.0               | 3                   | 38                   | \$13.50    | \$17.50      |
| 51435       | 51535        | 3.5                  | 12.0               | 4                   | 50                   | \$17.50    | \$22.50      |
| 51440       | 51540        | 4.0                  | 14.0               | 4                   | 50                   | \$17.50    | \$22.50      |
| 51445       | 51545        | 4.5                  | 16.0               | 6                   | 50                   | \$21.50    | \$26.50      |
| 51450       | 51550        | 5.0                  | 16.0               | 6                   | 50                   | \$21.50    | \$26.50      |
| 51460       | 51560        | 6.0                  | 19.0               | 6                   | 50                   | \$22.50    | \$28.50      |

## Ball End - UNCOATED - AITiN COATED 0.5mm to 6.0mm



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter (mm) | Length of Cut (mm) | Shank Diameter (mm) | Over All Length (mm) | PRICE EACH |              |
|-------------|--------------|----------------------|--------------------|---------------------|----------------------|------------|--------------|
| Not Coated  | AITiN Coated |                      |                    |                     |                      | Not Coated | AITiN Coated |
| 51405B      | 51505B       | 0.5                  | 1.5                | 3                   | 38                   | \$28.50    | \$32.50      |
| 51410B      | 51510B       | 1.0                  | 3.0                | 3                   | 38                   | \$18.50    | \$22.50      |
| 51415B      | 51515B       | 1.5                  | 4.5                | 3                   | 38                   | \$18.50    | \$22.50      |
| 51420B      | 51520B       | 2.0                  | 6.0                | 3                   | 38                   | \$18.50    | \$22.50      |
| 51425B      | 51525B       | 2.5                  | 7.5                | 3                   | 38                   | \$18.50    | \$22.50      |
| 51430B      | 51530B       | 3.0                  | 12.0               | 3                   | 38                   | \$16.50    | \$20.50      |
| 51435B      | 51535B       | 3.5                  | 12.0               | 4                   | 51                   | \$21.50    | \$26.50      |
| 51440B      | 51540B       | 4.0                  | 14.0               | 4                   | 51                   | \$21.50    | \$26.50      |
| 51445B      | 51545B       | 4.5                  | 14.0               | 5                   | 51                   | \$24.50    | \$29.50      |
| 51450B      | 51550B       | 5.0                  | 20.0               | 5                   | 51                   | \$24.50    | \$29.50      |
| 51460B      | 51560B       | 6.0                  | 20.0               | 6                   | 63                   | \$26.50    | \$31.50      |

Most Miniature metric cutting diameters are also available on 1/8" diameter shanks. Call for exact specifications.



# METRIC - LONG REACH - 2-FLUTE

Square End - UNCOATED - AITiN COATED

MINIMUM  
3 TOOLS  
EACH SIZE

Shipped  
Within 24-48  
Hours



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |              | Cutter Diameter (mm) | Length of Cut (mm) | Reach From Tip (mm) | Shank Diameter (mm) | Over All Length (mm) | PRICE EACH |              |
|-------------|--------------|----------------------|--------------------|---------------------|---------------------|----------------------|------------|--------------|
| Not Coated  | AITiN Coated |                      |                    |                     |                     |                      | Not Coated | AITiN Coated |
| 51810       | 51810TL      | 1                    | 3.0                | 9                   | 3                   | 38                   | \$25.50    | \$29.50      |
| 51815       | 51815TL      | 1.5                  | 4.5                | 12                  | 3                   | 38                   | \$25.50    | \$29.50      |
| 51820       | 51820TL      | 2                    | 9.0                | 15                  | 3                   | 38                   | \$26.50    | \$30.50      |
| 51825       | 51825TL      | 2.5                  | 12.0               | 16                  | 3                   | 38                   | \$26.50    | \$30.50      |
| 51830       | 51830TL      | 3                    | 12.0               | 16                  | 3                   | 38                   | \$26.50    | \$30.50      |

## Ball End - UNCOATED - AITiN COATED

| TOOL NUMBER |              | Cutter Diameter (mm) | Length of Cut (mm) | Reach From Tip (mm) | Shank Diameter (mm) | Over All Length (mm) | PRICE EACH |              |
|-------------|--------------|----------------------|--------------------|---------------------|---------------------|----------------------|------------|--------------|
| Not Coated  | AITiN Coated |                      |                    |                     |                     |                      | Not Coated | AITiN Coated |
| 51810B      | 51810BTL     | 1                    | 3.0                | 9                   | 3                   | 38                   | \$29.50    | \$33.50      |
| 51815B      | 51815BTL     | 1.5                  | 4.5                | 12                  | 3                   | 38                   | \$29.50    | \$33.50      |
| 51820B      | 51820BTL     | 2                    | 9.0                | 15                  | 3                   | 38                   | \$30.50    | \$34.50      |
| 51825B      | 51825BTL     | 2.5                  | 12.0               | 16                  | 3                   | 38                   | \$30.50    | \$34.50      |
| 51830B      | 51830BTL     | 3                    | 12.0               | 16                  | 3                   | 38                   | \$30.50    | \$34.50      |

# METRIC - LONG REACH - 4-FLUTE

Square End - UNCOATED - AITiN COATED

Shipped  
Within 24-48  
Hours



| TOOL NUMBER |              | Cutter Diameter (mm) | Length of Cut (mm) | Reach From Tip (mm) | Shank Diameter (mm) | Over All Length (mm) | PRICE EACH |              |
|-------------|--------------|----------------------|--------------------|---------------------|---------------------|----------------------|------------|--------------|
| Not Coated  | AITiN Coated |                      |                    |                     |                     |                      | Not Coated | AITiN Coated |
| 51910       | 51910TL      | 1                    | 3.0                | 9                   | 3                   | 38                   | \$25.50    | \$29.50      |
| 51915       | 51915TL      | 1.5                  | 4.2                | 12                  | 3                   | 38                   | \$25.50    | \$29.50      |
| 51920       | 51920TL      | 2                    | 6.0                | 15                  | 3                   | 38                   | \$26.50    | \$30.50      |
| 51925       | 51925TL      | 2.5                  | 7.5                | 16                  | 3                   | 38                   | \$26.50    | \$30.50      |
| 51930       | 51930TL      | 3                    | 12                 | 16                  | 3                   | 38                   | \$26.50    | \$30.50      |

## Ball End - UNCOATED - AITiN COATED

| TOOL NUMBER |              | Cutter Diameter (mm) | Length of Cut (mm) | Reach From Tip (mm) | Shank Diameter (mm) | Over All Length (mm) | PRICE EACH |              |
|-------------|--------------|----------------------|--------------------|---------------------|---------------------|----------------------|------------|--------------|
| Not Coated  | AITiN Coated |                      |                    |                     |                     |                      | Not Coated | AITiN Coated |
| 51910B      | 51910BTL     | 1                    | 3.0                | 9                   | 3                   | 38                   | \$29.50    | \$33.50      |
| 51915B      | 51915BTL     | 1.5                  | 4.5                | 12                  | 3                   | 38                   | \$29.50    | \$33.50      |
| 51920B      | 51920BTL     | 2                    | 6.0                | 15                  | 3                   | 38                   | \$30.50    | \$34.50      |
| 51925B      | 51925BTL     | 2.5                  | 7.5                | 16                  | 3                   | 38                   | \$30.50    | \$34.50      |
| 51930B      | 51930BTL     | 3                    | 12                 | 16                  | 3                   | 38                   | \$30.50    | \$34.50      |

Other metric long reach sizes, quoted on request. Call for exact specifications.

Shipped within 24-48 hours. Minimum order 3 tools each size.  
Tools are custom manufactured to order and are nonreturnable.

# END MILL EXTENSION HOLDERS

## End Mill Extension Holders

I.D. CONCENTRIC WITHIN .0003"- I.D. HOLE SIZE +.00015/-0



| Tool Number | I.D. Hole Size | Shank Diameter | Over All Length | Price Each |
|-------------|----------------|----------------|-----------------|------------|
| ACH1250     | .1250"         | 3/8"           | 3-1/4"          | \$199.50   |
| ACH1250L    | .1250"         | 3/8"           | 6"              | \$265.50   |
| ACH1875     | .1875"         | 1/2"           | 3-1/2"          | \$199.50   |
| ACH1875L    | .1875"         | 1/2"           | 5"              | \$215.50   |
| ACH2500     | .2500"         | 5/8"           | 4-1/4"          | \$199.50   |
| ACH2500L    | .2500"         | 5/8"           | 6"              | \$219.50   |

## End Mill Extension Holders Millimeter Sizes

I.D. CONCENTRIC WITHIN .0003"- I.D. HOLE SIZE +.00015/-0



| Tool Number | I.D. Hole Size | Shank Diameter | Over All Length | Price Each |
|-------------|----------------|----------------|-----------------|------------|
| ACH1181     | .1181" (3mm)   | 3/8"           | 3-1/4"          | \$219.50   |
| ACH1575     | .1575" (4mm)   | 1/2"           | 3-1/2"          | \$219.50   |
| ACH2362     | .2362" (6mm)   | 5/8"           | 4-1/4"          | \$229.00   |

## ABRASION RESISTANT TOOL COATINGS



### TiCN

Cutting carbon steel, alloy steel and cast iron; cold forming & stamping tools.



### ZrN

Hard coating for machining a variety of non-ferrous materials.



### AlTiN

High performance coating for dry and semi-dry machining of all aerospace materials at high speeds.



### Diamond

(Amorphous) Thin film coating for graphite, nonferrous materials and epoxy.

## Special Cutting Tool Quotations

Microcut's capability to produce Standard cutting tools is replicated by its ability to produce Special Cutting Tools. Quality, competitive pricing, and on-time delivery has been a Microcut trademark for almost 20 years. Microcut's workforce experience in producing special Micro Tools dates back over 40 years and makes us one of the most experienced Micro Tool companies in the U.S.A. Submit your special tool B/P to us by fax at 781-582-8095 or email to sales@microcutUSA.com and we will quote it through the distributor of your choice that services your facility.



# STANDARD FRACTIONAL - 2-FLUTE

## Square & Ball End - UNCOATED - 1/64" to 1/2"



Standard Length of Cut - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 52015       | 52015B   | 1/64"           | 3/64"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.60  |
| 52031       | 52031B   | 1/32"           | 3/32"         | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 52047       | 52047B   | 3/64"           | 1/8"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 52062       | 52062B   | 1/16"           | 1/4"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 52078       | 52078B   | 5/64"           | 3/16"         | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 52093       | 52093B   | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 52109       | 52109B   | 7/64"           | 3/8"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 52125       | 52125B   | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 52140       | 52140B   | 9/64"           | 9/16"         | 3/16"          | 2"              | \$11.75    | \$15.00  |
| 52156       | 52156B   | 5/32"           | 9/16"         | 3/16"          | 2"              | \$11.75    | \$15.00  |
| 52187       | 52187B   | 3/16"           | 5/8"          | 3/16"          | 2"              | \$11.75    | \$15.00  |
| 52250       | 52250B   | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$12.85    | \$17.15  |
| 52312       | 52312B   | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$17.15    | \$21.45  |
| 52375       | 52375B   | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$20.35    | \$24.65  |
| 52500       | 52500B   | 1/2"            | 1"            | 1/2"           | 3"              | \$33.85    | \$44.60  |

## Square & Ball End - AITiN COATED - 1/64" to 1/2"



| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 52015TL     | 52015BTL | 1/64"           | 3/64"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 52031TL     | 52031BTL | 1/32"           | 3/32"         | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 52047TL     | 52047BTL | 3/64"           | 1/8"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 52062TL     | 52062BTL | 1/16"           | 1/4"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 52078TL     | 52078BTL | 5/64"           | 3/16"         | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 52093TL     | 52093BTL | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 52109TL     | 52109BTL | 7/64"           | 3/8"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 52125TL     | 52125BTL | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 52140TL     | 52140BTL | 9/64"           | 9/16"         | 3/16"          | 2"              | \$16.05    | \$20.35  |
| 52156TL     | 52156BTL | 5/32"           | 9/16"         | 3/16"          | 2"              | \$16.05    | \$20.35  |
| 52187TL     | 52187BTL | 3/16"           | 5/8"          | 3/16"          | 2"              | \$16.05    | \$20.35  |
| 52250TL     | 52250BTL | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$18.20    | \$23.60  |
| 52312TL     | 52312BTL | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$21.45    | \$28.95  |
| 52375TL     | 52375BTL | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$24.65    | \$34.35  |
| 52500TL     | 52500BTL | 1/2"            | 1"            | 1/2"           | 3"              | \$42.95    | \$61.20  |

# STANDARD FRACTIONAL - 4-FLUTE



## Square & Ball End - UNCOATED - 1/64" to 1/2"



| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 54015       | 54015B   | 1/64"           | 3/64"         | 1/8"           | 1-1/2"          | \$17.15    | \$23.60  |
| 54031       | 54031B   | 1/32"           | 3/32"         | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 54047       | 54047B   | 3/64"           | 1/8"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 54062       | 54062B   | 1/16"           | 1/4"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 54078       | 54078B   | 5/64"           | 3/16"         | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 54093       | 54093B   | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 54109       | 54109B   | 7/64"           | 3/8"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 54125       | 54125B   | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$10.70    | \$12.85  |
| 54140       | 54140B   | 9/64"           | 9/16"         | 3/16"          | 2"              | \$11.75    | \$15.00  |
| 54156       | 54156B   | 5/32"           | 9/16"         | 3/16"          | 2"              | \$11.75    | \$15.00  |
| 54187       | 54187B   | 3/16"           | 5/8"          | 3/16"          | 2"              | \$11.75    | \$15.00  |
| 54250       | 54250B   | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$12.85    | \$17.15  |
| 54312       | 54312B   | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$17.15    | \$21.45  |
| 54375       | 54375B   | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$20.35    | \$24.65  |
| 54500       | 54500B   | 1/2"            | 1"            | 1/2"           | 3"              | \$33.85    | \$44.60  |

## Square & Ball End - AITiN COATED - 1/64" to 3/4"



| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 54015TL     | 54015BTL | 1/64"           | 3/64"         | 1/8"           | 1-1/2"          | \$21.45    | \$27.90  |
| 54031TL     | 54031BTL | 1/32"           | 3/32"         | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 54047TL     | 54047BTL | 3/64"           | 1/8"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 54062TL     | 54062BTL | 1/16"           | 1/4"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 54078TL     | 54078BTL | 5/64"           | 3/16"         | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 54093TL     | 54093BTL | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 54109TL     | 54109BTL | 7/64"           | 3/8"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 54125TL     | 54125BTL | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$13.90    | \$16.05  |
| 54140TL     | 54140BTL | 9/64"           | 9/16"         | 3/16"          | 2"              | \$16.05    | \$20.35  |
| 54156TL     | 54156BTL | 5/32"           | 9/16"         | 3/16"          | 2"              | \$16.05    | \$20.35  |
| 54187TL     | 54187BTL | 3/16"           | 5/8"          | 3/16"          | 2"              | \$16.05    | \$20.35  |
| 54250TL     | 54250BTL | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$18.20    | \$23.60  |
| 54312TL     | 54312BTL | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$21.45    | \$28.95  |
| 54375TL     | 54375BTL | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$24.65    | \$34.35  |
| 54500TL     | 54500BTL | 1/2"            | 1"            | 1/2"           | 3"              | \$42.95    | \$61.20  |



# EXTRA LG RCH - FRACTIONAL - 2-FLUTE

## Square & Ball End - UNCOATED - 1/8" to 1/4"



Neck diameters are reduced for clearance

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 55025S      | 55025SB  | 1/8"            | 3/4"          | 1-1/4"         | 1/8"           | 3"              | \$29.55    | \$33.85  |
| 55025       | 55025B   | 1/8"            | 3/4"          | 1-1/2"         | 1/8"           | 3"              | \$30.65    | \$34.95  |
| 55025L      | 55025LB  | 1/8"            | 1"            | 1-5/8"         | 1/8"           | 3"              | \$31.70    | \$36.00  |
| 55087S      | 55087SB  | 3/16"           | 3/4"          | 1-3/8"         | 3/16"          | 2-1/2"          | \$28.50    | \$32.80  |
| 55087       | 55087B   | 3/16"           | 1"            | 2-5/8"         | 3/16"          | 4"              | \$31.70    | \$36.00  |
| 55050S      | 55050SB  | 1/4"            | 1"            | 2-1/4"         | 1/4"           | 4"              | \$37.10    | \$42.45  |
| 55050       | 55050B   | 1/4"            | 1-1/2"        | 4-1/4"         | 1/4"           | 6"              | \$46.75    | \$52.15  |

## Square & Ball End - ALTiN COATED - 1/8" to 1/2"



Neck diameters are reduced for clearance

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 55125S      | 55125SB  | 1/8"            | 3/4"          | 1-1/4"         | 1/8"           | 3"              | \$35.20    | \$39.50  |
| 55125       | 55125B   | 1/8"            | 3/4"          | 1-1/2"         | 1/8"           | 3"              | \$36.00    | \$40.30  |
| 55125L      | 55125LB  | 1/8"            | 1"            | 1-5/8"         | 1/8"           | 3"              | \$37.10    | \$41.40  |
| 55187S      | 55187SB  | 3/16"           | 3/4"          | 1-3/8"         | 3/16"          | 2-1/2"          | \$34.95    | \$39.25  |
| 55187       | 55187B   | 3/16"           | 1"            | 2-5/8"         | 3/16"          | 4"              | \$38.15    | \$42.45  |
| 55250S      | 55250SB  | 1/4"            | 1"            | 2-1/4"         | 1/4"           | 4"              | \$43.55    | \$48.90  |
| 55250       | 55250B   | 1/4"            | 1-1/2"        | 4-1/4"         | 1/4"           | 6"              | \$53.20    | \$58.60  |
| 55312       | 55312B   | 5/16"           | 1-1/2"        | 4-1/4"         | 5/16"          | 6"              | \$70.40    | \$77.95  |
| 55375       | 55375B   | 3/8"            | 1-1/2"        | 4-3/8"         | 3/8"           | 6"              | \$81.15    | \$86.55  |
| 55500       | 55500B   | 1/2"            | 1-1/2"        | 4"             | 1/2"           | 6"              | \$107.25   | \$118.00 |



## Square & Ball End - UNCOATED - 1/8" to 1/4"



Neck diameters are reduced for clearance

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 56025S      | 56025SB  | 1/8"            | 3/4"          | 1-1/4"         | 1/8"           | 3"              | \$29.55    | \$33.85  |
| 56025       | 56025B   | 1/8"            | 3/4"          | 1-1/2"         | 1/8"           | 3"              | \$30.65    | \$34.95  |
| 56025L      | 56025LB  | 1/8"            | 1"            | 1-5/8"         | 1/8"           | 3"              | \$31.70    | \$36.00  |
| 56087S      | 56087SB  | 3/16"           | 3/4"          | 1-3/8"         | 3/16"          | 2-1/2"          | \$28.50    | \$32.80  |
| 56087       | 56087B   | 3/16"           | 1"            | 2-5/8"         | 3/16"          | 4"              | \$31.70    | \$36.00  |
| 56050S      | 56050SB  | 1/4"            | 1"            | 2-1/4"         | 1/4"           | 4"              | \$37.10    | \$42.45  |
| 56050       | 56050B   | 1/4"            | 1-1/2"        | 4-1/4"         | 1/4"           | 6"              | \$46.75    | \$52.15  |

## Square & Ball End - ALTiN COATED - 1/8" to 1/2"



Neck diameters are reduced for clearance

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 56125S      | 56125SB  | 1/8"            | 3/4"          | 1-1/4"         | 1/8"           | 3"              | \$35.20    | \$39.50  |
| 56125       | 56125B   | 1/8"            | 3/4"          | 1-1/2"         | 1/8"           | 3"              | \$36.00    | \$40.30  |
| 56125L      | 56125LB  | 1/8"            | 1"            | 1-5/8"         | 1/8"           | 3"              | \$37.10    | \$41.40  |
| 56187S      | 56187SB  | 3/16"           | 3/4"          | 1-3/8"         | 3/16"          | 2-1/2"          | \$34.95    | \$39.25  |
| 56187       | 56187B   | 3/16"           | 1"            | 2-5/8"         | 3/16"          | 4"              | \$38.15    | \$42.45  |
| 56250S      | 56250SB  | 1/4"            | 1"            | 2-1/4"         | 1/4"           | 4"              | \$43.55    | \$48.90  |
| 56250       | 56250B   | 1/4"            | 1-1/2"        | 4-1/4"         | 1/4"           | 6"              | \$53.20    | \$58.60  |
| 56312       | 56312B   | 5/16"           | 1-1/2"        | 4-1/4"         | 5/16"          | 6"              | \$70.40    | \$77.95  |
| 56375       | 56375B   | 3/8"            | 1-1/2"        | 4-3/8"         | 3/8"           | 6"              | \$81.15    | \$86.55  |
| 56500       | 56500B   | 1/2"            | 1-1/2"        | 4"             | 1/2"           | 6"              | \$107.25   | \$118.00 |



# FRACTIONAL – CORNER RAD – 4-FLUTE

Corner Radius - **AlTiN COATED** - 1/8" to 1/2"



Fractional Sizes 1/8" to 1/2" with Corner Radius – Center Cutting – Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 89125-005   | 1/8"            | .005"         | 1/2"          | 1/8"           | 1-1/2"          | \$24.50    |
| 89125-010   | 1/8"            | .010"         | 1/2"          | 1/8"           | 1-1/2"          | \$24.50    |
| 89125-015   | 1/8"            | .015"         | 1/2"          | 1/8"           | 1-1/2"          | \$24.50    |
| 89125-020   | 1/8"            | .020"         | 1/2"          | 1/8"           | 1-1/2"          | \$24.50    |
| 89125-030   | 1/8"            | .030"         | 1/2"          | 1/8"           | 1-1/2"          | \$24.50    |
| 89187-015   | 3/16"           | .015"         | 5/8"          | 3/16"          | 2"              | \$25.25    |
| 89187-020   | 3/16"           | .020"         | 5/8"          | 3/16"          | 2"              | \$25.25    |
| 89187-030   | 3/16"           | .030"         | 5/8"          | 3/16"          | 2"              | \$25.25    |
| 89250-015   | 1/4"            | .015"         | 3/4"          | 1/4"           | 2-1/2"          | \$28.50    |
| 89250-020   | 1/4"            | .020"         | 3/4"          | 1/4"           | 2-1/2"          | \$28.50    |
| 89250-030   | 1/4"            | .030"         | 3/4"          | 1/4"           | 2-1/2"          | \$28.50    |
| 89250-045   | 1/4"            | .045"         | 3/4"          | 1/4"           | 2-1/2"          | \$28.50    |
| 89250-060   | 1/4"            | .060"         | 3/4"          | 1/4"           | 2-1/2"          | \$28.50    |
| 89312-015   | 5/16"           | .015"         | 13/16"        | 5/16"          | 2-1/2"          | \$35.40    |
| 89312-030   | 5/16"           | .030"         | 13/16"        | 5/16"          | 2-1/2"          | \$35.40    |
| 89312-060   | 5/16"           | .060"         | 13/16"        | 5/16"          | 2-1/2"          | \$35.40    |
| 89375-015   | 3/8"            | .015"         | 1"            | 3/8"           | 2-1/2"          | \$42.45    |
| 89375-030   | 3/8"            | .030"         | 1"            | 3/8"           | 2-1/2"          | \$42.45    |
| 89375-045   | 3/8"            | .045"         | 1"            | 3/8"           | 2-1/2"          | \$42.45    |
| 89375-060   | 3/8"            | .060"         | 1"            | 3/8"           | 2-1/2"          | \$42.45    |
| 89500-015   | 1/2"            | .015"         | 1"            | 1/2"           | 3"              | \$63.35    |
| 89500-030   | 1/2"            | .030"         | 1"            | 1/2"           | 3"              | \$63.35    |
| 89500-045   | 1/2"            | .045"         | 1"            | 1/2"           | 3"              | \$63.35    |
| 89500-060   | 1/2"            | .060"         | 1"            | 1/2"           | 3"              | \$63.35    |
| 89500-125   | 1/2"            | .125"         | 1"            | 1/2"           | 3"              | \$63.35    |

## Special Cutting Tool Quotations

Microcut's capability to produce Standard cutting tools is replicated by its ability to produce Special Cutting Tools. Quality, competitive pricing, and on-time delivery has been a Microcut trademark for almost 20 years. Microcut's workforce experience in producing special Micro Tools dates back over 40 years and makes us one of the most experienced Micro Tool companies in the U.S.A. Submit your special tool B/P to us by fax at 781-582-8095 or email to [sales@microcutUSA.com](mailto:sales@microcutUSA.com) and we will quote it through the distributor of your choice that services your facility.



## Corner Radius - **AITiN COATED** - 1/8" to 1/4"



Fractional Sizes 1/8" to 1/4" with Corner Radius – Center Cutting – Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 89700-015   | 1/8"            | .015          | 3/4"          | 1/8"           | 2-1/4"          | \$24.60    |
| 89700-020   | 1/8"            | .020          | 3/4"          | 1/8"           | 2-1/4"          | \$24.60    |
| 89700-030   | 1/8"            | .030          | 3/4"          | 1/8"           | 2-1/4"          | \$24.60    |
| 89701-015   | 1/8"            | .015          | 1"            | 1/8"           | 3"              | \$25.25    |
| 89701-020   | 1/8"            | .020          | 1"            | 1/8"           | 3"              | \$25.25    |
| 89701-030   | 1/8"            | .030          | 1"            | 1/8"           | 3"              | \$25.25    |
| 89702-015   | 3/16"           | .015          | 3/4"          | 3/16"          | 2-1/2"          | \$25.70    |
| 89702-020   | 3/16"           | .020          | 3/4"          | 3/16"          | 2-1/2"          | \$25.70    |
| 89702-030   | 3/16"           | .030          | 3/4"          | 3/16"          | 2-1/2"          | \$25.70    |
| 89703-015   | 3/16"           | .015          | 1-1/8"        | 3/16"          | 3"              | \$27.85    |
| 89703-020   | 3/16"           | .020          | 1-1/8"        | 3/16"          | 3"              | \$27.85    |
| 89703-030   | 3/16"           | .030          | 1-1/8"        | 3/16"          | 3"              | \$27.85    |
| 89704-015   | 1/4"            | .015          | 1-1/8"        | 1/4"           | 3"              | \$37.50    |
| 89704-020   | 1/4"            | .020          | 1-1/8"        | 1/4"           | 3"              | \$37.50    |
| 89704-030   | 1/4"            | .030          | 1-1/8"        | 1/4"           | 3"              | \$37.50    |
| 89705-015   | 1/4"            | .015          | 1"            | 1/4"           | 4"              | \$39.25    |
| 89705-020   | 1/4"            | .020          | 1"            | 1/4"           | 4"              | \$39.25    |
| 89705-030   | 1/4"            | .030          | 1"            | 1/4"           | 4"              | \$39.25    |
| 89705-045   | 1/4"            | .045          | 1"            | 1/4"           | 4"              | \$39.25    |
| 89705-060   | 1/4"            | .060          | 1"            | 1/4"           | 4"              | \$39.25    |
| 89706-015   | 1/4"            | .015          | 1-1/2"        | 1/4"           | 6"              | \$51.05    |
| 89706-020   | 1/4"            | .020          | 1-1/2"        | 1/4"           | 6"              | \$51.05    |
| 89706-030   | 1/4"            | .030          | 1-1/2"        | 1/4"           | 6"              | \$51.05    |
| 89706-045   | 1/4"            | .045          | 1-1/2"        | 1/4"           | 6"              | \$51.05    |
| 89706-060   | 1/4"            | .060          | 1-1/2"        | 1/4"           | 6"              | \$51.05    |



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# LONG FLUTE - 4-FLUTE

## Square & Ball End - UNCOATED - 1/64" to 1/2"



Length of Cut as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| LF4015      | LF4015B  | .015" (1/64)    | .075"         | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF4020      | LF4020B  | .020"           | .100"         | 1/8"           | 2-1/2"          | \$24.90    | \$28.90  |
| LF4025      | LF4025B  | .025"           | .125"         | 1/8"           | 2-1/2"          | \$23.90    | \$27.90  |
| LF4030      | LF4030B  | .030"           | .150"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4031      | LF4031B  | .031" (1/32)    | .150"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4031L     | LF4031LB | .031" (1/32)    | .250"         | 1/8"           | 2-1/2"          | \$39.50    | \$44.50  |
| LF4035      | LF4035B  | .035"           | .175"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4040      | LF4040B  | .040"           | .200"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4045      | LF4045B  | .045"           | .250"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4047      | LF4047B  | .047" (3/64)    | .250"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4047L     | LF4047LB | .047" (3/64)    | .375"         | 1/8"           | 2-1/2"          | \$35.50    | \$39.50  |
| LF4050      | LF4050B  | .050"           | .300"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4055      | LF4055B  | .055"           | .375"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4060      | LF4060B  | .060"           | .500"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4062S     | LF4062SB | .062"           | .312"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| LF4062      | LF4062B  | .062" (1/16)    | .500"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4062L     | LF4062LB | .062" (1/16)    | .750"         | 1/8"           | 2-1/2"          | \$37.50    | \$43.50  |
| LF4065      | LF4065B  | .065"           | .500"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4070      | LF4070B  | .070"           | .500"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4075      | LF4075B  | .075"           | .500"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4078      | LF4078B  | .078" (5/64)    | .500"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4078L     | LF4078LB | .078" (5/64)    | .750"         | 1/8"           | 2-1/2"          | \$36.50    | \$42.50  |
| LF4090      | LF4090B  | .090"           | .500"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4093      | LF4093B  | .093" (3/32)    | .500"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4093L     | LF4093LB | .093" (3/32)    | .750"         | 1/8"           | 2-1/2"          | \$24.50    | \$28.50  |
| LF4100      | LF4100B  | .100"           | .625"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| LF4125      | LF4125B  | 1/8"            | .750"         | 1/8"           | 3"              | \$21.90    | \$25.90  |
| LF4125L     | LF4125LB | 1/8"            | 1.000"        | 1/8"           | 3"              | \$22.90    | \$26.90  |
| LF4187      | LF4187B  | 3/16"           | 1.125"        | 3/16"          | 3"              | \$21.50    | \$25.50  |
| LF4250      | LF4250B  | 1/4"            | 1.125"        | 1/4"           | 3"              | \$23.50    | \$27.50  |
| LF4250L     | LF4250LB | 1/4"            | 1.500"        | 1/4"           | 4"              | \$25.50    | \$29.50  |
| LF4312      | LF4312B  | 5/16"           | 1.625"        | 5/16"          | 4"              | \$32.50    | \$38.50  |
| LF4375      | LF4375B  | 3/8"            | 1.125"        | 3/8"           | 3"              | \$33.50    | \$39.50  |
| LF4375L     | LF4375LB | 3/8"            | 1.750"        | 3/8"           | 4"              | \$37.50    | \$43.50  |
| LF4500      | LF4500B  | 1/2"            | 2.000"        | 1/2"           | 4"              | \$54.50    | \$62.50  |

# LONG FLUTE - LONG REACH - 4-FLUTE



**Square & Ball End - UNCOATED - .015" to .125"**



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

Length of Cut as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| LF3015      | LF3015B  | .015" (1/64)    | .075"         | .150"          | 1/8"           | 2-1/2"          | \$34.90    | \$38.90  |
| LF3020      | LF3020B  | .020"           | .100"         | .200"          | 1/8"           | 2-1/2"          | \$30.90    | \$34.90  |
| LF3025      | LF3025B  | .025"           | .125"         | .250"          | 1/8"           | 2-1/2"          | \$29.90    | \$33.90  |
| LF3030      | LF3030B  | .030"           | .150"         | .250"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3031      | LF3031B  | .031" (1/32)    | .150"         | .250"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3031L     | LF3031LB | .031" (1/32)    | .150"         | .300"          | 1/8"           | 2-1/2"          | \$33.90    | \$36.90  |
| LF3035      | LF3035B  | .035"           | .175"         | .300"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3040      | LF3040B  | .040"           | .200"         | .350"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3045      | LF3045B  | .045"           | .250"         | .400"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3047      | LF3047B  | .047" (3/64)    | .250"         | .400"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3047L     | LF3047LB | .047" (3/64)    | .250"         | .500"          | 1/8"           | 2-1/2"          | \$32.90    | \$35.90  |
| LF3050      | LF3050B  | .050"           | .300"         | .500"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3055      | LF3055B  | .055"           | .375"         | .600"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3060      | LF3060B  | .060"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3060L     | LF3060LB | .060"           | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$32.90    | \$35.90  |
| LF3062      | LF3062B  | .062" (1/16)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3062L     | LF3062LB | .062"           | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$32.90    | \$35.90  |
| LF3065      | LF3065B  | .065"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3070      | LF3070B  | .070"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3075      | LF3075B  | .075"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3078      | LF3078B  | .078" (5/64)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3078L     | LF3078LB | .078" (5/64)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$32.90    | \$35.90  |
| LF3090S     | LF3090BS | .090"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3090      | LF3090B  | .090"           | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$32.90    | \$35.90  |
| LF3093S     | LF3093BS | .093" (3/32)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF3093      | LF3093B  | .093" (3/32)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$32.90    | \$35.90  |
| LF3125      | LF3125B  | .125" (1/8)     | .750"         | 1.25"          | 1/8"           | 3"              | \$27.90    | \$31.90  |
| LF3125L     | LF3125LB | .125" (1/8)     | 1.00"         | 1.50"          | 1/8"           | 3"              | \$29.90    | \$33.90  |

**Shipped within 24-48 hours. Minimum order 3 tools each size.  
Tools are custom manufactured to order and are nonreturnable.**

TOLL FREE 866-426-3300  
FAX 781-582-8095

**Microcut**



# LONG FLUTE - 4-FLUTE

Square & Ball End - **AlTiN COATED** - 1/64" to 1/4"



Length of Cut as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| LF5015      | LF5015B  | .015" (1/64)    | .075"         | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF5020      | LF5020B  | .020"           | .100"         | 1/8"           | 2-1/2"          | \$29.90    | \$33.90  |
| LF5025      | LF5025B  | .025"           | .125"         | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF5030      | LF5030B  | .030"           | .150"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5031      | LF5031B  | .031" (1/32)    | .150"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5031L     | LF5031LB | .031" (1/32)    | .250"         | 1/8"           | 2-1/2"          | \$44.50    | \$49.50  |
| LF5035      | LF5035B  | .035"           | .175"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5040      | LF5040B  | .040"           | .200"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5045      | LF5045B  | .045"           | .250"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5047      | LF5047B  | .047" (3/64)    | .250"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5047L     | LF5047LB | .047" (3/64)    | .375"         | 1/8"           | 2-1/2"          | \$39.90    | \$43.90  |
| LF5050      | LF5050B  | .050"           | .300"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5055      | LF5055B  | .055"           | .375"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5060      | LF5060B  | .060"           | .500"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5062S     | LF5062SB | .062"           | .312"         | 1/8"           | 2-1/2"          | \$26.90    | \$30.90  |
| LF5062      | LF5062B  | .062" (1/16)    | .500"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5062L     | LF5062LB | .062" (1/16)    | .750"         | 1/8"           | 2-1/2"          | \$41.90    | \$47.90  |
| LF5065      | LF5065B  | .065"           | .500"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5070      | LF5070B  | .070"           | .500"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5075      | LF5075B  | .075"           | .500"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5078      | LF5078B  | .078" (5/64)    | .500"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5078L     | LF5078LB | .078" (5/64)    | .750"         | 1/8"           | 2-1/2"          | \$40.90    | \$46.90  |
| LF5090      | LF5090B  | .090"           | .500"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5093      | LF5093B  | .093" (3/32)    | .500"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5093L     | LF5093LB | .093" (3/32)    | .750"         | 1/8"           | 2-1/2"          | \$28.90    | \$32.90  |
| LF5100      | LF5100B  | .100"           | .625"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| LF5125      | LF5125B  | .125"           | .750"         | 1/8"           | 3"              | \$24.90    | \$28.90  |
| LF5125L     | LF5125LB | .125"           | 1.00"         | 1/8"           | 3"              | \$26.90    | \$30.90  |
| LF5187      | LF5187B  | 3/16"           | 1.125"        | 3/16"          | 3"              | \$25.50    | \$28.50  |
| LF5250      | LF5250B  | 1/4"            | 1.125"        | 1/4"           | 3"              | \$27.50    | \$31.50  |
| LF5250L     | LF5250LB | 1/4"            | 1.500"        | 1/4"           | 4"              | \$28.50    | \$32.50  |

# LONG FLUTE - LONG REACH - 4-FLUTE



Square & Ball End - **AlTiN Coated** - .015" to .125"



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

Length of Cut as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| LF6015      | LF6015B  | .015" (1/64)    | .075"         | .150"          | 1/8"           | 2-1/2"          | \$39.90    | \$43.90  |
| LF6020      | LF6020B  | .020"           | .100"         | .200"          | 1/8"           | 2-1/2"          | \$35.90    | \$39.90  |
| LF6025      | LF6025B  | .025"           | .125"         | .250"          | 1/8"           | 2-1/2"          | \$34.90    | \$38.90  |
| LF6030      | LF6030B  | .030"           | .150"         | .250"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6031      | LF6031B  | .031" (1/32)    | .150"         | .250"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6031L     | LF6031LB | .031" (1/32)    | .150"         | .300"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| LF6035      | LF6035B  | .035"           | .175"         | .300"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6040      | LF6040B  | .040"           | .200"         | .350"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6045      | LF6045B  | .045"           | .250"         | .400"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6047      | LF6047B  | .047" (3/64)    | .250"         | .400"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6047L     | LF6047LB | .047" (3/64)    | .250"         | .500"          | 1/8"           | 2-1/2"          | \$37.90    | \$40.90  |
| LF6050      | LF6050B  | .050"           | .300"         | .500"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6055      | LF6055B  | .055"           | .375"         | .600"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6060      | LF6060B  | .060"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6060L     | LF6060LB | .060"           | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$37.90    | \$40.90  |
| LF6062      | LF6062B  | .062" (1/16)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6062L     | LF6062LB | .062" (1/16)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$37.90    | \$40.90  |
| LF6065      | LF6065B  | .065"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6070      | LF6070B  | .070"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6075      | LF6075B  | .075"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6078      | LF6078B  | .078" (5/64)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6078L     | LF6078LB | .078" (5/64)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$37.90    | \$40.90  |
| LF6090S     | LF6090BS | .090"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6090      | LF6090B  | .090"           | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$37.90    | \$40.90  |
| LF6093S     | LF6093BS | .093" (3/32)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| LF6093      | LF6093B  | .093" (3/32)    | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$37.90    | \$40.90  |
| LF6125      | LF6125B  | .125" (1/8)     | .750"         | 1.25"          | 1/8"           | 3"              | \$32.90    | \$36.90  |
| LF6125L     | LF6125LB | .125" (1/8)     | 1.00"         | 1.50"          | 1/8"           | 3"              | \$34.90    | \$38.90  |

**Shipped within 24-48 hours. Minimum order 3 tools each size.  
Tools are custom manufactured to order and are nonreturnable.**



# STUB – LONG SHANK – 4-FLUTE

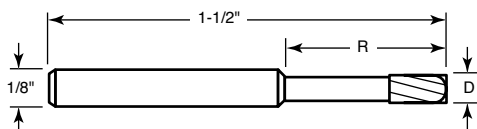
**Square & Ball End - UNCOATED - .015" to .125"**



Length of Cut = 2 x Diameter – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| SF4015      | SF4015B  | .015"           | .030"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF4020      | SF4020B  | .020"           | .040"         | 1/8"           | 2-1/2"          | \$23.90    | \$27.90  |
| SF4025      | SF4025B  | .025"           | .050"         | 1/8"           | 2-1/2"          | \$22.90    | \$26.90  |
| SF4030      | SF4030B  | .030"           | .060"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4031      | SF4031B  | .031"           | .062"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4035      | SF4035B  | .035"           | .070"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4040      | SF4040B  | .040"           | .080"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4045      | SF4045B  | .045"           | .090"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4047      | SF4047B  | .047"           | .094"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4050      | SF4050B  | .050"           | .100"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4060      | SF4060B  | .060"           | .120"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4062      | SF4062B  | .062"           | .125"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4065      | SF4065B  | .065"           | .130"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4070      | SF4070B  | .070"           | .140"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4075      | SF4075B  | .075"           | .150"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4078      | SF4078B  | .078"           | .156"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4090      | SF4090B  | .090"           | .180"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4093      | SF4093B  | .093"           | .186"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |
| SF4125      | SF4125B  | .125"           | .250"         | 1/8"           | 2-1/2"          | \$21.90    | \$25.90  |

## ORDER SPECIAL Square & Ball End 4-Flute LONG REACH MILLS



To order special long reach 4-flute end mills please specify:

1. Specify:  Square End or  Ball End.
2. Diameter (D): \_\_\_\_\_
3. Overall Reach (R): \_\_\_\_\_
4. Quantity (Minimum 6): \_\_\_\_\_

**Special Reaches  
Shipped  
within  
24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

# STUB - LG SHANK - LG REACH - 4-FLT



## Square & Ball End - UNCOATED - .015" TO .125"



Neck is reduced for clearance.

Length of Cut 2 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| SF3015S     | SF3015SB | .015"           | .030"         | .100"          | 1/8"           | 2-1/2"          | \$31.50    | \$35.50  |
| SF3015      | SF3015B  | .015"           | .030"         | .150"          | 1/8"           | 2-1/2"          | \$31.50    | \$35.50  |
| SF3020S     | SF3020SB | .020"           | .040"         | .100"          | 1/8"           | 2-1/2"          | \$29.90    | \$33.90  |
| SF3020      | SF3020B  | .020"           | .040"         | .160"          | 1/8"           | 2-1/2"          | \$29.90    | \$33.90  |
| SF3025S     | SF3025SB | .025"           | .050"         | .125"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3025      | SF3025B  | .025"           | .050"         | .200"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3030S     | SF3030SB | .030"           | .060"         | .150"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3030      | SF3030B  | .030"           | .060"         | .250"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3031S     | SF3031SB | .031"           | .062"         | .150"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3031      | SF3031B  | .031"           | .062"         | .250"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3035S     | SF3035SB | .035"           | .070"         | .175"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3035      | SF3035B  | .035"           | .070"         | .280"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3040S     | SF3040SB | .040"           | .080"         | .200"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3040      | SF3040B  | .040"           | .080"         | .325"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3045S     | SF3045SB | .045"           | .090"         | .225"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3045      | SF3045B  | .045"           | .090"         | .360"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3047S     | SF3047SB | .047"           | .094"         | .250"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3047      | SF3047B  | .047"           | .094"         | .375"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3050S     | SF3050SB | .050"           | .100"         | .250"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3050      | SF3050B  | .050"           | .100"         | .400"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3060S     | SF3060SB | .060"           | .120"         | .300"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3060      | SF3060B  | .060"           | .120"         | .500"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3062S     | SF3062SB | .062"           | .125"         | .325"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3062      | SF3062B  | .062"           | .125"         | .500"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3065S     | SF3065SB | .065"           | .130"         | .350"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3065      | SF3065B  | .065"           | .130"         | .500"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3070S     | SF3070SB | .070"           | .140"         | .350"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3070      | SF3070B  | .070"           | .140"         | .550"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3075S     | SF3075SB | .075"           | .150"         | .375"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3075      | SF3075B  | .075"           | .150"         | .600"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3078S     | SF3078SB | .078"           | .156"         | .400"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3078      | SF3078B  | .078"           | .156"         | .625"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3090S     | SF3090SB | .090"           | .180"         | .450"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3090      | SF3090B  | .090"           | .180"         | .650"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3093S     | SF3093SB | .093"           | .186"         | .500"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3093      | SF3093B  | .093"           | .186"         | .750"          | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |
| SF3125S     | SF3125SB | .125"           | .250"         | .750"          | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF3125      | SF3125B  | .125"           | .250"         | 1.000"         | 1/8"           | 2-1/2"          | \$30.90    | \$33.90  |

Special long reach end mills quoted on request.



# STUB – LONG SHANK – 4-FLUTE

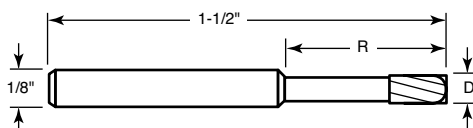
Square & Ball End - **AlTiN COATED** - .015" to .125"



Length of Cut = 2 x Diameter – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| SF5015      | SF5015B  | .015"           | .030"         | 1/8"           | 2-1/2"          | \$29.90    | \$33.90  |
| SF5020      | SF5020B  | .020"           | .040"         | 1/8"           | 2-1/2"          | \$27.90    | \$31.90  |
| SF5025      | SF5025B  | .025"           | .050"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5030      | SF5030B  | .030"           | .060"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5031      | SF5031B  | .031"           | .062"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5035      | SF5035B  | .035"           | .070"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5040      | SF5040B  | .040"           | .080"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5045      | SF5045B  | .045"           | .090"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5047      | SF5047B  | .047"           | .094"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5050      | SF5050B  | .050"           | .100"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5060      | SF5060B  | .060"           | .120"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5062      | SF5062B  | .062"           | .125"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5065      | SF5065B  | .065"           | .130"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5070      | SF5070B  | .070"           | .140"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5075      | SF5075B  | .075"           | .150"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5078      | SF5078B  | .078"           | .156"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5090      | SF5090B  | .090"           | .180"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5093      | SF5093B  | .093"           | .186"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |
| SF5125      | SF5125B  | .125"           | .250"         | 1/8"           | 2-1/2"          | \$25.90    | \$29.90  |

## ORDER SPECIAL Square & Ball End 4-Flute LONG REACH MILLS



To order special long reach 4-flute end mills please specify:

1. Specify:  Square End or  Ball End.
2. Diameter (D): \_\_\_\_\_ From above chart.
3. Overall Reach (R): \_\_\_\_\_
4. Quantity (Minimum 6): \_\_\_\_\_

**Special Reaches  
Shipped  
within  
24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

# STUB - LG SHANK - LG REACH - 4-FLT



Square & Ball End - **AlTiN COATED** - .015" TO .125"



Length of Cut as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| SF6015S     | SF6015SB | .015"           | .030"         | .100"          | 1/8"           | 2-1/2"          | \$35.50    | \$40.50  |
| SF6015      | SF6015B  | .015"           | .030"         | .150"          | 1/8"           | 2-1/2"          | \$35.50    | \$40.50  |
| SF6020S     | SF6020SB | .020"           | .040"         | .100"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| SF6020      | SF6020B  | .020"           | .040"         | .160"          | 1/8"           | 2-1/2"          | \$33.90    | \$37.90  |
| SF6025S     | SF6025SB | .025"           | .050"         | .125"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6025      | SF6025B  | .025"           | .050"         | .200"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6030S     | SF6030SB | .030"           | .060"         | .150"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6030      | SF6030B  | .030"           | .060"         | .250"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6031S     | SF6031SB | .031"           | .062"         | .150"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6031      | SF6031B  | .031"           | .062"         | .250"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6035S     | SF6035SB | .035"           | .070"         | .175"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6035      | SF6035B  | .035"           | .070"         | .280"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6040S     | SF6040SB | .040"           | .080"         | .200"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6040      | SF6040B  | .040"           | .080"         | .325"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6045S     | SF6045SB | .045"           | .090"         | .225"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6045      | SF6045B  | .045"           | .090"         | .360"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6047S     | SF6047SB | .047"           | .094"         | .250"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6047      | SF6047B  | .047"           | .094"         | .375"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6050S     | SF6050SB | .050"           | .100"         | .250"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6050      | SF6050B  | .050"           | .100"         | .400"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6060S     | SF6060SB | .060"           | .120"         | .300"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6060      | SF6060B  | .060"           | .120"         | .500"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6062S     | SF6062SB | .062"           | .125"         | .325"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6062      | SF6062B  | .062"           | .125"         | .500"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6065S     | SF6065SB | .065"           | .130"         | .350"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6065      | SF6065B  | .065"           | .130"         | .500"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6070S     | SF6070SB | .070"           | .140"         | .350"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6070      | SF6070B  | .070"           | .140"         | .550"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6075S     | SF6075SB | .075"           | .150"         | .375"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6075      | SF6075B  | .075"           | .150"         | .600"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6078S     | SF6078SB | .078"           | .156"         | .400"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6078      | SF6078B  | .078"           | .156"         | .625"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6090S     | SF6090SB | .090"           | .180"         | .450"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6090      | SF6090B  | .090"           | .180"         | .650"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6093S     | SF6093SB | .093"           | .186"         | .500"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6093      | SF6093B  | .093"           | .186"         | .750"          | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |
| SF6125S     | SF6125SB | .125"           | .250"         | .750"          | 1/8"           | 2-1/2"          | \$31.90    | \$35.90  |
| SF6125      | SF6125B  | .125"           | .250"         | 1.000"         | 1/8"           | 2-1/2"          | \$34.90    | \$37.90  |

Special long reach end mills quoted on request.



# VARIABLE HELIX - 4-FLUTE

Stub Length - Sharp Corner - **AlTiN COATED** - .031" to .500"



Center Cutting • Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 59031S      | .031"           | .046"         | 1/8"           | 1-1/2"          | \$23.10    |
| 59047S      | .047"           | .070"         | 1/8"           | 1-1/2"          | \$23.10    |
| 59062S      | .062"           | .093"         | 1/8"           | 1-1/2"          | \$23.10    |
| 59078S      | .078"           | .117"         | 1/8"           | 1-1/2"          | \$23.10    |
| 59093S      | .093"           | .139"         | 1/8"           | 1-1/2"          | \$23.10    |
| 59125S      | .125"           | .250"         | 1/8"           | 1-1/2"          | \$19.90    |
| 59187S      | .187"           | .375"         | 3/16"          | 2"              | \$22.90    |
| 59250S      | .250"           | .375"         | 1/4"           | 2"              | \$25.90    |
| 59312S      | .312"           | .437"         | 5/16"          | 2"              | \$37.90    |
| 59375S      | .375"           | .500"         | 3/8"           | 2"              | \$41.90    |
| 59500S      | .500"           | .625"         | 1/2"           | 2-1/2"          | \$62.50    |

**DESIGN FEATURES:** UNEQUAL FLUTE SPACING TO REDUCE CHATTER.  
 HELIX CHANGES ALONG THE FLUTES INCREASING STABILITY DURING CUTTING.  
 REDUCES CHATTER AND VIBRATION DURING RAPID STOCK REMOVAL.  
 ALTiN COATED FOR MAXIMUM PERFORMANCE AND WEAR RESISTANCE.  
 USE IN STAINLESS STEEL, TOOL STEELS, HIGH TEMPERATURE ALLOYS.

Standard Length - Sharp Corner - **AlTiN COATED** - .031" to .500"



Center Cutting • Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 59031       | .031"           | .093"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59047       | .047"           | .140"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59062       | .062"           | .187"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59078       | .078"           | .234"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59093       | .093"           | .267"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59125       | .125"           | .500"         | 1/8"           | 1-1/2"          | \$19.90    |
| 59187       | .187"           | .562"         | 3/16"          | 2"              | \$23.90    |
| 59250       | .250"           | .750"         | 1/4"           | 2-1/2"          | \$29.90    |
| 59312       | .312"           | .812"         | 5/16"          | 2-1/2"          | \$39.90    |
| 59375       | .375"           | 1.00"         | 3/8"           | 2-1/2"          | \$47.90    |
| 59500       | .500"           | 1.00"         | 1/2"           | 3"              | \$69.50    |

# VARIABLE HELIX - LONG REACH - 4-FLT



## Stub Length - Sharp Corner - AITiN COATED - .031" to .125"



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

4-Flute - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Length of Reach | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|-----------------|----------------|-----------------|------------|
| 59431S      | .031"           | .046"         | .200"           | 1/8"           | 1-1/2"          | \$36.00    |
| 59447S      | .047"           | .070"         | .350"           | 1/8"           | 1-1/2"          | \$36.00    |
| 59462S      | .062"           | .093"         | .400"           | 1/8"           | 1-1/2"          | \$36.00    |
| 59478S      | .078"           | .117"         | .500"           | 1/8"           | 1-1/2"          | \$36.00    |
| 59493S      | .093"           | .139"         | .500"           | 1/8"           | 1-1/2"          | \$36.00    |
| 59425S      | .125"           | .250"         | .650"           | 1/8"           | 1-1/2"          | \$33.85    |

## Standard Length - Sharp Corner - AITiN COATED - .031" to .125"



**MINIMUM  
3 TOOLS  
EACH SIZE**

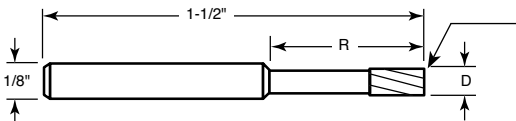
**Shipped  
Within 24-48  
Hours**

Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Length of Reach | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|-----------------|----------------|-----------------|------------|
| 59431       | .031"           | .093"         | .200"           | 1/8"           | 1-1/2"          | \$37.10    |
| 59447       | .047"           | .140"         | .350"           | 1/8"           | 1-1/2"          | \$37.10    |
| 59462       | .062"           | .187"         | .400"           | 1/8"           | 1-1/2"          | \$37.10    |
| 59478       | .078"           | .234"         | .500"           | 1/8"           | 1-1/2"          | \$37.10    |
| 59493       | .093"           | .267"         | .500"           | 1/8"           | 1-1/2"          | \$37.10    |
| 59425       | .125"           | .500"         | .650"           | 1/8"           | 1-1/2"          | \$34.95    |

### ORDER SPECIAL 4-Flute Square End Variable Helix LONG REACH END MILLS

To order special long reach end mills please specify:



1. Diameter (D): \_\_\_\_\_ From above chart.
2. Overall Reach (R): \_\_\_\_\_
3. Specify:
  - Sharp Corner
  - Corner Radius (See page 60)
4. Quantity (Minimum 6): \_\_\_\_\_

**Special Reaches Shipped within 24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**



# VARIABLE HELIX - CORNER RAD - 4-FLT

## Stub Length - **AITiN COATED** - .031" to .500"



Length of Cut as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Corner Radius | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 59231S      | <b>.031"</b>    | .046"         | .005"         | 1/8"           | 1-1/2"          | \$26.35    |
| 59247S      | <b>.047"</b>    | .070"         | .005"         | 1/8"           | 1-1/2"          | \$26.35    |
| 59262S      | <b>.062"</b>    | .093"         | .005"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59278S      | <b>.078"</b>    | .117"         | .005"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59293S      | <b>.093"</b>    | .139"         | .010"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59225S      | <b>.125"</b>    | .250"         | .010"         | 1/8"           | 1-1/2"          | \$24.20    |
| 59287S      | <b>.187"</b>    | .375"         | .015"         | 3/16"          | 1-1/2"          | \$25.25    |
| 59250S      | <b>.250"</b>    | .375"         | .015"         | 1/4"           | 2"              | \$27.40    |
| 59212S      | <b>.312"</b>    | .437"         | .015"         | 5/16"          | 2"              | \$31.70    |
| 59275S      | <b>.375"</b>    | .500"         | .015"         | 3/8"           | 2"              | \$40.30    |
| 59200S      | <b>.500"</b>    | .625"         | .030"         | 1/2"           | 2-1/2"          | \$61.80    |

## Corner Radius - Standard Length - **AITiN COATED** - .031" to .500"



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Corner Radius | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 59231       | <b>.031"</b>    | .093"         | .005"         | 1/8"           | 1-1/2"          | \$27.40    |
| 59247       | <b>.047"</b>    | .140"         | .005"         | 1/8"           | 1-1/2"          | \$27.40    |
| 59262       | <b>.062"</b>    | .187"         | .005"         | 1/8"           | 1-1/2"          | \$25.25    |
| 59278       | <b>.078"</b>    | .234"         | .005"         | 1/8"           | 1-1/2"          | \$25.25    |
| 59293       | <b>.093"</b>    | .279"         | .010"         | 1/8"           | 1-1/2"          | \$25.25    |
| 59225       | <b>.125"</b>    | .500"         | .010"         | 1/8"           | 1-1/2"          | \$25.25    |
| 59287       | <b>.187"</b>    | .625"         | .015"         | 3/16"          | 2"              | \$26.35    |
| 59250       | <b>.250"</b>    | .750"         | .015"         | 1/4"           | 2-1/2"          | \$30.65    |
| 59212       | <b>.312"</b>    | .812"         | .015"         | 5/16"          | 2-1/2"          | \$34.95    |
| 59275       | <b>.375"</b>    | 1.00"         | .015"         | 3/8"           | 2-1/2"          | \$44.60    |
| 59200       | <b>.500"</b>    | 1.00"         | .030"         | 1/2"           | 3"              | \$68.25    |

**DESIGN FEATURES:** UNEQUAL FLUTE SPACING TO REDUCE CHATTER.  
HELIX VARIES ON EACH FLUTE.  
USE IN STAINLESS STEEL, TOOL STEELS, HIGH TEMPERATURE ALLOYS.



## Long Reach Stub Length - AITiN COATED



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Corner Radius | Length of Reach | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|-----------------|----------------|-----------------|------------|
| 59531S      | .031"           | .046"         | .005"         | .200"           | 1/8"           | 1-1/2"          | \$38.15    |
| 59547S      | .047"           | .070"         | .005"         | .350"           | 1/8"           | 1-1/2"          | \$38.15    |
| 59562S      | .062"           | .093"         | .005"         | .400"           | 1/8"           | 1-1/2"          | \$36.00    |
| 59578S      | .078"           | .117"         | .005"         | .500"           | 1/8"           | 1-1/2"          | \$36.00    |
| 59593S      | .093"           | .139"         | .010"         | .500"           | 1/8"           | 1-1/2"          | \$36.00    |
| 59525S      | .125"           | .250"         | .010"         | .600"           | 1/8"           | 1-1/2"          | \$36.00    |

**Tools are custom manufactured to order and are nonreturnable.**

## Corner Radius - Long Reach Standard Length - AITiN COATED



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

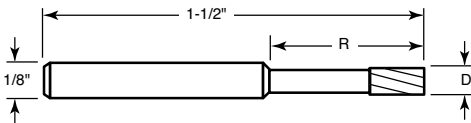
Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Corner Radius | Length of Reach | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|-----------------|----------------|-----------------|------------|
| 59531       | .031"           | .093"         | .005"         | .200"           | 1/8"           | 1-1/2"          | \$39.25    |
| 59547       | .047"           | .140"         | .005"         | .350"           | 1/8"           | 1-1/2"          | \$39.25    |
| 59562       | .062"           | .187"         | .005"         | .400"           | 1/8"           | 1-1/2"          | \$37.10    |
| 59578       | .078"           | .234"         | .005"         | .500"           | 1/8"           | 1-1/2"          | \$37.10    |
| 59593       | .093"           | .279"         | .010"         | .500"           | 1/8"           | 1-1/2"          | \$37.10    |
| 59525       | .125"           | .500"         | .010"         | .650"           | 1/8"           | 1-1/2"          | \$37.10    |

**Tools are custom manufactured to order and are nonreturnable.**

### ORDER SPECIAL 4-Flute Variable Helix Corner Radius LONG REACH END MILLS

To order special long reach end mills please specify:



1. Diameter (D): \_\_\_\_\_ From above charts.
2. Overall Reach (R): \_\_\_\_\_
3. Quantity (Minimum 6): \_\_\_\_\_

**Special Reaches Shipped within 24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**



# CORNER RADIUS - 2-FLUTE

## Decimal - UNCOATED

### .015" to .075" Diameter



Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 86615-003   | .015"           | .003"         | .045"         | 1/8"           | 1-1/2"          | \$36.50    |
| 86620-005   | .020"           | .005"         | .060"         | 1/8"           | 1-1/2"          | \$32.50    |
| 86625-005   | .025"           | .005"         | .075"         | 1/8"           | 1-1/2"          | \$32.50    |
| 86630-005   | .030"           | .005"         | .090"         | 1/8"           | 1-1/2"          | \$28.75    |
| 86630-010   | .030"           | .010"         | .090"         | 1/8"           | 1-1/2"          | \$28.75    |
| 86631-005   | .031" (1/32)    | .005"         | .093"         | 1/8"           | 1-1/2"          | \$28.75    |
| 86631-010   | .031" (1/32)    | .010"         | .093"         | 1/8"           | 1-1/2"          | \$28.75    |
| 86635-005   | .035"           | .005"         | .105"         | 1/8"           | 1-1/2"          | \$24.75    |
| 86635-010   | .035"           | .010"         | .105"         | 1/8"           | 1-1/2"          | \$24.75    |
| 86640-005   | .040"           | .005"         | .120"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86640-010   | .040"           | .010"         | .120"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86645-005   | .045"           | .005"         | .135"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86645-010   | .045"           | .010"         | .135"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86645-015   | .045"           | .015"         | .135"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86647-005   | .047" (3/64)    | .005"         | .141"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86647-010   | .047" (3/64)    | .010"         | .141"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86647-015   | .047" (3/64)    | .015"         | .141"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86650-005   | .050"           | .005"         | .150"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86650-010   | .050"           | .010"         | .150"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86650-015   | .050"           | .015"         | .150"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86660-005   | .060"           | .005"         | .180"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86660-010   | .060"           | .010"         | .180"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86660-015   | .060"           | .015"         | .180"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86662-005   | .062" (1/16)    | .005"         | .186"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86662-010   | .062" (1/16)    | .010"         | .186"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86662-015   | .062" (1/16)    | .015"         | .186"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86662-020   | .062" (1/16)    | .020"         | .186"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86675-005   | .075"           | .005"         | .225"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86675-010   | .075"           | .010"         | .225"         | 1/8"           | 1-1/2"          | \$21.50    |
| 86675-015   | .075"           | .015"         | .225"         | 1/8"           | 1-1/2"          | \$21.50    |

Continued Next Page

Corner radius helps prevent chipping at corners at high feeds and speeds.

# CORNER RADIUS - 2-FLUTE



## Decimal - UNCOATED .078" to .125" Diameter



Length of Cut = 3 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter     | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH     |
|-------------|---------------------|---------------|---------------|----------------|-----------------|----------------|
| 86678-005   | <b>.078" (5/64)</b> | .005"         | .234"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86678-010   | <b>.078" (5/64)</b> | .010"         | .234"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86678-015   | <b>.078" (5/64)</b> | .015"         | .234"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86678-020   | <b>.078" (5/64)</b> | .020"         | .234"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86690-005   | <b>.090"</b>        | .005"         | .270"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86690-010   | <b>.090"</b>        | .010"         | .270"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86690-015   | <b>.090"</b>        | .015"         | .270"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86693-005   | <b>.093" (3/32)</b> | .005"         | .279"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86693-010   | <b>.093" (3/32)</b> | .010"         | .279"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86693-015   | <b>.093" (3/32)</b> | .015"         | .279"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86693-020   | <b>.093" (3/32)</b> | .020"         | .279"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86612-005   | <b>.125" (1/8)</b>  | .005"         | .500"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86612-010   | <b>.125" (1/8)</b>  | .010"         | .500"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86612-015   | <b>.125" (1/8)</b>  | .015"         | .500"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86612-020   | <b>.125" (1/8)</b>  | .020"         | .500"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |
| 86612-030   | <b>.125" (1/8)</b>  | .030"         | .500"         | 1/8"           | 1-1/2"          | <b>\$21.50</b> |

Corner radius helps prevent chipping at corners at high feeds and speeds.

## END MILL EXTENSION HOLDERS

I.D. CONCENTRIC WITHIN .0003"- I.D. HOLE SIZE +.00015/-0



| Tool Number | I.D. Hole Size | Shank Diameter | Over All Length | Price Each      |
|-------------|----------------|----------------|-----------------|-----------------|
| ACH1250     | .1250"         | 3/8"           | 3-1/4"          | <b>\$199.50</b> |
| ACH1250L    | .1250"         | 3/8"           | 6"              | <b>\$265.50</b> |
| ACH1875     | .1875"         | 1/2"           | 3-1/2"          | <b>\$199.50</b> |
| ACH1875L    | .1875"         | 1/2"           | 5"              | <b>\$215.50</b> |
| ACH2500     | .2500"         | 5/8"           | 4-1/4"          | <b>\$199.50</b> |
| ACH2500L    | .2500"         | 5/8"           | 6"              | <b>\$219.50</b> |



# CORNER RADIUS - 4-FLUTE

## Decimal - UNCOATED .015" to .075" Diameter



Length of Cut = 3 x Diameter – Center Cutting – Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 89915-003   | .015"           | .003"         | .045"         | 1/8"           | 1-1/2"          | \$36.50    |
| 89920-005   | .020"           | .005"         | .060"         | 1/8"           | 1-1/2"          | \$32.50    |
| 89925-005   | .025"           | .005"         | .075"         | 1/8"           | 1-1/2"          | \$32.50    |
| 89930-005   | .030"           | .005"         | .090"         | 1/8"           | 1-1/2"          | \$28.75    |
| 89930-010   | .030"           | .010"         | .090"         | 1/8"           | 1-1/2"          | \$28.75    |
| 89931-005   | .031" (1/32)    | .005"         | .093"         | 1/8"           | 1-1/2"          | \$28.75    |
| 89931-010   | .031" (1/32)    | .010"         | .093"         | 1/8"           | 1-1/2"          | \$28.75    |
| 89935-005   | .035"           | .005"         | .105"         | 1/8"           | 1-1/2"          | \$24.75    |
| 89935-010   | .035"           | .010"         | .105"         | 1/8"           | 1-1/2"          | \$24.75    |
| 89940-005   | .040"           | .005"         | .120"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89940-010   | .040"           | .010"         | .120"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89945-005   | .045"           | .005"         | .135"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89945-010   | .045"           | .010"         | .135"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89945-015   | .045"           | .015"         | .135"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89947-005   | .047" (3/64)    | .005"         | .141"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89947-010   | .047" (3/64)    | .010"         | .141"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89947-015   | .047" (3/64)    | .015"         | .141"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89950-005   | .050"           | .005"         | .150"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89950-010   | .050"           | .010"         | .150"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89950-015   | .050"           | .015"         | .150"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89960-005   | .060"           | .005"         | .180"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89960-010   | .060"           | .010"         | .180"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89960-015   | .060"           | .015"         | .180"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89962-005   | .062" (1/16)    | .005"         | .186"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89962-010   | .062" (1/16)    | .010"         | .186"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89962-015   | .062" (1/16)    | .015"         | .186"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89975-005   | .075"           | .005"         | .225"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89975-010   | .075"           | .010"         | .225"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89975-015   | .075"           | .015"         | .225"         | 1/8"           | 1-1/2"          | \$21.50    |

Continued Next Page

Corner radius helps prevent chipping at corners at high feeds and speeds.

# CORNER RADIUS - 4-FLUTE



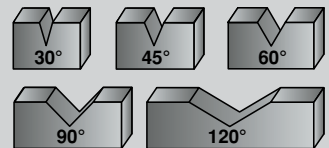
## Decimal - UNCOATED .078" to .250" Diameter



Length of Cut as Specified – Center Cutting – Micro Grain Carbide  
Corner radius helps prevent chipping at corners at high feeds and speeds.

| TOOL NUMBER | Cutter Diameter     | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|---------------------|---------------|---------------|----------------|-----------------|------------|
| 89978-005   | <b>.078" (5/64)</b> | .005"         | .234"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89978-010   | <b>.078" (5/64)</b> | .010"         | .234"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89978-015   | <b>.078" (5/64)</b> | .015"         | .234"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89990-005   | <b>.090"</b>        | .005"         | .270"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89990-010   | <b>.090"</b>        | .010"         | .270"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89990-015   | <b>.090"</b>        | .015"         | .270"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89993-005   | <b>.093" (3/32)</b> | .005"         | .279"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89993-010   | <b>.093" (3/32)</b> | .010"         | .279"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89993-015   | <b>.093" (3/32)</b> | .015"         | .279"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89912-005   | <b>.125" (1/8)</b>  | .005"         | .500"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89912-010   | <b>.125" (1/8)</b>  | .010"         | .500"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89912-015   | <b>.125" (1/8)</b>  | .015"         | .500"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89912-020   | <b>.125" (1/8)</b>  | .020"         | .500"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89912-030   | <b>.125" (1/8)</b>  | .030"         | .500"         | 1/8"           | 1-1/2"          | \$21.50    |
| 89987-010   | <b>.187" (3/16)</b> | .010"         | .625"         | 3/16"          | 2"              | 20.50      |
| 89987-015   | <b>.187" (3/16)</b> | .015"         | .625"         | 3/16"          | 2"              | 20.50      |
| 89987-030   | <b>.187" (3/16)</b> | .030"         | .625"         | 3/16"          | 2"              | 20.50      |
| 89900-010   | <b>.250" (1/4)</b>  | .010"         | .750"         | 1/4"           | 2-1/2"          | 22.50      |
| 89900-015   | <b>.250" (1/4)</b>  | .015"         | .750"         | 1/4"           | 2-1/2"          | 22.50      |
| 89900-030   | <b>.250" (1/4)</b>  | .030"         | .750"         | 1/4"           | 2-1/2"          | 22.50      |
| 89900-045   | <b>.250" (1/4)</b>  | .045"         | .750"         | 1/4"           | 2-1/2"          | 22.50      |
| 89900-060   | <b>.250" (1/4)</b>  | .060"         | .750"         | 1/4"           | 2-1/2"          | 22.50      |

Double Angle Cutters. See pages 100 and 101.





# CORNER RADIUS - 4-FLUTE

## Decimal Size - **AlTiN COATED** .015" to .060" Diameter



Length of Cut = 3 x Diameter – Center Cutting – Micro Grain Carbide  
Corner radius helps prevent chipping at corners at high feeds and speeds.

| TOOL NUMBER | Cutter Diameter     | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|---------------------|---------------|---------------|----------------|-----------------|------------|
| 89015-003   | <b>.015"</b>        | .003"         | .045"         | 1/8"           | 1-1/2"          | \$40.50    |
| 89020-004   | <b>.020"</b>        | .005"         | .060"         | 1/8"           | 1-1/2"          | \$36.50    |
| 89025-005   | <b>.025"</b>        | .005"         | .075"         | 1/8"           | 1-1/2"          | \$36.50    |
| 89030-005   | <b>.030"</b>        | .005"         | .090"         | 1/8"           | 1-1/2"          | \$32.75    |
| 89030-010   | <b>.030"</b>        | .010"         | .090"         | 1/8"           | 1-1/2"          | \$32.75    |
| 89031-005   | <b>.031" (1/32)</b> | .005"         | .093"         | 1/8"           | 1-1/2"          | \$32.75    |
| 89031-010   | <b>.031" (1/32)</b> | .010"         | .093"         | 1/8"           | 1-1/2"          | \$32.75    |
| 89035-005   | <b>.035"</b>        | .005"         | .105"         | 1/8"           | 1-1/2"          | \$28.75    |
| 89035-010   | <b>.035"</b>        | .010"         | .105"         | 1/8"           | 1-1/2"          | \$28.75    |
| 89040-005   | <b>.040"</b>        | .005"         | .120"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89040-010   | <b>.040"</b>        | .010"         | .120"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89045-005   | <b>.045"</b>        | .005"         | .135"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89045-010   | <b>.045"</b>        | .010"         | .135"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89045-015   | <b>.045"</b>        | .015"         | .135"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89047-005   | <b>.047" (3/64)</b> | .005"         | .141"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89047-010   | <b>.047" (3/64)</b> | .010"         | .141"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89047-015   | <b>.047" (3/64)</b> | .015"         | .141"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89050-005   | <b>.050"</b>        | .005"         | .150"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89050-010   | <b>.050"</b>        | .010"         | .150"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89050-015   | <b>.050"</b>        | .015"         | .150"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89060-005   | <b>.060"</b>        | .005"         | .180"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89060-010   | <b>.060"</b>        | .010"         | .180"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89060-015   | <b>.060"</b>        | .015"         | .180"         | 1/8"           | 1-1/2"          | \$25.50    |

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### Special Cutting Tool Quotations

Microcut's capability to produce Standard cutting tools is replicated by its ability to produce Special Cutting Tools. Quality, competitive pricing, and on-time delivery has been a Microcut trademark for almost 20 years. Microcut's workforce experience in producing special Micro Tools dates back over 40 years and makes us one of the most experienced Micro Tool companies in the U.S.A. Submit your special tool B/P to us by fax at 781-582-8095 or email to sales@microcutUSA.com and we will quote it through the distributor of your choice that services your facility.

# CORNER RADIUS - 4-FLUTE



## Decimal Size - **AlTiN COATED** .062" to .250" Diameter



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide  
Corner radius helps prevent chipping at corners at high feeds and speeds.

| TOOL NUMBER | Cutter Diameter     | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|---------------------|---------------|---------------|----------------|-----------------|------------|
| 89062-005   | <b>.062" (1/16)</b> | .005"         | .186"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89062-010   | <b>.062" (1/16)</b> | .010"         | .186"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89062-015   | <b>.062" (1/16)</b> | .015"         | .186"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89075-005   | <b>.075"</b>        | .005"         | .225"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89075-010   | <b>.075"</b>        | .010"         | .225"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89075-015   | <b>.075"</b>        | .015"         | .225"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89078-005   | <b>.078" (5/64)</b> | .005"         | .234"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89078-010   | <b>.078" (5/64)</b> | .010"         | .234"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89078-015   | <b>.078" (5/64)</b> | .015"         | .234"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89090-005   | <b>.090"</b>        | .005"         | .270"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89090-010   | <b>.090"</b>        | .010"         | .270"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89090-015   | <b>.090"</b>        | .015"         | .270"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89093-005   | <b>.093" (3/32)</b> | .005"         | .279"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89093-010   | <b>.093" (3/32)</b> | .010"         | .279"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89093-015   | <b>.093" (3/32)</b> | .015"         | .279"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89100-005   | <b>.100"</b>        | .005"         | .300"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89100-010   | <b>.100"</b>        | .010"         | .300"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89100-015   | <b>.100"</b>        | .015"         | .300"         | 1/8"           | 1-1/2"          | \$25.50    |
| 89125-005   | <b>.125" (1/8)</b>  | .005"         | .500"         | 1/8"           | 1-1/2"          | \$24.50    |
| 89125-010   | <b>.125" (1/8)</b>  | .010"         | .500"         | 1/8"           | 1-1/2"          | \$24.50    |
| 89125-015   | <b>.125" (1/8)</b>  | .015"         | .500"         | 1/8"           | 1-1/2"          | \$24.50    |
| 89125-020   | <b>.125" (1/8)</b>  | .020"         | .500"         | 1/8"           | 1-1/2"          | \$24.50    |
| 89125-030   | <b>.125" (1/8)</b>  | .030"         | .500"         | 1/8"           | 1-1/2"          | \$24.50    |
| 89187-010   | <b>.187" (3/16)</b> | .010"         | .625"         | 3/16"          | 2"              | \$25.25    |
| 89187-015   | <b>.187" (3/16)</b> | .015"         | .625"         | 3/16"          | 2"              | \$25.25    |
| 89187-030   | <b>.187" (3/16)</b> | .030"         | .625"         | 3/16"          | 2"              | \$25.25    |
| 89250-010   | <b>.250" (1/4)</b>  | .010"         | .750"         | 1/4"           | 2-1/2"          | \$28.50    |
| 89250-015   | <b>.250" (1/4)</b>  | .015"         | .750"         | 1/4"           | 2-1/2"          | \$28.50    |
| 89250-030   | <b>.250" (1/4)</b>  | .030"         | .750"         | 1/4"           | 2-1/2"          | \$28.50    |
| 89250-045   | <b>.250" (1/4)</b>  | .045"         | .750"         | 1/4"           | 2-1/2"          | \$28.50    |
| 89250-060   | <b>.250" (1/4)</b>  | .060"         | .750"         | 1/4"           | 2-1/2"          | \$28.50    |



# STUB LENGTH - CORNER RAD - 4-FLT

## Decimal - AITiN COATED

**.015" to .062" Diameter**



Length of Cut = 1.5 x Diameter - Center Cutting - Micro Grain Carbide  
Corner radius helps prevent chipping at corners at high feeds and speeds.

| TOOL NUMBER | Cutter Diameter     | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH     |
|-------------|---------------------|---------------|---------------|----------------|-----------------|----------------|
| 89415-003   | <b>.015"</b>        | .003"         | .023"         | 1/8"           | 1-1/2"          | <b>\$40.50</b> |
| 89420-005   | <b>.020"</b>        | .005"         | .030"         | 1/8"           | 1-1/2"          | <b>\$36.50</b> |
| 89425-005   | <b>.025"</b>        | .005"         | .038"         | 1/8"           | 1-1/2"          | <b>\$36.50</b> |
| 89430-005   | <b>.030"</b>        | .005"         | .045"         | 1/8"           | 1-1/2"          | <b>\$32.75</b> |
| 89430-010   | <b>.030"</b>        | .010"         | .045"         | 1/8"           | 1-1/2"          | <b>\$32.75</b> |
| 89431-005   | <b>.031" (1/32)</b> | .005"         | .047"         | 1/8"           | 1-1/2"          | <b>\$32.75</b> |
| 89431-010   | <b>.031" (1/32)</b> | .010"         | .047"         | 1/8"           | 1-1/2"          | <b>\$32.75</b> |
| 89435-005   | <b>.035"</b>        | .005"         | .053"         | 1/8"           | 1-1/2"          | <b>\$28.75</b> |
| 89435-010   | <b>.035"</b>        | .010"         | .053"         | 1/8"           | 1-1/2"          | <b>\$28.75</b> |
| 89440-005   | <b>.040"</b>        | .005"         | .060"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89440-010   | <b>.040"</b>        | .010"         | .060"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89445-005   | <b>.045"</b>        | .005"         | .068"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89445-010   | <b>.045"</b>        | .010"         | .068"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89445-015   | <b>.045"</b>        | .015"         | .068"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89447-005   | <b>.047" (3/64)</b> | .005"         | .071"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89447-010   | <b>.047" (3/64)</b> | .010"         | .071"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89447-015   | <b>.047" (3/64)</b> | .015"         | .071"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89450-005   | <b>.050"</b>        | .005"         | .075"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89450-010   | <b>.050"</b>        | .010"         | .075"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89450-015   | <b>.050"</b>        | .015"         | .075"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89460-005   | <b>.060"</b>        | .005"         | .090"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89460-010   | <b>.060"</b>        | .010"         | .090"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89460-015   | <b>.060"</b>        | .015"         | .090"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89462-005   | <b>.062" (1/16)</b> | .005"         | .093"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89462-010   | <b>.062" (1/16)</b> | .010"         | .093"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89462-015   | <b>.062" (1/16)</b> | .015"         | .093"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |

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## Decimal - AITiN COATED

**.065" to .125" Diameter**



Length of Cut 1.5 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

Corner radius helps prevent chipping at corners at high feeds and speeds.

| TOOL NUMBER | Cutter Diameter     | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH     |
|-------------|---------------------|---------------|---------------|----------------|-----------------|----------------|
| 89465-005   | <b>.065"</b>        | .005"         | .098"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89465-010   | <b>.065"</b>        | .010"         | .098"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89465-015   | <b>.065"</b>        | .015"         | .098"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89470-005   | <b>.070"</b>        | .005"         | .105"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89470-010   | <b>.070"</b>        | .010"         | .105"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89470-015   | <b>.070"</b>        | .015"         | .105"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89475-005   | <b>.075"</b>        | .005"         | .113"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89475-010   | <b>.075"</b>        | .010"         | .113"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89475-015   | <b>.075"</b>        | .015"         | .113"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89478-005   | <b>.078" (5/64)</b> | .005"         | .117"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89478-010   | <b>.078" (5/64)</b> | .010"         | .117"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89478-015   | <b>.078" (5/64)</b> | .015"         | .117"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89490-005   | <b>.090"</b>        | .005"         | .135"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89490-010   | <b>.090"</b>        | .010"         | .135"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89490-015   | <b>.090"</b>        | .015"         | .135"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89493-005   | <b>.093" (3/32)</b> | .005"         | .140"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89493-010   | <b>.093" (3/32)</b> | .010"         | .140"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89493-015   | <b>.093" (3/32)</b> | .015"         | .140"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89410-005   | <b>.100"</b>        | .005"         | .150"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89410-010   | <b>.100"</b>        | .010"         | .150"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89410-015   | <b>.100"</b>        | .015"         | .150"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89412-005   | <b>.125" (1/8)</b>  | .005"         | .250"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89412-010   | <b>.125" (1/8)</b>  | .010"         | .250"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89412-015   | <b>.125" (1/8)</b>  | .015"         | .250"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89412-020   | <b>.125" (1/8)</b>  | .020"         | .250"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |
| 89412-030   | <b>.125" (1/8)</b>  | .030"         | .250"         | 1/8"           | 1-1/2"          | <b>\$25.50</b> |



# STUB - LG REACH - CORNER RAD - 4-FLT

## Decimal - AITiN COATED

### .015" to .062" Diameter



**MINIMUM  
3 TOOLS  
EACH SIZE**



Length of Cut 1.5 x Diameter or as Specified – Center Cutting – Micro Grain Carbide  
Corner radius helps prevent chipping at corners at high feeds and speeds.

| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|----------------|-----------------|------------|
| 79415-003   | .015"           | .003"         | .023"         | .125"          | 1/8"           | 1-1/2"          | \$53.70    |
| 79420-005   | .020"           | .005"         | .030"         | .150"          | 1/8"           | 1-1/2"          | \$52.15    |
| 79425-005   | .025"           | .005"         | .038"         | .200"          | 1/8"           | 1-1/2"          | \$52.15    |
| 79430-005   | .030"           | .005"         | .045"         | .200"          | 1/8"           | 1-1/2"          | \$42.75    |
| 79430-010   | .030"           | .010"         | .045"         | .200"          | 1/8"           | 1-1/2"          | \$42.75    |
| 79431-005   | .031" (1/32)    | .005"         | .047"         | .250"          | 1/8"           | 1-1/2"          | \$42.75    |
| 79431-010   | .031" (1/32)    | .010"         | .047"         | .250"          | 1/8"           | 1-1/2"          | \$42.75    |
| 79435-005   | .035"           | .005"         | .053"         | .250"          | 1/8"           | 1-1/2"          | \$40.60    |
| 79435-010   | .035"           | .010"         | .053"         | .250"          | 1/8"           | 1-1/2"          | \$40.60    |
| 79440-005   | .040"           | .005"         | .060"         | .250"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79440-010   | .040"           | .010"         | .060"         | .250"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79445-005   | .045"           | .005"         | .068"         | .275"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79445-010   | .045"           | .010"         | .068"         | .275"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79445-015   | .045"           | .015"         | .068"         | .275"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79447-005   | .047" (3/64)    | .005"         | .071"         | .300"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79447-010   | .047" (3/64)    | .010"         | .071"         | .300"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79447-015   | .047" (3/64)    | .015"         | .071"         | .300"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79450-005   | .050"           | .005"         | .075"         | .350"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79450-010   | .050"           | .010"         | .075"         | .350"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79450-015   | .050"           | .015"         | .075"         | .350"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79460-005   | .060"           | .005"         | .090"         | .400"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79460-010   | .060"           | .010"         | .090"         | .400"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79460-015   | .060"           | .015"         | .090"         | .400"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79462-005   | .062" (1/16)    | .005"         | .093"         | .400"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79462-010   | .062" (1/16)    | .010"         | .093"         | .400"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79462-015   | .062" (1/16)    | .015"         | .093"         | .400"          | 1/8"           | 1-1/2"          | \$39.25    |

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**Shipped within 48 hours. Minimum order 3 tools each size.  
Tools are custom manufactured to order and are nonreturnable.**



## Decimal - AITiN COATED

**.065" to .125" Diameter**



**MINIMUM  
3 TOOLS  
EACH SIZE**



Length of Cut 1.5 x Diameter or as Specified – Center Cutting – Micro Grain Carbide  
Corner radius helps prevent chipping at corners at high feeds and speeds.

| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|----------------|-----------------|------------|
| 79465-005   | .065"           | .005"         | .098"         | .450"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79465-010   | .065"           | .010"         | .098"         | .450"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79465-015   | .065"           | .015"         | .098"         | .450"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79470-005   | .070"           | .005"         | .105"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79470-010   | .070"           | .010"         | .105"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79470-015   | .070"           | .015"         | .105"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79475-005   | .075"           | .005"         | .113"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79475-010   | .075"           | .010"         | .113"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79475-015   | .075"           | .015"         | .113"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79478-005   | .078" (5/64)    | .005"         | .117"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79478-010   | .078" (5/64)    | .010"         | .117"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79478-015   | .078" (5/64)    | .015"         | .117"         | .500"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79490-005   | .090"           | .005"         | .135"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79490-010   | .090"           | .010"         | .135"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79490-015   | .090"           | .015"         | .135"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79493-005   | .093" (3/32)    | .005"         | .140"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79493-010   | .093" (3/32)    | .010"         | .140"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79493-015   | .093" (3/32)    | .015"         | .140"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79410-005   | .100"           | .005"         | .150"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79410-010   | .100"           | .010"         | .150"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79410-015   | .100"           | .015"         | .150"         | .550"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79412-005   | .125" (1/8)     | .005"         | .250"         | .600"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79412-010   | .125" (1/8)     | .010"         | .250"         | .600"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79412-015   | .125" (1/8)     | .015"         | .250"         | .600"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79412-020   | .125" (1/8)     | .020"         | .250"         | .600"          | 1/8"           | 1-1/2"          | \$39.25    |
| 79412-030   | .125" (1/8)     | .030"         | .250"         | .600"          | 1/8"           | 1-1/2"          | \$39.25    |

**Shipped within 48 hours. Minimum order 3 tools each size.  
Tools are custom manufactured to order and are nonreturnable.**

# MINIATURE BALL PROFILE CUTTERS - 2-FLUTE

## Ball End - AITiN COATED

Designed for Deep Cavity Profiling in tough materials.

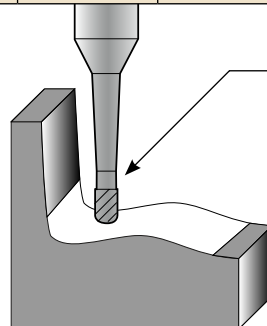
TAPERED NECK REDUCES DEFLECTION.



Length of Cut = 1.5 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Over All Reach | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|----------------|-----------------|------------|
| 17031-500   | .031"           | .047"         | .500"          | 1/4"           | 3"              | \$42.45    |
| 17031-750   | .031"           | .047"         | .750"          | 1/4"           | 3"              | \$45.70    |
| 17031-100   | .031"           | .047"         | 1.00"          | 1/4"           | 3"              | \$48.90    |
| 17047-500   | .047"           | .071"         | .500"          | 1/4"           | 3"              | \$42.45    |
| 17047-750   | .047"           | .071"         | .750"          | 1/4"           | 3"              | \$45.70    |
| 17047-100   | .047"           | .071"         | 1.00"          | 1/4"           | 3"              | \$48.90    |
| 17062-500   | .062"           | .094"         | .500"          | 1/4"           | 3"              | \$42.45    |
| 17062-750   | .062"           | .094"         | .750"          | 1/4"           | 3"              | \$45.70    |
| 17062-100   | .062"           | .094"         | 1.00"          | 1/4"           | 3"              | \$48.90    |
| 17078-750   | .078"           | .118"         | .750"          | 1/4"           | 3"              | \$42.45    |
| 17078-100   | .078"           | .118"         | 1.00"          | 1/4"           | 3"              | \$45.70    |
| 17078-125   | .078"           | .118"         | 1.25"          | 1/4"           | 3"              | \$48.90    |
| 17093-750   | .093"           | .140"         | .750"          | 1/4"           | 3"              | \$42.45    |
| 17093-100   | .093"           | .140"         | 1.00"          | 1/4"           | 3"              | \$45.70    |
| 17093-125   | .093"           | .140"         | 1.25"          | 1/4"           | 3"              | \$48.90    |
| 17125-750   | .125"           | .187"         | .750"          | 1/4"           | 3"              | \$42.45    |
| 17125-100   | .125"           | .187"         | 1.00"          | 1/4"           | 3"              | \$45.70    |
| 17125-125   | .125"           | .187"         | 1.25"          | 1/4"           | 3"              | \$48.90    |

**Note:** Miniature profile cutters are designed to mill deep cavities in molds. The tapered neck is available in various lengths to provide the most rigid tool for each application. Since interference with the cavity wall is a possibility (see diagram), we suggest the application be verified with CAD by your programmer.



Neck is reduced behind the cutter diameter for a length of one diameter.

# BALL MILLS FOR DIES & MOLDS - 2-FLUTE

## Ball End - nACo COATED

FOR HARD MILLING IN MOLD & DIE STEELS 40-60 RC. NEW "nACo" COATING FOR EXTREME DURABILITY AT HIGH TEMPERATURE. SHORT FLUTE LENGTH WITH REDUCED NECK FOR MAXIMUM RIGIDITY. USE WITH AIR MIST COOLANT.



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 58704       | .031"           | .031"         | 1/8"           | 3"              | \$26.35    |
| 58706       | .047"           | .047"         | 1/8"           | 3"              | \$26.35    |
| 58708       | .062"           | .062"         | 1/8"           | 3"              | \$26.35    |
| 58710       | .078"           | .078"         | 1/8"           | 3"              | \$26.35    |
| 58712       | .093"           | .093"         | 1/8"           | 3"              | \$26.35    |
| 58714       | .125"           | .125"         | 1/8"           | 3"              | \$26.35    |
| 58716       | .187"           | .187"         | 3/16"          | 3"              | \$30.65    |
| 58718       | .250"           | .250"         | 1/4"           | 3"              | \$41.40    |

## Long Reach - Ball End - nACo COATED

Minimum order 3 tools each size.



| TOOL NUMBER | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|----------------|-----------------|------------|
| 58724       | .031"           | .031"         | .093"          | 1/8"           | 3"              | \$39.25    |
| 58726       | .031"           | .031"         | .156"          | 1/8"           | 3"              | \$39.25    |
| 58728       | .031"           | .031"         | .250"          | 1/8"           | 3"              | \$42.45    |
| 58730       | .047"           | .047"         | .141"          | 1/8"           | 3"              | \$39.25    |
| 58732       | .047"           | .047"         | .250"          | 1/8"           | 3"              | \$39.25    |
| 58734       | .047"           | .047"         | .375"          | 1/8"           | 3"              | \$42.45    |
| 58736       | .062"           | .062"         | .187"          | 1/8"           | 3"              | \$39.25    |
| 58738       | .062"           | .062"         | .312"          | 1/8"           | 3"              | \$39.25    |
| 58740       | .062"           | .062"         | .500"          | 1/8"           | 3"              | \$42.45    |
| 58742       | .078"           | .078"         | .234"          | 1/8"           | 3"              | \$39.25    |
| 58744       | .078"           | .078"         | .406"          | 1/8"           | 3"              | \$39.25    |
| 58746       | .078"           | .078"         | .625"          | 1/8"           | 3"              | \$42.45    |
| 58748       | .093"           | .093"         | .281"          | 1/8"           | 3"              | \$39.25    |
| 58750       | .093"           | .093"         | .500"          | 1/8"           | 3"              | \$39.25    |
| 58752       | .093"           | .093"         | .750"          | 1/8"           | 3"              | \$42.45    |
| 58754       | .125"           | .125"         | .375"          | 1/8"           | 3"              | \$39.25    |
| 58756       | .125"           | .125"         | .625"          | 1/8"           | 3"              | \$39.25    |
| 58758       | .125"           | .125"         | 1.000"         | 1/8"           | 3"              | \$42.45    |
| 58760       | .187"           | .187"         | .375"          | 3/16"          | 3"              | \$43.55    |
| 58762       | .187"           | .187"         | .570"          | 3/16"          | 3"              | \$45.70    |
| 58764       | .187"           | .187"         | 1.000"         | 3/16"          | 3"              | \$48.90    |
| 58766       | .250"           | .250"         | .500"          | 1/4"           | 3"              | \$53.20    |
| 58768       | .250"           | .250"         | .750"          | 1/4"           | 3"              | \$55.35    |
| 58770       | .250"           | .250"         | 1.250"         | 1/4"           | 3"              | \$58.60    |

Long reach tools are manufactured to order and are nonreturnable.

# SPHERICAL BALL END MILLS - 2 & 4-FLUTE

## Standard Length - Ball End - AITiN COATED

AVAILABLE IN STANDARD LENGTH AND LONG SHANK SERIES

DESIGNED FOR UNDERCUTTING & MACHINING MOLD CAVITIES - 220 DEGREE SPHERICAL BALL



Length of Cut as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Neck Diameter | No. of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|---------------|----------------|-----------------|------------|
| 13062       | 1/16"           | .040"         | .048"         | 2             | 1/8"           | 1-1/2"          | \$27.90    |
| 13093       | 3/32"           | .060"         | .077"         | 2             | 1/8"           | 1-1/2"          | \$27.90    |
| 13125       | 1/8"            | 3/32"         | .095"         | 4             | 1/8"           | 1-1/2"          | \$24.90    |
| 13125L      | 1/8"            | 3/32"         | .095"         | 4             | 1/8"           | 3"              | \$25.90    |
| 13187       | 3/16"           | 9/64"         | .140"         | 4             | 3/16"          | 2"              | \$27.90    |
| 13187L      | 3/16"           | 9/64"         | .140"         | 4             | 3/16"          | 3"              | \$30.90    |
| 13250       | 1/4"            | 3/16"         | .165"         | 4             | 1/4"           | 2-1/2"          | \$38.90    |
| 13250L      | 1/4"            | 3/16"         | .165"         | 4             | 1/4"           | 4"              | \$42.90    |
| 13375       | 3/8"            | 9/32"         | .280"         | 4             | 3/8"           | 2-1/2"          | \$54.90    |
| 13375L      | 3/8"            | 9/32"         | .280"         | 4             | 3/8"           | 4"              | \$61.90    |
| 13500       | 1/2"            | 3/8"          | .375"         | 4             | 1/2"           | 3"              | \$82.90    |
| 13500L      | 1/2"            | 3/8"          | .375"         | 4             | 1/2"           | 6"              | \$129.90   |

## Long Reach - 2 and 4 Flute



| TOOL NUMBER | Cutter Diameter | Length of Cut | Neck Diameter | Reach From Tip | No. of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|---------------|----------------|-----------------|------------|
| 13062LR     | 1/16"           | .040"         | .048"         | .250"          | 2             | 1/8"           | 1-1/2"          | \$33.90    |
| 13093LR     | 3/32"           | .060"         | .077"         | .400"          | 2             | 1/8"           | 1-1/2"          | \$33.90    |
| 13125LR     | 1/8"            | 3/32"         | .095"         | .500"          | 4             | 1/8"           | 1-1/2"          | \$30.90    |
| 13187LR     | 3/16"           | 9/64"         | .140"         | .625"          | 4             | 3/16"          | 2"              | \$35.90    |
| 13250LR     | 1/4"            | .187"         | .168"         | .900"          | 4             | 1/4"           | 2-1/2"          | \$48.90    |
| 13375LR     | 3/8"            | 9/32"         | .280"         | 1.000"         | 4             | 3/8"           | 2-1/2"          | \$68.90    |
| 13500LR     | 1/2"            | 3/8"          | .375"         | 1.300"         | 4             | 1/2"           | 3"              | \$99.90    |

## Extra Long Reach - 4 Flute



| TOOL NUMBER | Cutter Diameter | Length of Cut | Neck Diameter | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|----------------|-----------------|------------|
| 13125XR     | 1/8"            | 3/32"         | .095"         | 1.000"         | 1/8"           | 3"              | \$32.90    |
| 13187XR     | 3/16"           | 9/64"         | .140"         | 1.125"         | 3/16"          | 3"              | \$38.90    |
| 13250XR     | 1/4"            | .187"         | .168"         | 1.600"         | 1/4"           | 4"              | \$52.90    |
| 13375XR     | 3/8"            | 9/32"         | .280"         | 1.750"         | 3/8"           | 4"              | \$72.90    |
| 13500XR     | 1/2"            | 3/8"          | .375"         | 2.300"         | 1/2"           | 6"              | \$147.90   |

Special long reach with reduced neck diameters quoted on request.

# 45° HELIX END MILLS – 5-FLUTE 1/32" TO 1/2"

## Stub Length - Square End - AITiN COATED



HEAVY CORE WITH CORNER CHAMFER OR RADIUS ON ALL SIZES.  
Carbide End Mills for Hardened Steel to 50 RC.

| TOOL NUMBER | Cutter Diameter | Length of Cut | Corner Chamfer/ Radius | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------------|----------------|-----------------|------------|
| 57031S      | .031"           | .062"         | .005" CHFR             | 1/8"           | 1-1/2"          | \$25.75    |
| 57047S      | .047"           | .094"         | .005" CHFR             | 1/8"           | 1-1/2"          | \$25.75    |
| 57062S      | .062"           | .125"         | .007" CHFR             | 1/8"           | 1-1/2"          | \$23.60    |
| 57078S      | .078"           | .156"         | .007" CHFR             | 1/8"           | 1-1/2"          | \$23.60    |
| 57093S      | .093"           | .186"         | .007" CHFR             | 1/8"           | 1-1/2"          | \$23.60    |
| 57125S      | .125"           | .250"         | .010" RAD              | 1/8"           | 1-1/2"          | \$18.20    |
| 57187S      | .187"           | .375"         | .010" RAD              | 3/16"          | 2"              | \$19.30    |
| 57250S      | .250"           | .500"         | .020" RAD              | 1/4"           | 2"              | \$21.45    |
| 57312S      | .312"           | .500"         | .020" RAD              | 5/16"          | 2"              | \$26.80    |
| 57375S      | .375"           | .625"         | .020" RAD              | 3/8"           | 2"              | \$37.55    |
| 57500S      | .500"           | .625"         | .040" RAD              | 1/2"           | 2-1/2"          | \$49.40    |

## Standard Length - AITiN COATED



| TOOL NUMBER | Cutter Diameter | Length of Cut | Corner Chamfer/ Radius | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------------|----------------|-----------------|------------|
| 57031       | .031"           | .093"         | .005" CHFR             | 1/8"           | 1-1/2"          | \$27.90    |
| 57047       | .047"           | .141"         | .005" CHFR             | 1/8"           | 1-1/2"          | \$27.90    |
| 57062       | .062"           | .186"         | .007" CHFR             | 1/8"           | 1-1/2"          | \$25.75    |
| 57078       | .078"           | .234"         | .007" CHFR             | 1/8"           | 1-1/2"          | \$25.75    |
| 57093       | .093"           | .267"         | .007" CHFR             | 1/8"           | 1-1/2"          | \$25.75    |
| 57125       | .125"           | .500"         | .010" RAD              | 1/8"           | 1-1/2"          | \$20.35    |
| 57187       | .187"           | .750"         | .010" RAD              | 3/16"          | 2"              | \$24.65    |
| 57250       | .250"           | .750"         | .020" RAD              | 1/4"           | 2-1/2"          | \$26.80    |
| 57312       | .312"           | .875"         | .020" RAD              | 5/16"          | 2-1/2"          | \$31.10    |
| 57375       | .375"           | .875"         | .020" RAD              | 3/8"           | 2-1/2"          | \$41.85    |
| 57500       | .500"           | 1.250"        | .040" RAD              | 1/2"           | 3"              | \$75.20    |

# 45° HELIX END MILLS – 6-FLUTE 1/8" TO 1/2"

Carbide End Mills for Hardened Steel over 50 RC. ALTiN Coated.  
Heavy Core combined with Corner Radius for improved life.  
Used for Light Finishing Cuts Only in hardened materials.



| TOOL NUMBER | Cutter Diameter | Length of Cut | Corner Radius | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 58125       | 1/8"            | .500"         | .010"         | 1/8"           | 1-1/2"          | \$21.45    |
| 58187       | 3/16"           | .625"         | .010"         | 3/16"          | 2"              | \$27.90    |
| 58250       | 1/4"            | .750"         | .015"         | 1/4"           | 2-1/2"          | \$39.70    |
| 58312       | 5/16"           | .812"         | .020"         | 5/16"          | 2-1/2"          | \$49.40    |
| 58375       | 3/8"            | 1.00"         | .020"         | 3/8"           | 2-1/2"          | \$56.90    |
| 58500       | 1/2"            | 1.00"         | .025"         | 1/2"           | 3"              | \$91.30    |

# MICRO END MILLS FOR ALUMINUM - 2-FLUTE

## 45° Helix - Square End - Ball End - UNCOATED .031" to .125" Diameter



FOR FASTER CHIP REMOVAL AND IMPROVED FINISH

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 80031       | 80031B   | .031"           | .093"         | 1/8"           | 1-1/2"          | \$18.55    | \$21.75  |
| 80035       | 80035B   | .035"           | .105"         | 1/8"           | 1-1/2"          | \$18.55    | \$21.75  |
| 80040       | 80040B   | .040"           | .120"         | 1/8"           | 1-1/2"          | \$18.55    | \$21.75  |
| 80045       | 80045B   | .045"           | .135"         | 1/8"           | 1-1/2"          | \$18.55    | \$21.75  |
| 80047       | 80047B   | .047"           | .141"         | 1/8"           | 1-1/2"          | \$18.55    | \$21.75  |
| 80050       | 80050B   | .050"           | .150"         | 1/8"           | 1-1/2"          | \$18.55    | \$21.75  |
| 80060       | 80060B   | .060"           | .180"         | 1/8"           | 1-1/2"          | \$18.55    | \$21.75  |
| 80062       | 80062B   | .062"           | .187"         | 1/8"           | 1-1/2"          | \$16.15    | \$20.45  |
| 80070       | 80070B   | .070"           | .210"         | 1/8"           | 1-1/2"          | \$16.15    | \$20.45  |
| 80075       | 80075B   | .075"           | .225"         | 1/8"           | 1-1/2"          | \$16.15    | \$20.45  |
| 80078       | 80078B   | .078"           | .234"         | 1/8"           | 1-1/2"          | \$16.15    | \$20.45  |
| 80090       | 80090B   | .090"           | .270"         | 1/8"           | 1-1/2"          | \$16.15    | \$20.45  |
| 80093       | 80093B   | .093"           | .279"         | 1/8"           | 1-1/2"          | \$16.15    | \$20.45  |
| 80125       | 80125B   | .125"           | .500"         | 1/8"           | 1-1/2"          | \$15.60    | \$19.90  |



**ZRN COATED** Zirconium Nitride

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| 80031Z      | 80031BZ  | .031"           | .093"         | 1/8"           | 1-1/2"          | \$23.40    | \$26.60  |
| 80035Z      | 80035BZ  | .035"           | .105"         | 1/8"           | 1-1/2"          | \$23.40    | \$26.60  |
| 80040Z      | 80040BZ  | .040"           | .120"         | 1/8"           | 1-1/2"          | \$23.40    | \$26.60  |
| 80045Z      | 80045BZ  | .045"           | .135"         | 1/8"           | 1-1/2"          | \$23.40    | \$26.60  |
| 80047Z      | 80047BZ  | .047"           | .141"         | 1/8"           | 1-1/2"          | \$23.40    | \$26.60  |
| 80050Z      | 80050BZ  | .050"           | .150"         | 1/8"           | 1-1/2"          | \$23.40    | \$26.60  |
| 80060Z      | 80060BZ  | .060"           | .180"         | 1/8"           | 1-1/2"          | \$23.40    | \$26.60  |
| 80062Z      | 80062BZ  | .062"           | .187"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25  |
| 80070Z      | 80070BZ  | .070"           | .210"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25  |
| 80075Z      | 80075BZ  | .075"           | .225"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25  |
| 80078Z      | 80078BZ  | .078"           | .234"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25  |
| 80090Z      | 80090BZ  | .090"           | .270"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25  |
| 80093Z      | 80093BZ  | .093"           | .279"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25  |
| 80125Z      | 80125BZ  | .125"           | .500"         | 1/8"           | 1-1/2"          | \$20.45    | \$24.75  |

Zirconium coating has a low affinity for non ferrous materials. Helps prevent buildup and chip packing on cutting edges & flutes. Use in aluminum, aluminum and magnesium alloys, brass, copper and bronze.

# LONG REACH MILLS FOR ALUMINUM - 2-FLUTE

## 45° Helix - Square End - Ball End - UNCOATED .031" to .125" Diameter



Shipped  
Within 24-48  
Hours

FOR FASTER CHIP REMOVAL AND IMPROVED FINISH. **MINIMUM 3 PIECES PER SIZE**

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 70031       | 70031B   | .031"           | .093"         | .250"          | 1/8"           | 1-1/2"          | \$31.45    | \$34.65  |
| 70035       | 70035B   | .035"           | .105"         | .285"          | 1/8"           | 1-1/2"          | \$31.45    | \$34.65  |
| 70040       | 70040B   | .040"           | .120"         | .350"          | 1/8"           | 1-1/2"          | \$31.45    | \$34.65  |
| 70045       | 70045B   | .045"           | .135"         | .400"          | 1/8"           | 1-1/2"          | \$31.45    | \$34.65  |
| 70047       | 70047B   | .047"           | .141"         | .400"          | 1/8"           | 1-1/2"          | \$31.45    | \$34.65  |
| 70050       | 70050B   | .050"           | .150"         | .450"          | 1/8"           | 1-1/2"          | \$31.45    | \$34.65  |
| 70060       | 70060B   | .060"           | .180"         | .500"          | 1/8"           | 1-1/2"          | \$31.45    | \$34.65  |
| 70062       | 70062B   | .062"           | .187"         | .500"          | 1/8"           | 1-1/2"          | \$29.05    | \$33.35  |
| 70070       | 70070B   | .070"           | .210"         | .500"          | 1/8"           | 1-1/2"          | \$29.05    | \$33.35  |
| 70075       | 70075B   | .075"           | .225"         | .500"          | 1/8"           | 1-1/2"          | \$29.05    | \$33.35  |
| 70078       | 70078B   | .078"           | .234"         | .500"          | 1/8"           | 1-1/2"          | \$29.05    | \$33.35  |
| 70090       | 70090B   | .090"           | .270"         | .600"          | 1/8"           | 1-1/2"          | \$29.05    | \$33.35  |
| 70093       | 70093B   | .093"           | .279"         | .600"          | 1/8"           | 1-1/2"          | \$29.05    | \$33.35  |
| 70125       | 70125B   | .125"           | .500"         | .650"          | 1/8"           | 1-1/2"          | \$29.05    | \$33.35  |



**ZRN COATED** Zirconium Nitride

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| 70031Z      | 70031BZ  | .031"           | .093"         | .250"          | 1/8"           | 1-1/2"          | \$36.30    | \$39.50  |
| 70035Z      | 70035BZ  | .035"           | .105"         | .285"          | 1/8"           | 1-1/2"          | \$36.30    | \$39.50  |
| 70040Z      | 70040BZ  | .040"           | .120"         | .350"          | 1/8"           | 1-1/2"          | \$36.30    | \$39.50  |
| 70045Z      | 70045BZ  | .045"           | .135"         | .400"          | 1/8"           | 1-1/2"          | \$36.30    | \$39.50  |
| 70047Z      | 70047BZ  | .047"           | .141"         | .400"          | 1/8"           | 1-1/2"          | \$36.30    | \$39.50  |
| 70050Z      | 70050BZ  | .050"           | .150"         | .450"          | 1/8"           | 1-1/2"          | \$36.30    | \$39.50  |
| 70060Z      | 70060BZ  | .060"           | .180"         | .500"          | 1/8"           | 1-1/2"          | \$36.30    | \$39.50  |
| 70062Z      | 70062BZ  | .062"           | .187"         | .500"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15  |
| 70070Z      | 70070BZ  | .070"           | .210"         | .500"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15  |
| 70075Z      | 70075BZ  | .075"           | .225"         | .500"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15  |
| 70078Z      | 70078BZ  | .078"           | .234"         | .500"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15  |
| 70090Z      | 70090BZ  | .090"           | .270"         | .600"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15  |
| 70093Z      | 70093BZ  | .093"           | .279"         | .600"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15  |
| 70125Z      | 70125BZ  | .125"           | .500"         | .650"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15  |

**Tools are custom manufactured to order and are nonreturnable.**

**Special reaches quoted on request.**

TOLL FREE 866-426-3300  
FAX 781-582-8095

**Microcut**

## Standard Length - UNCOATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 62125       | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$14.95    |
| 62187       | 3/16"           | 5/8"          | 3/16"          | 2"              | \$20.50    |
| 62250       | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$26.50    |
| 62312       | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$31.50    |
| 62375       | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$35.50    |
| 62500       | 1/2"            | 1-1/4"        | 1/2"           | 3"              | \$59.50    |

## Standard Length - ZRN COATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 62125Z      | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$18.95    |
| 62187Z      | 3/16"           | 3/4"          | 3/16"          | 2"              | \$25.50    |
| 62250Z      | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$32.50    |
| 62312Z      | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$38.50    |
| 62375Z      | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$42.50    |
| 62500Z      | 1/2"            | 1-1/4"        | 1/2"           | 3"              | \$66.50    |

## Standard Length - Corner Radius - UNCOATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 62125R      | 1/8"            | .020"         | 1/2"          | 1/8"           | 1-1/2"          | \$17.90    |
| 62187R      | 3/16"           | .020"         | 5/8"          | 3/16"          | 2"              | \$24.90    |
| 62250R      | 1/4"            | .020"         | 3/4"          | 1/4"           | 2-1/2"          | \$33.90    |
| 62312R      | 5/16"           | .020"         | 13/16"        | 5/16"          | 2-1/2"          | \$39.90    |
| 62375R      | 3/8"            | .020"         | 1"            | 3/8"           | 2-1/2"          | \$42.90    |
| 62500R      | 1/2"            | .040"         | 1-1/4"        | 1/2"           | 3"              | \$69.90    |

## Standard Length - Corner Radius - ZRN COATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 62125RZ     | 1/8"            | .020"         | 1/2"          | 1/8"           | 1-1/2"          | \$22.90    |
| 62187RZ     | 3/16"           | .020"         | 3/4"          | 3/16"          | 2"              | \$30.90    |
| 62250RZ     | 1/4"            | .020"         | 3/4"          | 1/4"           | 2-1/2"          | \$40.90    |
| 62312RZ     | 5/16"           | .020"         | 13/16"        | 5/16"          | 2-1/2"          | \$47.90    |
| 62375RZ     | 3/8"            | .020"         | 1"            | 3/8"           | 2-1/2"          | \$50.90    |
| 62500RZ     | 1/2"            | .040"         | 1-1/4"        | 1/2"           | 3"              | \$80.90    |

Zirconium has no affinity for the materials mentioned above. Tools plunge cut and can be run at 20-40% higher speed and feed rates.

# 45 DEGREE HELIX MILLS - 2-FLUTE 1/8" TO 1/2"

## Long Length - UNCOATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 62125L      | 1/8"            | 3/4"          | 1/8"           | 2-1/4"          | \$23.50    |
| 62187L      | 3/16"           | 3/4"          | 3/16"          | 2-1/2"          | \$26.90    |
| 62250L      | 1/4"            | 1-1/4"        | 1/4"           | 3"              | \$38.50    |
| 62312L      | 5/16"           | 1-3/8"        | 5/16"          | 3"              | \$47.50    |
| 62375L      | 3/8"            | 1-1/2"        | 3/8"           | 4"              | \$59.50    |
| 62500L      | 1/2"            | 2"            | 1/2"           | 4"              | \$83.50    |

## Long Length - ZRN COATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 62125ZL     | 1/8"            | 3/4"          | 1/8"           | 2-1/4"          | \$28.50    |
| 62187ZL     | 3/16"           | 3/4"          | 3/16"          | 2-1/2"          | \$32.50    |
| 62250ZL     | 1/4"            | 1-1/4"        | 1/4"           | 3"              | \$44.50    |
| 62312ZL     | 5/16"           | 1-3/8"        | 5/16"          | 3"              | \$59.50    |
| 62375ZL     | 3/8"            | 1-1/2"        | 3/8"           | 4"              | \$72.50    |
| 62500ZL     | 1/2"            | 2"            | 1/2"           | 4"              | \$99.50    |

## Long Length - Corner Radius - UNCOATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 62125LR     | 1/8"            | .020"         | 3/4"          | 1/8"           | 2-1/4"          | \$30.90    |
| 62187LR     | 3/16"           | .020"         | 3/4"          | 3/16"          | 2-1/2"          | \$35.90    |
| 62250LR     | 1/4"            | .020"         | 1-1/4"        | 1/4"           | 3"              | \$46.90    |
| 62312LR     | 5/16"           | .020"         | 1-3/8"        | 5/16"          | 3"              | \$59.90    |
| 62375LR     | 3/8"            | .020"         | 1-1/2"        | 3/8"           | 4"              | \$74.90    |
| 62500LR     | 1/2"            | .040"         | 2"            | 1/2"           | 4"              | \$98.90    |

## Long Length - Corner Radius - ZRN COATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 62125LRZ    | 1/8"            | .020"         | 3/4"          | 1/8"           | 2-1/4"          | \$38.90    |
| 62187LRZ    | 3/16"           | .020"         | 3/4"          | 3/16"          | 2-1/2"          | \$43.90    |
| 62250LRZ    | 1/4"            | .020"         | 1-1/4"        | 1/4"           | 3"              | \$55.90    |
| 62312LRZ    | 5/16"           | .020"         | 1-3/8"        | 5/16"          | 3"              | \$75.90    |
| 62375LRZ    | 3/8"            | .020"         | 1-1/2"        | 3/8"           | 4"              | \$90.40    |
| 62500LRZ    | 1/2"            | .040"         | 2"            | 1/2"           | 4"              | \$118.90   |

Zirconium has no affinity for the materials mentioned above.  
Tools plunge cut and can be run at 20-40% higher speed and feed rates.

TOLL FREE 866-426-3300  
FAX 781-582-8095

**MicroCUT**

## Standard Length - UNCOATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 63125       | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$14.95    |
| 63187       | 3/16"           | 5/8"          | 3/16"          | 2"              | \$20.50    |
| 63250       | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$26.50    |
| 63312       | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$31.50    |
| 63375       | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$35.50    |
| 63500       | 1/2"            | 1-1/4"        | 1/2"           | 3"              | \$59.50    |

## Standard Length - ZRN COATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 63125Z      | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$18.95    |
| 63187Z      | 3/16"           | 3/4"          | 3/16"          | 2"              | \$25.50    |
| 63250Z      | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$32.50    |
| 63312Z      | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$38.50    |
| 63375Z      | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$42.50    |
| 63500Z      | 1/2"            | 1-1/4"        | 1/2"           | 3"              | \$66.50    |

## Standard Length - Corner Radius - UNCOATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 63125R      | 1/8"            | .020"         | 1/2"          | 1/8"           | 1-1/2"          | \$17.90    |
| 63187R      | 3/16"           | .020"         | 5/8"          | 3/16"          | 2"              | \$24.90    |
| 63250R      | 1/4"            | .020"         | 3/4"          | 1/4"           | 2-1/2"          | \$33.90    |
| 63312R      | 5/16"           | .020"         | 13/16"        | 5/16"          | 2-1/2"          | \$39.90    |
| 63375R      | 3/8"            | .020"         | 1"            | 3/8"           | 2-1/2"          | \$42.90    |
| 63500R      | 1/2"            | .040"         | 1-1/4"        | 1/2"           | 3"              | \$69.90    |

## Standard Length - Corner Radius - ZRN COATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 63125RZ     | 1/8"            | .020"         | 1/2"          | 1/8"           | 1-1/2"          | \$22.90    |
| 63187RZ     | 3/16"           | .020"         | 3/4"          | 3/16"          | 2"              | \$30.90    |
| 63250RZ     | 1/4"            | .020"         | 3/4"          | 1/4"           | 2-1/2"          | \$40.90    |
| 63312RZ     | 5/16"           | .020"         | 13/16"        | 5/16"          | 2-1/2"          | \$47.90    |
| 63375RZ     | 3/8"            | .020"         | 1"            | 3/8"           | 2-1/2"          | \$50.90    |
| 63500RZ     | 1/2"            | .040"         | 1-1/4"        | 1/2"           | 3"              | \$80.90    |

Zirconium has no affinity for the materials mentioned above. Tools plunge cut and can be run at 20-40% higher speed and feed rates.

# 45 DEGREE HELIX MILLS - 3-FLUTE 1/8" TO 1/2"

## Long Length - UNCOATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 63125L      | 1/8"            | 3/4"          | 1/8"           | 2-1/4"          | \$23.50    |
| 63187L      | 3/16"           | 3/4"          | 3/16"          | 2-1/2"          | \$26.90    |
| 63250L      | 1/4"            | 1-1/4"        | 1/4"           | 3"              | \$38.50    |
| 63312L      | 5/16"           | 1-3/8"        | 5/16"          | 3"              | \$47.50    |
| 63375L      | 3/8"            | 1-1/2"        | 3/8"           | 4"              | \$59.50    |
| 63500L      | 1/2"            | 2"            | 1/2"           | 4"              | \$83.50    |

## Long Length - ZRN COATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 63125ZL     | 1/8"            | 3/4"          | 1/8"           | 2-1/4"          | \$28.50    |
| 63187ZL     | 3/16"           | 3/4"          | 3/16"          | 2-1/2"          | \$32.50    |
| 63250ZL     | 1/4"            | 1-1/4"        | 1/4"           | 3"              | \$44.50    |
| 63312ZL     | 5/16"           | 1-3/8"        | 5/16"          | 3"              | \$59.50    |
| 63375ZL     | 3/8"            | 1-1/2"        | 3/8"           | 4"              | \$72.50    |
| 63500ZL     | 1/2"            | 2"            | 1/2"           | 4"              | \$99.50    |

## Long Length - Corner Radius - UNCOATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 63125LR     | 1/8"            | .020"         | 3/4"          | 1/8"           | 2-1/4"          | \$30.90    |
| 63187LR     | 3/16"           | .020"         | 3/4"          | 3/16"          | 2-1/2"          | \$35.90    |
| 63250LR     | 1/4"            | .020"         | 1-1/4"        | 1/4"           | 3"              | \$46.90    |
| 63312LR     | 5/16"           | .020"         | 1-3/8"        | 5/16"          | 3"              | \$59.90    |
| 63375LR     | 3/8"            | .020"         | 1-1/2"        | 3/8"           | 4"              | \$74.90    |
| 63500LR     | 1/2"            | .040"         | 2"            | 1/2"           | 4"              | \$98.90    |

## Long Length - Corner Radius - ZRN COATED - 45 Degree Helix

FOR ALUMINUM, BRASS, BRONZE AND COPPER



| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| 63125LRZ    | 1/8"            | .020"         | 3/4"          | 1/8"           | 2-1/4"          | \$38.90    |
| 63187LRZ    | 3/16"           | .020"         | 3/4"          | 3/16"          | 2-1/2"          | \$43.90    |
| 63250LRZ    | 1/4"            | .020"         | 1-1/4"        | 1/4"           | 3"              | \$55.90    |
| 63312LRZ    | 5/16"           | .020"         | 1-3/8"        | 5/16"          | 3"              | \$75.90    |
| 63375LRZ    | 3/8"            | .020"         | 1-1/2"        | 3/8"           | 4"              | \$90.40    |
| 63500LRZ    | 1/2"            | .040"         | 2"            | 1/2"           | 4"              | \$118.90   |

Zirconium has no affinity for the materials mentioned above.  
Tools plunge cut and can be run at 20-40% higher speed and feed rates.

TOLL FREE 866-426-3300  
FAX 781-582-8095

# Microcut

# CARBIDE END MILLS - 3-FLUTE

## Standard Length - **AlTiN COATED** - 45 Degree Helix

PROFILE AND FINISHING IN ALL EXOTIC MATERIAL AND STAINLESS STEEL



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 60125       | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$17.75    |
| 60187       | 3/16"           | 5/8"          | 3/16"          | 2"              | \$19.90    |
| 60250       | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$22.05    |
| 60312       | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$25.25    |
| 60375       | 3/8"            | 7/8"          | 3/8"           | 2-1/2"          | \$33.85    |
| 60500       | 1/2"            | 1/4"          | 1/2"           | 3"              | \$57.50    |

## Standard Length - **AlTiN COATED** - 60 Degree Helix

PROFILE AND FINISHING IN ALL EXOTIC MATERIAL AND STAINLESS STEEL



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 61125       | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$17.75    |
| 61187       | 3/16"           | 5/8"          | 3/16"          | 2"              | \$19.90    |
| 61250       | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$22.05    |
| 61312       | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$25.25    |
| 61375       | 3/8"            | 7/8"          | 3/8"           | 2-1/2"          | \$33.85    |
| 61500       | 1/2"            | 1"            | 1/2"           | 3"              | \$57.50    |

Increase SFM up to 40% when using these 3-Flute Series of High Performance 45 and 60-Degree Helix End Mills.

# MINIATURE DIE SINKING BALL END MILLS

## 3, 5, & 7 Degree Tapered Neck - **AlTiN COATED**

2 STRAIGHT FLUTES



| TOOL NUMBER | Cutter Diameter | Degrees Per Side | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|------------------|---------------|----------------|-----------------|------------|
| 59931-3     | .031"           | 3                | .875"         | .125"          | 2"              | \$21.25    |
| 59962-3     | .062"           | 3                | .562"         | .125"          | 2"              | \$21.25    |
| 59993-3     | .093"           | 3                | .875"         | .187"          | 2"              | \$28.50    |
| 59125-3     | .125"           | 3                | 1.00"         | .250"          | 2-1/2"          | \$38.15    |
| 59931-5     | .031"           | 5                | .500"         | .125"          | 2"              | \$21.25    |
| 59962-5     | .062"           | 5                | .312"         | .125"          | 2"              | \$21.25    |
| 59993-5     | .093"           | 5                | .500"         | .187"          | 2"              | \$28.50    |
| 59125-5     | .125"           | 5                | .680"         | .250"          | 2-1/2"          | \$38.15    |
| 59931-7     | .031"           | 7                | .375"         | .125"          | 1-1/2"          | \$21.25    |
| 59962-7     | .062"           | 7                | .250"         | .125"          | 1-1/2"          | \$21.25    |
| 59993-7     | .093"           | 7                | .375"         | .187"          | 2"              | \$28.50    |
| 59125-7     | .125"           | 7                | .500"         | .250"          | 2-1/2"          | \$38.15    |

# SOLID CARBIDE FINE PITCH ROUGHERS

## Fine Pitch Rougher Standard Length - UNCOATED - 1/4" to 1/2"



| TOOL NUMBER | Cutter Diameter | Length of Cut | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------|----------------|-----------------|------------|
| 16250       | 1/4"            | 3/4"          | 4                | 1/4"           | 2-1/2"          | \$26.80    |
| 16312       | 5/16"           | 13/16"        | 4                | 5/16"          | 2-1/2"          | \$37.55    |
| 16375       | 3/8"            | 7/8"          | 4                | 3/8"           | 2-1/2"          | \$44.00    |
| 16500       | 1/2"            | 1-1/4"        | 4                | 1/2"           | 3"              | \$53.70    |

## Long Length - UNCOATED



| TOOL NUMBER | Cutter Diameter | Length of Cut | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------|----------------|-----------------|------------|
| 16250L      | 1/4"            | 1-1/2"        | 4                | 1/4"           | 4"              | \$38.65    |
| 16312L      | 5/16"           | 1-1/2"        | 4                | 5/16"          | 4"              | \$49.40    |
| 16375L      | 3/8"            | 1-3/4"        | 4                | 3/8"           | 4"              | \$62.30    |
| 16500L      | 1/2"            | 2"            | 4                | 1/2"           | 4"              | \$70.90    |

## Standard Length - AITiN COATED



Designed to remove the maximum amount of material with a minimum amount of chatter or vibration.  
Works well in hardened steels, alloyed steel, titanium, stainless and nickel based alloys.

| TOOL NUMBER | Cutter Diameter | Length of Cut | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------|----------------|-----------------|------------|
| 15250       | 1/4"            | 3/4"          | 4                | 1/4"           | 2-1/2"          | \$33.85    |
| 15312       | 5/16"           | 13/16"        | 4                | 5/16"          | 2-1/2"          | \$47.85    |
| 15375       | 3/8"            | 7/8"          | 4                | 3/8"           | 2-1/2"          | \$55.35    |
| 15500       | 1/2"            | 1-1/4"        | 4                | 1/2"           | 3"              | \$68.25    |

## Long Length - AITiN COATED



| TOOL NUMBER | Cutter Diameter | Length of Cut | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------|----------------|-----------------|------------|
| 15250L      | 1/4"            | 1-1/2"        | 4                | 1/4"           | 4"              | \$48.90    |
| 15312L      | 5/16"           | 1-1/2"        | 4                | 5/16"          | 4"              | \$63.95    |
| 15375L      | 3/8"            | 1-3/4"        | 4                | 3/8"           | 4"              | \$77.95    |
| 15500L      | 1/2"            | 2"            | 4                | 1/2"           | 4"              | \$99.45    |

# CORNER ROUNDING MILLS – 2-FLUTE

## UNCOATED - .005" - .375" Radius



Double Ended – End Cutting – Micro Grain Carbide

| Radius | Pilot Diameter | Shank Diameter | Overall Length | UNCOATED    |            |
|--------|----------------|----------------|----------------|-------------|------------|
|        |                |                |                | Tool Number | Price Each |
| .005"  | 3/64"          | 1/8"           | 1-1/2"         | 99005       | \$24.50    |
| .007"  | 3/64"          | 1/8"           | 1-1/2"         | 99007       | \$24.50    |
| .010"  | 3/64"          | 1/8"           | 1-1/2"         | 99010       | \$24.50    |
| .012"  | 3/64"          | 1/8"           | 1-1/2"         | 99012       | \$24.50    |
| .015"  | 3/64"          | 1/8"           | 1-1/2"         | 99015       | \$24.50    |
| .020"  | 3/64"          | 1/8"           | 1-1/2"         | 99020       | \$24.50    |
| .025"  | 3/64"          | 1/8"           | 1-1/2"         | 99025       | \$24.50    |
| .030"  | 3/64"          | 1/8"           | 1-1/2"         | 99030       | \$24.50    |
| .031"  | 3/64"          | 1/8"           | 1-1/2"         | 99031       | \$24.50    |
| .032"  | 3/64"          | 1/8"           | 1-1/2"         | 99032       | \$24.50    |
| .035"  | 3/64"          | 1/8"           | 1-1/2"         | 99035       | \$24.50    |
| .039"  | 3/64"          | 1/8"           | 1-1/2"         | 99039       | \$24.50    |
| .040"  | 3/64"          | 1/8"           | 1-1/2"         | 99040       | \$31.50    |
| .043"  | 3/64"          | 3/16"          | 2"             | 99043       | \$31.50    |
| .045"  | 3/64"          | 3/16"          | 2"             | 99045       | \$31.50    |
| .047"  | 3/64"          | 3/16"          | 2"             | 99047       | \$31.50    |
| .050"  | 3/64"          | 3/16"          | 2"             | 99050       | \$31.50    |
| .055"  | 3/64"          | 3/16"          | 2"             | 99055       | \$31.50    |
| .060"  | 3/64"          | 3/16"          | 2"             | 99060       | \$31.90    |
| .062"  | 3/64"          | 3/16"          | 2"             | 99062       | \$31.90    |
| .065"  | 3/64"          | 3/16"          | 2"             | 99065       | \$31.90    |
| .070"  | 3/64"          | 3/16"          | 2"             | 99070       | \$36.90    |
| .075"  | 3/64"          | 1/4"           | 2"             | 99075       | \$36.90    |
| .078"  | 3/64"          | 1/4"           | 2"             | 99078       | \$36.90    |
| .080"  | 3/64"          | 1/4"           | 2"             | 99080       | \$36.90    |
| .090"  | 3/64"          | 1/4"           | 2"             | 99090       | \$36.90    |
| .094"  | 3/64"          | 1/4"           | 2"             | 99094       | \$36.90    |
| .098"  | 3/64"          | 1/4"           | 2"             | 99098       | \$36.90    |
| .100"  | 3/64"          | 1/4"           | 2"             | 99100       | \$36.90    |
| .109"  | .060"          | 5/16"          | 2-1/2"         | 99109       | \$49.90    |
| .118"  | .060"          | 5/16"          | 2-1/2"         | 99118       | \$49.90    |
| .125"  | .060"          | 5/16"          | 2-1/2"         | 99125       | \$49.90    |
| .140"  | .060"          | 3/8"           | 2-1/2"         | 99140       | \$59.50    |
| .156"  | .060"          | 3/8"           | 2-1/2"         | 99156       | \$62.50    |
| .187"  | .060"          | 7/16"          | 2-1/2"         | 99187       | \$105.50   |
| .250"  | .110"          | 5/8"           | 3-1/2"         | 99250       | \$192.50   |
| .375"  | .250"          | 1"             | 4"             | 99375       | \$334.50   |

Forms precision radius on outside edges of parts. CNC Ground - 2 Flute - Double End - Rigid Solid Carbide Shank. Tolerance on Radius is +/- .0005". Special radii quoted on request.

# CORNER ROUNDING MILLS – 2-FLUTE

## TiCN COATED & AITiN COATED



Double Ended – End Cutting – Micro Grain Carbide

| Radius | Pilot Diameter | Shank Diameter | Overall Length | TiCN COATED |            | AITiN COATED |            |
|--------|----------------|----------------|----------------|-------------|------------|--------------|------------|
|        |                |                |                | Tool Number | Price Each | Tool Number  | Price Each |
| .005"  | 3/64"          | 1/8"           | 1-1/2"         | 99005TC     | \$30.50    | 99005TL      | \$30.50    |
| .007"  | 3/64"          | 1/8"           | 1-1/2"         | 99007TC     | \$30.50    | 99007TL      | \$30.50    |
| .010"  | 3/64"          | 1/8"           | 1-1/2"         | 99010TC     | \$30.50    | 99010TL      | \$30.50    |
| .012"  | 3/64"          | 1/8"           | 1-1/2"         | 99012TC     | \$30.50    | 99012TL      | \$30.50    |
| .015"  | 3/64"          | 1/8"           | 1-1/2"         | 99015TC     | \$30.50    | 99015TL      | \$30.50    |
| .020"  | 3/64"          | 1/8"           | 1-1/2"         | 99020TC     | \$30.50    | 99020TL      | \$30.50    |
| .025"  | 3/64"          | 1/8"           | 1-1/2"         | 99025TC     | \$30.50    | 99025TL      | \$30.50    |
| .030"  | 3/64"          | 1/8"           | 1-1/2"         | 99030TC     | \$30.50    | 99030TL      | \$30.50    |
| .031"  | 3/64"          | 1/8"           | 1-1/2"         | 99031TC     | \$30.50    | 99031TL      | \$30.50    |
| .032"  | 3/64"          | 1/8"           | 1-1/2"         | 99032TC     | \$30.50    | 99032TL      | \$30.50    |
| .035"  | 3/64"          | 1/8"           | 1-1/2"         | 99035TC     | \$30.50    | 99035TL      | \$30.50    |
| .039"  | 3/64"          | 1/8"           | 1-1/2"         | 99039TC     | \$30.50    | 99039TL      | \$30.50    |
| .040"  | 1/8"           | 3/16"          | 1-1/2"         | 99040TC     | \$37.90    | 99040TL      | \$37.90    |
| .043"  | 3/64"          | 3/16"          | 2"             | 99043TC     | \$37.90    | 99043TL      | \$37.90    |
| .045"  | 3/64"          | 3/16"          | 2"             | 99045TC     | \$37.90    | 99045TL      | \$37.90    |
| .047"  | 3/64"          | 3/16"          | 2"             | 99047TC     | \$37.90    | 99047TL      | \$37.90    |
| .050"  | 3/64"          | 3/16"          | 2"             | 99050TC     | \$37.90    | 99050TL      | \$37.90    |
| .055"  | 3/64"          | 3/16"          | 2"             | 99055TC     | \$37.90    | 99055TL      | \$37.90    |
| .060"  | 3/64"          | 3/16"          | 2"             | 99060TC     | \$37.90    | 99060TL      | \$37.90    |
| .062"  | 3/64"          | 3/16"          | 2"             | 99062TC     | \$37.90    | 99062TL      | \$37.90    |
| .065"  | 3/64"          | 3/16"          | 2"             | 99065TC     | \$37.90    | 99065TL      | \$37.90    |
| .070"  | 3/64"          | 3/16"          | 2"             | 99070TC     | \$44.90    | 99070TL      | \$44.90    |
| .075"  | 3/64"          | 1/4"           | 2"             | 99075TC     | \$44.90    | 99075TL      | \$44.90    |
| .078"  | 3/64"          | 1/4"           | 2"             | 99078TC     | \$44.90    | 99078TL      | \$44.90    |
| .080"  | 3/64"          | 1/4"           | 2"             | 99080TC     | \$44.90    | 99080TL      | \$44.90    |
| .090"  | 3/64"          | 1/4"           | 2"             | 99090TC     | \$44.90    | 99090TL      | \$44.90    |
| .094"  | 3/64"          | 1/4"           | 2"             | 99094TC     | \$44.90    | 99094TL      | \$44.90    |
| .098"  | 3/64"          | 1/4"           | 2"             | 99098TC     | \$44.90    | 99098TL      | \$44.90    |
| .100"  | 3/64"          | 1/4"           | 2"             | 99100TC     | \$44.90    | 99100TL      | \$44.90    |
| .109"  | .060"          | 5/16"          | 2-1/2"         | 99109TC     | \$61.90    | 99109TL      | \$61.90    |
| .118"  | .060"          | 5/16"          | 2-1/2"         | 99118TC     | \$61.90    | 99118TL      | \$61.90    |
| .125"  | .060"          | 5/16"          | 2-1/2"         | 99125TC     | \$61.90    | 99125TL      | \$61.90    |
| .140"  | .060"          | 3/8"           | 2-1/2"         | 99140TC     | \$71.50    | 99140TL      | \$71.50    |
| .156"  | .060"          | 3/8"           | 2-1/2"         | 99156TC     | \$76.50    | 99156TL      | \$76.50    |
| .187"  | .060"          | 7/16"          | 2-1/2"         | 99187TC     | \$121.50   | 99187TL      | \$121.50   |
| .250"  | .110"          | 5/8"           | 3-1/2"         | N/A         | N/A        | 99250TL      | \$210.50   |

### TiCN & AITiN Coated.

Forms precision radius on outside edges of parts. CNC Ground - 2 Flute - Double End - Rigid Solid Carbide Shank.  
Tolerance on Radius is +/- .0005". Special radii quoted on request.

TOLL FREE 866-426-3300  
FAX 781-582-8095

**Microcut**

# CORNER ROUNDING MILLS – 4-FLUTE

## UNCOATED & AITiN COATED



Double Ended – End Cutting – Micro Grain Carbide

**DEPTH OF CUT = RADIUS PLUS .005"**

**RADIUS TOLERANCE ±.0005"**

| Radius               | Pilot Diameter | Shank Diameter | Overall Length | UNCOATED    |            | AITiN COATED |            |
|----------------------|----------------|----------------|----------------|-------------|------------|--------------|------------|
|                      |                |                |                | Tool Number | Price Each | Tool Number  | Price Each |
| <b>1/64" (.0156)</b> | 7/64"          | 3/16"          | 2"             | 98015       | \$39.50    | 98015TL      | \$47.50    |
| <b>.5mm (.020)</b>   | 7/64"          | 3/16"          | 2"             | 98020       | \$39.50    | 98020TL      | \$47.50    |
| <b>1/32" (.0312)</b> | 7/64"          | 3/16"          | 2"             | 98031       | \$43.50    | 98031TL      | \$51.50    |
| <b>1mm (.040)</b>    | 7/64"          | 3/16"          | 2"             | 98040       | \$43.50    | 98040TL      | \$51.50    |
| <b>3/64" (.0469)</b> | 7/64"          | 1/4"           | 2"             | 98046       | \$49.50    | 98046TL      | \$58.50    |
| <b>1/16" (.0625)</b> | 7/64"          | 1/4"           | 2"             | 98062       | \$49.50    | 98062TL      | \$58.50    |
| <b>5/64" (.0781)</b> | 3/32"          | 1/4"           | 2"             | 98078       | \$49.50    | 98078TL      | \$58.50    |
| <b>3/32" (.0937)</b> | 1/8"           | 5/16"          | 2-1/2"         | 98093       | \$66.50    | 98093TL      | \$81.50    |
| <b>1/8" (.1250)</b>  | 3/16"          | 3/8"           | 2-1/2"         | 98125       | \$94.50    | 98125TL      | \$107.50   |

Multiple flutes improve performance in hard to machine alloyed steels and mold steels.

## 3° FLARED - CORNER ROUNDING MILLS

### 4-Flute - UNCOATED & AITiN COATED



Double Ended – End Cutting – Micro Grain Carbide

**DEPTH OF CUT = RADIUS PLUS .005"**

**RADIUS TOLERANCE ±.0005"**

| Radius               | Pilot Diameter | Shank Diameter | Overall Length | UNCOATED    |            | AITiN COATED |            |
|----------------------|----------------|----------------|----------------|-------------|------------|--------------|------------|
|                      |                |                |                | Tool Number | Price Each | Tool Number  | Price Each |
| <b>1/64" (.0156)</b> | 7/64"          | 3/16"          | 2"             | 98015FL     | \$46.50    | 98015FLT     | \$55.50    |
| <b>.5mm (.020)</b>   | 7/64"          | 3/16"          | 2"             | 98020FL     | \$46.50    | 98020FLT     | \$55.50    |
| <b>1/32" (.0312)</b> | 7/64"          | 3/16"          | 2"             | 98031FL     | \$49.50    | 98031FLT     | \$57.50    |
| <b>1mm (.040)</b>    | 7/64"          | 3/16"          | 2"             | 98040FL     | \$49.50    | 98040FLT     | \$57.50    |
| <b>3/64" (.0469)</b> | 7/64"          | 1/4"           | 2"             | 98046FL     | \$58.50    | 98046FLT     | \$68.50    |
| <b>1/16" (.0625)</b> | 7/64"          | 1/4"           | 2"             | 98062FL     | \$58.50    | 98062FLT     | \$68.50    |
| <b>5/64" (.0781)</b> | 3/32"          | 1/4"           | 2"             | 98078FL     | \$58.50    | 98078FLT     | \$68.50    |
| <b>3/32" (.0937)</b> | 1/8"           | 5/16"          | 2-1/2"         | 98093FL     | \$72.50    | 98093FLT     | \$87.50    |
| <b>1/8" (.1250)</b>  | 3/16"          | 3/8"           | 2-1/2"         | 98125FL     | \$98.50    | 98125FLT     | \$114.50   |

Multiple flutes improve performance in hard to machine alloyed steels and mold steels.

3° flare on pilot and shoulder help avoid steps in workpiece.

# 3° FLARED - CORNER ROUNDING - 2-FLUTE

## UNCOATED & AITiN COATED

Double Ended - End Cutting - Micro Grain Carbide

DEPTH OF CUT = RADIUS PLUS .005"  
RADIUS TOLERANCE ±.0005"



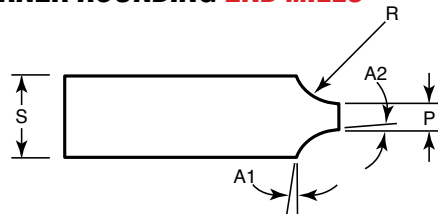
**NEW: available with multiple pilot diameters**

| Radius | Pilot Diameter | Shank Diameter | Overall Length | UNCOATED    |            | AITiN COATED |            |
|--------|----------------|----------------|----------------|-------------|------------|--------------|------------|
|        |                |                |                | Tool Number | Price Each | Tool Number  | Price Each |
| .005"  | .020"          | 1/8"           | 1-1/2"         | 99205FL     | \$39.50    | 99205FLT     | \$45.50    |
| .005"  | .047"          | 1/8"           | 1-1/2"         | 99005FL     | \$29.90    | 99005FLT     | \$35.90    |
| .010"  | .020"          | 1/8"           | 1-1/2"         | 99210FL     | \$39.50    | 99210FLT     | \$45.50    |
| .010"  | .047"          | 1/8"           | 1-1/2"         | 99010FL     | \$29.90    | 99010FLT     | \$35.90    |
| .015"  | .020"          | 1/8"           | 1-1/2"         | 99215FL     | \$39.50    | 99215FLT     | \$45.50    |
| .015"  | .047"          | 1/8"           | 1-1/2"         | 99015FL     | \$29.90    | 99015FLT     | \$35.90    |
| .020"  | .020"          | 1/8"           | 1-1/2"         | 99220FL     | \$39.50    | 99220FLT     | \$45.50    |
| .020"  | .047"          | 1/8"           | 1-1/2"         | 99020FL     | \$29.90    | 99020FLT     | \$35.90    |
| .025"  | .020"          | 1/8"           | 1-1/2"         | 99225FL     | \$39.50    | 99225FLT     | \$45.50    |
| .025"  | .047"          | 1/8"           | 1-1/2"         | 99025FL     | \$29.90    | 99025FLT     | \$35.90    |
| .030"  | .020"          | 1/8"           | 1-1/2"         | 99230FL     | \$39.50    | 99230FLT     | \$45.50    |
| .030"  | .047"          | 1/8"           | 1-1/2"         | 99030FL     | \$29.90    | 99030FLT     | \$35.90    |
| .031"  | .020"          | 1/8"           | 1-1/2"         | 99231FL     | \$39.50    | 99231FLT     | \$45.50    |
| .031"  | .047"          | 1/8"           | 1-1/2"         | 99031FL     | \$29.90    | 99031FLT     | \$35.90    |
| .035"  | .047"          | 1/8"           | 1-1/2"         | 99035FL     | \$29.90    | 99035FLT     | \$35.90    |
| .040"  | .047"          | 1/8"           | 1-1/2"         | 99040FL     | \$35.90    | 99040FLT     | \$43.50    |
| .043"  | .047"          | 3/16"          | 2"             | 99043FL     | \$37.90    | 99043FLT     | \$45.50    |
| .047"  | .047"          | 3/16"          | 2"             | 99047FL     | \$37.90    | 99047FLT     | \$45.50    |
| .060"  | .047"          | 3/16"          | 2"             | 99060FL     | \$37.90    | 99060FLT     | \$45.50    |
| .062"  | .047"          | 3/16"          | 2"             | 99062FL     | \$37.90    | 99062FLT     | \$45.50    |
| .078"  | .047"          | 1/4"           | 2"             | 99078FL     | \$44.90    | 99078FLT     | \$54.50    |
| .093"  | .047"          | 1/4"           | 2"             | 99093FL     | \$44.90    | 99093FLT     | \$54.50    |
| .125"  | .062"          | 5/16"          | 2-1/2"         | 99125FL     | \$69.90    | 99125FLT     | \$79.50    |

### ORDER SPECIAL 2-FLUTE CORNER ROUNDING END MILLS

Please specify:

1.  Single End or  Double End.
2. Radius (R): \_\_\_\_\_
3. Pilot (P): \_\_\_\_\_
4. Flare Angle (A1): \_\_\_\_\_
5. Flare Angle (A2): \_\_\_\_\_
6. Shank Diameter (S): \_\_\_\_\_
7. Quantity (Minimum 6): \_\_\_\_\_
8. Overall Length: Mfg. Standard



**Special 2-Flute  
Corner Rounding End Mills**

**Tools are custom manufactured to order and are nonreturnable.**

# MINIATURE BACK RADIUS FORM TOOLS

## Micro-Sized Carbide Back Radius Form Tools



Used to form radius on the backside of slots, drilled holes and part projections.

Cuts on the Radius and 3-5 Degree flare angles only.

Circular Interpolate the back side many hole diameters.

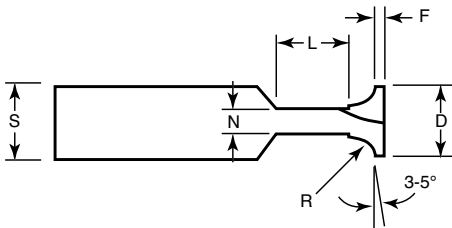
AITiN Coated for wear resistance.

| RADIUS<br>+/-<br>.0005" | HEAD<br>DIA.<br>"D" | NECK<br>DIA.<br>"N" | *NECK<br>LENGTH<br>"L" | C/L<br>RADIUS<br>FROM<br>TIP | NON<br>CUTTING<br>FLAT<br>"F" | NO.<br>OF<br>FLUTES | SHANK<br>DIA.<br>"S" | OAL    | AITiN COATED   |               |
|-------------------------|---------------------|---------------------|------------------------|------------------------------|-------------------------------|---------------------|----------------------|--------|----------------|---------------|
|                         |                     |                     |                        |                              |                               |                     |                      |        | TOOL<br>NUMBER | PRICE<br>EACH |
| .010"                   | .078"               | .050"               | .275"                  | .030"                        | .020"                         | 3                   | 1/8"                 | 1-1/2" | 99310          | \$57.50       |
| .010"                   | .175"               | .140"               | .531"                  | .070"                        | .060"                         | 3                   | 3/16"                | 2"     | 99310L         | \$64.50       |
| .015"                   | .090"               | .056"               | .300"                  | .035"                        | .020"                         | 3                   | 1/8"                 | 1-1/2" | 99315          | \$57.50       |
| .015"                   | .175"               | .135"               | .531"                  | .080"                        | .060"                         | 3                   | 3/16"                | 2"     | 99315L         | \$64.50       |
| .020"                   | .114"               | .070"               | .375"                  | .040"                        | .020"                         | 3                   | 1/8"                 | 1-1/2" | 99320          | \$57.50       |
| .020"                   | .175"               | .125"               | .531"                  | .080"                        | .060"                         | 3                   | 3/16"                | 2"     | 99320L         | \$64.50       |
| .031"                   | .175"               | .100"               | .531"                  | .090"                        | .060"                         | 3                   | 3/16"                | 2"     | 99331          | \$64.50       |
| .062"                   | .300"               | .160"               | .775"                  | .125"                        | .060"                         | 3                   | 5/16"                | 2-1/2" | 99362          | \$84.50       |

\*Neck length is measured from behind the cutter head as shown on the engineering drawing.

### ORDER SPECIAL NECK LENGTHS FOR BACK RADIUS FORM TOOLS

To order special neck lengths please specify desired length and quantity:



1. Tool Number to add reach: \_\_\_\_\_

2. Neck Length (L): \_\_\_\_\_

The only option is to change the neck length "L". All other dimensions are as above.

3. Quantity (Minimum 3): \_\_\_\_\_

**Special Neck Lengths Ship in 24 to 48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

# MINIATURE BACK CHAMFERING TOOLS

## Miniature Carbide Back Chamfering Tools



Used to chamfer or de-burr the backside of slots, thru holes and part projections.

Cuts on the 45 Degree angle only.

Flute face designed to evacuate chips for smooth finish.

Circular Interpolate the back side of most common hole diameters, and or de-burr a variety of part configurations.

Available Uncoated and AITIN Coated.

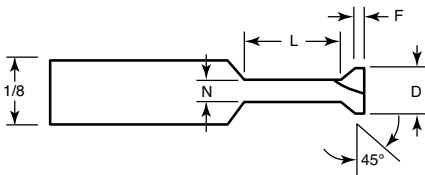
1/8" Shank – 1-1/2" Overall Length

| CUTTER DIA. "D" | LENGTH OF CUT (AXIAL) | MAX BACK CHAMFER | NECK DIA. "N" | NON CUTTING FLAT "F" | *NECK LENGTH "L" | NO. OF FLTS | UNCOATED    |            | AITIN COATED |            |
|-----------------|-----------------------|------------------|---------------|----------------------|------------------|-------------|-------------|------------|--------------|------------|
|                 |                       |                  |               |                      |                  |             | TOOL NUMBER | PRICE EACH | TOOL NUMBER  | PRICE EACH |
| .026"           | .004"                 | .004x45 Deg      | .016"         | .008"                | .140"            | 3           | 11026       | \$43.50    | 11026TL      | \$49.50    |
| .036"           | .006"                 | .005x45 Deg      | .024"         | .010"                | .175"            | 3           | 11036       | \$43.50    | 11036TL      | \$49.50    |
| .046"           | .007"                 | .006x45 Deg      | .032"         | .015"                | .200"            | 3           | 11046       | \$41.50    | 11046TL      | \$47.50    |
| .056"           | .008"                 | .007x45 Deg      | .040"         | .015"                | .300"            | 3           | 11056       | \$41.50    | 11056TL      | \$47.50    |
| .086"           | .010"                 | .009x45 Deg      | .075"         | .020"                | .375"            | 3           | 11086       | \$38.50    | 11086TL      | \$44.50    |
| .116"           | .013"                 | .012x45 Deg      | .090"         | .030"                | .575"            | 3           | 11116       | \$36.50    | 11116TL      | \$42.50    |

\*Neck length is measured from behind the cutter head.

### ORDER SPECIAL NECK LENGTHS ON THE ABOVE TOOLS

To order special neck lengths please specify desired length and quantity:



1. Tool Number to add reach: \_\_\_\_\_

2. Neck Length (L): \_\_\_\_\_

The only option is to change the neck length "L".

All other dimensions are as above.

3. Quantity (Minimum 3): \_\_\_\_\_

**Special Neck Lengths Ship in 24 to 48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

# 60° DRILL POINT MILLS - 2 & 4-FLUTE

## 2-Flute - 60° Included Point - UNCOATED & AITiN COATED

CENTER CUTTING FOR DRILLING AND MILLING APPLICATIONS



Recommended for non-ferrous materials.

| TOOL NUMBER |              | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |               |                |                 | Not Coated | AITiN Coated |
| 96030       | 96030TL      | 1/32"           | 1/8"          | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 96045       | 96045TL      | 3/64"           | 9/64"         | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 96060       | 96060TL      | 1/16"           | 3/16"         | 1/8"           | 1-1/2"          | \$17.90    | \$21.90      |
| 96094       | 96094TL      | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$17.90    | \$21.90      |
| 96125       | 96125TL      | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$16.90    | \$20.90      |
| 96187       | 96187TL      | 3/16"           | 5/8"          | 3/16"          | 2"              | \$21.90    | \$26.90      |
| 96250       | 96250TL      | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$26.90    | \$32.90      |
| 96312       | 96312TL      | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$32.90    | \$40.90      |
| 96375       | 96375TL      | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$39.90    | \$49.90      |
| 96500       | 96500TL      | 1/2"            | 1"            | 1/2"           | 3"              | \$66.90    | \$79.90      |

## 4-Flute - 60° Included Point - UNCOATED & AITiN COATED

CENTER CUTTING FOR DRILLING AND MILLING APPLICATIONS



For cutting mild steel, stainless steel, and alloyed steels.

| TOOL NUMBER |              | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |               |                |                 | Not Coated | AITiN Coated |
| 97030       | 97030TL      | 1/32"           | 1/8"          | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 97045       | 97045TL      | 3/64"           | 9/64"         | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 97060       | 97060TL      | 1/16"           | 3/16"         | 1/8"           | 1-1/2"          | \$17.90    | \$21.90      |
| 97094       | 97094TL      | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$17.90    | \$21.90      |
| 97125       | 97125TL      | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$16.90    | \$20.90      |
| 97187       | 97187TL      | 3/16"           | 5/8"          | 3/16"          | 2"              | \$21.90    | \$26.90      |
| 97250       | 97250TL      | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$26.90    | \$32.90      |
| 97312       | 97312TL      | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$32.90    | \$40.90      |
| 97375       | 97375TL      | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$39.90    | \$49.90      |
| 97500       | 97500TL      | 1/2"            | 1"            | 1/2"           | 3"              | \$66.90    | \$79.90      |

# 90° DRILL POINT MILLS - 2 & 4-FLUTE

## 2-Flute - 90° Included Point - UNCOATED & AITiN COATED

CENTER CUTTING FOR DRILLING AND MILLING APPLICATIONS



For cutting mild steel, stainless steel, and alloyed steels.

| TOOL NUMBER |              | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |               |                |                 | Not Coated | AITiN Coated |
| 92030       | 92030TL      | 1/32"           | 1/8"          | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 92045       | 92045TL      | 3/64"           | 9/64"         | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 92060       | 92060TL      | 1/16"           | 3/16"         | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 92094       | 92094TL      | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 92125       | 92125TL      | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 92187       | 92187TL      | 3/16"           | 5/8"          | 3/16"          | 2"              | \$21.90    | \$26.90      |
| 92250       | 92250TL      | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$26.90    | \$32.90      |
| 92312       | 92312TL      | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$32.90    | \$40.90      |
| 92375       | 92375TL      | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$39.90    | \$49.90      |
| 92500       | 92500TL      | 1/2"            | 1"            | 1/2"           | 3"              | \$66.90    | \$79.90      |
| 92625       | 92625TL      | 5/8"            | 1-1/4"        | 5/8"           | 3-1/2"          | \$105.50   | \$125.50     |
| 92750       | 92750TL      | 3/4"            | 1-1/2"        | 3/4"           | 4"              | \$164.50   | \$189.50     |

## 4-Flute - 90° Included Point - UNCOATED & AITiN COATED

CENTER CUTTING FOR DRILLING AND MILLING APPLICATIONS



For cutting mild steel, stainless steel, and alloyed steels.

| TOOL NUMBER |              | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |               |                |                 | Not Coated | AITiN Coated |
| 94030       | 94030TL      | 1/32"           | 1/8"          | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 94045       | 94045TL      | 3/64"           | 9/64"         | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 94060       | 94060TL      | 1/16"           | 3/16"         | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 94094       | 94094TL      | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 94125       | 94125TL      | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$18.90    | \$22.90      |
| 94187       | 94187TL      | 3/16"           | 5/8"          | 3/16"          | 2"              | \$21.90    | \$26.90      |
| 94250       | 94250TL      | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$26.90    | \$32.90      |
| 94312       | 94312TL      | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$32.90    | \$40.90      |
| 94375       | 94375TL      | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$39.90    | \$49.90      |
| 94500       | 94500TL      | 1/2"            | 1"            | 1/2"           | 3"              | \$66.90    | \$79.90      |
| 94625       | 94625TL      | 5/8"            | 1-1/4"        | 5/8"           | 3-1/2"          | \$105.50   | \$125.50     |
| 94750       | 94750TL      | 3/4"            | 1-1/2"        | 3/4"           | 4"              | \$164.50   | \$189.50     |

# 120° DRILL POINT MILLS - 4-FLUTE

## 4-Flute - 120° Included Point - UNCOATED

CENTER CUTTING FOR DRILLING AND MILLING APPLICATIONS



For cutting mild steel, stainless steel, and alloyed steels.

| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 95030       | 1/32"           | 3/32"         | 1/8"           | 1-1/2"          | \$24.90    |
| 95045       | 3/64"           | 9/64"         | 1/8"           | 1-1/2"          | \$24.90    |
| 95060       | 1/16"           | 3/16"         | 1/8"           | 1-1/2"          | \$24.90    |
| 95094       | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$24.90    |
| 95125       | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$24.90    |
| 95187       | 3/16"           | 5/8"          | 3/16"          | 2"              | \$26.90    |
| 95250       | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$34.90    |
| 95312       | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$37.90    |
| 95375       | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$46.90    |
| 95500       | 1/2"            | 1"            | 1/2"           | 3"              | \$72.90    |

## 4-Flute - 120° Included Point - AITiN COATED

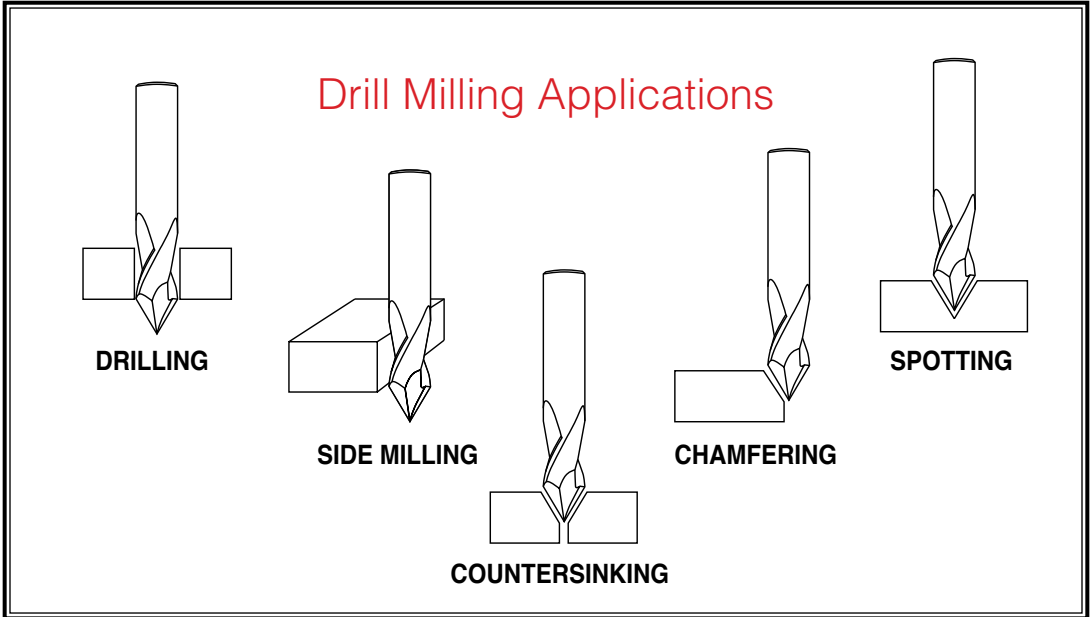
CENTER CUTTING FOR DRILLING AND MILLING APPLICATIONS



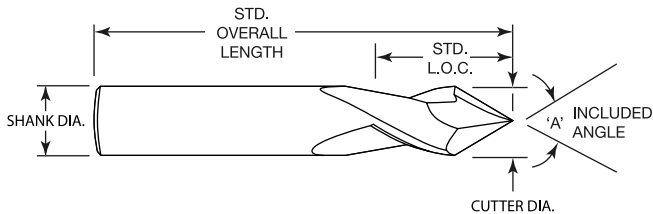
For cutting mild steel, stainless steel, and alloyed steels.

| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 95030TL     | 1/32"           | 3/32"         | 1/8"           | 1-1/2"          | \$28.90    |
| 95045TL     | 3/64"           | 9/64"         | 1/8"           | 1-1/2"          | \$28.90    |
| 95060TL     | 1/16"           | 3/16"         | 1/8"           | 1-1/2"          | \$28.90    |
| 95094TL     | 3/32"           | 3/8"          | 1/8"           | 1-1/2"          | \$28.90    |
| 95125TL     | 1/8"            | 1/2"          | 1/8"           | 1-1/2"          | \$28.90    |
| 95187TL     | 3/16"           | 5/8"          | 3/16"          | 2"              | \$31.90    |
| 95250TL     | 1/4"            | 3/4"          | 1/4"           | 2-1/2"          | \$40.90    |
| 95312TL     | 5/16"           | 13/16"        | 5/16"          | 2-1/2"          | \$44.90    |
| 95375TL     | 3/8"            | 1"            | 3/8"           | 2-1/2"          | \$58.90    |
| 95500TL     | 1/2"            | 1"            | 1/2"           | 3"              | \$84.90    |

# ORDER SPECIAL DRILL POINT MILLS



## ORDER SPECIAL DRILL MILLS



### Please specify the following dimensions:

1. Cutter Diameter: \_\_\_\_\_ (Note: Must be same as Shank Diameter 1/8 inch and above.\*)
2. Included Angle (A): \_\_\_\_\_
3. Number of Flutes:  2 or  4
4.  Uncoated or  \*AlTiN Coated \*Allow 2 Weeks Extra for AlTiN Coating
5. Quantity (Minimum 6): \_\_\_\_\_

Note: The maximum cutter diameter we manufacture is .500".

\* Shank Diameter, Overall Length, and Length of Cut are our manufacturing standards listed on our Series 52000 and 54000 (See pages 44 and 45).

# MINIATURE KEYSEAT CUTTERS - 4-FLUTE

Micrograin Carbide - **UNCOATED** & **AlTiN COATED**



1/16" to 3/32" DIAMETER

| TOOL NUMBER |              | Cutter Diameter | Cutter Width | Neck Diameter | Neck Length | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|--------------|---------------|-------------|----------------|-----------------|------------|--------------|
| Not Coated  | AlTiN Coated |                 |              |               |             |                |                 | Not Coated | AlTiN Coated |
| 28400       | 28400TL      | 1/16"           | .015"        | .031"         | 3/32"       | 1/8"           | 1-1/2"          | \$39.50    | \$43.80      |
| 28405       | 28405TL      | 1/16"           | .031"        | .031"         | 3/32"       | 1/8"           | 1-1/2"          | \$39.50    | \$43.80      |
| 28410       | 28410TL      | 1/16"           | .047"        | .031"         | 3/32"       | 1/8"           | 1-1/2"          | \$39.50    | \$43.80      |
| 28415       | 28415TL      | 1/16"           | .062"        | .031"         | 3/32"       | 1/8"           | 1-1/2"          | \$39.50    | \$43.80      |
| 28500       | 28500TL      | 5/64"           | .015"        | .040"         | 1/8"        | 1/8"           | 1-1/2"          | \$39.10    | \$43.40      |
| 28505       | 28505TL      | 5/64"           | .031"        | .040"         | 1/8"        | 1/8"           | 1-1/2"          | \$39.10    | \$43.40      |
| 28510       | 28510TL      | 5/64"           | .047"        | .040"         | 1/8"        | 1/8"           | 1-1/2"          | \$39.10    | \$43.40      |
| 28515       | 28515TL      | 5/64"           | .062"        | .040"         | 1/8"        | 1/8"           | 1-1/2"          | \$39.10    | \$43.40      |
| 28600       | 28600TL      | 3/32"           | .015"        | .047"         | 5/32"       | 1/8"           | 1-1/2"          | \$38.65    | \$42.95      |
| 28605       | 28605TL      | 3/32"           | .031"        | .047"         | 5/32"       | 1/8"           | 1-1/2"          | \$38.65    | \$42.95      |
| 28610       | 28610TL      | 3/32"           | .047"        | .047"         | 5/32"       | 1/8"           | 1-1/2"          | \$38.65    | \$42.95      |
| 28615       | 28615TL      | 3/32"           | .062"        | .047"         | 5/32"       | 1/8"           | 1-1/2"          | \$38.65    | \$42.95      |

# MINIATURE KEYSEAT CUTTERS - 6-FLUTE

Order Special Width Keyseat Cutters

1/8", 3/16" AND 1/4" DIAMETERS. MIN. 3 TOOLS PER SIZE



| TOOL NUMBER |              | Cutter Dia. | Cutter Width | Neck Dia. | Neck Length | Shank Dia. | Over All Length | PRICE EACH |              |
|-------------|--------------|-------------|--------------|-----------|-------------|------------|-----------------|------------|--------------|
| Not Coated  | AlTiN Coated |             |              |           |             |            |                 | Not Coated | AlTiN Coated |
| 28000SP     | 28000SPT     | 1/8"        | .015-.125"   | .062"     | 3/16"       | 1/8"       | 1-1/2"          | \$79.45    | \$92.35      |
| 28100SP     | 28100SPT     | 3/16"       | .015-.187"   | .093"     | 9/32"       | 3/16"      | 2"              | \$83.75    | \$96.65      |
| 28300SP     | 28300SPT     | 1/4"        | .015-.250"   | .125"     | 3/8"        | 1/4"       | 2-1/2"          | \$88.05    | \$104.15     |

TOOL NUMBER: ADD DECIMAL SIZE TO TOOL NO. IN CHART.

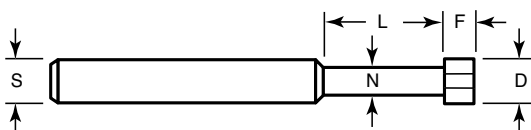
EXAMPLE: 28100SPT-114 IS FOR A 3/16" DIA. X .114" CUTTER WIDTH.

LONGER NECK TOOLS QUOTED ON REQUEST.

DELIVERY: 7-10 DAYS FOR UNCOATED TOOLS. ADD 1 ADDITIONAL WEEK FOR ALTiN COATING.

## ORDER SPECIAL 6-FLUTE KEYSEAT CUTTERS

To order special Keyseat Cutters please specify:



1. Shank Dia. (S): \_\_\_\_\_
2. Cutter Dia. (D): \_\_\_\_\_
3. Flute Length (F): \_\_\_\_\_
4. Neck Length (L): \_\_\_\_\_
5. Neck Dia. (N): \_\_\_\_\_
6. Quantity (Min. 6): \_\_\_\_\_
7. Overall Length: Mfg. Standard

# MINIATURE KEYSEAT CUTTERS - 6-FLUTE

Micrograin Carbide - **UNCOATED** & **AlTiN COATED**



1/8", 3/16", 1/4" Diameter

Available with multiple neck lengths

| TOOL NUMBER |              | Cutter Diameter | Cutter Width | Neck Diameter | Neck Length | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|--------------|---------------|-------------|----------------|-----------------|------------|--------------|
| Not Coated  | AlTiN Coated |                 |              |               |             |                |                 | Not Coated | AlTiN Coated |
| 28000       | 28000TL      | 1/8"            | .015"        | .062"         | 3/16"       | 1/8"           | 1-1/2"          | \$36.95    | \$41.25      |
| 28000L      | 28000LT      | 1/8"            | .015"        | .062"         | 3/8"        | 1/8"           | 1-1/2"          | \$43.40    | \$47.70      |
| 28005       | 28005TL      | 1/8"            | .031"        | .062"         | 3/16"       | 1/8"           | 1-1/2"          | \$36.95    | \$41.25      |
| 28005L      | 28005LT      | 1/8"            | .031"        | .062"         | 3/8"        | 1/8"           | 1-1/2"          | \$43.40    | \$47.70      |
| 28010       | 28010TL      | 1/8"            | .047"        | .062"         | 3/16"       | 1/8"           | 1-1/2"          | \$36.95    | \$41.25      |
| 28010L      | 28010LT      | 1/8"            | .047"        | .062"         | 3/8"        | 1/8"           | 1-1/2"          | \$43.40    | \$47.70      |
| 28015       | 28015TL      | 1/8"            | .062"        | .062"         | 3/16"       | 1/8"           | 1-1/2"          | \$36.95    | \$41.25      |
| 28015L      | 28015LT      | 1/8"            | .062"        | .062"         | 3/8"        | 1/8"           | 1-1/2"          | \$43.40    | \$47.70      |
| 28020       | 28020TL      | 1/8"            | .093"        | .062"         | 3/16"       | 1/8"           | 1-1/2"          | \$36.95    | \$41.25      |
| 28020L      | 28020LT      | 1/8"            | .093"        | .062"         | 3/8"        | 1/8"           | 1-1/2"          | \$43.40    | \$47.70      |
| 28025       | 28025TL      | 1/8"            | .125"        | .062"         | 3/16"       | 1/8"           | 1-1/2"          | \$36.95    | \$41.25      |
| 28025L      | 28025LT      | 1/8"            | .125"        | .062"         | 3/8"        | 1/8"           | 1-1/2"          | \$43.40    | \$47.70      |
| 28100       | 28100TL      | 3/16"           | .015"        | .093"         | 9/32"       | 3/16"          | 2"              | \$39.35    | \$43.85      |
| 28100L      | 28100LT      | 3/16"           | .015"        | .093"         | 1/2"        | 3/16"          | 2"              | \$48.75    | \$54.15      |
| 28105       | 28105TL      | 3/16"           | .031"        | .093"         | 9/32"       | 3/16"          | 2"              | \$39.35    | \$43.85      |
| 28105L      | 28105LT      | 3/16"           | .031"        | .093"         | 1/2"        | 3/16"          | 2"              | \$48.75    | \$54.15      |
| 28110       | 28110TL      | 3/16"           | .047"        | .093"         | 9/32"       | 3/16"          | 2"              | \$39.35    | \$43.85      |
| 28110L      | 28110LT      | 3/16"           | .047"        | .093"         | 1/2"        | 3/16"          | 2"              | \$48.75    | \$54.15      |
| 28115       | 28115TL      | 3/16"           | .062"        | .093"         | 9/32"       | 3/16"          | 2"              | \$39.35    | \$43.85      |
| 28115L      | 28115LT      | 3/16"           | .062"        | .093"         | 1/2"        | 3/16"          | 2"              | \$48.75    | \$54.15      |
| 28120       | 28120TL      | 3/16"           | .093"        | .093"         | 5/16"       | 3/16"          | 2"              | \$39.35    | \$43.85      |
| 28120L      | 28120LT      | 3/16"           | .093"        | .093"         | 9/16"       | 3/16"          | 2"              | \$48.75    | \$54.15      |
| 28125       | 28125TL      | 3/16"           | .125"        | .093"         | 5/16"       | 3/16"          | 2"              | \$39.35    | \$43.85      |
| 28125L      | 28125LT      | 3/16"           | .125"        | .093"         | 9/16"       | 3/16"          | 2"              | \$48.75    | \$54.15      |
| 28130       | 28130TL      | 3/16"           | .187"        | .093"         | 5/16"       | 3/16"          | 2"              | \$39.35    | \$43.85      |
| 28130L      | 28130LT      | 3/16"           | .187"        | .093"         | 9/16"       | 3/16"          | 2"              | \$48.75    | \$54.15      |
| 28300       | 28300TL      | 1/4"            | .015"        | .125"         | 3/8"        | 1/4"           | 2-1/2"          | \$42.30    | \$48.75      |
| 28300L      | 28300LT      | 1/4"            | .015"        | .125"         | 3/4"        | 1/4"           | 2-1/2"          | \$52.25    | \$58.70      |
| 28305       | 28305TL      | 1/4"            | .031"        | .125"         | 3/8"        | 1/4"           | 2-1/2"          | \$42.30    | \$48.75      |
| 28305L      | 28305LT      | 1/4"            | .031"        | .125"         | 3/4"        | 1/4"           | 2-1/2"          | \$52.25    | \$58.70      |
| 28310       | 28310TL      | 1/4"            | .047"        | .125"         | 3/8"        | 1/4"           | 2-1/2"          | \$42.30    | \$48.75      |
| 28310L      | 28310LT      | 1/4"            | .047"        | .125"         | 3/4"        | 1/4"           | 2-1/2"          | \$52.25    | \$58.70      |
| 28315       | 28315TL      | 1/4"            | .062"        | .125"         | 3/8"        | 1/4"           | 2-1/2"          | \$42.30    | \$48.75      |
| 28315L      | 28315LT      | 1/4"            | .062"        | .125"         | 3/4"        | 1/4"           | 2-1/2"          | \$52.25    | \$58.70      |
| 28320       | 28320TL      | 1/4"            | .125"        | .125"         | 3/8"        | 1/4"           | 2-1/2"          | \$42.30    | \$48.75      |
| 28320L      | 28320LT      | 1/4"            | .125"        | .125"         | 3/4"        | 1/4"           | 2-1/2"          | \$52.25    | \$58.70      |
| 28325       | 28325TL      | 1/4"            | .187"        | .125"         | 3/8"        | 1/4"           | 2-1/2"          | \$42.30    | \$48.75      |
| 28325L      | 28325LT      | 1/4"            | .187"        | .125"         | 3/4"        | 1/4"           | 2-1/2"          | \$52.25    | \$58.70      |
| 28330       | 28330TL      | 1/4"            | .250"        | .125"         | 3/8"        | 1/4"           | 2-1/2"          | \$42.30    | \$48.75      |
| 28330L      | 28330LT      | 1/4"            | .250"        | .125"         | 3/4"        | 1/4"           | 2-1/2"          | \$52.25    | \$58.70      |

Neck length measured from behind cutter head.

# HELICAL THREAD MILLS - 3, 4 & 5-FLUTE

## Un Thread Form - AITiN COATED



Length of Cut as Specified - Micro Grain Carbide

Designed for internal and external threads.

Tools cut right hand or left hand.

AITiN Coated for maximum wear resistance.

CNC ground.

| TOOL NUMBER | Thread Size | Cutter Diameter | Shank Diameter | Length of Cut | No. of Flutes | Over All Length | PRICE EACH |
|-------------|-------------|-----------------|----------------|---------------|---------------|-----------------|------------|
| 44002       | #2-56       | .065"           | 1/8"           | .125"         | 3             | 2"              | \$76.85    |
| 44004       | #4-40       | .085"           | 1/8"           | .175"         | 3             | 2"              | \$80.10    |
| 44006       | #6-32       | .100"           | 1/8"           | .218"         | 3             | 2"              | \$83.30    |
| 44008       | #8-32       | .115"           | 1/8"           | .250"         | 3             | 2"              | \$85.45    |
| 44009       | #10-24      | .120"           | 1/8"           | .312"         | 3             | 2"              | \$88.70    |
| 44010       | #10-32      | .120"           | 1/8"           | .312"         | 3             | 2"              | \$88.70    |
| 44101       | 1/4-20      | .180"           | 3/16"          | .500"         | 3             | 2-1/2"          | \$99.45    |
| 44102       | 1/4-28      | .180"           | 3/16"          | .500"         | 3             | 2-1/2"          | \$99.45    |
| 44201       | 5/16-18     | .235"           | 1/4"           | .625"         | 3             | 2-1/2"          | \$98.50    |
| 44202       | 5/16-24     | .235"           | 1/4"           | .625"         | 3             | 2-1/2"          | \$127.50   |
| 44301       | 3/8-16      | .285"           | 5/16"          | .750"         | 4             | 3"              | \$124.50   |
| 44302       | 3/8-24      | .285"           | 5/16"          | .750"         | 4             | 3"              | \$152.50   |
| 44401       | 7/16-14     | .340"           | 3/8"           | .875"         | 4             | 3"              | \$124.50   |
| 44402       | 7/16-20     | .340"           | 3/8"           | .875"         | 4             | 3"              | \$164.50   |
| 44501       | 1/2-13      | .350"           | 3/8"           | .875"         | 4             | 3-1/2"          | \$169.50   |
| 44502       | 1/2-20      | .350"           | 3/8"           | .875"         | 4             | 3-1/2"          | \$179.50   |
| 44601       | 9/16-12     | .370"           | 3/8"           | .875"         | 4             | 3-1/2"          | \$182.50   |
| 44602       | 9/16-18     | .370"           | 3/8"           | .875"         | 4             | 3-1/2"          | \$182.50   |
| 44701       | 5/8-11      | .495"           | 1/2"           | 1.25"         | 4             | 3-1/2"          | \$212.50   |
| 44801       | 3/4-10      | .495"           | 1/2"           | 1.25"         | 4             | 3-1/2"          | \$212.50   |
| 44802       | 3/4-12      | .495"           | 1/2"           | 1.25"         | 4             | 3-1/2"          | \$212.50   |
| 44803       | 3/4-16      | .495"           | 1/2"           | 1.25"         | 5             | 3-1/2"          | \$224.50   |
| 44901       | 7/8-9       | .620"           | 5/8"           | 1.25"         | 5             | 3-1/2"          | \$289.50   |
| 44902       | 7/8-14      | .620"           | 5/8"           | 1.25"         | 5             | 3-1/2"          | \$289.50   |
| 44950       | 1-8         | .620"           | 5/8"           | 1.375"        | 5             | 4"              | \$289.50   |

### THREADMILLS - CALCULATION FORMULAS

Use these formulas to calculate:

**Feed Rate Adjustment:**  $\frac{(\text{Thread Major Diameter to Be Cut}) - (\text{Threadmill Dia.})}{(\text{Thread Major Dia. to Be Cut})} \times \text{Linear Feed Rate}$

**RPM:**  $\frac{3.8}{(\text{Threadmill Diameter})} \times \text{SFM}$

**Linear IPM:** (Inches Per Tooth) X (Number of Flutes) X RPM

# HELICAL THREAD MILLS - 3, 4 & 5-FLUTE

## N.P.T. - AITiN COATED



Length of Cut as Specified - Micro Grain Carbide

Designed for internal and external threads.

Tools cut right hand or left hand.

AITiN Coated for maximum wear resistance.

CNC ground-Micrograin Carbide.

| TOOL NUMBER | Thread Size | Pitch | Cutter Diameter | Shank Diameter | Length of Cut | No. of Flutes | Over All Length | PRICE EACH |
|-------------|-------------|-------|-----------------|----------------|---------------|---------------|-----------------|------------|
| 45501       | 1/16        | 27    | .245"           | 1/4"           | .437"         | 3             | 2-1/2"          | \$117.70   |
| 45511       | 1/8         | 27    | .310"           | 5/16"          | .437"         | 4             | 2-1/2"          | \$117.70   |
| 45502       | 1/4         | 18    | .370"           | 3/8"           | .625"         | 4             | 3"              | \$149.95   |
| 45512       | 3/8         | 18    | .370"           | 3/8"           | .625"         | 4             | 3"              | \$149.95   |
| 45503       | 1/2         | 14    | .495"           | 1/2"           | .875"         | 4             | 3-1/2"          | \$199.40   |
| 45513       | 3/4         | 14    | .495"           | 1/2"           | .875"         | 4             | 3-1/2"          | \$199.40   |
| 45504       | 1-2         | 11.5  | .620"           | 3/4"           | 1.125"        | 5             | 4"              | \$257.45   |

## NPTF Dryseal Pipe Thread - AITiN COATED



| TOOL NUMBER | Thread Size | Pitch | Cutter Diameter | Shank Diameter | Length of Cut | No. of Flutes | Over All Length | PRICE EACH |
|-------------|-------------|-------|-----------------|----------------|---------------|---------------|-----------------|------------|
| 45601       | 1/16        | 27    | .245"           | 1/4"           | .437"         | 3             | 2-1/2"          | \$117.70   |
| 45611       | 1/8         | 27    | .310"           | 5/16"          | .437"         | 4             | 2-1/2"          | \$117.70   |
| 45602       | 1/4         | 18    | .370"           | 3/8"           | .625"         | 4             | 3"              | \$149.95   |
| 45612       | 3/8         | 18    | .370"           | 3/8"           | .625"         | 4             | 3"              | \$149.95   |
| 45603       | 1/2         | 14    | .495"           | 1/2"           | .875"         | 4             | 3-1/2"          | \$199.40   |
| 45613       | 3/4         | 14    | .495"           | 1/2"           | .875"         | 4             | 3-1/2"          | \$199.40   |
| 45604       | 1-2         | 11.5  | .620"           | 3/4"           | 1.125"        | 5             | 4"              | \$257.45   |

### THREADMILLS FEEDS & SPEEDS

| WORKPIECE MATERIAL     | SPEED SFM | TOOL CUTTING DIAMETER / FEEDRATE (inches/tooth) |             |            |             |             |
|------------------------|-----------|---|-------------|------------|-------------|-------------|
|                        |           | 3/16  | 1/4         | 5/16       | 3/8         | 1/2         |
| Aluminum               | 800-1400  | .001-.0015                                      | .0015-.0025 | .002-.003  | .003-.0045  | .0035-.0055 |
| Brass                  | 600-800   | .001-.0015                                      | .0015-.0025 | .002-.003  | .003-.0045  | .0035-.0045 |
| Bronze                 | 500-600   | .001-.0015                                      | .0015-.0025 | .002-.003  | .003-.0045  | .0035-.0045 |
| Low Alloy Steel <25RC  | 350-500   | .001-.0015                                      | .0015-.0025 | .002-.003  | .0025-.0035 | .003-.004   |
| High Alloy Steel >25RC | 250-400   | .0005-.001                                      | .0008-.0015 | .001-.002  | .0015-.0025 | .002-.003   |
| Stainless              | 150-250   | .0006-.001                                      | .001-.0015  | .0015-.002 | .0015-.0030 | .002-.0035  |
| Titanium               | 80-150    | .0005-.001                                      | .0008-.0015 | .001-.002  | .0015-.0025 | .0015-.0025 |

# HELICAL THREAD MILLS – 3, 4 & 5-FLUTE

## Metric Thread Form - AITiN COATED



Length of Cut as Specified – Micro Grain Carbide

Designed for internal and external threads.

Tools cut right hand or left hand.

AITiN Coated for maximum wear resistance.

| TOOL NUMBER | Thread Size      | Pitch | Cutter Diameter | Shank Diameter | Length of Cut | No. of Flutes | Over All Length | PRICE EACH      |
|-------------|------------------|-------|-----------------|----------------|---------------|---------------|-----------------|-----------------|
| 43909       | <b>M4-0.70</b>   | 0.70" | .115"           | 1/8"           | .250"         | 3             | 2"              | <b>\$99.70</b>  |
| 43910       | <b>M4.5-0.75</b> | 0.75" | .120"           | 1/8"           | .250"         | 3             | 2"              | <b>\$99.70</b>  |
| 43911       | <b>M5-0.80</b>   | 0.80" | .120"           | 3/16"          | .312"         | 3             | 2"              | <b>\$99.70</b>  |
| 43917       | <b>M6-1.00</b>   | 1.00" | .170"           | 3/16"          | .500"         | 3             | 2-1/2"          | <b>\$120.15</b> |
| 43921       | <b>M8-0.75</b>   | 0.75" | .235"           | 1/4"           | .625"         | 3             | 2-1/2"          | <b>\$128.75</b> |
| 43922       | <b>M8-1.00</b>   | 1.00" | .235"           | 1/4"           | .625"         | 3             | 2-1/2"          | <b>\$128.75</b> |
| 43923       | <b>M8-1.25</b>   | 1.25" | .235"           | 1/4"           | .625"         | 3             | 2-1/2"          | <b>\$128.75</b> |
| 43928       | <b>M10-1.25</b>  | 1.25" | .300"           | 5/16"          | .750"         | 4             | 3"              | <b>\$169.60</b> |
| 43929       | <b>M10-1.50</b>  | 1.50" | .300"           | 5/16"          | .750"         | 4             | 3"              | <b>\$169.60</b> |
| 43933       | <b>M12-1.00</b>  | 1.00" | .360"           | 3/8"           | .875"         | 4             | 3-1/2"          | <b>\$185.45</b> |
| 43934       | <b>M12-1.25</b>  | 1.25" | .360"           | 3/8"           | .875"         | 4             | 3-1/2"          | <b>\$185.45</b> |
| 43935       | <b>M12-1.75</b>  | 1.75" | .360"           | 3/8"           | .875"         | 4             | 3-1/2"          | <b>\$185.45</b> |
| 43941       | <b>M14-1.50</b>  | 1.50" | .360"           | 3/8"           | .875"         | 4             | 3-1/2"          | <b>\$185.45</b> |
| 43947       | <b>M16-2.00</b>  | 2.00" | .470"           | 1/2"           | 1.250"        | 5             | 3-1/2"          | <b>\$228.45</b> |
| 43954       | <b>M18-2.50</b>  | 2.50" | .470"           | 1/2"           | 1.250"        | 5             | 3-1/2"          | <b>\$228.45</b> |
| 43960       | <b>M20-3.00</b>  | 3.00" | .479"           | 5/8"           | 1.250"        | 5             | 3-1/2"          | <b>\$234.90</b> |

### THREADMILLS - CALCULATION FORMULAS

Use these formulas to calculate:

**Feed Rate Adjustment:**  $\frac{(\text{Thread Major Diameter to Be Cut}) - (\text{Threadmill Dia.})}{(\text{Thread Major Dia. to Be Cut})} \times \text{Linear Feed Rate}$

**RPM:**  $\frac{3.8}{(\text{Threadmill Diameter})} \times \text{SFM}$

**Linear IPM:** (Inches Per Tooth) X (Number of Flutes) X RPM

## Special Cutting Tool Quotations

Microcut's capability to produce Standard cutting tools is replicated by its ability to produce Special Cutting Tools. Quality, competitive pricing, and on-time delivery has been a Microcut trademark for almost 20 years. Microcut's workforce experience in producing special Micro Tools dates back over 40 years and makes us one of the most experienced Micro Tool companies in the U.S.A. Submit your special tool B/P to us by fax at 781-582-8095 or email to sales@microcutUSA.com and we will quote it through the distributor of your choice that services your facility.

# SINGLE FORM THREAD MILLING CUTTERS

## UNCOATED & AITiN COATED

Mills Any Pitch Including Metric Sizes



### Suggested Starting Data:

#### Ferrous

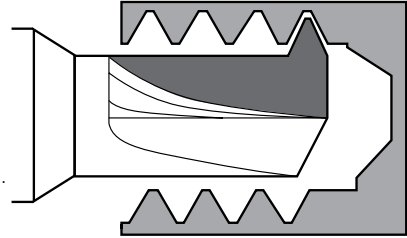
150/300 SFM; .0003/.001 IPT

#### Non-Ferrous

500/1K SFM; .0005/.0015 IPT

Interpolate Helix from bottom up.

\*Neck length is measured from tip of tool.



| Tool Number |              | Thread Size | Cutter Dia. | Neck Dia. | Neck Length* | Overall Length | Shank Dia. | No. Flutes | Price Each |              |
|-------------|--------------|-------------|-------------|-----------|--------------|----------------|------------|------------|------------|--------------|
| Not Coated  | AITiN Coated |             |             |           |              |                |            |            | Not Coated | AITiN Coated |
| 48003       | 48003TL      | #3          | .072"       | .040"     | .160"        | 2"             | 3/16"      | 1          | \$76.85    | \$83.30      |
| 48203       | 48203TL      | #3          | .072"       | .040"     | .225"        | 2"             | 3/16"      | 1          | \$85.45    | \$91.90      |
| 48004       | 48004TL      | #4          | .080"       | .050"     | .190"        | 2"             | 3/16"      | 1          | \$76.85    | \$83.30      |
| 48204       | 48204TL      | #4          | .080"       | .050"     | .290"        | 2"             | 3/16"      | 1          | \$87.60    | \$94.05      |
| 48006       | 48006TL      | #6          | .098"       | .055"     | .260"        | 2"             | 3/16"      | 2          | \$76.85    | \$83.30      |
| 48206       | 48206TL      | #6          | .098"       | .055"     | .375"        | 2"             | 3/16"      | 2          | \$87.60    | \$94.05      |
| 48008       | 48008TL      | #8          | .128"       | .083"     | .320"        | 2"             | 3/16"      | 3          | \$81.85    | \$88.30      |
| 48208       | 48208TL      | #8          | .128"       | .083"     | .500"        | 2"             | 3/16"      | 3          | \$92.60    | \$99.05      |
| 48010       | 48010TL      | #10         | .139"       | .081"     | .380"        | 2"             | 3/16"      | 3          | \$81.85    | \$88.30      |
| 48210       | 48210TL      | #10         | .139"       | .081"     | .500"        | 2"             | 3/16"      | 3          | \$92.60    | \$99.05      |
| 48250       | 48250TL      | 1/4         | .188"       | .124"     | .400"        | 2"             | 1/4"       | 4          | \$88.60    | \$97.20      |
| 48252       | 48252TL      | 1/4         | .188"       | .124"     | .625"        | 2"             | 1/4"       | 4          | \$101.50   | \$110.10     |
| 48312       | 48312TL      | 5/16        | .247"       | .175"     | .500"        | 2-1/2"         | 3/8"       | 4          | \$99.45    | \$106.95     |
| 48314       | 48314TL      | 5/16        | .247"       | .175"     | .750"        | 2-1/2"         | 3/8"       | 4          | \$115.55   | \$123.10     |
| 48375       | 48375TL      | 3/8         | .300"       | .218"     | .600"        | 2-1/2"         | 3/8"       | 4          | \$99.45    | \$106.95     |
| 48377       | 48377TL      | 3/8         | .300"       | .218"     | .875"        | 2-1/2"         | 3/8"       | 4          | \$115.55   | \$123.10     |
| 48500       | 48500TL      | 1/2         | .420"       | .300"     | .800"        | 2-1/2"         | 1/2"       | 6          | \$113.40   | \$124.15     |
| 48502       | 48502TL      | 1/2         | .420"       | .300"     | 1.125"       | 2-1/2"         | 1/2"       | 6          | \$130.10   | \$140.85     |

# 90° DOUBLE ANGLE CUTTERS

## UNCOATED - Micrograin Carbide



| Tool Number | Cutter Dia. | Cutter Width | Neck Dia. | Neck Length | No. Flutes | Shank Dia. | Overall Length | Price Each |
|-------------|-------------|--------------|-----------|-------------|------------|------------|----------------|------------|
| 49062       | 1/16"       | .031"        | .031"     | .093"       | 2          | 1/8"       | 1-1/2"         | \$33.85    |
| 49078       | 5/64"       | .039"        | .039"     | .118"       | 2          | 1/8"       | 1-1/2"         | \$33.85    |
| 49093       | 3/32"       | .047"        | .047"     | .141"       | 2          | 1/8"       | 1-1/2"         | \$33.85    |
| 49125       | 1/8"        | .062"        | .062"     | .250"       | 3          | 1/8"       | 1-1/2"         | \$33.85    |
| 49187       | 3/16"       | .093"        | .093"     | .312"       | 4          | 3/16"      | 2"             | \$34.95    |
| 49250       | 1/4"        | .125"        | .125"     | .375"       | 4          | 1/4"       | 2-1/2"         | \$42.45    |
| 49312       | 5/16"       | .156"        | .156"     | .500"       | 4          | 5/16"      | 2-1/2"         | \$51.50    |
| 49375       | 3/8"        | .187"        | .187"     | .625"       | 6          | 3/8"       | 2-1/2"         | \$60.75    |
| 49500       | 1/2"        | .250"        | .250"     | .750"       | 6          | 1/2"       | 3"             | \$81.15    |

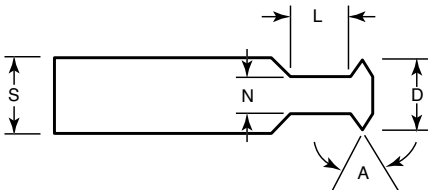
## AITiN COATED - Micrograin Carbide



| Tool Number | Cutter Dia. | Cutter Width | Neck Dia. | Neck Length | No. Flutes | Shank Dia. | Overall Length | Price Each |
|-------------|-------------|--------------|-----------|-------------|------------|------------|----------------|------------|
| 49062TL     | 1/16"       | .031"        | .031"     | .093"       | 2          | 1/8"       | 1-1/2"         | \$38.15    |
| 49078TL     | 5/64"       | .039"        | .039"     | .118"       | 2          | 1/8"       | 1-1/2"         | \$38.15    |
| 49093TL     | 3/32"       | .047"        | .047"     | .141"       | 2          | 1/8"       | 1-1/2"         | \$38.15    |
| 49125TL     | 1/8"        | .062"        | .062"     | .250"       | 3          | 1/8"       | 1-1/2"         | \$38.15    |
| 49187TL     | 3/16"       | .093"        | .093"     | .312"       | 4          | 3/16"      | 2"             | \$40.30    |
| 49250TL     | 1/4"        | .125"        | .125"     | .375"       | 4          | 1/4"       | 2-1/2"         | \$48.90    |
| 49312TL     | 5/16"       | .156"        | .156"     | .500"       | 4          | 5/16"      | 2-1/2"         | \$59.00    |
| 49375TL     | 3/8"        | .187"        | .187"     | .625"       | 6          | 3/8"       | 2-1/2"         | \$68.25    |
| 49500TL     | 1/2"        | .250"        | .250"     | .750"       | 6          | 1/2"       | 3"             | \$91.90    |

### ORDER SPECIAL DOUBLE ANGLE CUTTERS

To order special double angle cutters please specify:



1. Cutter Dia. (D): \_\_\_\_\_
2. Incl. Angle (A): \_\_\_\_\_
3. Neck Length (L): \_\_\_\_\_  
(Behind Cutter)
4. Neck Dia. (N): \_\_\_\_\_
5. Shank Dia. (S): \_\_\_\_\_
6. Overall Length: Mfg. Std.
7. Quantity (Minimum 6): \_\_\_\_\_

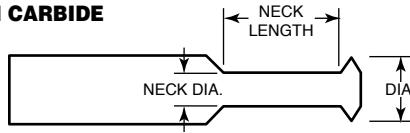
# DOUBLE ANGLE CUTTERS

## 90° LONG REACH & MULTI ANGLE

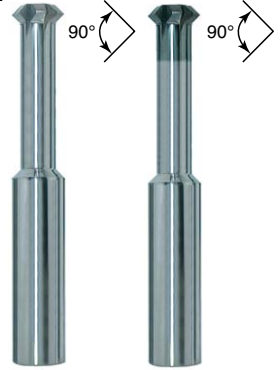
### 90° LONG REACH DOUBLE ANGLE CUTTERS

#### UNCOATED & AITiN COATED

MICROGRAIN CARBIDE



**NOTE:** Neck length is measured behind the cutter head.

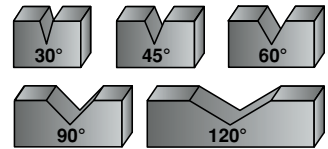


| Tool Number |              | Cutter Dia. | Cutter Width | Neck Dia. | Neck Length | No. Flutes | Shank Dia. | Overall Length | Price Each |              |
|-------------|--------------|-------------|--------------|-----------|-------------|------------|------------|----------------|------------|--------------|
| Not Coated  | AITiN Coated |             |              |           |             |            |            |                | Not Coated | AITiN Coated |
| 49062LR     | 49062LRT     | 1/16"       | .031"        | .031"     | .156"       | 2          | 1/8"       | 1-1/2"         | \$37.55    | \$41.85      |
| 49078LR     | 49078LRT     | 5/64"       | .039"        | .039"     | .187"       | 2          | 1/8"       | 1-1/2"         | \$37.55    | \$41.85      |
| 49093LR     | 49093LRT     | 3/32"       | .047"        | .047"     | .250"       | 2          | 1/8"       | 1-1/2"         | \$37.55    | \$41.85      |
| 49125LR     | 49125LRT     | 1/8"        | 1/16"        | 1/16"     | .500"       | 3          | 1/8"       | 1-1/2"         | \$38.45    | \$42.75      |
| 49130LR     | 49130LRT     | 1/8"        | 1/16"        | 1/16"     | .650"       | 3          | 1/8"       | 1-1/2"         | \$41.65    | \$45.95      |
| 49180LR     | 49180LRT     | 3/16"       | 3/32"        | 3/32"     | .500"       | 4          | 3/16"      | 2"             | \$38.45    | \$44.90      |
| 49187LR     | 49187LRT     | 3/16"       | 3/32"        | 3/32"     | .625"       | 4          | 3/16"      | 2"             | \$40.30    | \$45.70      |
| 49240LR     | 49240LRT     | 1/4"        | 1/8"         | 1/8"      | .500"       | 4          | 1/4"       | 2-1/2"         | \$45.70    | \$52.15      |
| 49245LR     | 49245LRT     | 1/4"        | 1/8"         | 1/8"      | .750"       | 4          | 1/4"       | 2-1/2"         | \$47.20    | \$53.65      |
| 49250LR     | 49250LRT     | 1/4"        | 1/8"         | 1/8"      | 1.00"       | 4          | 1/4"       | 2-1/2"         | \$50.00    | \$56.45      |
| 49312LR     | 49312LRT     | 5/16"       | 5/32"        | 5/32"     | 1.00"       | 4          | 5/16"      | 2-1/2"         | \$58.60    | \$66.10      |
| 49375LR     | 49375LRT     | 3/8"        | 3/16"        | 3/16"     | 1.125"      | 6          | 3/8"       | 2-1/2"         | \$71.50    | \$80.10      |
| 49500LR     | 49500LRT     | 1/2"        | 1/4"         | 1/4"      | 1.250"      | 6          | 1/2"       | 3"             | \$98.35    | \$106.95     |

### MULTI ANGLE DOUBLE ANGLE CUTTERS

#### UNCOATED & AITiN COATED

MICROGRAIN CARBIDE - 1/4" SHANK



| Tool Number |              | Incl'd Angle | Cutter Width | Neck Dia. | Neck Length | No. Flutes | Cutter Dia. | Overall Length | Price Each |              |
|-------------|--------------|--------------|--------------|-----------|-------------|------------|-------------|----------------|------------|--------------|
| Not Coated  | AITiN Coated |              |              |           |             |            |             |                | Not Coated | AITiN Coated |
| 49250-30    | 49250T-30    | 30°          | .033"        | .125"     | .375"       | 4          | 1/4"        | 2-1/2"         | \$48.90    | \$53.65      |
| 49250-45    | 49250T-45    | 45°          | .052"        | .125"     | .375"       | 4          | 1/4"        | 2-1/2"         | \$48.90    | \$53.65      |
| 49250-60    | 49250T-60    | 60°          | .072"        | .125"     | .375"       | 4          | 1/4"        | 2-1/2"         | \$48.90    | \$53.65      |
| 49250-90    | 49250T-90    | 90°          | .125"        | .125"     | .375"       | 4          | 1/4"        | 2-1/2"         | \$42.45    | \$48.90      |
| 49250-120   | 49250T-120   | 120°         | .215"        | .125"     | .375"       | 4          | 1/4"        | 2-1/2"         | \$48.90    | \$53.65      |

**NOTE:** Neck length is measured behind the cutter head.  
Longer reach neck lengths, quoted on request. Minimum Order 3 pieces.

# CARBIDE MICRO DRILLS

## High Performance Micro Drills

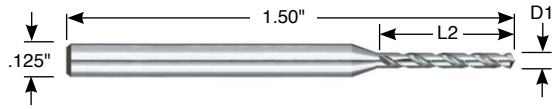
Designed for drilling in a wide variety of materials including: steels, stainless steel, titanium, alloy steels, plastic and aluminum.

**Size Range: .0079" (#92) - .1250" (1/8")**

**Cutter Diameter Tolerance: +0/-.0003"**

**135 Degree Point**

**AlTiN coated tools allow 2 weeks for coating - Min order for AlTiN is 10 Tools of any assorted sizes.**



| Drill Size<br>(Fractional/Wire) | Drill Diameter<br>D1 | Flute Length<br>L2 | UNCOATED    |            | AITIN NANO COATED |            |
|---------------------------------|----------------------|--------------------|-------------|------------|-------------------|------------|
|                                 |                      |                    | Tool Number | Price Each | Tool Number       | Price Each |
| #92                             | .0079"               | .125"              | 10092       | \$30.90    | -                 | -          |
| #91                             | .0083"               | .125"              | 10091       | \$30.90    | -                 | -          |
| #90                             | .0087"               | .125"              | 10090       | \$30.90    | -                 | -          |
| #89                             | .0091"               | .125"              | 10089       | \$25.90    | -                 | -          |
| #88                             | .0095"               | .125"              | 10088       | \$25.90    | -                 | -          |
| #87                             | .0100"               | .150"              | 10087       | \$25.90    | -                 | -          |
| #86                             | .0105"               | .150"              | 10086       | \$19.90    | -                 | -          |
| #85                             | .0110"               | .150"              | 10085       | \$19.90    | -                 | -          |
| #84                             | .0115"               | .150"              | 10084       | \$19.90    | -                 | -          |
| #83                             | .0120"               | .190"              | 10083       | \$19.90    | -                 | -          |
| #82                             | .0125"               | .190"              | 10082       | \$15.90    | 10082TL           | \$20.50    |
| #81                             | .0130"               | .190"              | 10081       | \$15.90    | 10081TL           | \$20.50    |
| #80                             | .0135"               | .190"              | 10080       | \$14.90    | 10080TL           | \$19.50    |
| #79                             | .0145"               | .190"              | 10079       | \$14.90    | 10079TL           | \$19.50    |
| #78                             | .0160"               | .190"              | 10078       | \$14.90    | 10078TL           | \$19.50    |
| #77                             | .0180"               | .250"              | 10077       | \$14.90    | 10077TL           | \$19.50    |
| #76                             | .0200"               | .250"              | 10076       | \$12.90    | 10076TL           | \$17.50    |
| #75                             | .0210"               | .250"              | 10075       | \$12.90    | 10075TL           | \$17.50    |
| #74                             | .0225"               | .250"              | 10074       | \$12.90    | 10074TL           | \$17.50    |
| #73                             | .0240"               | .250"              | 10073       | \$12.90    | 10073TL           | \$17.50    |
| #72                             | .0250"               | .250"              | 10072       | \$12.90    | 10072TL           | \$17.50    |
| #71                             | .0260"               | .250"              | 10071       | \$12.90    | 10071TL           | \$17.50    |
| #70                             | .0280"               | .320"              | 10070       | \$12.90    | 10070TL           | \$17.50    |
| #69                             | .0292"               | .320"              | 10069       | \$12.90    | 10069TL           | \$17.50    |
| #68                             | .0310"               | .400"              | 10068       | \$12.90    | 10068TL           | \$17.50    |
| 1/32"                           | .0312"               | .400"              | 10312       | \$12.90    | 10312TL           | \$17.50    |
| #67                             | .0320"               | .400"              | 10067       | \$12.90    | 10067TL           | \$17.50    |
| #66                             | .0330"               | .400"              | 10066       | \$12.90    | 10066TL           | \$17.50    |
| #65                             | .0350"               | .400"              | 10065       | \$12.90    | 10065TL           | \$17.50    |
| #64                             | .0360"               | .400"              | 10064       | \$12.90    | 10064TL           | \$17.50    |
| #63                             | .0370"               | .400"              | 10063       | \$12.90    | 10063TL           | \$17.50    |
| #62                             | .0380"               | .400"              | 10062       | \$12.90    | 10062TL           | \$17.50    |
| #61                             | .0390"               | .400"              | 10061       | \$12.90    | 10061TL           | \$17.50    |
| #60                             | .0400"               | .400"              | 10060       | \$12.90    | 10060TL           | \$17.50    |
| #59                             | .0410"               | .400"              | 10059       | \$12.90    | 10059TL           | \$17.50    |
| #58                             | .0420"               | .400"              | 10058       | \$12.90    | 10058TL           | \$17.50    |
| #57                             | .0430"               | .400"              | 10057       | \$12.90    | 10057TL           | \$17.50    |
| #56                             | .0465"               | .400"              | 10056       | \$12.90    | 10056TL           | \$17.50    |
| 3/64"                           | .0469"               | .400"              | 10471       | \$12.90    | 10471TL           | \$17.50    |
| #55                             | .0520"               | .400"              | 10055       | \$12.90    | 10055TL           | \$17.50    |
| #54                             | .0550"               | .400"              | 10054       | \$12.90    | 10054TL           | \$17.50    |
| #53                             | .0595"               | .400"              | 10053       | \$12.90    | 10053TL           | \$17.50    |
| 1/16"                           | .0625"               | .480"              | 10625       | \$12.90    | 10625TL           | \$17.50    |
| 5/64"                           | .0781"               | .480"              | 10781       | \$12.90    | 10781TL           | \$17.50    |
| 3/32"                           | .0938"               | .480"              | 10938       | \$12.90    | 10938TL           | \$17.50    |
| 7/64"                           | .1094"               | .480"              | 10109       | \$12.90    | 10109TL           | \$17.50    |
| 1/8"                            | .1250"               | .480"              | 10125       | \$12.90    | 10125TL           | \$17.50    |

# METRIC CARBIDE MICRO DRILLS

## High Performance Micro Drills

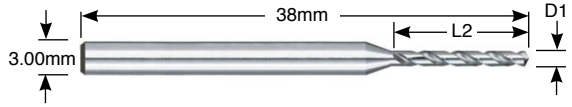
Designed for drilling in a wide variety of materials including: steels, stainless steel, titanium, alloy steels, plastic and aluminum.

**Size Range: .0059" (0.15mm) - .1181" (3.00mm)**

**Cutter Diameter Tolerance: +0/-0.008mm**

**135 Degree Point**

**AlTiN coated tools allow 2 weeks for coating - Min order for AlTiN is 10 Tools of any assorted sizes.**



| Drill Size<br>D1 (mm) | Drill Diameter<br>(inch) | Flute Length<br>L2 (mm) | UNCOATED    |            | AlTiN NANO COATED |            |
|-----------------------|--------------------------|-------------------------|-------------|------------|-------------------|------------|
|                       |                          |                         | Tool Number | Price Each | Tool Number       | Price Each |
| 0.15                  | .0059"                   | 2.50                    | 10059M      | \$42.90    | 10059MTL          | \$47.90    |
| 0.20                  | .0078"                   | 2.50                    | 10078M      | \$30.90    | 10078MTL          | \$35.90    |
| 0.25                  | .0098"                   | 3.20                    | 10098M      | \$25.90    | 10098MTL          | \$30.50    |
| 0.30                  | .0118"                   | 4.80                    | 10118M      | \$15.90    | 10118MTL          | \$20.50    |
| 0.35                  | .0138"                   | 4.80                    | 10138M      | \$14.90    | 10138MTL          | \$19.50    |
| 0.40                  | .0157"                   | 4.80                    | 10157M      | \$14.90    | 10157MTL          | \$19.50    |
| 0.45                  | .0177"                   | 6.35                    | 10177M      | \$14.90    | 10177MTL          | \$19.50    |
| 0.50                  | .0197"                   | 6.35                    | 10197M      | \$12.90    | 10197MTL          | \$17.50    |
| 0.55                  | .0217"                   | 6.35                    | 10217M      | \$12.90    | 10217MTL          | \$17.50    |
| 0.60                  | .0236"                   | 6.35                    | 10236M      | \$12.90    | 10236MTL          | \$17.50    |
| 0.65                  | .0256"                   | 6.35                    | 10256M      | \$12.90    | 10256MTL          | \$17.50    |
| 0.70                  | .0276"                   | 8.10                    | 10276M      | \$12.90    | 10276MTL          | \$17.50    |
| 0.75                  | .0295"                   | 8.10                    | 10295M      | \$12.90    | 10295MTL          | \$17.50    |
| 0.80                  | .0315"                   | 10.15                   | 10315M      | \$12.90    | 10315MTL          | \$17.50    |
| 0.85                  | .0335"                   | 10.15                   | 10335M      | \$12.90    | 10335MTL          | \$17.50    |
| 0.90                  | .0354"                   | 10.15                   | 10354M      | \$12.90    | 10354MTL          | \$17.50    |
| 0.95                  | .0374"                   | 10.15                   | 10374M      | \$12.90    | 10374MTL          | \$17.50    |
| 1.00                  | .0394"                   | 10.15                   | 10394M      | \$12.90    | 10394MTL          | \$17.50    |
| 1.50                  | .0590"                   | 10.15                   | 10591M      | \$12.90    | 10591MTL          | \$17.50    |
| 2.00                  | .0787"                   | 12.18                   | 10781M      | \$12.90    | 10781MTL          | \$17.50    |
| 2.50                  | .0984"                   | 12.18                   | 10984M      | \$12.90    | 10984MTL          | \$17.50    |
| 3.00                  | .1181"                   | 12.18                   | 11181M      | \$12.90    | 11181MTL          | \$17.50    |

| Workpiece<br>Material Group                   | Examples   | Series   |        | Tool Diameter |       |       |       |       |
|---|--|----------|--------|---------------|-------|-------|-------|-------|
|   |  | Uncoated | Coated | 1/64          | 1/32  | 1/16  | 3/32  | 1/8   |
|   |  | SFM      |        | IPR           |       |       |       |       |
| Steels  | Low Carbon Steels 1018   | 110      | 150    | .0004         | .0008 | .0015 | .0023 | .0030 |
|   | Alloy Steels (up to 35 Rc) 4140  | 90       | 130    | .0004         | .0008 | .0015 | .0023 | .0030 |
|   | Alloy Steels (36-45 Rc) 4140   | 85       | 120    | .0004         | .0008 | .0015 | .0023 | .0030 |
| Austenitic                                    | 304 - 316  | 90       | 125    | .0004         | .0008 | .0015 | .0023 | .0030 |
| Stainless Steels                              | Free Machining 303   | 110      | 140    | .0004         | .0008 | .0015 | .0023 | .0030 |
|   | Ferritic Martensitic 440C  | 80       | 110    | .0004         | .0008 | .0015 | .0023 | .0030 |
| Precipitation<br>Hardened Stainless<br>Steels | 17-4 PH  | 45       | 60     | .0002         | .0004 | .0007 | .0011 | .0014 |
| Cast Irons                                    | Gray Cast Iron A48 Class 20/G4000  | 110      | 150    | .0004         | .0008 | .0015 | .0023 | .0030 |
|   | Ductile Cast Iron A536/60-40-18  | 110      | 150    | .0004         | .0008 | .0015 | .0023 | .0030 |
| Special Alloys                                | Titanium 6AL-4V  | 50       | 70     | .0004         | .0008 | .0015 | .0023 | .0030 |
|   | High Temp Alloys - Inconel - Hastelloy<br>Waspelly - Nickel Based Alloys - Monel | 45       | 60     | .0002         | .0004 | .0007 | .0011 | .0014 |
| Hardened Steels                               | 55 Rc Steel  | 35       | 50     | .0002         | .0004 | .0007 | .0011 | .0014 |
| Non-Ferrous                                   | Plastic  | 175      |        | .0005         | .0010 | .0020 | .0030 | .0040 |
|   | Aluminum (<10% Si)   | 175      |        | .0005         | .0010 | .0020 | .0030 | .0040 |

**TOLL FREE 866-426-3300**  
**FAX 781-582-8095**

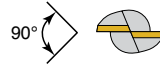
# MicroCUT

# 90° & 140° SPOT DRILLS

## UNCOATED & AITiN COATED

### Miniature 90° "Dead Center" Spot Drills

2-FLUTE - MICROGRAIN CARBIDE



| TOOL NUMBER |              | Drill Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                |               |                |                 | Not Coated | AITiN Coated |
| 22010       | 24010        | .010"          | .030"         | 1/8"           | 1-1/2"          | \$25.55    | \$30.90      |
| 22015       | 24015        | .015"          | .045"         | 1/8"           | 1-1/2"          | \$24.20    | \$28.50      |
| 22020       | 24020        | .020"          | .060"         | 1/8"           | 1-1/2"          | \$22.05    | \$26.35      |
| 22025       | 24025        | .025"          | .075"         | 1/8"           | 1-1/2"          | \$21.45    | \$25.75      |
| 22030       | 24030        | .030"          | .090"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25      |
| 22045       | 24045        | .045"          | .135"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 22060       | 24060        | .060"          | .180"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 22090       | 24090        | .090"          | .270"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 22125       | 24125        | .125"          | .375"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |

Thinned web at tip insures accuracy. Special spot drills quoted on request.

### Extended Reach 90° "Dead Center" Spot Drills

2-FLUTE - MICROGRAIN CARBIDE

MINIMUM 3 PIECES PER SIZE



| TOOL NUMBER |              | Drill Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|----------------|---------------|----------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                |               |                |                |                 | Not Coated | AITiN Coated |
| 22015LR     | 24015LR      | .015"          | .045"         | .125"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15      |
| 22020LR     | 24020LR      | .020"          | .060"         | .165"          | 1/8"           | 1-1/2"          | \$31.70    | \$36.00      |
| 22025LR     | 24025LR      | .025"          | .075"         | .205"          | 1/8"           | 1-1/2"          | \$30.65    | \$34.95      |
| 22030LR     | 24030LR      | .030"          | .090"         | .250"          | 1/8"           | 1-1/2"          | \$29.55    | \$33.85      |
| 22045LR     | 24045LR      | .045"          | .135"         | .400"          | 1/8"           | 1-1/2"          | \$26.35    | \$30.65      |
| 22060LR     | 24060LR      | .060"          | .180"         | .500"          | 1/8"           | 1-1/2"          | \$26.35    | \$30.65      |
| 22090LR     | 24090LR      | .090"          | .270"         | .500"          | 1/8"           | 1-1/2"          | \$26.35    | \$30.65      |
| 22125LR     | 24125LR      | .125"          | .375"         | .625"          | 1/8"           | 1-1/2"          | \$26.35    | \$30.65      |

Neck diameter is same as cutter diameter.

Tools are custom manufactured to order and are nonreturnable.

### Miniature 140° Spot Drills

2-FLUTE - MICROGRAIN CARBIDE



| TOOL NUMBER |              | Drill Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                |               |                |                 | Not Coated | AITiN Coated |
| 26015       | 26215        | .015"          | .045"         | 1/8"           | 1-1/2"          | \$24.20    | \$28.50      |
| 26020       | 26220        | .020"          | .060"         | 1/8"           | 1-1/2"          | \$22.05    | \$26.35      |
| 26025       | 26225        | .025"          | .075"         | 1/8"           | 1-1/2"          | \$21.45    | \$25.75      |
| 26030       | 26230        | .030"          | .090"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25      |
| 26045       | 26245        | .045"          | .135"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 26060       | 26260        | .060"          | .180"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 26090       | 26290        | .090"          | .270"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 26125       | 26325        | .125"          | .375"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |

Extended reach spot drills available on request. Minimum 3 pieces per size.

# 120° SPOT DRILLS & NC SPOT DRILLS

## UNCOATED & AITiN COATED

### Miniature 120° "Dead Center" Spot Drills

2-FLUTE - MICROGRAIN CARBIDE



| TOOL NUMBER |              | Drill Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|----------------|---------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                |               |                |                 | Not Coated | AITiN Coated |
| 23015       | 25015        | .015"          | .045"         | 1/8"           | 1-1/2"          | \$24.20    | \$28.50      |
| 23020       | 25020        | .020"          | .060"         | 1/8"           | 1-1/2"          | \$22.05    | \$26.35      |
| 23025       | 25025        | .025"          | .075"         | 1/8"           | 1-1/2"          | \$21.45    | \$25.75      |
| 23030       | 25030        | .030"          | .090"         | 1/8"           | 1-1/2"          | \$20.95    | \$25.25      |
| 23045       | 25045        | .045"          | .135"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 23060       | 25060        | .060"          | .180"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 23090       | 25090        | .090"          | .270"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |
| 23125       | 25125        | .125"          | .375"         | 1/8"           | 1-1/2"          | \$18.20    | \$22.50      |

### Extended Reach 120° "Dead Center" Spot Drills

2-FLUTE - MICROGRAIN CARBIDE

MINIMUM 3 PIECES PER SIZE



| TOOL NUMBER |              | Drill Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|----------------|---------------|----------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                |               |                |                |                 | Not Coated | AITiN Coated |
| 23015LR     | 25015LR      | .015"          | .045"         | .125"          | 1/8"           | 1-1/2"          | \$33.85    | \$38.15      |
| 23020LR     | 25020LR      | .020"          | .060"         | .165"          | 1/8"           | 1-1/2"          | \$31.70    | \$36.00      |
| 23025LR     | 25025LR      | .025"          | .075"         | .205"          | 1/8"           | 1-1/2"          | \$30.65    | \$34.95      |
| 23030LR     | 25030LR      | .030"          | .090"         | .250"          | 1/8"           | 1-1/2"          | \$29.55    | \$33.85      |
| 23045LR     | 25045LR      | .045"          | .135"         | .400"          | 1/8"           | 1-1/2"          | \$26.35    | \$30.65      |
| 23060LR     | 25060LR      | .060"          | .180"         | .500"          | 1/8"           | 1-1/2"          | \$26.35    | \$30.65      |
| 23090LR     | 25090LR      | .090"          | .270"         | .500"          | 1/8"           | 1-1/2"          | \$26.35    | \$30.65      |
| 23125LR     | 25125LR      | .125"          | .375"         | .625"          | 1/8"           | 1-1/2"          | \$26.35    | \$30.65      |

Tools are custom manufactured to order and are nonreturnable.

### Miniature NC Spotting Drills

2-FLUTE - MICROGRAIN CARBIDE - UNCOATED

1/8" - 1/4" DIA. - 90, 120 & 140 DEGREE INCLUDED POINT ANGLES



| TOOL NUMBER |              | Cutter Diameter | Included Angle | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|----------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |                |                |                 | Not Coated | AITiN Coated |
| NC125-90    | NCT125-90    | 1/8"            | 90 DEG         | 1/8"           | 2"              | \$17.15    | \$21.45      |
| NC187-90    | NCT187-90    | 3/16"           | 90 DEG         | 3/16"          | 2"              | \$20.35    | \$25.75      |
| NC250-90    | NCT250-90    | 1/4"            | 90 DEG         | 1/4"           | 3"              | \$24.65    | \$31.10      |
| NC125-120   | NCT125-120   | 1/8"            | 120 DEG        | 1/8"           | 2"              | \$17.15    | \$21.45      |
| NC187-120   | NCT187-120   | 3/16"           | 120 DEG        | 3/16"          | 2"              | \$20.35    | \$25.75      |
| NC250-120   | NCT250-120   | 1/4"            | 120 DEG        | 1/4"           | 3"              | \$24.65    | \$31.10      |
| NC125-140   | NCT125-140   | 1/8"            | 140 DEG        | 1/8"           | 2"              | \$17.15    | \$21.45      |
| NC187-140   | NCT187-140   | 3/16"           | 140 DEG        | 3/16"          | 2"              | \$20.35    | \$25.75      |
| NC250-140   | NCT250-140   | 1/4"            | 140 DEG        | 1/4"           | 3"              | \$24.65    | \$31.10      |

TOLL FREE 866-426-3300  
FAX 781-582-8095

**Microcut**

# 82° & 90° COUNTERSINKS – 6-FLUTE

## UNCOATED & AITiN COATED

### 82° Countersinks

Double End – 6-Flutes – RHC – Micrograin Carbide



| TOOL NUMBER |              | Cutter Diameter | Included Angle | Maximum Tip Diameter | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|----------------|----------------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |                |                      |                |                 | Not Coated | AITiN Coated |
| 31125       | 31125TL      | 1/8"            | 82 DEG         | .025"                | 1/8"           | 1-1/2"          | \$24.20    | \$30.65      |
| 31187       | 31187TL      | 3/16"           | 82 DEG         | .035"                | 3/16"          | 2"              | \$30.65    | \$39.25      |
| 31250       | 31250TL      | 1/4"            | 82 DEG         | .045"                | 1/4"           | 2"              | \$37.10    | \$45.70      |
| 31312       | 31312TL      | 5/16"           | 82 DEG         | .055"                | 5/16"          | 2-1/2"          | \$59.65    | \$70.40      |
| 31375       | 31375TL      | 3/8"            | 82 DEG         | .060"                | 3/8"           | 2-1/2"          | \$71.50    | \$85.45      |
| 31500       | 31500TL      | 1/2"            | 82 DEG         | .090"                | 1/2"           | 3"              | \$96.20    | \$118.00     |

AITiN coating for hard to machine mold steel and alloyed steel.

### 90° Countersinks

Double End – 6-Flutes – RHC – Micrograin Carbide



| TOOL NUMBER |              | Cutter Diameter | Included Angle | Maximum Tip Diameter | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|----------------|----------------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |                |                      |                |                 | Not Coated | AITiN Coated |
| 32125       | 32125TL      | 1/8"            | 90 DEG         | .025"                | 1/8"           | 1-1/2"          | \$24.20    | \$30.65      |
| 32187       | 32187TL      | 3/16"           | 90 DEG         | .035"                | 3/16"          | 2"              | \$30.65    | \$39.25      |
| 32250       | 32250TL      | 1/4"            | 90 DEG         | .045"                | 1/4"           | 2"              | \$37.10    | \$45.70      |
| 32312       | 32312TL      | 5/16"           | 90 DEG         | .055"                | 5/16"          | 2-1/2"          | \$59.65    | \$70.40      |
| 32375       | 32375TL      | 3/8"            | 90 DEG         | .060"                | 3/8"           | 2-1/2"          | \$71.50    | \$85.45      |
| 32500       | 32500TL      | 1/2"            | 90 DEG         | .090"                | 1/2"           | 3"              | \$96.20    | \$118.00     |

AITiN coating for hard to machine mold steel and alloyed steel.

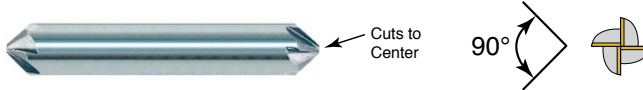
## Special Cutting Tool Quotations

Microcut's capability to produce Standard cutting tools is replicated by its ability to produce Special Cutting Tools. Quality, competitive pricing, and on-time delivery has been a Microcut trademark for almost 20 years. Microcut's workforce experience in producing special Micro Tools dates back over 40 years and makes us one of the most experienced Micro Tool companies in the U.S.A. Submit your special tool B/P to us by fax at 781-582-8095 or email to [sales@microcutUSA.com](mailto:sales@microcutUSA.com) and we will quote it through the distributor of your choice that services your facility.

# COUNTERSINKS – 4-FLUTE 90° & 2-FLUTE 60°

## 90° "Drill Point" Countersinks UNCOATED

Drill & Countersink In One Operation – Solid Carbide – Double End – 4 Flutes  
End Cutting - 90 Degree Angle Included



Save time. Tool combines two operations into one.

| TOOL NUMBER | Cutter Diameter | Included Angle | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|----------------|----------------|-----------------|------------|
| 33125       | 1/8"            | 90 DEG         | 1/8"           | 1-1/2"          | \$29.55    |
| 33187       | 3/16"           | 90 DEG         | 3/16"          | 2"              | \$38.15    |
| 33250       | 1/4"            | 90 DEG         | 1/4"           | 2"              | \$47.85    |
| 33312       | 5/16"           | 90 DEG         | 5/16"          | 2-1/2"          | \$72.55    |
| 33375       | 3/8"            | 90 DEG         | 3/8"           | 2-1/2"          | \$88.70    |
| 33500       | 1/2"            | 90 DEG         | 1/2"           | 3"              | \$116.65   |

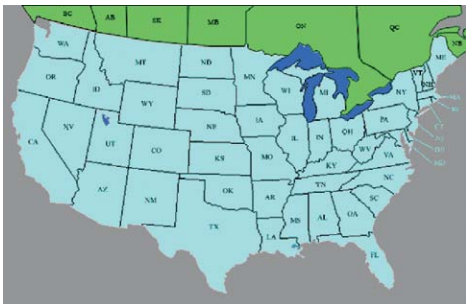
## 60° Miniature Carbide Countersinks UNCOATED & AITiN COATED

Combined Drill & Countersinks – 60 Degree Included Angle – Solid Carbide – Double End – 2 Flutes



| TOOL NUMBER |              | Size | Drill Diameter | Shank Diameter | Over All Length | PRICE EACH |              |
|-------------|--------------|------|----------------|----------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |      |                |                |                 | Not Coated | AITiN Coated |
| 33025CS     | 33025CST     | 00   | .025"          | 1/8"           | 1-1/2"          | \$17.10    | \$21.40      |
| 33031CS     | 33031CST     | 0    | .031"          | 1/8"           | 1-1/2"          | \$16.00    | \$20.30      |
| 33047CS     | 33047CST     | 1    | .047"          | 1/8"           | 1-1/2"          | \$14.95    | \$19.25      |
| 33078CS     | 33078CST     | 2    | .078"          | 3/16"          | 2"              | \$21.40    | \$26.75      |
| 33109CS     | 33109CST     | 3    | .109"          | 1/4"           | 2"              | \$24.60    | \$30.00      |
| 33125CS     | 33125CST     | 4    | .125"          | 5/16"          | 2-1/8"          | \$32.15    | \$38.60      |

## Locate Your Distributor



Microcut products are sold by cutting tool distributors in the U.S. and Canada. These distributors are selected because of their expertise in cutting tools and are available to assist you in your standard and special cutting tools. It's easy to locate a local distributor. Just visit our website at [www.microcutUSA.com](http://www.microcutUSA.com) and select "Locate a Distributor". Enter your Zip code, or select your state in the U.S. or province in Canada and chose a distributor that can process your order quickly and forward it on to the Microcut Sales Dept. We will process your order and ship the tools directly to you on the same day from our warehouse, or manufacture the specialty product as listed in the catalog within the lead time published or quoted.

# COUNTERSINKS – 60°, 82° & 90° SINGLE END

## 60°, 82° & 90° Single End Carbide Countersinks

**NOTE:** For use in production machining on cast iron, steel, and alloyed steels.  
3/8" & 1/2" diameter have solid carbide heads on hardened steel shanks.

### UNCOATED

#### SINGLE FLUTE



| TOOL NUMBER |           |           | Countersink Diameter | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------|-----------|----------------------|----------------|-----------------|------------|
| 60 DEGREE   | 82 DEGREE | 90 DEGREE |                      |                |                 |            |
| 30161       | 30181     | 30191     | 1/8"                 | 1/8"           | 1-1/2"          | \$14.50    |
| 30161-1     | 30181-1   | 30191-1   | 3/16"                | 3/16"          | 2"              | \$15.50    |
| 30162       | 30182     | 30192     | 1/4"                 | 1/4"           | 2"              | \$17.75    |
| 30163       | 30183     | 30193     | 3/8"                 | 1/4"           | 2-1/2"          | \$31.50    |
| 30164       | 30184     | 30194     | 1/2"                 | 1/4"           | 2-1/2"          | \$39.75    |

#### 3 FLUTE - SINGLE END



| TOOL NUMBER |           |           | Countersink Diameter | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------|-----------|----------------------|----------------|-----------------|------------|
| 60 DEGREE   | 82 DEGREE | 90 DEGREE |                      |                |                 |            |
| 30261       | 30361     | 30391     | 1/8"                 | 1/8"           | 1-1/2"          | \$14.50    |
| 30261-1     | 30361-1   | 30391-1   | 3/16"                | 3/16"          | 2"              | \$15.50    |
| 30262       | 30362     | 30392     | 1/4"                 | 1/4"           | 2"              | \$17.75    |
| 30263       | 30363     | 30393     | 3/8"                 | 1/4"           | 2-1/2"          | \$31.50    |
| 30264       | 30364     | 30394     | 1/2"                 | 1/4"           | 2-1/2"          | \$39.75    |

#### 6 FLUTE - SINGLE END



| TOOL NUMBER |           |           | Countersink Diameter | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------|-----------|----------------------|----------------|-----------------|------------|
| 60 DEGREE   | 82 DEGREE | 90 DEGREE |                      |                |                 |            |
| 30461       | 30661     | 30991     | 1/8"                 | 1/8"           | 1-1/2"          | \$14.50    |
| 30461-1     | 30661-1   | 30991-1   | 3/16"                | 3/16"          | 2"              | \$15.50    |
| 30462       | 30662     | 30992     | 1/4"                 | 1/4"           | 2"              | \$17.75    |
| 30463       | 30663     | 30993     | 3/8"                 | 1/4"           | 2-1/2"          | \$31.50    |
| 30464       | 30664     | 30994     | 1/2"                 | 1/4"           | 2-1/2"          | \$39.75    |

# 45°, 60° & 66° DOVETAIL CUTTERS

## 45° & 60° Dovetail Cutters

Solid Micrograin Carbide – 2 Flute – RHC

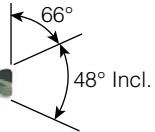
**UNCOATED**



| TOOL NUMBER |        | Cutter Diameter<br>(Nominal or to the theoretical sharp corner) | Corner Radius | Depth of Cut |       | No. of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|--------|---|---------------|--------------|-------|---------------|----------------|-----------------|------------|
| 45°         | 60°    |   |               | 45°          | 60°   |               |                |                 |            |
| 42187       | 43187  | <b>3/16"</b>  | None          | .046"        | .094" | 2             | 3/16"          | 2"              | \$76.20    |
| 42187R      | 43187R | <b>3/16"</b>  | .010"         | .046"        | .094" | 2             | 3/16"          | 2"              | \$88.50    |
| 42250       | 43250  | <b>1/4"</b>   | None          | .062"        | .125" | 3             | 1/4"           | 2"              | \$81.60    |
| 42250R      | 43250R | <b>1/4"</b>   | .010"         | .062"        | .125" | 3             | 1/4"           | 2"              | \$93.75    |
| 42312       | 43312  | <b>5/16"</b>  | None          | .090"        | .150" | 3             | 5/16"          | 2-1/2"          | \$86.95    |
| 42312R      | 43312R | <b>5/16"</b>  | .010"         | .090"        | .150" | 3             | 5/16"          | 2-1/2"          | \$99.50    |
| 42375       | 43375  | <b>3/8"</b>   | None          | .125"        | .187" | 3             | 3/8"           | 2-1/2"          | \$97.70    |
| 42375R      | 43375R | <b>3/8"</b>   | .010"         | .125"        | .187" | 3             | 3/8"           | 2-1/2"          | \$109.75   |

## 66° Dovetail Cutters For O-Ring Grooves

**UNCOATED**



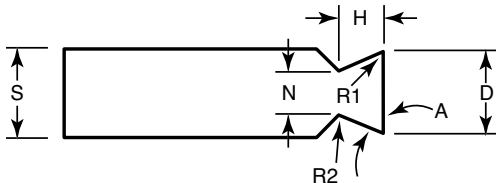
| TOOL NUMBER      | O-Ring Dia.  | Neck Dia.*     | Slot Depth | Top Radius | Bottom Radius | Actual Cutter Dia. Over Radius | No. of Flutes | Shank Dia. | Over All Length | PRICE EACH |
|------------------|--------------|----------------|------------|------------|---------------|--------------------------------|---------------|------------|-----------------|------------|
| 41062<br>41062US | <b>.070"</b> | .057"<br>.052" | .051"      | .005"      | .015"         | .0862"                         | 1             | 3/16"      | 2"              | \$81.60    |
| 41093<br>41093US | <b>.103"</b> | .085"<br>.077" | .082"      | .010"      | .015"         | .1418"                         | 2             | 3/16"      | 2"              | \$81.60    |
| 41125<br>41125US | <b>.139"</b> | .115"<br>.105" | .112"      | .010"      | .031"         | .1812"                         | 2             | 1/4"       | 2"              | \$84.80    |
| 41187<br>41187US | <b>.210"</b> | .173"<br>.161" | .172"      | .015"      | .031"         | .2927"                         | 3             | 5/16"      | 2-1/2"          | \$98.00    |
| 41250<br>41250US | <b>.275"</b> | .233"<br>.218" | .232"      | .015"      | .062"         | .3726"                         | 3             | 3/8"       | 2-1/2"          | \$118.70   |
| 41375<br>41375US | <b>.375"</b> | .317"<br>.302" | .317"      | .020"      | .094"         | .4978"                         | 4             | 1/2"       | 2-1/2"          | \$162.20   |

Tool numbers with US suffix have reduced neck diameters as shown in table.

\* Neck diameter is measured to the theoretical sharp corner.

### ORDER SPECIAL DOVETAIL CUTTERS

*Special Multiple Flute Dovetail Cutters*



### Please specify:

1. Neck (N): \_\_\_\_\_
2. Radius or Sharp Corner (R1): \_\_\_\_\_
3. Radius or Sharp Corner (R2): \_\_\_\_\_
4. Height (H): \_\_\_\_\_
5. Angle Per Side (A): \_\_\_\_\_
6. Cutter Diameter (D): \_\_\_\_\_
7. Shank Diameter (S): \_\_\_\_\_
8. Number of Flutes: \_\_\_\_\_
9. Quantity (Minimum 6): \_\_\_\_\_

# ENGRAVING CUTTERS

## Carbide Engraving Cutters - 60 Degree

**UNCOATED & AITiN COATED**



| TOOL NUMBER |              | Cutter Diameter | Shank Diameter | Split Length | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|----------------|--------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |                |              |                 | Not Coated | AITiN Coated |
| 36125       | 36125TL      | 1/8"            | 1/8"           | 1/4"         | 1-1/2"          | \$13.90    | \$18.20      |
| 36187       | 36187TL      | 3/16"           | 3/16"          | 5/16"        | 1-1/2"          | \$17.15    | \$22.50      |
| 36250       | 36250TL      | 1/4"            | 1/4"           | 3/8"         | 2-1/2"          | \$21.45    | \$27.90      |

## Carbide Engraving Cutters - 90 Degree

**UNCOATED & AITiN COATED**



| TOOL NUMBER |              | Cutter Diameter | Shank Diameter | Split Length | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|----------------|--------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |                |              |                 | Not Coated | AITiN Coated |
| 39125       | 39125TL      | 1/8"            | 1/8"           | 1/4"         | 1-1/2"          | \$13.90    | \$18.20      |
| 39187       | 39187TL      | 3/16"           | 3/16"          | 5/16"        | 2"              | \$17.15    | \$22.50      |
| 39250       | 39250TL      | 1/4"            | 1/4"           | 3/8"         | 2-1/2"          | \$21.45    | \$27.90      |

AITiN Coating improves performance in dry engraving of most materials.

## Flat Tip Engraving Cutters - 60 Degree

Single End – .010" Tip Diameter – Right Hand Cut  
Tipped off end provides extra strength and improves cutting.  
Leaves .010" flat at bottom of groove.

**AITiN COATED**



| TOOL NUMBER | Cutter Diameter | Tip Diameter | Shank Diameter | Split Length | Over All Length | PRICE EACH |
|-------------|-----------------|--------------|----------------|--------------|-----------------|------------|
| 34125TL     | 1/8"            | .010"        | 1/8"           | 1/4"         | 1-1/2"          | \$22.50    |
| 34187TL     | 3/16"           | .010"        | 3/16"          | 5/16"        | 2"              | \$28.95    |
| 34250TL     | 1/4"            | .010"        | 1/4"           | 3/8"         | 2"              | \$37.55    |

## Flat Tip Engraving Cutters - 90 Degree

Single End – .010" Tip Diameter – Right Hand Cut

**AITiN COATED**



| TOOL NUMBER | Cutter Diameter | Tip Diameter | Shank Diameter | Split Length | Over All Length | PRICE EACH |
|-------------|-----------------|--------------|----------------|--------------|-----------------|------------|
| 35125TL     | 1/8"            | .010"        | 1/8"           | 1/4"         | 1-1/2"          | \$22.50    |
| 35187TL     | 3/16"           | .010"        | 3/16"          | 5/16"        | 2"              | \$28.95    |
| 35250TL     | 1/4"            | .010"        | 1/4"           | 3/8"         | 2"              | \$37.55    |

# HEAVY DUTY ENGRAVING CUTTERS - 2-FLUTE

## 2 Flute - 30 Degree

**UNCOATED & AITiN COATED**



| TOOL NUMBER |              | Cutter Diameter | Flat Dim at Bottom | Shank Diameter | Length of Cut | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|--------------------|----------------|---------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |                    |                |               |                 | Not Coated | AITiN Coated |
| 38025       | 38025TL      | 1/8"            | .005"              | 1/8"           | 7/32"         | 1-1/2"          | \$18.80    | \$23.10      |

## 2 Flute - 60 Degree

**UNCOATED & AITiN COATED**



| TOOL NUMBER |              | Cutter Diameter | Flat Dim at Bottom | Shank Diameter | Length of Cut | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|--------------------|----------------|---------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |                    |                |               |                 | Not Coated | AITiN Coated |
| 38125       | 38125TL      | 1/8"            | .005"              | 1/8"           | 7/32"         | 1-1/2"          | \$18.80    | \$22.50      |
| 38187       | 38187TL      | 3/16"           | .010"              | 3/16"          | 5/32"         | 2"              | \$22.50    | \$26.80      |
| 38250       | 38250TL      | 1/4"            | .015"              | 1/4"           | 3/16"         | 2-1/2"          | \$32.20    | \$41.40      |

## 2 Flute - 90 Degree

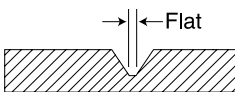
**UNCOATED & AITiN COATED**



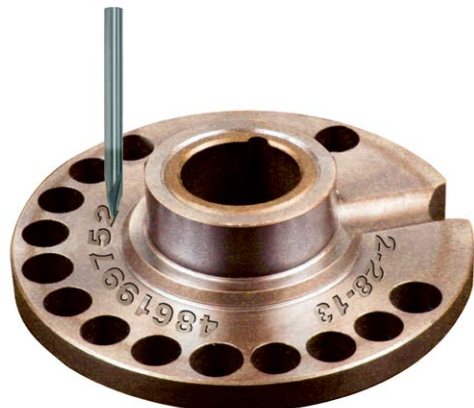
| TOOL NUMBER |              | Cutter Diameter | Flat Dim at Bottom | Shank Diameter | Length of Cut | Over All Length | PRICE EACH |              |
|-------------|--------------|-----------------|--------------------|----------------|---------------|-----------------|------------|--------------|
| Not Coated  | AITiN Coated |                 |                    |                |               |                 | Not Coated | AITiN Coated |
| 37125       | 37125TL      | 1/8"            | .010"              | 1/8"           | 1/16"         | 1-1/2"          | \$18.80    | \$22.50      |
| 37187       | 37187TL      | 3/16"           | .020"              | 3/16"          | 3/32"         | 2"              | \$22.50    | \$26.80      |
| 37250       | 37250TL      | 1/4"            | .030"              | 1/4"           | 1/8"          | 2-1/2"          | \$32.20    | \$41.40      |

Designed For Engraving Ferrous And Non-Ferrous Materials.

- 30, 60 & 90 degree included point angle with heavy duty tip design.
- End Cutting - Produces flat in bottom of groove. See chart for width of flat produced.



- Use AITiN coating for wear resistance.



# SINGLE END CHAMFER CUTTERS

## Carbide Single End Chamfer Cutters

**UNCOATED**



Designed to machine accurate chamfers and countersink angles. Rigid design insures smooth finishes. 1/8" size will plunge cut to center. Other sizes are non-end cutting. Special angles quoted on request.

| Tool Number | Shank Dia. | Cutter Dia. | Angle Per Side | Incl'd Angle | Tip Dia. | No. Flutes | Overall Length | Price Each |
|-------------|------------|-------------|----------------|--------------|----------|------------|----------------|------------|
| 62015       | 1/8"       | 1/8"        | 15             | 30           | .010"    | 2          | 1-1/2"         | \$14.90    |
| 62030       | 1/8"       | 1/8"        | 30             | 60           | .010"    | 2          | 1-1/2"         | \$14.90    |
| 62045       | 1/8"       | 1/8"        | 45             | 90           | .010"    | 2          | 1-1/2"         | \$14.90    |
| 62060       | 1/8"       | 1/8"        | 60             | 120          | .010"    | 2          | 1-1/2"         | \$14.90    |
| 63015       | 1/4"       | 1/4"        | 15             | 30           | .045"    | 3          | 2-1/2"         | \$26.90    |
| 63030       | 1/4"       | 1/4"        | 30             | 60           | .045"    | 3          | 2-1/2"         | \$26.90    |
| 63045       | 1/4"       | 1/4"        | 45             | 90           | .045"    | 3          | 2-1/2"         | \$26.90    |
| 63060       | 1/4"       | 1/4"        | 60             | 120          | .045"    | 3          | 2-1/2"         | \$26.90    |
| 64015       | 3/8"       | 3/8"        | 15             | 30           | .060"    | 4          | 2-1/2"         | \$38.50    |
| 64030       | 3/8"       | 3/8"        | 30             | 60           | .060"    | 4          | 2-1/2"         | \$38.50    |
| 64045       | 3/8"       | 3/8"        | 45             | 90           | .060"    | 4          | 2-1/2"         | \$38.50    |
| 64060       | 3/8"       | 3/8"        | 60             | 120          | .060"    | 4          | 2-1/2"         | \$38.50    |
| 65015       | 1/2"       | 1/2"        | 15             | 30           | .075"    | 4          | 3"             | \$59.90    |
| 65030       | 1/2"       | 1/2"        | 30             | 60           | .075"    | 4          | 3"             | \$55.90    |
| 65045       | 1/2"       | 1/2"        | 45             | 90           | .075"    | 4          | 3"             | \$55.90    |
| 65060       | 1/2"       | 1/2"        | 60             | 120          | .075"    | 4          | 3"             | \$55.90    |

## Carbide Single End Chamfer Cutters

**AITIN COATED**



| Tool Number | Shank Dia. | Cutter Dia. | Angle Per Side | Incl'd Angle | Tip Dia. | No. Flutes | Overall Length | Price Each |
|-------------|------------|-------------|----------------|--------------|----------|------------|----------------|------------|
| 62015TL     | 1/8"       | 1/8"        | 15             | 30           | .010"    | 2          | 1-1/2"         | \$18.90    |
| 62030TL     | 1/8"       | 1/8"        | 30             | 60           | .010"    | 2          | 1-1/2"         | \$18.90    |
| 62045TL     | 1/8"       | 1/8"        | 45             | 90           | .010"    | 2          | 1-1/2"         | \$18.90    |
| 62060TL     | 1/8"       | 1/8"        | 60             | 120          | .010"    | 2          | 1-1/2"         | \$18.90    |
| 63015TL     | 1/4"       | 1/4"        | 15             | 30           | .045"    | 3          | 2-1/2"         | \$32.90    |
| 63030TL     | 1/4"       | 1/4"        | 30             | 60           | .045"    | 3          | 2-1/2"         | \$32.90    |
| 63045TL     | 1/4"       | 1/4"        | 45             | 90           | .045"    | 3          | 2-1/2"         | \$32.90    |
| 63060TL     | 1/4"       | 1/4"        | 60             | 120          | .045"    | 3          | 2-1/2"         | \$32.90    |
| 64015TL     | 3/8"       | 3/8"        | 15             | 30           | .060"    | 4          | 2-1/2"         | \$46.50    |
| 64030TL     | 3/8"       | 3/8"        | 30             | 60           | .060"    | 4          | 2-1/2"         | \$46.50    |
| 64045TL     | 3/8"       | 3/8"        | 45             | 90           | .060"    | 4          | 2-1/2"         | \$46.50    |
| 64060TL     | 3/8"       | 3/8"        | 60             | 120          | .060"    | 4          | 2-1/2"         | \$46.50    |
| 65015TL     | 1/2"       | 1/2"        | 15             | 30           | .075"    | 4          | 3"             | \$74.50    |
| 65030TL     | 1/2"       | 1/2"        | 30             | 60           | .075"    | 4          | 3"             | \$69.50    |
| 65045TL     | 1/2"       | 1/2"        | 45             | 90           | .075"    | 4          | 3"             | \$69.50    |
| 65060TL     | 1/2"       | 1/2"        | 60             | 120          | .075"    | 4          | 3"             | \$69.50    |

# DOUBLE END CHAMFER CUTTERS

## Carbide Double End Chamfer Cutters

**UNCOATED**



**AITiN COATED**



Designed to machine accurate chamfers and countersink angles. Rigid design insures smooth finishes. 1/8" size will plunge cut to center. Other sizes are non-end cutting. Special angles quoted on request.

| TOOL NUMBER |              | Cutter Dia. | Angle Per Side | Incl'd Angle | Tip Dia. | No. Flutes | Shank Dia. | Overall Length | PRICE EACH |              |
|-------------|--------------|-------------|----------------|--------------|----------|------------|------------|----------------|------------|--------------|
| Not Coated  | AITiN Coated |             |                |              |          |            |            |                | Not Coated | AITiN Coated |
| 66030       | 66030TL      | 1/8"        | 30             | 60           | .010"    | 2          | 1/8"       | 1-1/2"         | \$27.90    | \$33.90      |
| 66045       | 66045TL      | 1/8"        | 45             | 90           | .010"    | 2          | 1/8"       | 1-1/2"         | \$27.90    | \$33.90      |
| 66060       | 66060TL      | 1/8"        | 60             | 120          | .010"    | 2          | 1/8"       | 1-1/2"         | \$27.90    | \$33.90      |
| 66130       | 66130TL      | 1/8"        | 30             | 60           | .020"    | 4          | 1/8"       | 1-1/2"         | \$27.90    | \$33.90      |
| 66145       | 66145TL      | 1/8"        | 45             | 90           | .020"    | 4          | 1/8"       | 1-1/2"         | \$27.90    | \$33.90      |
| 66160       | 66160TL      | 1/8"        | 60             | 120          | .020"    | 4          | 1/8"       | 1-1/2"         | \$27.90    | \$33.90      |
| 66230       | 66230TL      | 3/16"       | 30             | 60           | .030"    | 4          | 3/16"      | 2-1/2"         | \$34.50    | \$42.50      |
| 66245       | 66245TL      | 3/16"       | 45             | 90           | .030"    | 4          | 3/16"      | 2-1/2"         | \$34.50    | \$42.50      |
| 66260       | 66260TL      | 3/16"       | 60             | 120          | .030"    | 4          | 3/16"      | 2-1/2"         | \$34.50    | \$42.50      |
| 67030       | 67030TL      | 1/4"        | 30             | 60           | .045"    | 3          | 1/4"       | 2-1/2"         | \$45.50    | \$56.50      |
| 67045       | 67045TL      | 1/4"        | 45             | 90           | .045"    | 3          | 1/4"       | 2-1/2"         | \$45.50    | \$56.50      |
| 67060       | 67060TL      | 1/4"        | 60             | 120          | .045"    | 3          | 1/4"       | 2-1/2"         | \$45.50    | \$56.50      |
| 67130       | 67130TL      | 1/4"        | 30             | 60           | .045"    | 4          | 1/4"       | 2-1/2"         | \$45.50    | \$56.50      |
| 67145       | 67145TL      | 1/4"        | 45             | 90           | .045"    | 4          | 1/4"       | 2-1/2"         | \$45.50    | \$56.50      |
| 67160       | 67160TL      | 1/4"        | 60             | 120          | .045"    | 4          | 1/4"       | 2-1/2"         | \$45.50    | \$56.50      |
| 67230       | 67230TL      | 5/16"       | 30             | 60           | .045"    | 4          | 5/16"      | 2-1/2"         | \$54.90    | \$69.90      |
| 67245       | 67245TL      | 5/16"       | 45             | 90           | .045"    | 4          | 5/16"      | 2-1/2"         | \$54.90    | \$69.90      |
| 67260       | 67260TL      | 5/16"       | 60             | 120          | .045"    | 4          | 5/16"      | 2-1/2"         | \$54.90    | \$69.90      |
| 68030       | 68030TL      | 3/8"        | 30             | 60           | .060"    | 4          | 3/8"       | 2-1/2"         | \$69.50    | \$85.50      |
| 68045       | 68045TL      | 3/8"        | 45             | 90           | .060"    | 4          | 3/8"       | 2-1/2"         | \$69.50    | \$85.50      |
| 68060       | 68060TL      | 3/8"        | 60             | 120          | .060"    | 4          | 3/8"       | 2-1/2"         | \$69.50    | \$85.50      |
| 69030       | 69030TL      | 1/2"        | 30             | 60           | .075"    | 4          | 1/2"       | 3"             | \$99.50    | \$127.50     |
| 69045       | 69045TL      | 1/2"        | 45             | 90           | .075"    | 4          | 1/2"       | 3"             | \$99.50    | \$127.50     |
| 69060       | 69060TL      | 1/2"        | 60             | 120          | .075"    | 4          | 1/2"       | 3"             | \$99.50    | \$127.50     |

# MINIATURE PLASTIC CUTTING END MILLS

## Square End - 2-Flute - Micrograin Carbide

UNCOATED & **AMORPHOUS DIAMOND COATED**



Designed specifically for milling mechanical plastics.  
 For use in Polyurethane, Polycarbonate, ABS, Delrin, Nylon, PEEK, and Acrylics.  
 2-Flute upcut open design for fast and effective chip removal.  
 Center cutting end designed for plunging into solid material.  
 Available with Multiple shank diameters on some sizes.



| Cutter Diameter | Length of Cut | Shank Diameter | Overall Length | UNCOATED    |            | DIAMOND COATED |            |
|-----------------|---------------|----------------|----------------|-------------|------------|----------------|------------|
|                 |               |                |                | Tool Number | Price Each | Tool Number    | Price Each |
| .031"           | .093"         | 1/8"           | 1-1/2"         | 14112       | \$27.90    | 14212          | \$41.90    |
| .031"           | .156"         | 1/8"           | 1-1/2"         | 14114       | \$34.90    | 14214          | \$48.90    |
| .062"           | .250"         | 1/8"           | 1-1/2"         | 14120       | \$23.90    | 14220          | \$37.90    |
| .062"           | .375"         | 1/8"           | 2-1/2"         | 14124       | \$26.50    | 14224          | \$40.50    |
| .062"           | .500"         | 1/4"           | 2"             | 14128       | \$32.50    | 14228          | \$49.50    |
| .093"           | .500"         | 1/8"           | 2-1/2"         | 14133       | \$23.90    | 14233          | \$37.90    |
| .093"           | .750"         | 1/4"           | 2-1/2"         | 14135       | \$34.50    | 14235          | \$52.50    |
| .125"           | .500"         | 1/8"           | 1-1/2"         | 14140       | \$23.90    | 14240          | \$37.90    |
| .125"           | .750"         | 1/8"           | 2-1/2"         | 14145       | \$28.50    | 14245          | \$44.50    |
| .125"           | 1.00"         | 1/4"           | 2-1/2"         | 14150       | \$34.50    | 14250          | \$52.50    |
| .187"           | .562"         | 3/16"          | 2"             | 14155       | \$29.90    | 14255          | \$51.90    |
| .250"           | .750"         | 1/4"           | 2-1/2"         | 14160       | \$34.90    | 14260          | \$56.90    |
| .250"           | 1.25"         | 1/4"           | 3"             | 14165       | \$41.90    | 14265          | \$66.90    |

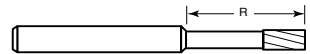
## Ball End - 2-Flute

UNCOATED



| Cutter Diameter | Length of Cut | Shank Diameter | Overall Length | UNCOATED    |            |
|-----------------|---------------|----------------|----------------|-------------|------------|
|                 |               |                |                | Tool Number | Price Each |
| .031"           | .093"         | 1/8"           | 1-1/2"         | 14312       | \$32.50    |
| .062"           | .250"         | 1/8"           | 1-1/2"         | 14320       | \$27.50    |
| .062"           | .375"         | 1/8"           | 2-1/2"         | 14324       | \$31.50    |
| .062"           | .500"         | 1/4"           | 2"             | 14328       | \$38.50    |
| .093"           | .500"         | 1/8"           | 2-1/2"         | 14333       | \$29.50    |
| .093"           | .750"         | 1/4"           | 2-1/2"         | 14335       | \$41.50    |
| .125"           | .500"         | 1/8"           | 1-1/2"         | 14340       | \$27.50    |
| .125"           | .750"         | 1/8"           | 2-1/2"         | 14345       | \$34.50    |
| .125"           | 1.00"         | 1/4"           | 2-1/2"         | 14350       | \$41.50    |
| .187"           | .562"         | 3/16"          | 2"             | 14355       | \$35.90    |
| .250"           | .750"         | 1/4"           | 2-1/2"         | 14360       | \$41.90    |
| .250"           | 1.25"         | 1/4"           | 3"             | 14365       | \$48.90    |

Special long reach end mills quoted on request.  
 Minimum 3 pieces per size.



**Ships within  
 24-48 hours.**

**See Order Form  
 on next page.**

# MINIATURE PLASTIC CUTTING END MILLS

## Corner Radius - 2-Flute - Micrograin Carbide

UNCOATED

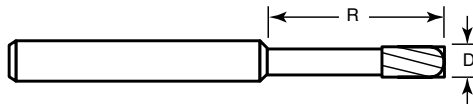


Designed for milling applications in pockets where the bottom must be smooth.  
Available with multiple corner radii. See chart below

| Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Overall Length | UNCOATED    |            |
|-----------------|---------------|---------------|----------------|----------------|-------------|------------|
|                 |               |               |                |                | Tool Number | Price Each |
| .062"           | .005"         | .250"         | 1/8"           | 1-1/2"         | 14620       | \$27.50    |
| .062"           | .010"         | .250"         | 1/8"           | 1-1/2"         | 14621       | \$27.50    |
| .093"           | .010"         | .500"         | 1/8"           | 1-1/2"         | 14633       | \$27.50    |
| .093"           | .015"         | .500"         | 1/8"           | 1-1/2"         | 14634       | \$27.50    |
| .125"           | .010"         | .500"         | 1/8"           | 1-1/2"         | 14640       | \$27.50    |
| .125"           | .020"         | .500"         | 1/8"           | 1-1/2"         | 14642       | \$27.50    |
| .125"           | .030"         | .500"         | 1/8"           | 1-1/2"         | 14644       | \$27.50    |
| .187"           | .015"         | .562"         | 3/16"          | 2"             | 14655       | \$35.90    |
| .187"           | .030"         | .562"         | 3/16"          | 2"             | 14657       | \$35.90    |
| .250"           | .015"         | .750"         | 1/4"           | 2-1/2"         | 14660       | \$42.90    |
| .250"           | .030"         | .750"         | 1/4"           | 2-1/2"         | 14662       | \$42.90    |

### ORDER SPECIAL Square & Ball End or Corner Radius LONG REACH PLASTIC CUTTING END MILLS

To order special long reach end mills please specify:



1. Specify:  Square End or  Ball End or  Corner Radius.
2. Shank Diameter: \_\_\_\_\_
3. Cutter Diameter (D): \_\_\_\_\_
4. Corner Radius (From page 115 top): \_\_\_\_\_
5. Overall Reach (R): \_\_\_\_\_
6. Quantity (Minimum 3): \_\_\_\_\_
7. 2-Flute only.

**Special Reaches Shipped within 24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

# PLASTIC & ALUMINUM ROUTERS

## Plastic Cutting Carbide Routers

SINGLE FLUTE - UPCUT STYLE

CUTS HARD & SOFT PLASTIC

MICROGRAIN CARBIDE

### UNCOATED



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 14050       | .062"           | .250"         | 1/4"           | 2"              | \$33.70    |
| 14055       | .125"           | .250"         | 1/4"           | 2"              | \$33.70    |
| 14060       | .125"           | .500"         | 1/4"           | 2"              | \$33.70    |
| 14070       | .187"           | .375"         | 1/4"           | 2"              | \$33.70    |
| 14075       | .187"           | .625"         | 1/4"           | 2"              | \$33.70    |
| 14080       | .250"           | .375"         | 1/4"           | 2"              | \$32.50    |
| 14085       | .250"           | .750"         | 1/4"           | 2-1/2"          | \$33.70    |
| 14090       | .250"           | 1.250"        | 1/4"           | 3"              | \$40.80    |

Use in Acrylics, Polycarbonate, Polystyrene, ABS, Nylon, PVC & similar.

## Aluminum Routers

SINGLE FLUTE - UPCUT SPIRAL

CUTS ALUMINUM PLATE & SHEET

### UNCOATED



| TOOL NUMBER | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|-----------------|------------|
| 14510       | .062"           | .250"         | 1/8"           | 1-1/2"          | \$33.70    |
| 14520       | .093"           | .250"         | 1/8"           | 2"              | \$34.85    |
| 14525       | .125"           | .250"         | 1/8"           | 1-1/2"          | \$34.85    |
| 14530       | .125"           | .500"         | 1/4"           | 2"              | \$43.65    |
| 14535       | .187"           | .625"         | 1/4"           | 2"              | \$44.90    |
| 14540       | .250"           | .375"         | 1/4"           | 2"              | \$43.65    |
| 14550       | .250"           | .750"         | 1/4"           | 2-1/2"          | \$47.25    |
| 14560       | .250"           | 1.250"        | 1/4"           | 3"              | \$69.45    |

Ultra High Performance Design. Used for high speed machining of aluminum plate and single or multi-sheet aluminum. Designed for CNC mills, machining centers and CNC routers.

# SHEAR HOG® & INSERTS FOR ALUMINUM

## Shear Hog® For Aluminum

THRU SPINDLE COOLANT HOLE.  
INCLUDES INSERTS AND WRENCH.

| TOOL NUMBER | Cutter Diameter | Number of Flutes | Ramp Angle | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|------------------|------------|----------------|-----------------|------------|
| MCH-0750    | .750"           | 1                | CTR CUT    | 3/4"           | 4.0"            | \$269.00   |
| MCH-1000    | 1.00"           | 1                | CTR CUT    | 3/4"           | 3.5"            | \$269.00   |
| MCH-1250    | 1.25"           | 2                | 8 DEG      | 3/4"           | 3.5"            | \$299.00   |
| MCH-1500    | 1.50"           | 2                | 8 DEG      | 3/4"           | 4.0"            | \$329.00   |
| MCH-2000    | 2.00"           | 3                | 4 DEG      | 3/4"           | 4.5"            | \$369.00   |
| MCH-2100    | 2.00"           | 3                | 4 DEG      | 1"             | 5.0"            | \$379.00   |

## Hi-Shear Polished Carbide Inserts For Aluminum

| TOOL NUMBER | Corner Radius | PRICE EACH |
|-------------|---------------|------------|
| MCH-431     | .010"         | \$26.50    |
| MCH-432     | .030"         | \$26.50    |
| MCH-434     | .060"         | \$26.50    |



## ABRASION RESISTANT TOOL COATINGS



### TiCN

Cutting carbon steel, alloy steel and cast iron; cold forming & stamping tools.



### ZrN

Hard coating for machining a variety of non-ferrous materials.



### AlTiN

High performance coating for dry and semi-dry machining of all aerospace materials at high speeds.



### Diamond

(Amorphous) Thin film coating for graphite, nonferrous materials and epoxy.



# DIAMOND - DECIMAL - 2-FLUTE

## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Decimal Miniature End Mills

#### HIGH PERFORMANCE DESIGN



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| GRX1010     | GRX2010  | .010"           | .030"         | 1/8"           | 1-1/2"          | \$40.30    | \$46.75  |
| GRX1015     | GRX2015  | .015"           | .045"         | 1/8"           | 1-1/2"          | \$37.10    | \$42.45  |
| GRX1020     | GRX2020  | .020"           | .060"         | 1/8"           | 1-1/2"          | \$30.65    | \$34.95  |
| GRX1025     | GRX2025  | .025"           | .075"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1030     | GRX2030  | .030"           | .090"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1031     | GRX2031  | .031"           | .125"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1035     | GRX2035  | .035"           | .105"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1040     | GRX2040  | .040"           | .120"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1045     | GRX2045  | .045"           | .135"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1047     | GRX2047  | .047"           | .141"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1050     | GRX2050  | .050"           | .150"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1055     | GRX2055  | .055"           | .165"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1060     | GRX2060  | .060"           | .180"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1062     | GRX2062  | .062"           | .250"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1065     | GRX2065  | .065"           | .195"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1070     | GRX2070  | .070"           | .210"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1075     | GRX2075  | .075"           | .225"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1078     | GRX2078  | .078"           | .234"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1090     | GRX2090  | .090"           | .270"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1093     | GRX2093  | .093"           | .375"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1100     | GRX2100  | .100"           | .300"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX1125     | GRX2125  | .125"           | .500"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |

Amorphous diamond coated end mills are engineered for machining graphite, aluminum, nonferrous metals, plastics and composite materials.

# DIAMOND – LONG REACH – 2-FLUTE



## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Long Reach Decimal Miniature End Mills

HIGH PERFORMANCE DESIGN



MINIMUM  
3 TOOLS  
EACH SIZE



Length of Cut = 3 x Diameter or as Specified – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| GRX8015     | GRX9015  | .015"           | .045"         | .125"          | 1/8"           | 1-1/2"          | \$47.85    | \$53.20  |
| GRX8020     | GRX9020  | .020"           | .060"         | .165"          | 1/8"           | 1-1/2"          | \$41.40    | \$45.70  |
| GRX8025     | GRX9025  | .025"           | .075"         | .205"          | 1/8"           | 1-1/2"          | \$40.30    | \$44.60  |
| GRX8030     | GRX9030  | .030"           | .090"         | .250"          | 1/8"           | 1-1/2"          | \$40.30    | \$44.60  |
| GRX8031     | GRX9031  | .031"           | .125"         | .250"          | 1/8"           | 1-1/2"          | \$40.30    | \$44.60  |
| GRX8035     | GRX9035  | .035"           | .105"         | .285"          | 1/8"           | 1-1/2"          | \$40.30    | \$44.60  |
| GRX8040     | GRX9040  | .040"           | .120"         | .350"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX8045     | GRX9045  | .045"           | .135"         | .400"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX8047     | GRX9047  | .047"           | .141"         | .400"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX8050     | GRX9050  | .050"           | .150"         | .450"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX8055     | GRX9055  | .055"           | .165"         | .450"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX8060     | GRX9060  | .060"           | .180"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8062     | GRX9062  | .062"           | .250"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8065     | GRX9065  | .065"           | .195"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8070     | GRX9070  | .070"           | .210"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8075     | GRX9075  | .075"           | .225"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8078     | GRX9078  | .078"           | .234"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8090     | GRX9090  | .090"           | .270"         | .600"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8093     | GRX9093  | .093"           | .375"         | .600"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8100     | GRX9100  | .100"           | .300"         | .600"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX8125     | GRX9125  | .125"           | .500"         | .650"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |

**Tools are custom manufactured to order and are nonreturnable.**

Amorphous diamond coated end mills are engineered for machining graphite, aluminum, nonferrous metals, plastics and composite materials.



# DIAMOND - DECIMAL - 4-FLUTE

## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Decimal Miniature End Mills



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| GRX010      | GRX010B  | .010"           | .030"         | 1/8"           | 1-1/2"          | \$40.30    | \$46.75  |
| GRX015      | GRX015B  | .015"           | .045"         | 1/8"           | 1-1/2"          | \$37.10    | \$42.45  |
| GRX020      | GRX020B  | .020"           | .060"         | 1/8"           | 1-1/2"          | \$30.65    | \$34.95  |
| GRX025      | GRX025B  | .025"           | .075"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX030      | GRX030B  | .030"           | .090"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX031      | GRX031B  | .031"           | .125"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX035      | GRX035B  | .035"           | .105"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX040      | GRX040B  | .040"           | .120"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX045      | GRX045B  | .045"           | .135"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX047      | GRX047B  | .047"           | .141"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX050      | GRX050B  | .050"           | .150"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX055      | GRX055B  | .055"           | .165"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX060      | GRX060B  | .060"           | .180"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX062      | GRX062B  | .062"           | .250"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX065      | GRX065B  | .065"           | .195"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX070      | GRX070B  | .070"           | .210"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX075      | GRX075B  | .075"           | .225"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX078      | GRX078B  | .078"           | .250"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX090      | GRX090B  | .090"           | .270"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX093      | GRX093B  | .093"           | .375"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX100      | GRX100B  | .100"           | .300"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX109      | GRX109B  | .109"           | .375"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX125      | GRX125B  | .125"           | .500"         | 1/8"           | 1-1/2"          | \$29.55    | \$33.85  |
| GRX187      | GRX187B  | .187"           | .625"         | 3/16"          | 2"              | \$34.95    | \$38.15  |
| GRX250      | GRX250B  | .250"           | .750"         | 1/4"           | 2-1/2"          | \$41.40    | \$44.60  |
| GRX312      | GRX312B  | .312"           | .812"         | 5/16"          | 2-1/2"          | \$53.20    | \$57.50  |
| GRX375      | GRX375B  | .375"           | 1.00"         | 3/8"           | 2-1/2"          | \$63.95    | \$69.35  |
| GRX500      | GRX500B  | .500"           | 1.00"         | 1/2"           | 3"              | \$96.20    | \$103.75 |

Amorphous diamond coated end mills are engineered for machining graphite, aluminum, nonferrous metals, plastics and composite materials.



## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Long Reach Decimal Miniature End Mills



**MINIMUM  
3 TOOLS  
EACH SIZE**

**SHIPPED  
WITHIN  
24 - 48  
HOURS**

Length of Cut = 3 x Diameter or as Specified – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| GRX3015     | GRX3015B | .015"           | .045"         | .125"          | 1/8"           | 1-1/2"          | \$47.85    | \$53.20  |
| GRX3020     | GRX3020B | .020"           | .060"         | .165"          | 1/8"           | 1-1/2"          | \$41.40    | \$45.70  |
| GRX3025     | GRX3025B | .025"           | .075"         | .205"          | 1/8"           | 1-1/2"          | \$40.30    | \$45.70  |
| GRX3030     | GRX3030B | .030"           | .090"         | .250"          | 1/8"           | 1-1/2"          | \$40.30    | \$45.70  |
| GRX3031     | GRX3031B | .031"           | .125"         | .250"          | 1/8"           | 1-1/2"          | \$40.30    | \$44.60  |
| GRX3035     | GRX3035B | .035"           | .105"         | .285"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX3040     | GRX3040B | .040"           | .120"         | .350"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX3045     | GRX3045B | .045"           | .135"         | .400"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX3047     | GRX3047B | .047"           | .141"         | .400"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX3050     | GRX3050B | .050"           | .150"         | .450"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX3055     | GRX3055B | .055"           | .165"         | .450"          | 1/8"           | 1-1/2"          | \$39.50    | \$43.80  |
| GRX3060     | GRX3060B | .060"           | .180"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3062     | GRX3062B | .062"           | .250"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3065     | GRX3065B | .065"           | .195"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3070     | GRX3070B | .070"           | .210"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3075     | GRX3075B | .075"           | .225"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3078     | GRX3078B | .078"           | .250"         | .500"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3090     | GRX3090B | .090"           | .270"         | .600"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3093     | GRX3093B | .093"           | .375"         | .600"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3100     | GRX3100B | .100"           | .300"         | .600"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3109     | GRX3109B | .109"           | .375"         | .650"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |
| GRX3125     | GRX3125B | .125"           | .500"         | .650"          | 1/8"           | 1-1/2"          | \$38.60    | \$42.90  |

**Tools are custom manufactured to order and are nonreturnable.**

Amorphous diamond coated end mills are engineered for machining graphite, aluminum, nonferrous metals, plastics and composite materials.



# DIAMOND – CORNER RADIUS – 2-FLUTE

## Corner Radius - **AMORPHOUS DIAMOND COATED**

### Decimal End Mills Sized .015" to .125"



Length of Cut = 3 x Diameter or as Specified – Center Cutting – Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter     | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|---------------------|---------------|---------------|----------------|-----------------|------------|
| GX215-003   | <b>.015"</b>        | .003"         | .045"         | 1/8"           | 1-1/2"          | \$52.15    |
| GX220-005   | <b>.020"</b>        | .005"         | .060"         | 1/8"           | 1-1/2"          | \$47.85    |
| GX225-005   | <b>.025"</b>        | .005"         | .075"         | 1/8"           | 1-1/2"          | \$47.85    |
| GX230-005   | <b>.030"</b>        | .005"         | .090"         | 1/8"           | 1-1/2"          | \$41.65    |
| GX231-005   | <b>.031" (1/32)</b> | .005"         | .093"         | 1/8"           | 1-1/2"          | \$41.65    |
| GX235-005   | <b>.035"</b>        | .005"         | .105"         | 1/8"           | 1-1/2"          | \$41.65    |
| GX240-005   | <b>.040"</b>        | .005"         | .120"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX245-005   | <b>.045"</b>        | .005"         | .135"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX247-005   | <b>.047" (3/64)</b> | .005"         | .141"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX250-005   | <b>.050"</b>        | .005"         | .150"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX260-005   | <b>.060"</b>        | .005"         | .180"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX260-010   | <b>.060"</b>        | .010"         | .180"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX262-005   | <b>.062" (1/16)</b> | .005"         | .186"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX262-010   | <b>.062" (1/16)</b> | .010"         | .186"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX275-005   | <b>.075"</b>        | .005"         | .225"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX275-010   | <b>.075"</b>        | .010"         | .225"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX278-005   | <b>.078" (5/64)</b> | .005"         | .234"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX278-010   | <b>.078" (5/64)</b> | .010"         | .234"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX293-005   | <b>.093" (3/32)</b> | .005"         | .279"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX293-010   | <b>.093" (3/32)</b> | .010"         | .279"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX225-010   | <b>.125" (1/8)</b>  | .010"         | 1/2"          | 1/8"           | 1-1/2"          | \$34.95    |
| GX225-015   | <b>.125" (1/8)</b>  | .015"         | 1/2"          | 1/8"           | 1-1/2"          | \$34.95    |
| GX225-020   | <b>.125" (1/8)</b>  | .020"         | 1/2"          | 1/8"           | 1-1/2"          | \$34.95    |

Corner radius helps prevent chipping at corners at high feeds and speeds.

### Special Cutting Tool Quotations

Microcut's capability to produce Standard cutting tools is replicated by its ability to produce Special Cutting Tools. Quality, competitive pricing, and on-time delivery has been a Microcut trademark for almost 20 years. Microcut's workforce experience in producing special Micro Tools dates back over 40 years and makes us one of the most experienced Micro Tool companies in the U.S.A. Submit your special tool B/P to us by fax at 781-582-8095 or email to [sales@microcutUSA.com](mailto:sales@microcutUSA.com) and we will quote it through the distributor of your choice that services your facility.

# DIAMOND – CORNER RADIUS – 4-FLUTE



## Corner Radius - **AMORPHOUS DIAMOND COATED**

### Decimal End Mills Sized .015" to .125"



Length of Cut = 3 x Diameter or as Specified – Center Cutting – Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|-----------------|------------|
| GX415-003   | .015"           | .003"         | .045"         | 1/8"           | 1-1/2"          | \$52.15    |
| GX420-005   | .020"           | .005"         | .060"         | 1/8"           | 1-1/2"          | \$47.85    |
| GX425-005   | .025"           | .005"         | .075"         | 1/8"           | 1-1/2"          | \$47.85    |
| GX430-005   | .030"           | .005"         | .090"         | 1/8"           | 1-1/2"          | \$41.65    |
| GX431-005   | .031" (1/32)    | .005"         | .093"         | 1/8"           | 1-1/2"          | \$41.65    |
| GX435-005   | .035"           | .005"         | .105"         | 1/8"           | 1-1/2"          | \$41.65    |
| GX440-005   | .040"           | .005"         | .120"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX445-005   | .045"           | .005"         | .135"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX447-005   | .047" (3/64)    | .005"         | .141"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX450-005   | .050"           | .005"         | .150"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX460-005   | .060"           | .005"         | .180"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX460-010   | .060"           | .010"         | .180"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX462-005   | .062" (1/16)    | .005"         | .186"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX462-010   | .062" (1/16)    | .010"         | .186"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX475-005   | .075"           | .005"         | .225"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX475-010   | .075"           | .010"         | .225"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX478-005   | .078" (5/64)    | .005"         | .234"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX478-010   | .078" (5/64)    | .010"         | .234"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX493-005   | .093" (3/32)    | .005"         | .279"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX493-010   | .093" (3/32)    | .010"         | .279"         | 1/8"           | 1-1/2"          | \$39.25    |
| GX425-010   | .125" (1/8)     | .010"         | 1/2"          | 1/8"           | 1-1/2"          | \$34.95    |
| GX425-015   | .125" (1/8)     | .015"         | 1/2"          | 1/8"           | 1-1/2"          | \$34.95    |
| GX425-020   | .125" (1/8)     | .020"         | 1/2"          | 1/8"           | 1-1/2"          | \$34.95    |

Corner radius helps prevent chipping at corners at high feeds and speeds.

### Locate Your Distributor



Microcut products are sold by cutting tool distributors in the U.S. and Canada. These distributors are selected because of their expertise in cutting tools and are available to assist you in your standard and special cutting tools. To locate a local distributor visit our website at [www.microcutUSA.com](http://www.microcutUSA.com) and select "Locate a Distributor". Enter your Zip code, or select your state or province and chose a distributor that can process your order quickly and forward it on to the Microcut Sales Dept. We will process and ship the tools directly to you on the same day from our warehouse, or manufacture the specialty product as listed in the catalog within the lead time published or quoted.



# DIAMOND - LG FLT & SHK - DECIMAL - 3-FLT

## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Decimal Long Flute, Long Shank End Mills



Length of Cut = 3 x Diameter or as Specified - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter     | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|---------------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                     |               |                |                 | Square End | Ball End |
| GL1015      | GL1015B  | <b>.015" (1/64)</b> | .075"         | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GL1020      | GL1020B  | <b>.020"</b>        | .100"         | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GL1025      | GL1025B  | <b>.025"</b>        | .125"         | 1/8"           | 2-1/2"          | \$41.80    | \$46.10  |
| GL1031      | GL1031B  | <b>.031" (1/32)</b> | .150"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |
| GL1040      | GL1040B  | <b>.040"</b>        | .200"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |
| GL1047      | GL1047B  | <b>.047" (3/64)</b> | .250"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |
| GL1062S     | GL1062SB | <b>.062" (1/16)</b> | .312"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |
| GL1062      | GL1062B  | <b>.062" (1/16)</b> | .500"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |
| GL1070      | GL1070B  | <b>.070"</b>        | .500"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |
| GL1078      | GL1078B  | <b>.078" (5/64)</b> | .500"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |
| GL1093      | GL1093B  | <b>.093" (3/32)</b> | .500"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |
| GL1093L     | GL1093LB | <b>.093" (3/32)</b> | .750"         | 1/8"           | 2-1/2"          | \$42.90    | \$47.20  |
| GL1125      | GL1125B  | <b>.125" (1/8)</b>  | .750"         | 1/8"           | 2-1/2"          | \$40.75    | \$45.05  |

### Need Carbide Micro Drills? See pages 102 to 103.

Designed for drilling in a wide variety of materials including: steels, stainless steel, titanium, alloy steels, plastic and aluminum.

- **Size Range: .0079" (#92) - .1250" (1/8")**
- **Cutter Diameter Tolerance: +0/-0.0003"**
- **135 Degree Point**





## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Decimal Long Flute, Long Reach End Mills



**MINIMUM  
3 TOOLS  
EACH SIZE**



2-1/2" OAL – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |            | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|------------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End   |                 |               |                |                |                 | Square End | Ball End |
| GL15-125    | GLB15-125  | .015" (1/64)    | .075"         | .125"          | 1/8"           | 2-1/2"          | \$56.45    | \$60.75  |
| GL15-150    | GLB15-150  | .015" (1/64)    | .075"         | .150"          | 1/8"           | 2-1/2"          | \$56.45    | \$60.75  |
| GL20-150    | GLB20-150  | .020"           | .100"         | .150"          | 1/8"           | 2-1/2"          | \$52.55    | \$56.85  |
| GL20-200    | GLB20-200  | .020"           | .100"         | .200"          | 1/8"           | 2-1/2"          | \$52.55    | \$56.85  |
| GL25-200    | GLB25-200  | .025"           | .125"         | .200"          | 1/8"           | 2-1/2"          | \$50.40    | \$54.70  |
| GL25-250    | GLB25-250  | .025"           | .125"         | .250"          | 1/8"           | 2-1/2"          | \$50.40    | \$54.70  |
| GL31-250    | GLB31-250  | .031" (1/32)    | .150"         | .250"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GL31-300    | GLB31-300  | .031" (1/32)    | .150"         | .300"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GL40-350    | GLB40-350  | .040"           | .200"         | .350"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GL47-400    | GLB47-400  | .047" (3/64)    | .250"         | .400"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GL47-500    | GLB47-500  | .047" (3/64)    | .250"         | .500"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GL62-650    | GLB62-650  | .062" (1/16)    | .500"         | .650"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GL62-750    | GLB62-750  | .062" (1/16)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$47.20    | \$51.50  |
| GL62-850    | GLB62-850  | .062" (1/16)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GL62-100    | GLB62-100  | .062" (1/16)    | .500"         | 1.000"         | 1/8"           | 2-1/2"          | \$49.35    | \$53.65  |
| GL70-750    | GLB70-750  | .070"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$47.20    | \$51.50  |
| GL78-750    | GLB78-750  | .078" (5/64)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$47.20    | \$51.50  |
| GL78-850    | GLB78-850  | .078" (5/64)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GL78-100    | GLB78-100  | .078" (5/64)    | .500"         | 1.000"         | 1/8"           | 2-1/2"          | \$49.35    | \$53.65  |
| GL93-750    | GLB93-750  | .093" (3/32)    | .500"         | .750"          | 1/8"           | 2-1/2"          | \$47.20    | \$51.50  |
| GL93-850    | GLB93-850  | .093" (3/32)    | .500"         | .850"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GL93-100    | GLB93-100  | .093" (3/32)    | .500"         | 1.000"         | 1/8"           | 2-1/2"          | \$49.35    | \$53.65  |
| GL125-125   | GLB125-125 | .125" (1/8)     | .750"         | 1.25"          | 1/8"           | 2-1/2"          | \$47.20    | \$51.50  |

**Don't see the reach you want?? Call customer service.**

**Shorter reaches available at No Extra Charge and ship in 24 Hours.**

**Longer Reaches need to be quoted by our Sales Department and ship in 24-48 hours after receipt of order.**

**Minimum quantity is 3 tools per size.**

**All products on this page are made to order and are non-returnable.**



# **DIAMOND – STUB FLT – LG SHK & RCH – 3-FLT**

## **SQUARE & BALL END - AMORPHOUS DIAMOND COATED**

### **Stub Flute, Long Shank, Long Reach End Mills**



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

2-1/2" OAL – Center Cutting – Micro Grain Carbide

**Tools are custom manufactured to order and are nonreturnable.**

| TOOL NUMBER |           | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|-----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End  |                 |               |                |                |                 | Square End | Ball End |
| GS15-075    | GB15-075  | .015"           | .022"         | .075"          | 1/8"           | 2-1/2"          | \$47.85    | \$54.30  |
| GS15-100    | GB15-100  | .015"           | .022"         | .100"          | 1/8"           | 2-1/2"          | \$47.85    | \$54.30  |
| GS15-100    | GB15-100  | .015"           | .022"         | .125"          | 1/8"           | 2-1/2"          | \$50.00    | \$56.45  |
| GS15-150    | GB15-150  | .015"           | .022"         | .150"          | 1/8"           | 2-1/2"          | \$50.00    | \$56.45  |
| GS20-100    | GB20-100  | .020"           | .030"         | .100"          | 1/8"           | 2-1/2"          | \$46.10    | \$52.55  |
| GS20-150    | GB20-150  | .020"           | .030"         | .150"          | 1/8"           | 2-1/2"          | \$46.10    | \$52.55  |
| GS20-200    | GB20-200  | .020"           | .030"         | .200"          | 1/8"           | 2-1/2"          | \$48.25    | \$54.70  |
| GS25-125    | GB25-125  | .025"           | .037"         | .125"          | 1/8"           | 2-1/2"          | \$46.10    | \$52.55  |
| GS25-200    | GB25-200  | .025"           | .037"         | .200"          | 1/8"           | 2-1/2"          | \$46.10    | \$52.55  |
| GS25-250    | GB25-250  | .025"           | .037"         | .250"          | 1/8"           | 2-1/2"          | \$48.25    | \$54.70  |
| GS31-150    | GB31-150  | .031"           | .046"         | .150"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS31-200    | GB31-200  | .031"           | .046"         | .200"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS31-250    | GB31-250  | .031"           | .046"         | .250"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GS31-300    | GB31-300  | .031"           | .046"         | .300"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GS40-200    | GB40-200  | .040"           | .060"         | .200"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS40-300    | GB40-300  | .040"           | .060"         | .300"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GS40-400    | GB40-400  | .040"           | .060"         | .400"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GS47-250    | GB47-250  | .047"           | .070"         | .250"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS47-350    | GB47-350  | .047"           | .070"         | .350"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GS47-450    | GB47-450  | .047"           | .070"         | .450"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GS62-300    | GB62-325  | .062"           | .093"         | .300"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS62-400    | GB62-400  | .062"           | .093"         | .400"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS62-500    | GB62-500  | .062"           | .093"         | .500"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS62-600    | GB62-600  | .062"           | .093"         | .600"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS62-750    | GB62-750  | .062"           | .093"         | .750"          | 1/8"           | 2-1/2"          | \$48.25    | \$52.55  |
| GS70-300    | GB70-300  | .070"           | .105"         | .300"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS70-400    | GB70-400  | .070"           | .105"         | .400"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS70-500    | GB70-500  | .070"           | .105"         | .500"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS78-400    | GB78-400  | .078"           | .117"         | .400"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS78-500    | GB78-500  | .078"           | .117"         | .500"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS78-600    | GB78-600  | .078"           | .117"         | .600"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS78-750    | GB78-750  | .078"           | .117"         | .750"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS93-400    | GB93-400  | .093"           | .139"         | .400"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS93-500    | GB93-500  | .093"           | .139"         | .500"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS93-600    | GB93-600  | .093"           | .139"         | .600"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS93-750    | GB93-750  | .093"           | .139"         | .750"          | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS93-100    | GB93-100  | .093"           | .139"         | 1.000"         | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |
| GS125-750   | GB125-750 | .125"           | .187"         | .750"          | 1/8"           | 2-1/2"          | \$43.95    | \$48.25  |
| GS125-100   | GB125-100 | .125"           | .187"         | 1.000"         | 1/8"           | 2-1/2"          | \$46.10    | \$50.40  |

# STUB - CORNER RAD - LG SHK - LG RCH - 3-FLT



## Corner Radius - **AMORPHOUS DIAMOND COATED**

### Stub Corner Radius, Long Shank, Long Reach End Mills



**MINIMUM  
3 TOOLS  
EACH SIZE**

**Shipped  
Within 24-48  
Hours**

2-1/2" OAL - Center Cutting - Micro Grain Carbide

**Tools are custom manufactured to order and are nonreturnable.**

| TOOL NUMBER  | Cutter Diameter | Corner Radius | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |
|--------------|-----------------|---------------|---------------|----------------|----------------|-----------------|------------|
| GR1031       | .031"           | .005"         | .046"         | .150"          | 1/8"           | 2-1/2"          | \$48.25    |
| GR1031L      | .031"           | .005"         | .046"         | .250"          | 1/8"           | 2-1/2"          | \$48.25    |
| GR1031XL     | .031"           | .005"         | .046"         | .300"          | 1/8"           | 2-1/2"          | \$50.40    |
| GR1040       | .040"           | .005"         | .060"         | .200"          | 1/8"           | 2-1/2"          | \$48.25    |
| GR1047       | .047"           | .005"         | .070"         | .250"          | 1/8"           | 2-1/2"          | \$48.25    |
| GR1047L      | .047"           | .005"         | .070"         | .350"          | 1/8"           | 2-1/2"          | \$50.40    |
| GR1062S      | .062"           | .005"         | .094"         | .300"          | 1/8"           | 2-1/2"          | \$48.25    |
| GR1062       | .062"           | .005"         | .094"         | .500"          | 1/8"           | 2-1/2"          | \$50.40    |
| GR1062L-010  | .062"           | .010"         | .094"         | .300"          | 1/8"           | 2-1/2"          | \$48.25    |
| GR1062XL-010 | .062"           | .010"         | .094"         | .500"          | 1/8"           | 2-1/2"          | \$50.40    |
| GR1070       | .070"           | .005"         | .105"         | .350"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1078       | .078"           | .005"         | .117"         | .400"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1078L      | .078"           | .005"         | .117"         | .500"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1078XL     | .078"           | .005"         | .117"         | .600"          | 1/8"           | 2-1/2"          | \$50.40    |
| GR1078-010   | .078"           | .010"         | .117"         | .400"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1078L-010  | .078"           | .010"         | .117"         | .500"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1078XL-010 | .078"           | .010"         | .117"         | .600"          | 1/8"           | 2-1/2"          | \$50.40    |
| GR1093       | .093"           | .005"         | .139"         | .500"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1093L      | .093"           | .005"         | .139"         | .750"          | 1/8"           | 2-1/2"          | \$48.25    |
| GR1093XL     | .093"           | .005"         | .139"         | 1.00"          | 1/8"           | 2-1/2"          | \$50.40    |
| GR1093-010   | .093"           | .010"         | .139"         | .500"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1093L-010  | .093"           | .010"         | .139"         | .750"          | 1/8"           | 2-1/2"          | \$48.25    |
| GR1093XL-010 | .093"           | .010"         | .139"         | 1.000"         | 1/8"           | 2-1/2"          | \$50.40    |
| GR1125       | .125"           | .005"         | .187"         | .750"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1125L      | .125"           | .005"         | .187"         | 1.000"         | 1/8"           | 2-1/2"          | \$48.25    |
| GR1125-010   | .125"           | .010"         | .187"         | .750"          | 1/8"           | 2-1/2"          | \$46.10    |
| GR1125L-010  | .125"           | .010"         | .187"         | 1.000"         | 1/8"           | 2-1/2"          | \$48.25    |



# DIAMOND - LONG FLUTE - 4-FLUTE

SQUARE & BALL END - **AMORPHOUS DIAMOND COATED**

Decimal End Mills Sized .015" to .062"



Center Cutting - Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| GRX4015     | GRX5015  | .015"           | .075"         | 1/8"           | 2-1/2"          | \$42.75    | \$48.10  |
| GRX4020     | GRX5020  | .020"           | .100"         | 1/8"           | 2-1/2"          | \$39.25    | \$42.45  |
| GRX4025     | GRX5025  | .025"           | .125"         | 1/8"           | 2-1/2"          | \$37.10    | \$40.30  |
| GRX4030     | GRX5030  | .030"           | .150"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4031     | GRX5031  | .031"           | .150"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4031L    | GRX5031L | .031"           | .250"         | 1/8"           | 2-1/2"          | \$53.70    | \$62.30  |
| GRX4035     | GRX5035  | .035"           | .175"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4040     | GRX5040  | .040"           | .200"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4045     | GRX5045  | .045"           | .250"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4047     | GRX5047  | .047"           | .250"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4047L    | GRX5047L | .047"           | .375"         | 1/8"           | 2-1/2"          | \$47.25    | \$52.60  |
| GRX4050     | GRX5050  | .050"           | .300"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4055     | GRX5055  | .055"           | .375"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4060     | GRX5060  | .060"           | .500"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4062S    | GRX5062S | .062"           | .312"         | 1/8"           | 2-1/2"          | \$33.25    | \$34.95  |
| GRX4062     | GRX5062  | .062"           | .500"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4062L    | GRX5062L | .062"           | .750"         | 1/8"           | 2-1/2"          | \$49.40    | \$53.70  |

Special reaches for deep pocket milling quoted on request.

Continued Next Page

**GRX Diamond end mills for machining Graphite, Aluminum, abrasive plastics and composites.**

"GRX" series of amorphous diamond coated mills lower tooling costs and improve productivity over uncoated carbide.



# DIAMOND – LONG FLUTE – 4-FLUTE



## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

Decimal End Mills Sized .065" to .500"



Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| GRX4065     | GRX5065  | .065"           | .500"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4070     | GRX5070  | .070"           | .500"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4075     | GRX5075  | .075"           | .500"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4078     | GRX5078  | .078"           | .500"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4078L    | GRX5078L | .078"           | .750"         | 1/8"           | 2-1/2"          | \$49.40    | \$53.70  |
| GRX4090     | GRX5090  | .090"           | .500"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4093     | GRX5093  | .093"           | .500"         | 1/8"           | 2-1/2"          | \$36.50    | \$39.70  |
| GRX4093L    | GRX5093L | .093"           | .750"         | 1/8"           | 2-1/2"          | \$38.65    | \$42.95  |
| GRX4125     | GRX5125  | .125"           | .750"         | 1/8"           | 3"              | \$36.50    | \$39.70  |
| GRX4125L    | GRX5125L | .125"           | 1.00"         | 1/8"           | 3"              | \$38.15    | \$42.95  |
| GRX4187     | GRX5187  | .187"           | 1.125"        | 3/16"          | 3"              | \$42.45    | \$45.70  |
| GRX4250     | GRX5250  | .250"           | 1.500"        | 1/4"           | 4"              | \$48.90    | \$53.20  |
| GRX4375     | GRX5375  | .375"           | 1.750"        | 3/8"           | 4"              | \$71.50    | \$76.85  |
| GRX4500     | GRX5500  | .500"           | 2.000"        | 1/2"           | 4"              | \$117.70   | \$128.45 |

Special reaches for deep pocket milling quoted on request.

### Special Cutting Tool Quotations

Microcut's capability to produce Standard cutting tools is replicated by its ability to produce Special Cutting Tools. Quality, competitive pricing, and on-time delivery has been a Microcut trademark for almost 20 years. Microcut's workforce experience in producing special Micro Tools dates back over 40 years and makes us one of the most experienced Micro Tool companies in the U.S.A. Submit your special tool B/P to us by fax at 781-582-8095 or email to sales@microcutUSA.com and we will quote it through the distributor of your choice that services your facility.



# LONG FLUTE - LONG REACH - 4-FLUTE

## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Long Flute & Long Reach End Mills

HIGH PERFORMANCE DESIGN



**MINIMUM  
3 TOOLS  
EACH SIZE**

**SHIPPED  
WITHIN  
24 - 48  
HOURS**

Center Cutting - Micro Grain Carbide

High Performance thin film Diamond coated carbide end mills for Extra Deep Machining of graphite, aluminum, and composite materials.

All end mills have reduced neck diameters to prevent work piece contact.  
Special reaches for deep pocket milling quoted on request.

| TOOL NUMBER |          | Cutter Diameter      | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|----------------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                      |               |                |                |                 | Square End | Ball End |
| GRX4515     | GRX5515  | <b>1/64" (.0156)</b> | .075"         | .150"          | 1/8"           | 2-1/2"          | \$48.10    | \$53.50  |
| GRX4520     | GRX5520  | <b>.020"</b>         | .100"         | .200"          | 1/8"           | 2-1/2"          | \$44.60    | \$47.85  |
| GRX4525     | GRX5525  | <b>.025"</b>         | .125"         | .250"          | 1/8"           | 2-1/2"          | \$41.40    | \$45.10  |
| GRX4530     | GRX5530  | <b>.030"</b>         | .150"         | .300"          | 1/8"           | 2-1/2"          | \$41.40    | \$45.10  |
| GRX4531     | GRX5531  | <b>1/32" (.0312)</b> | .150"         | .300"          | 1/8"           | 2-1/2"          | \$41.40    | \$45.10  |
| GRX4535     | GRX5535  | <b>.035"</b>         | .175"         | .350"          | 1/8"           | 2-1/2"          | \$41.40    | \$45.10  |
| GRX4540     | GRX5540  | <b>.040"</b>         | .200"         | .400"          | 1/8"           | 2-1/2"          | \$41.40    | \$45.10  |
| GRX4545     | GRX5545  | <b>.045"</b>         | .250"         | .450"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4547     | GRX5547  | <b>3/64" (.0469)</b> | .250"         | .500"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4550     | GRX5550  | <b>.050"</b>         | .300"         | .500"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4555     | GRX5555  | <b>.055"</b>         | .375"         | .500"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4560S    | GRX5560S | <b>.060"</b>         | .500"         | .750"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4560     | GRX5560  | <b>.060"</b>         | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$45.40    | \$48.90  |
| GRX4562S    | GRX5562S | <b>1/16" (.0625)</b> | .500"         | .750"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4562     | GRX5562  | <b>1/16" (.0625)</b> | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$45.40    | \$48.90  |

Continued Next Page

**Tools are custom manufactured to order and are nonreturnable.**

**Minimum order 3 pieces per size.**

**Tools ground to order and shipped within 24-48 hours or less.**

# LONG FLUTE – LONG REACH – 4-FLUTE



## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Long Flute & Long Reach End Mills

HIGH PERFORMANCE DESIGN



**MINIMUM  
3 TOOLS  
EACH SIZE**

**SHIPPED  
WITHIN  
24 - 48  
HOURS**

Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                |                 | Square End | Ball End |
| GRX4565     | GRX5565  | .065"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4570     | GRX5570  | .070"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4575S    | GRX5575S | .075"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4575     | GRX5575  | .075"           | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$45.40    | \$48.90  |
| GRX4578S    | GRX5578S | 5/64" (.0781)   | .500"         | .750"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4578     | GRX5578  | 5/64" (.0781)   | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$45.40    | \$48.90  |
| GRX4590S    | GRX5590S | .090"           | .500"         | .750"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4590     | GRX5590  | .090"           | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$45.40    | \$48.90  |
| GRX4593S    | GRX5593S | 3/32" (.0937)   | .500"         | .750"          | 1/8"           | 2-1/2"          | \$41.10    | \$44.60  |
| GRX4593L    | GRX5593L | 3/32" (.0937)   | .500"         | 1.00"          | 1/8"           | 2-1/2"          | \$45.40    | \$48.90  |
| GRX4593     | GRX5593  | 3/32" (.0937)   | .500"         | 1.25"          | 1/8"           | 2-1/2"          | \$45.40    | \$48.90  |
| GRX45125    | GRX55125 | 1/8" (.1250)    | .750"         | 1.50"          | 1/8"           | 3"              | \$41.10    | \$44.60  |
| GRX45187    | GRX55187 | 3/16" (.1875)   | 1.125"        | 1.625"         | 3/16"          | 3"              | \$48.90    | \$52.60  |
| GRX45250    | GRX55250 | 1/4" (.2500)    | 1.500"        | 2.00"          | 1/4"           | 4"              | \$55.85    | \$58.00  |

**Tools are custom manufactured to order and are nonreturnable.**

**Minimum order 3 pieces per size.**

**Tools ground to order and shipped within 24-48 hours or less.**

Amorphous diamond coated end mills are engineered for machining graphite, aluminum, nonferrous metals, plastics and composite materials.



# DIAMOND – STUB – 4-FLUTE

## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Stub Long Shank Miniature End Mills



Length of Cut = 2 x Diameter – Center Cutting – Micro Grain Carbide

| TOOL NUMBER |          | Cutter Diameter | Length of Cut | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|----------|-----------------|---------------|----------------|-----------------|------------|----------|
| Square End  | Ball End |                 |               |                |                 | Square End | Ball End |
| GRX6515     | GRX7515  | .015"           | .030"         | 1/8"           | 2-1/2"          | \$41.65    | \$47.05  |
| GRX6520     | GRX7520  | .020"           | .040"         | 1/8"           | 2-1/2"          | \$38.15    | \$41.40  |
| GRX6525     | GRX7525  | .025"           | .050"         | 1/8"           | 2-1/2"          | \$36.00    | \$39.25  |
| GRX6530     | GRX7530  | .030"           | .060"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6531     | GRX7531  | .031"           | .062"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6535     | GRX7535  | .035"           | .070"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6540     | GRX7540  | .040"           | .080"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6545     | GRX7545  | .045"           | .090"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6547     | GRX7547  | .047"           | .094"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6550     | GRX7550  | .050"           | .100"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6560     | GRX7560  | .060"           | .120"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6562     | GRX7562  | .062"           | .125"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6565     | GRX7565  | .065"           | .130"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6570     | GRX7570  | .070"           | .140"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6575     | GRX7575  | .075"           | .150"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6578     | GRX7578  | .078"           | .156"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6590     | GRX7590  | .090"           | .180"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX6593     | GRX7593  | .093"           | .186"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |
| GRX65125    | GRX75125 | .125"           | .250"         | 1/8"           | 2-1/2"          | \$35.40    | \$38.65  |

Long Reach - Stub Length end mills are available on the next page.  
Special reaches quoted on request and ship within 24-48 hours.

**Minimum order 3 pieces per size.**

### RUN FAST.....RUN DEEP.....RUN LONG

## GRX Mills for Machining Graphite Electrodes

Microcut's "GRX" series of amorphous diamond coated end mills improve productivity over uncoated carbide. High performance Diamond Coated carbide end mills are for **extra deep machining** of graphite, aluminum, and composite materials. Stocked in a size range of .015" to .125" diameter and also available with extended reach capabilities.



# DIAMOND - LG REACH - STUB - 4-FLUTE



## SQUARE & BALL END - AMORPHOUS DIAMOND COATED

### Stub Long Reach Miniature End Mills



**MINIMUM  
3 TOOLS  
EACH SIZE**

**SHIPPED  
WITHIN  
24 - 48  
HOURS**

Length of Cut = 2 x Diameter - Center Cutting - Micro Grain Carbide

| TOOL NUMBER |           | Cutter Diameter | Length of Cut | Reach From Tip | Shank Diameter | Over All Length | PRICE EACH |          |
|-------------|-----------|-----------------|---------------|----------------|----------------|-----------------|------------|----------|
| Square End  | Ball End  |                 |               |                |                |                 | Square End | Ball End |
| GRX6015S    | GRX7015S  | .015"           | .030"         | .100"          | 1/8"           | 2-1/2"          | \$43.25    | \$51.85  |
| GRX6015     | GRX7015   | .015"           | .030"         | .150"          | 1/8"           | 2-1/2"          | \$43.25    | \$51.85  |
| GRX6020     | GRX7020   | .020"           | .040"         | .175"          | 1/8"           | 2-1/2"          | \$41.85    | \$50.45  |
| GRX6025     | GRX7025   | .025"           | .050"         | .200"          | 1/8"           | 2-1/2"          | \$41.85    | \$50.45  |
| GRX6030     | GRX7030   | .030"           | .060"         | .250"          | 1/8"           | 2-1/2"          | \$40.30    | \$45.70  |
| GRX6031S    | GRX7031S  | .031"           | .062"         | .150"          | 1/8"           | 2-1/2"          | \$40.30    | \$45.70  |
| GRX6031     | GRX7031   | .031"           | .062"         | .250"          | 1/8"           | 2-1/2"          | \$40.30    | \$45.70  |
| GRX6035     | GRX7035   | .035"           | .070"         | .280"          | 1/8"           | 2-1/2"          | \$40.30    | \$44.00  |
| GRX6040     | GRX7040   | .040"           | .080"         | .325"          | 1/8"           | 2-1/2"          | \$40.30    | \$44.00  |
| GRX6045     | GRX7045   | .045"           | .090"         | .360"          | 1/8"           | 2-1/2"          | \$40.30    | \$44.00  |
| GRX6047     | GRX7047   | .047"           | .094"         | .250"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6047L    | GRX7047L  | .047"           | .094"         | .375"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6050     | GRX7050   | .050"           | .100"         | .400"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6060     | GRX7060   | .060"           | .120"         | .500"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6062     | GRX7062   | .062"           | .125"         | .500"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6062L    | GRX7062L  | .062"           | .125"         | .750"          | 1/8"           | 2-1/2"          | \$44.00    | \$48.30  |
| GRX6062XL   | GRX7062XL | .062"           | .125"         | 1.00"          | 1/8"           | 2-1/2"          | \$48.30    | \$52.60  |
| GRX6065     | GRX7065   | .065"           | .130"         | .500"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6070     | GRX7070   | .070"           | .140"         | .500"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6075     | GRX7075   | .075"           | .150"         | .500"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6078     | GRX7078   | .078"           | .156"         | .500"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6078L    | GRX7078L  | .078"           | .156"         | .750"          | 1/8"           | 2-1/2"          | \$44.00    | \$48.30  |
| GRX6078XL   | GRX7078XL | .078"           | .156"         | 1.00"          | 1/8"           | 2-1/2"          | \$48.30    | \$52.60  |
| GRX6090     | GRX7090   | .090"           | .180"         | .500"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6093     | GRX7093   | .093"           | .186"         | .500"          | 1/8"           | 2-1/2"          | \$39.70    | \$44.00  |
| GRX6093L    | GRX7093L  | .093"           | .186"         | .750"          | 1/8"           | 2-1/2"          | \$44.00    | \$48.30  |
| GRX6093XL   | GRX7093XL | .093"           | .186"         | 1.00"          | 1/8"           | 2-1/2"          | \$48.30    | \$52.60  |
| GRX6125     | GRX7125   | .125"           | .250"         | 1.25"          | 1/8"           | 2-1/2"          | \$44.00    | \$48.30  |

**Tools are custom manufactured to order and are nonreturnable.**



# CVD ULTRA FINE DIAMOND END MILLS

## New CVD ULTRA FINE Diamond End Mills

### SQUARE END - 4-FLUTE



Standard - Center Cutting - Micro Grain Carbide

Chemical Vapor Deposition (CVD) results in the ability to deposit pure diamond on a special grades of tungsten carbide substrate. This process allows for tighter manufacturing tolerances and superior tool life compared to other less expensive CVD diamond coating applications. CVD Ultra-Fine by Microcut results in longer tool life, greatly improved workpiece surface finishes, and improved productivity, resulting in lower tooling costs.

Microcut's CVD Ultra-Fine Diamond Tools, the most wear resistant CVD diamond cutting tools.

| TOOL NUMBER | Cutter Diameter | Length of Cut | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------|----------------|-----------------|------------|
| 77031       | .031"           | .093"         | 4                | 1/8"           | 1-1/2"          | \$56.75    |
| 77031L      | .031"           | .093"         | 4                | 1/8"           | 3"              | \$89.90    |
| 77062       | .062"           | .187"         | 4                | 1/8"           | 1-1/2"          | \$63.75    |
| 77062L      | .062"           | .187"         | 4                | 1/8"           | 3"              | \$89.90    |
| 77093       | .093"           | .375"         | 4                | 1/8"           | 1-1/2"          | \$63.75    |
| 77093L      | .093"           | .281"         | 4                | 1/8"           | 3"              | \$89.90    |
| 77125       | .125"           | .500"         | 4                | 1/8"           | 1-1/2"          | \$69.90    |
| 77125L      | .125"           | 1.00"         | 4                | 1/8"           | 3"              | \$92.75    |
| 77187       | .187"           | .625"         | 4                | 3/16"          | 2-1/2"          | \$76.90    |
| 77250       | .250"           | .750"         | 4                | 1/4"           | 2-1/2"          | \$84.75    |
| 77250L      | .250"           | 1.25"         | 4                | 1/4"           | 3"              | \$125.75   |

### BALL END - 4-FLUTE



| TOOL NUMBER | Cutter Diameter | Length of Cut | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------|----------------|-----------------|------------|
| 77031B      | .031"           | .093"         | 4                | 1/8"           | 1-1/2"          | \$63.75    |
| 77031LB     | .031"           | .093"         | 4                | 1/8"           | 3"              | \$95.90    |
| 77062B      | .062"           | .187"         | 4                | 1/8"           | 1-1/2"          | \$69.75    |
| 77062LB     | .062"           | .187"         | 4                | 1/8"           | 3"              | \$95.90    |
| 77093B      | .093"           | .375"         | 4                | 1/8"           | 1-1/2"          | \$69.75    |
| 77093LB     | .093"           | .281"         | 4                | 1/8"           | 3"              | \$95.90    |
| 77125B      | .125"           | .500"         | 4                | 1/8"           | 1-1/2"          | \$75.90    |
| 77125LB     | .125"           | 1.00"         | 4                | 1/8"           | 3"              | \$98.75    |
| 77187B      | .187"           | .625"         | 4                | 3/16"          | 2-1/2"          | \$95.90    |
| 77250B      | .250"           | .750"         | 4                | 1/4"           | 2-1/2"          | \$90.75    |
| 77250LB     | .250"           | 1.25"         | 4                | 1/4"           | 3"              | \$132.75   |



## New CVD ULTRA FINE Diamond End Mills

### LONG REACH - SQUARE END - 4-FLUTE



**MINIMUM  
3 TOOLS  
EACH SIZE**

**SHIPPED  
WITHIN  
24 - 48  
HOURS**

Standard - Center Cutting - Micro Grain Carbide

**Tools are custom manufactured to order and are nonreturnable.**

| TOOL NUMBER | Cutter Diameter | Length of Cut | Reach From Tip | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|------------------|----------------|-----------------|------------|
| 78001       | .031"           | .093"         | .250"          | 4                | 1/8"           | 1-1/2"          | \$71.75    |
| 78004       | .031"           | .093"         | .400"          | 4                | 1/8"           | 3"              | \$94.75    |
| 78007       | .031"           | .093"         | .625"          | 4                | 1/8"           | 3"              | \$94.75    |
| 78009       | .062"           | .187"         | .500"          | 4                | 1/8"           | 1-1/2"          | \$78.75    |
| 78012       | .062"           | .187"         | .500"          | 4                | 1/8"           | 3"              | \$94.75    |
| 78015       | .062"           | .187"         | .750"          | 4                | 1/8"           | 3"              | \$94.75    |
| 78018       | .062"           | .187"         | 1.00"          | 4                | 1/8"           | 3"              | \$104.75   |
| 78021       | .093"           | .375"         | .600"          | 4                | 1/8"           | 1-1/2"          | \$78.75    |
| 78024       | .093"           | .281"         | 1.00"          | 4                | 1/8"           | 3"              | \$94.75    |
| 78027       | .125"           | .500"         | .650"          | 4                | 1/8"           | 1-1/2"          | \$79.90    |
| 78030       | .125"           | .375"         | .750"          | 4                | 1/8"           | 3"              | \$94.75    |
| 78033       | .125"           | .375"         | 1.00"          | 4                | 1/8"           | 3"              | \$94.75    |
| 78036       | .125"           | .375"         | 1.50"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78039       | .125"           | .375"         | 2.00"          | 4                | 1/8"           | 3"              | \$110.75   |
| 78041       | .187"           | .625"         | 1.00"          | 4                | 3/16"          | 2-1/2"          | \$91.90    |
| 78044       | .250"           | 1.25"         | 1.75"          | 4                | 1/4"           | 3"              | \$139.75   |

### LONG REACH - BALL END - 4-FLUTE



**MINIMUM  
3 TOOLS  
EACH SIZE**

**SHIPPED  
WITHIN  
24 - 48  
HOURS**

Standard - Center Cutting - Micro Grain Carbide

**Tools are custom manufactured to order and are nonreturnable.**

| TOOL NUMBER | Cutter Diameter | Length of Cut | Reach From Tip | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|----------------|------------------|----------------|-----------------|------------|
| 78001B      | .031"           | .093"         | .250"          | 4                | 1/8"           | 1-1/2"          | \$78.75    |
| 78004B      | .031"           | .093"         | .400"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78007B      | .031"           | .093"         | .625"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78009B      | .062"           | .187"         | .500"          | 4                | 1/8"           | 1-1/2"          | \$84.75    |
| 78012B      | .062"           | .187"         | .500"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78015B      | .062"           | .187"         | .750"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78018B      | .062"           | .187"         | 1.00"          | 4                | 1/8"           | 3"              | \$109.75   |
| 78021B      | .093"           | .375"         | .600"          | 4                | 1/8"           | 1-1/2"          | \$84.75    |
| 78024B      | .093"           | .281"         | 1.00"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78027B      | .125"           | .500"         | .650"          | 4                | 1/8"           | 1-1/2"          | \$85.90    |
| 78030B      | .125"           | .375"         | .750"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78033B      | .125"           | .375"         | 1.00"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78036B      | .125"           | .375"         | 1.50"          | 4                | 1/8"           | 3"              | \$104.75   |
| 78039B      | .125"           | .375"         | 2.00"          | 4                | 1/8"           | 3"              | \$116.75   |
| 78041B      | .187"           | .625"         | 1.00"          | 4                | 3/16"          | 2-1/2"          | \$110.90   |
| 78044B      | .250"           | 1.25"         | 1.75"          | 4                | 1/4"           | 3"              | \$149.75   |



# CVD ULTRA FINE DIAMOND END MILLS

## New CVD ULTRA FINE Diamond End Mills

### CORNER RADIUS - LONG REACH - EXTENDED SHANK



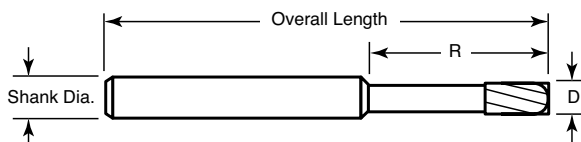
Standard – Center Cutting – Micro Grain Carbide

Chemical Vapor Deposition (CVD) results in the ability to deposit pure diamond on a special grades of tungsten carbide substrate. This process allows for tighter manufacturing tolerances and superior tool life compared to other less expensive CVD diamond coating applications. CVD Ultra-Fine by Microcut results in longer tool life, greatly improved workpiece surface finishes, and improved productivity, resulting in lower tooling costs.

Microcut's CVD Ultra-Fine Diamond Tools, the most wear resistant CVD diamond cutting tools.

| TOOL NUMBER | Cutter Diameter | Corner Radius | Length of Cut | Reach From Tip | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|----------------|------------------|----------------|-----------------|------------|
| 78201       | .031"           | .005"         | .093"         | .250"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78205       | .031"           | .005"         | .093"         | .400"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78209       | .047"           | .010"         | .141"         | .300"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78213       | .047"           | .010"         | .141"         | .600"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78217       | .062"           | .010"         | .187"         | .500"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78221       | .062"           | .010"         | .187"         | .750"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78225       | .062"           | .010"         | .187"         | 1.00"          | 4                | 1/8"           | 3"              | \$104.75   |
| 78229       | .093"           | .010"         | .281"         | .750"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78233       | .093"           | .010"         | .281"         | 1.00"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78237       | .125"           | .010"         | .375"         | .750"          | 4                | 1/8"           | 3"              | \$99.75    |
| 78241       | .125"           | .010"         | .375"         | 1.00"          | 4                | 1/8"           | 3"              | \$104.75   |
| 78245       | .125"           | .010"         | .375"         | 1.50"          | 4                | 1/8"           | 3"              | \$109.75   |

### ORDER SPECIAL LONG REACH CVD DIAMOND COATED END MILLS



To order special long reach CVD end mills please specify:

- Specify:  Square End  Ball End  Corner Radius.
- Corner Radius from CVD chart Page 136: \_\_\_\_\_
- Diameter (D) from CVD specifications: \_\_\_\_\_
- Overall Reach: \_\_\_\_\_
- Overall Length: \_\_\_\_\_
- Quantity (Minimum 3 Per Size): \_\_\_\_\_

**Special Reaches  
Shipped  
within  
24-48 Hours!**

**Tools are custom manufactured to order and are nonreturnable.**

## PCD Brazed on Carbide Shank

### SQUARE END



2 Straight Flutes - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------|----------------|-----------------|------------|
| PC1093      | 3/32"           | 3/16"         | 1                | 1/8"           | 1-1/2"          | \$163.60   |
| PC2125      | 1/8"            | 1/4"          | 1                | 1/8"           | 1-1/2"          | \$163.60   |
| PC2187      | 3/16"           | 1/4"          | 2                | 3/16"          | 2"              | \$181.90   |
| PC2250      | 1/4"            | 1/4"          | 2                | 1/4"           | 2-1/2"          | \$195.85   |
| PC2375      | 3/8"            | 1/4"          | 2                | 3/8"           | 2-1/2"          | \$235.65   |
| PC2500      | 1/2"            | 1/4"          | 2                | 1/2"           | 3"              | \$299.50   |

### BALL END



2 Straight Flutes - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|------------------|----------------|-----------------|------------|
| PC1093B     | 3/32"           | 3/16"         | 1                | 1/8"           | 1-1/2"          | \$195.85   |
| PC2125B     | 1/8"            | 1/4"          | 1                | 1/8"           | 1-1/2"          | \$195.85   |
| PC2187B     | 3/16"           | 1/4"          | 2                | 3/16"          | 2"              | \$209.85   |
| PC2250B     | 1/4"            | 5/16"         | 2                | 1/4"           | 2-1/2"          | \$219.50   |

### CORNER RADIUS



2 Straight Flutes - Center Cutting - Micro Grain Carbide

| TOOL NUMBER | Cutter Diameter | Length of Cut | Corner Radius | Number of Flutes | Shank Diameter | Over All Length | PRICE EACH |
|-------------|-----------------|---------------|---------------|------------------|----------------|-----------------|------------|
| PC1093R     | 3/32"           | 3/16"         | .010"         | 1                | 1/8"           | 1-1/2"          | \$195.85   |
| PC2125R     | 1/8"            | 1/4"          | .015"         | 1                | 1/8"           | 1-1/2"          | \$195.85   |
| PC2187R     | 3/16"           | 1/4"          | .015"         | 2                | 3/16"          | 2"              | \$209.85   |
| PC2250R     | 1/4"            | 1/4"          | .030"         | 2                | 1/4"           | 2-1/2"          | \$219.50   |
| PC2375R     | 3/8"            | 1/4"          | .030"         | 2                | 3/8"           | 2-1/2"          | \$271.50   |
| PC2500R     | 1/2"            | 1/4"          | .030"         | 2                | 1/2"           | 3"              | \$316.50   |

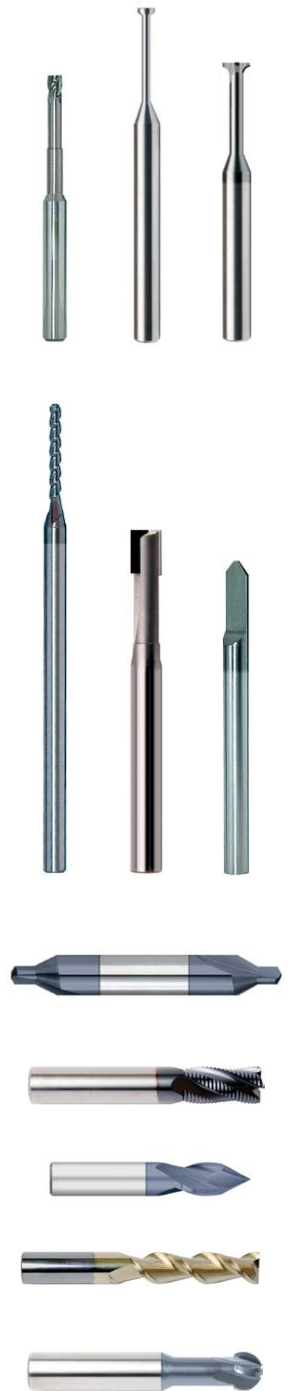
PCD is a thin wafer of diamond plate that is brazed on to a solid carbide preformed blank. The diamond plate is formed into different shapes by wire EDM and cutting edges are ground and polished to achieve an extremely sharp and accurate cutting edge. PCD diamond is used to cut Abrasive Plastics, Carbon Fiber, Graphite, Copper, Aluminum, Magnesium, and other nonferrous materials. All shapes are ground to cut to center for plunging into solid material.

# TOOL SERIES LOOK-UP BY PRODUCT NUMBER

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|     | 14000         | 116         | 41000US       | 109         | 59400         | 59          |
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|   | 23000         | 105         | 49000         | 100         | 62015 & TL    | 112         |
|     | 23000LR       | 105         | 49000TL       | 100         | 63000 & Z     | 80          |
|   | 24000         | 104         | 49000LR       | 101         | 63000R & RZ   | 80          |
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|   | 26200         | 104         | 51200B        | 40          | 65015         | 112         |
|   | 28000         | 95          | 51300         | 40          | 65015TL       | 112         |
|   | 28000TL       | 95          | 51300B        | 40          | 66000         | 113         |
|   | 28000SP & SPT | 94          | 51400         | 41          | 66000TL       | 113         |
|  | 28400         | 94          | 51400B        | 41          | 67000         | 113         |
|  | 28400TL       | 94          | 51500         | 41          | 67000TL       | 113         |
|   | 30100         | 108         | 51500B        | 41          | 68000         | 113         |
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| 80000Z    | 76   | 98000FL   | 86     | LF6000    | 53   |
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