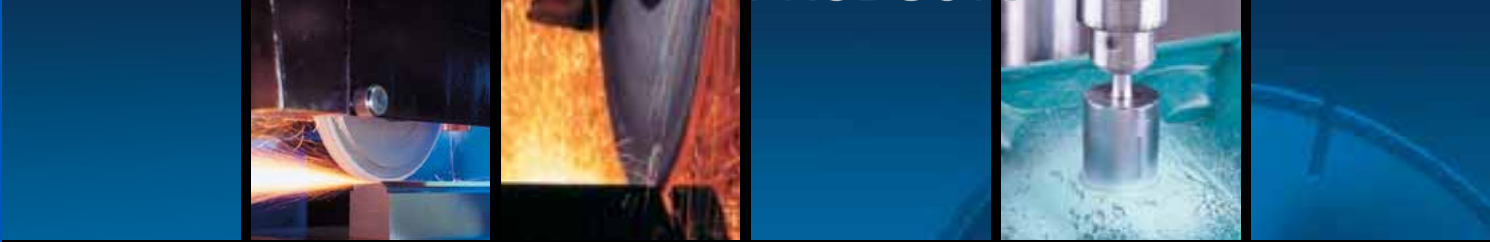


NORTON

2010 2011

ELECTROPLATED DIAMOND AND cBN PRODUCTS



**TODAY'S SOLUTIONS
TOMORROW'S STANDARDS**

www.nortonindustrial.com

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Identifying Target Markets:

An industry key is provided beside each product. This key identifies markets that typically use the product:

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES

Placing an Order

Our many products and services can be ordered through our network of quality industrial distributors. To ensure accurate and rapid order fulfillment, please provide your distributor with:

- **UPC Number:** the 11-digit number found in each product availability chart in the first left-hand column
- **Product Description:** such as a cBN mounted point or a diamond wheel
- **Dimensions and Wheel Shape:** such as 6 x 7/16 x 1-1-1/4 T type 6A2C diamond wheel
- **Product Specification:** such as 100 grit, diamond
- **Order quantity**

Strip and Replate Services and Custom-Made Products

Ask Customer Service for information and quotations on our complete strip and replate services on many electroplated products.

And, when your application calls for a product design not available from our standard offering, Norton can provide a made-to order product engineered to your drawings.

Contact Your Norton Distributor or Norton Customer Service

US Customer Service

Phone Toll Free: (800) 551-4413
 Fax Toll Free: (800) 551-4416
 Local Phone: (254) 918-2313
 Local Fax: (254) 918-2314

Canadian Customer Service

Telephone: (800) 263-6565
 Fax: (800) 561-9490

Technical Information

To ensure correct usage and maximum performance of our products, refer to the following General Information and Tech Tip pages.



Norton No-Risk Test Policy

There is no better time to improve productivity in your abrasive operations. Saint-Gobain's new No-Risk Productivity Policy is designed to help you improve any of your production goals including improved cycle times, lower total production costs, higher quality parts, or improved finish, while eliminating any risk. You define the metrics that determine a successful test as well as what is necessary to eliminate any risks, and our technical salesperson will identify the right product to help you meet your production needs, no matter what competitive product you are currently using.

WHAT DOES NO RISK MEAN?

- 1 You have absolutely nothing to lose and everything to gain.
- 2 You define the application requirements and the metrics of a successful test.
- 3 You define the definition of No-Risk in terms of cost to test, downtime, part rejection, and any other risk that is important to you.
- 4 You define the time period of the test.



Abrasive Applications

Although diamond and cBN (cubic Boron Nitride) are both superabrasives, the use of diamond and cBN varies, depending upon the materials to be ground.

Diamond Grinds:

- Cemented carbide
- Glass
- Ceramics
- Fiberglass
- Plastics
- Composites
- Abrasives
- Stone
- Electronic components and materials

cBN Grinds:

- High-speed tool steels
- Die steel
- Hardened carbon steels
- Hardened stainless steels
- Alloy steels
- Aerospace alloys
- Abrasion-resistant ferrous materials

In general, cBN is used to grind ferrous materials. Diamond is used to grind non-ferrous materials, because it reacts with iron.

Surface Finish

Use this chart only as a guide. Surface finish is affected by a number of variables: machine type and condition, type of material, coolant, wheel speed, bond system, etc.

Expected RMS Finish

GRIT SIZE	RESIN-BOND DIAMOND	RESIN-BOND cBN (OSCILLATION)	ELECTROPLATED
80	24-30		90-125
100	18-24	35-40	64-90
120	16-18	30-35	48-64
150	14-16	25-30	32-48
180	12-14	20-25	24-32
220	10-12	15-20	20-24
240	8-10	10-15	16-20
320	8	5-10	16-20
400	6-8	4-8	14-20
500	6		12-13
600	5-6		12
800	3-5		12
1200	2-4		12
1500	2		12

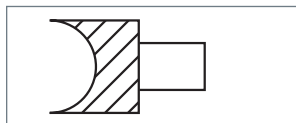
Made-to-Order Electroplated Product Guide

The stock electroplated products offered on the following pages have been engineered to meet the diversity of demands typical in today's manufacturing environment.

When special forms, shapes and configurations are required, Norton electroplated diamond and cBN products can be fabricated in almost any geometry. In addition, strip and replate services are available.

Customers may prefer to manufacture their own preforms/blanks for custom products and in many cases this can reduce cost and lead times.

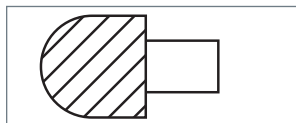
The instructions below detail the necessary allowances for each grit size. Please refer to these whenever manufacturing blanks.



Area to be plated (female radius)

Female radius must be larger than the finished size required.

Example – If a .500 female radius is required with 60/80 grit, then the blank should be manufactured .011 larger = .511



Area to be plated (male radius)

A male radius must be smaller than the finished size required.

Example – If a .500 male radius is required with 60/80 grit, then the blank should be manufactured .011 smaller = .489

Grit Size Allowance for Plated Products

GRIT SIZE	ALLOWANCE/PARTICLE SIZE
20/30	.035
30/40	.025
40/50	.018
60/80	.011
80/100	.008
100/120	.007
120/140	.006
140/170	.005
170/200	.004
200/230	.0035
270/325	.003
4.5 Micron – 400	.0025
30 Micron – 600	.0016
15 Micron – 1200	.001

THIS SHOULD BE USED AS A GUIDE WHEN MANUFACTURING BLANKS TO BE PLATED WITH DIAMOND OR CBN.

TECHtip

COOLANTS

Although coolants may not be necessary, using a coolant produces superior surface finishes, a longer tool life, higher performance, and reduces tool loading.

FEEDS

Suggested feeds for jig or internal grinding are from .0002" – .0004" per pass.

SPEEDS

Maximum Operating Speeds (MOS)

Never exceed the maximum operating speed marked on the superabrasive product being used.

Electroplated Products: 10,000 SFPM

Maximum speeds are a function of the length of overhang and size of the product. Refer to "Safe Operating Speeds" in form #2872, provided with your product.

Recommended Operating Speeds

The preceding speed is the maximum safe speed and not necessarily the most efficient. Superabrasive products operate most effectively at speeds lower than the maximum. The following are general recommendations. cBN products, in many cases, are used effectively at higher speeds.

Electroplated Diamond Products: 5,000 to 10,000 SFPM

Electroplated cBN Products: 8,000 to 10,000 SFPM

Calculating Operating Speed

The following formula may be used to quickly calculate wheel speed: RPM = Revolutions Per Minute
SFPM = Surface Feet Per Minute

To convert SFPM to RPM: (Multiply SFPM x 3.82) divided by wheel diameter in inches

NORTON ELECTROPLATED DIAMOND AND cBN PRODUCTS

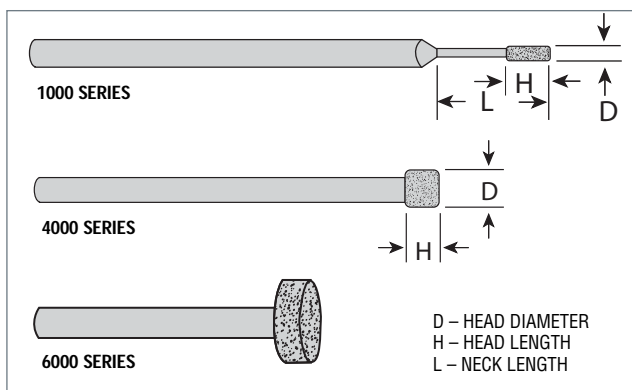
Electroplated Mounted Points

DIAMOND AND cBN MOUNTED POINTS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action
• Variety of tools and grit sizes available as stock	• Satisfies most tool and die and deburring requirements
• Mandrels are made of high-speed tool steel	• Withstand operating pressure

Use Norton diamond mounted points for precise, small hole, jig and internal grinding of carbide, ceramics, sapphire, glass, and a variety of tough, super alloys.

For grinding tough, high carbon, high chrome steel, use cBN mounted points.



UPC NO.	PRODUCT NO.	HEAD DIAMETER INCHES	HEAD LENGTH	NECK LENGTH	GRIT SIZE
1000 SERIES – DIAMOND					
1/8" Shank x 2-1/4" Overall Length					
66260392429	1016FD	.016	.079	1/8	200
66260392432	1020MD	.020	.079	1/8	150
66260392431	1020FD	.020	.079	1/8	200
66260392436	1025MD	.025	.079	1/8	150
66260392435	1025FD	.025	.079	1/8	200
66260392440	1030MD	.030	.079	1/4	150
66260392439	1030FD	.030	.079	1/4	200
66260392445	1035CD	.035	.118	1/4	100
66260392444	1035MD	.035	.118	1/4	150
66260392443	1035FD	.035	.118	1/4	200
66260392451	1040CD	.040	.118	1/4	100
66260392450	1040MD	.040	.118	1/4	150
66260392449	1040FD	.040	.118	1/4	200
66260392457	1045CD	.045	.118	1/4	100
66260392456	1045MD	.045	.118	1/4	150
66260392455	1045FD	.045	.118	1/4	200
66260392463	1050CD	.050	.118	1/2	100
66260392462	1050MD	.050	.118	1/2	150
66260392461	1050FD	.050	.118	1/2	200
66260392469	1050LCD	.050	.118	1	100
66260392468	1050LMD	.050	.118	1	150
66260392467	1050LFD	.050	.118	1	200
66260392475	1055CD	.055	.118	1/2	100
66260392474	1055MD	.055	.118	1/2	150
66260392473	1055FD	.055	.118	1/2	200
66260392481	1060CD	.060	.157	1/2	100

* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIME. + AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.



UPC NO.	PRODUCT NO.	HEAD DIAMETER INCHES	HEAD LENGTH	NECK LENGTH	GRIT SIZE
1000 SERIES – DIAMOND (CONTINUED)					
1/8" Shank x 2-1/4" Overall Length					
66260392480	1060MD	.060	.157	1/2	150
66260392479	1060FD	.060	.157	1/2	200
66260392487	1060LCD	.060	.157	1	100
66260392486	1060LMD	.060	.157	1	150
66260392485 +	1060LFD	.060	.157	1	200
66260392493 +	1065CD	.065	.157	1/2	100
66260392492	1065MD	.065	.157	1/2	150
66260392491	1065FD	.065	.157	1/2	200
66260392499	1070CD	.070	.157	1/2	100
66260392498	1070MD	.070	.157	1/2	150
66260392497	1070FD	.070	.157	1/2	200
66260392505	1070LCD	.070	.157	1	100
66260392504 *	1070LMD	.070	.157	1	150
66260392503 *	1070LFD	.070	.157	1	200
66260392511	1075CD	.075	.157	1/2	100
66260392510	1075MD	.075	.157	1/2	150
66260392509	1075FD	.075	.157	1/2	200
66260392517	1080CD	.080	.157	1/2	100
66260392516	1080MD	.080	.157	1/2	150
66260392515	1080FD	.080	.157	1/2	200
66260392523	1080LCD	.080	.157	1	100
66260392522 *	1080LMD	.080	.157	1	150
66260392521	1080LFD	.080	.157	1	200
66260392529	1085CD	.085	.157	1/2	100
66260392528	1085MD	.085	.157	1/2	150
66260392527 *	1085FD	.085	.157	1/2	200
66260392535	1090CD	.090	.157	1/2	100
66260392534	1090MD	.090	.157	1/2	150
66260392533	1090FD	.090	.157	1/2	200
66260392541	1090LCD	.090	.157	1	100
66260392540	1090LMD	.090	.157	1	150
66260392547	1095CD	.095	.157	1/2	100
66260392546	1095MD	.095	.157	1/2	150
66260392545	1095FD	.095	.157	1/2	200
66260392553	1100CD	.100	.157	1/2	100
66260392552	1100MD	.100	.157	1/2	150
66260392551	1100FD	.100	.157	1/2	200
66260392559	1100LCD	.100	.157	1	100
66260392557	1100LFD	.100	.157	1	200
66260392565	1105CD	.105	.157	1/2	100
66260392564 +	1105MD	.105	.157	1/2	150
66260392563	1105FD	.105	.157	1/2	200
66260392571 *	1105LCD	.105	.157	1	100

CONTINUED

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES

Electroplated Mounted Points

DIAMOND AND cBN MOUNTED POINTS

UPC NO.	PRODUCT NO.	HEAD DIAMETER INCHES	HEAD LENGTH	NECK LENGTH	GRIT SIZE
1000 SERIES – DIAMOND (CONTINUED)					
1/8" Shank x 2-1/4" Overall Length					
66260392570 +	1105LMD	.105	.157	1	150
66260392569 +	1105LFD	.105	.157	1	200
66260392577	1110CD	.110	.157	1/2	100
66260392576	1110MD	.110	.157	1/2	150
66260392575 *	1110FD	.110	.157	1/2	200
66260392583	1110LCD	.110	.157	1	100
66260392581 +	1110LFD	.110	.157	1	200
66260392589	1115CD	.115	.157	1/2	100
66260392588	1115MD	.115	.157	1/2	150
66260392587	1115FD	.115	.157	1/2	200
66260392595	1120CD	.120	.157	1/2	100
66260392594	1120MD	.120	.157	1/2	150
66260392593	1120FD	.120	.157	1/2	200
66260392601	1125CD	.125	.157	1/2	100
66260392600	1125MD	.125	.157	1/2	150
66260392599	1125FD	.125	.157	1/2	200
66260392607	1130CD	.130	.197	1	100
66260392606	1130MD	.130	.197	1	150
66260392605 +	1130FD	.130	.197	1	200
66260392613	1135CD	.135	.236	N/A	100
66260392612	1135MD	.135	.236	N/A	150
66260392611	1135FD	.135	.236	N/A	200
66260392619	1140CD	.140	.236	N/A	100
66260392618 +	1140MD	.140	.236	N/A	150
66260392617 +	1140FD	.140	.236	N/A	200
66260392625	1156CD	.156	.236	N/A	100
66260392624	1156MD	.156	.236	N/A	150
66260392623	1156FD	.156	.236	N/A	200
66260392731	1171CD	.171	.236	N/A	100
66260392730	1171MD	.171	.236	N/A	150
66260392729	1171FD	.171	.236	N/A	200
66260392737	1187CD	.187	.312	N/A	100
66260392736 +	1187MD	.187	.312	N/A	150
66260392735	1187FD	.187	.312	N/A	200
66260392743 +	1203CD	.203	.312	N/A	100
66260392742	1203MD	.203	.312	N/A	150
66260392741	1203FD	.203	.312	N/A	200
66260392749 +	1218CD	.218	.312	N/A	100
66260392748	1218MD	.218	.312	N/A	150
66260392747	1218FD	.218	.312	N/A	200
66260392755	1250CD	.250	.312	N/A	100
66260392754	1250MD	.250	.312	N/A	150
66260392753	1250FD	.250	.312	N/A	200
66260363450	W10MD	.750	.035	N/A	150

1000 SERIES – cBN					
1/8" Shank x 2-1/4" Overall Length					
66260392430 +	1016FC	.016	.079	1/8	200
66260392434	1020MC	.020	.079	1/8	150
66260392433 +	1020FC	.020	.079	1/8	200
66260392438 *	1025MC	.025	.079	1/8	150
66260392437 *	1025FC	.025	.079	1/8	200
66260392442	1030MC	.030	.079	1/4	150
66260392441	1030FC	.030	.079	1/4	200
66260392448 +	1035CC	.035	.118	1/4	100
66260392446 *	1035FC	.035	.118	1/4	200
66260392454 +	1040CC	.040	.118	1/4	100
66260392453	1040MC	.040	.118	1/4	150

CONTINUED

UPC NO.	PRODUCT NO.	HEAD DIAMETER INCHES	HEAD LENGTH	NECK LENGTH	GRIT SIZE
1000 SERIES – cBN (CONTINUED)					
1/8" Shank x 2-1/4" Overall Length					
66260392452	1040FC	.040	.118	1/4	200
66260392460	1045CC	.045	.118	1/4	100
66260392459 +	1045MC	.045	.118	1/4	150
66260392458 +	1045FC	.045	.118	1/4	200
66260392466	1050CC	.050	.118	1/2	100
66260392465	1050MC	.050	.118	1/2	150
66260392464	1050FC	.050	.118	1/2	200
66260392472 +	1050LCC	.050	.118	1	100
66260392471 +	1050LMC	.050	.118	1	150
66260392478 *	1055CC	.055	.118	1/2	100
66260392477 +	1055MC	.055	.118	1/2	150
66260392476	1055FC	.055	.118	1/2	200
66260392484	1060CC	.060	.157	1/2	100
66260392483	1060MC	.060	.157	1/2	150
66260392482	1060FC	.060	.157	1/2	200
66260392490 *	1060LCC	.060	.157	1	100
66260392489 *	1060LMC	.060	.157	1	150
66260392488 *	1060LFC	.060	.157	1	200
66260392496	1065CC	.065	.157	1/2	100
66260392494 *	1065FC	.065	.157	1/2	200
66260392502	1070CC	.070	.157	1/2	100
66260392501	1070MC	.070	.157	1/2	150
66260392500	1070FC	.070	.157	1/2	200
66260392508 *	1070LCC	.070	.157	1	100
66260392507 *	1070LMC	.070	.157	1	150
66260392506 *	1070LFC	.070	.157	1	200
66260392514	1075CC	.075	.157	1/2	100
66260392513 +	1075MC	.075	.157	1/2	150
66260392512	1075FC	.075	.157	1/2	200
66260392520	1080CC	.080	.157	1/2	100
66260392519 *	1080MC	.080	.157	1/2	150
66260392518 *	1080FC	.080	.157	1/2	200
66260392526	1080LCC	.080	.157	1	100
66260392525 +	1080LMC	.080	.157	1	150
66260392524 +	1080LFC	.080	.157	1	200
66260392532	1085CC	.085	.157	1/2	100
66260392531	1085MC	.085	.157	1/2	150
66260392530	1085FC	.085	.157	1/2	200
66260392538	1090CC	.090	.157	1/2	100
66260392537	1090MC	.090	.157	1/2	150
66260392536	1090FC	.090	.157	1/2	200
66260392544	1090LCC	.090	.157	1	100
66260392543	1090LMC	.090	.157	1	150
66260392542 +	1090LFC	.090	.157	1	200
66260392550 +	1095CC	.095	.157	1/2	100
66260392549	1095MC	.095	.157	1/2	150
66260392548 +	1095FC	.095	.157	1/2	200
66260392556	1100CC	.100	.157	1/2	100
66260392555	1100MC	.100	.157	1/2	150
66260392554	1100FC	.100	.157	1/2	200
66260392562 +	1100LCC	.100	.157	1	100
66260392561	1100LMC	.100	.157	1	150
66260392560	1100LFC	.100	.157	1	200
66260392568	1105CC	.105	.157	1/2	100
66260392567	1105MC	.105	.157	1/2	150
66260392566 +	1105FC	.105	.157	1/2	200
66260392574 +	1105LCC	.105	.157	1	100
66260392573 +	1105LMC	.105	.157	1	150
66260392572 +	1105LFC	.105	.157	1	200

CONTINUED

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES

+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.

* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.

NORTON ELECTROPLATED DIAMOND AND cBN PRODUCTS

ELECTROPLATED PRODUCTS

Electroplated Mounted Points

DIAMOND AND cBN MOUNTED POINTS

UPC NO.	PRODUCT NO.	HEAD DIAMETER INCHES	HEAD LENGTH	NECK LENGTH	GRIT SIZE
1000 SERIES – cBN (CONTINUED)					
1/8" Shank x 2-1/4" Overall Length					
66260392580	1110CC	.110	.157	1/2	100
66260392579 +	1110MC	.110	.157	1/2	150
66260392578	1110FC	.110	.157	1/2	200
66260392586 +	1110LCC	.110	.157	1	100
66260392585	1110LMC	.110	.157	1	150
66260392584 +	1110LFC	.110	.157	1	200
66260392592 +	1115CC	.115	.157	1/2	100
66260392591 +	1115MC	.115	.157	1/2	150
66260392590 +	1115FC	.115	.157	1/2	200
66260392598	1120CC	.120	.157	1/2	100
66260392597 +	1120MC	.120	.157	1/2	150
66260392596 +	1120FC	.120	.157	1/2	200
66260392604	1125CC	.125	.157	1/2	100
66260392603	1125MC	.125	.157	1/2	150
66260392602	1125FC	.125	.157	1/2	200
66260392610	1130CC	.130	.197	1	100
66260392609 +	1130MC	.130	.197	1	150
66260392608	1130FC	.130	.197	1	200
66260392616	1135CC	.135	.236	N/A	100
66260392615	1135MC	.135	.236	N/A	150
66260392614 +	1135FC	.135	.236	N/A	200
66260392622	1140CC	.140	.236	N/A	100
66260392621 +	1140MC	.140	.236	N/A	150
66260392620 +	1140FC	.140	.236	N/A	200
66260392628	1156CC	.156	.236	N/A	100
66260392627	1156MC	.156	.236	N/A	150
66260392626	1156FC	.156	.236	N/A	200
66260392734	1171CC	.171	.236	N/A	100
66260392733	1171MC	.171	.236	N/A	150
66260392732 *	1171FC	.171	.236	N/A	200
66260392740	1187CC	.187	.312	N/A	100
66260392739	1187MC	.187	.312	N/A	150
66260392738	1187FC	.187	.312	N/A	200
66260392746 +	1203CC	.203	.312	N/A	100
66260392745	1203MC	.203	.312	N/A	150
66260392744 *	1203FC	.203	.312	N/A	200
66260392752	1218CC	.218	.312	N/A	100
66260392751	1218MC	.218	.312	N/A	150
66260392750 +	1218FC	.218	.312	N/A	200
66260392758	1250CC	.250	.312	N/A	100
66260392757	1250MC	.250	.312	N/A	150
66260392756 +	1250FC	.250	.312	N/A	200
4000 SERIES – DIAMOND					
1/4" Shank x 3" Overall Length					
66260392630	4156CD	.156	.250	1	100
66260392629	4156FD	.156	.250	1	200
66260392634	4187CD	.187	.250	1	100
66260392633	4187FD	.187	.250	1	200
66260392638	4203CD	.203	.250	1	100
66260392637	4203FD	.203	.250	1	200
66260392642	4218CD	.218	.250	1	100
66260392641	4218FD	.218	.250	1	200
66260392646	4236CD	.236	.250	1	100
66260392645	4236FD	.236	.250	1	200
66260392650	4250CD	.250	.250	1	100
66260392649	4250FD	.250	.250	1	200
66260392654	4282CD	.282	.250	N/A	100
66260392653	4282FD	.282	.250	N/A	200
66260392658	4312CD	.312	.375	N/A	100

CONTINUED

UPC NO.	PRODUCT NO.	HEAD DIAMETER INCHES	HEAD LENGTH	NECK LENGTH	GRIT SIZE
4000 SERIES – DIAMOND (CONTINUED)					
1/4" Shank x 3" Overall Length					
66260392657	4312FD	.312	.375	N/A	200
66260392662	4375CD	.375	.375	N/A	100
66260392661	4375FD	.375	.375	N/A	200
66260392666	4390CD	.390	.375	N/A	100
66260392665	4390FD	.390	.375	N/A	200
66260392670	4406CD	.406	.375	N/A	100
66260392669 +	4406FD	.406	.375	N/A	200
66260392674	4437CD	.437	.375	N/A	100
66260392673 +	4437FD	.437	.375	N/A	200
66260392678	4500CD	.500	.375	N/A	100
66260392677	4500FD	.500	.375	N/A	200
66260392682	4730CD	.730	.375	N/A	100
66260392681 +	4730FD	.730	.375	N/A	200
66260392686	4864CD	.864	.375	N/A	100
66260392685 +	4864FD	.864	.375	N/A	200
66260392690	41000CD	1.000	.375	N/A	100
66260392689	41000FD	1.000	.375	N/A	200
4000 SERIES – cBN					
1/4" Shank x 3" Overall Length					
66260392632	4156CC	.156	.250	1	100
66260392631	4156FC	.156	.250	1	200
66260392636	4187CC	.187	.250	1	100
66260392635	4187FC	.187	.250	1	200
66260392640	4203CC	.203	.250	1	100
66260392639	4203FC	.203	.250	1	200
66260392644	4218CC	.218	.250	1	100
66260392643	4218FC	.218	.250	1	200
66260392648	4236CC	.236	.250	1	100
66260392647	4236FC	.236	.250	1	200
66260392652	4250CC	.250	.250	1	100
66260392651	4250FC	.250	.250	1	200
66260392656	4282CC	.282	.250	N/A	100
66260392655	4282FC	.282	.250	N/A	200
66260392660	4312CC	.312	.375	N/A	100
66260392659	4312FC	.312	.375	N/A	200
66260392664	4375CC	.375	.375	N/A	100
66260392663	4375FC	.375	.375	N/A	200
66260392668	4390CC	.390	.375	N/A	100
66260392667	4390FC	.390	.375	N/A	200
66260392672	4406CC	.406	.375	N/A	100
66260392671	4406FC	.406	.375	N/A	200
66260392676	4437CC	.437	.375	N/A	100
66260392675	4437FC	.437	.375	N/A	200
66260392680	4500CC	.500	.375	N/A	100
66260392679	4500FC	.500	.375	N/A	200
66260392684	4730CC	.730	.375	N/A	100
66260392683	4730FC	.730	.375	N/A	200
66260392688 +	4864CC	.864	.375	N/A	100
66260392687 +	4864FC	.864	.375	N/A	200
66260392692	41000CC	1.000	.375	N/A	100
66260392691 *	41000FC	1.000	.375	N/A	200

+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.

* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES



Electroplated Mounted Points, Mandrels and Tapered Honers

DIAMOND AND cBN MOUNTED POINTS

UPC NO.	PRODUCT NO.	HEAD DIAMETER INCHES	HEAD LENGTH	GRIT SIZE
6000 SERIES – DIAMOND				
3/8" Shank x 3-3/4" Overall Length				
66260392694	6406CD	.406	.375	80
66260392693	6406MD	.406	.375	150
66260392698	6437CD	.437	.375	80
66260392697	6437MD	.437	.375	150
66260392702	6500CD	.500	.375	80
66260392701	6500MD	.500	.375	150
66260392706	6562CD	.562	.375	80
66260392710	6625CD	.625	.375	80
66260392709	6625MD	.625	.375	150
66260392714 +	6687CD	.687	.375	80
66260392713 +	6687MD	.687	.375	150
66260392718	6750CD	.750	.375	80
66260392717	6750MD	.750	.375	150
66260392722 +	6875CD	.875	.400	80
66260392721	6875MD	.875	.400	150
66260392726	61000CD	1.000	.500	80
66260392725	61000MD	1.000	.500	150

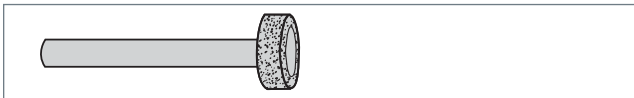
UPC NO.	PRODUCT NO.	HEAD DIAMETER INCHES	HEAD LENGTH	GRIT SIZE
6000 SERIES – cBN				
3/8" Shank x 3-3/4" Overall Length				
66260392696	6406CC	.406	.375	80
66260392695	6406MC	.406	.375	150
66260392700	6437CC	.437	.375	80
66260392699	6437MC	.437	.375	150
66260392704	6500CC	.500	.375	80
66260392703	6500MC	.500	.375	150
66260392708	6562CC	.562	.375	80
66260392707 +	6562MC	.562	.375	150
66260392712	6625CC	.625	.375	80
66260392711	6625MC	.625	.375	150
66260392716	6687CC	.687	.375	80
66260392715	6687MC	.687	.375	150
66260392720	6750CC	.750	.375	80
66260392719	6750MC	.750	.375	150
66260392724	6875CC	.875	.400	80
66260392723 *	6875MC	.875	.400	150
66260392728	61000CC	1.000	.500	80
66260392727	61000MC	1.000	.500	150

9000 SERIES – DIAMOND				
3/4" Shank x 3-3/4" Overall Length				
66260308354	91000CD	1.000	.500	80

cBN HEAVY STOCK REMOVAL MANDRELS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action
• Super coarse abrasive grit	• Long tool life

For heavy stock removal on jig, internal, and offhand operations on tool steels and hardened aerospace alloys.

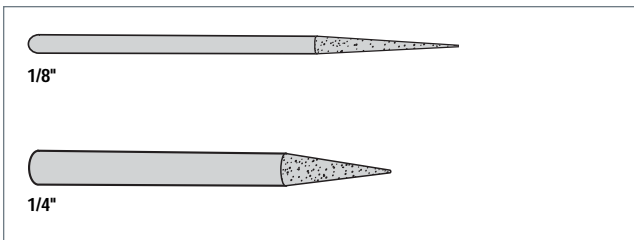


UPC NO.	PRODUCT NO.	HEAD DIAMETER	HEAD LENGTH	SHANK DIAMETER	OVERALL LENGTH	GRIT SIZE
HSR SERIES – cBN						
66260395426	HSR-1/4	1/4	1/4	3/8	3	60
66260395427	HSR-5/16	5/16	5/16	3/8	3	60
66260395428	HSR-3/8	3/8	3/8	3/8	3	60
66260395429	HSR-1/2	1/2	3/8	3/8	3-1/2	60
66260395430 +	HSR-5/8	5/8	3/8	3/8	3-1/2	60
66260395431	HSR-3/4	3/4	3/8	3/8	3-1/2	60
66260395432	HSR-1	1	3/8	3/8	3-1/2	60

DIAMOND TAPERED HONES FOR DRAWING DIES

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

Used primarily for forming carbide drawing dies, but can be used for small hole honing in ceramics, fiberglass, plastics, and composite materials.



UPC NO.	PRODUCT NO.	INCLUDED ANGLE	SHANK DIAMETER	GRIT SIZE
TAPERED HONES FOR DRAWING DIES – DIAMOND				
3" Overall Length				
66260395540	TH12-6MD	6°	1/8	150
66260395541	TH12-8MD	8°	1/8	150
66260363371	TH25-12CD	12°	1/4	100
66260395542	TH12-12MD	12°	1/8	150
66260395543	TH25-12MD	12°	1/4	150
66260395544	TH25-14MD	14°	1/4	150
66260395545	TH25-16MD	16°	1/4	150

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES

+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.

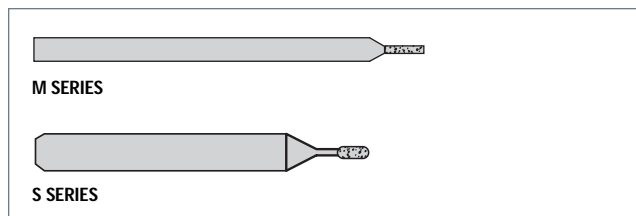
* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.

Electroplated Micro Drills and Routers

DIAMOND MICRO DRILLS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

A modification of Norton mounted points, these tools are specifically designed for drilling holes in the .007" to .065" diameter range. Perfect for drilling sapphire and high density alumina ceramics for hybrid micro-circuit substrates.



UPC NO.	PRODUCT NO.	DIAMETER INCHES	HEAD LENGTH	OVERALL LENGTH	GRIT SIZE
M-SERIES MICRO DRILLS – DIAMOND					
Shank Diameter .040" (1MM)					
66260395516	M7	.007	.028	11/16	600
66260395517	M10	.010	.049	11/16	400
66260395518	M12	.012	.056	13/16	325
66260395519	M15	.015	.077	13/16	325

CAREFULLY-SIZED, UNIFORMLY-SHAPED DIAMOND PARTICLES ARE USED ON ALL M-SERIES DRILLS.

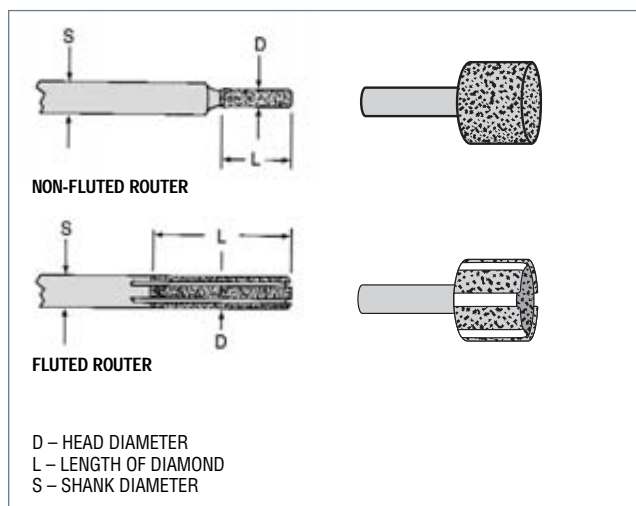
UPC NO.	PRODUCT NO.	DIAMETER INCHES	HEAD LENGTH	OVERALL LENGTH	GRIT SIZE
S-SERIES MICRO DRILLS – DIAMOND					
1/8" Shank x 1" Overall Length					
66260395520	S16FD	.016	.062	.093	200
66260392841	S18FD	.018	.062	.125	200
66260395521	S20FD	.020	.062	.125	200
66260395522	S25FD	.025	.093	.156	200
66260395523	S30MD	.030	.093	.156	150
66260395524	S35MD	.035	.093	.187	150
66260395525	S40MD	.040	.125	.218	150
66260395526	S45CD	.045	.125	.218	100
66260395527	S50CD	.050	.125	.250	100
66260395528	S60CD	.060	.125	.312	100
66260395529	S65CD	.065	.125	.312	100

RECOMMENDED FOR ADAPTING TO ULTRASONIC DRILL HEADS.

DIAMOND ROUTERS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

Used with hand operated tools, drill presses, and milling machines. Ideal for routing and reaming the highly-abrasive materials of alumina, fiberglass, plastics, and other nonmetallic composite materials.



UPC NO.	PRODUCT NO.	HEAD DIAMETER	LENGTH OF DIAMOND	SHANK DIAMETER	OVERALL LENGTH	GRIT SIZE
NON-FLUTED ROUTERS – DIAMOND						
66260364305 *	RNF1812CD	1/8	1/2	1/4	2-1/2	60
66260364304	RNF1810CD	1/8	1	1/4	2-1/2	60
66260364303 +	RNF1412CD	1/4	1/2	1/4	2-1/2	40
66260364302	RNF1410CD	1/4	1	1/4	2-1/2	40
66260302707 *	RNF3812CD	3/8	1/2	1/2	2-1/2	40
66260302709 *	RNF3810CD	3/8	1	1/2	2-1/2	40
66260302711 *	RNF1212CD	1/2	1/2	1/2	2-1/2	40
66260302712 +	RNF1210CD	1/2	1	1/2	2-1/2	40
66260302714 *	RNF3412CD	3/4	1/2	1/2	2-1/2	40
66260302717 +	RNF3410CD	3/4	1	1/2	2-1/2	40
66260364301 +	RNF1012CD	1	1/2	1/2	2-1/2	40
66260302720 *	RNF1010CD	1	1	1/2	2-1/2	40
66260302721 +	RNF11212CD	1-1/2	1/2	1/2	3	40
66260302725 *	RNF2012CD	2	1/2	1/2	3	40
66260302728 +	RNF2010CD	2	1	1/2	3	40

UPC NO.	PRODUCT NO.	HEAD DIAMETER	LENGTH OF DIAMOND	SHANK DIAMETER	OVERALL LENGTH	GRIT SIZE
FLUTED ROUTERS – DIAMOND						
66260364310	RSF1812CD	1/8	1/2	1/4	2-1/2	60
66260364309	RSF1810CD	1/8	1	1/4	2-1/2	60
66260364308	RSF1412CD	1/4	1/2	1/4	2-1/2	40
66260364307	RSF1410CD	1/4	1	1/4	2-1/2	40
66260302710 +	RSF3810CD	3/8	1	1/2	2-1/2	40
66260364306 +	RSF1212CD	1/2	1/2	1/2	2-1/2	40
66260302713 +	RSF1210CD	1/2	1	1/2	2-1/2	40
66260302715	RSF3412CD	3/4	1/2	1/2	2-1/2	40
66260302716 +	RSF3410CD	3/4	1	1/2	2-1/2	40
66260302718 +	RSF1012CD	1	1/2	1/2	2-1/2	40
66260302719 +	RSF1010CD	1	1	1/2	2-1/2	40
66260302722 *	RSF11212CD	1-1/2	1/2	1/2	3	40
66260302724 +	RSF11210CD	1-1/2	1	1/2	3	40
66260302726 *	RSF2012CD	2	1/2	1/2	3	40
66260302727 +	RSF2010CD	2	1	1/2	3	40

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES



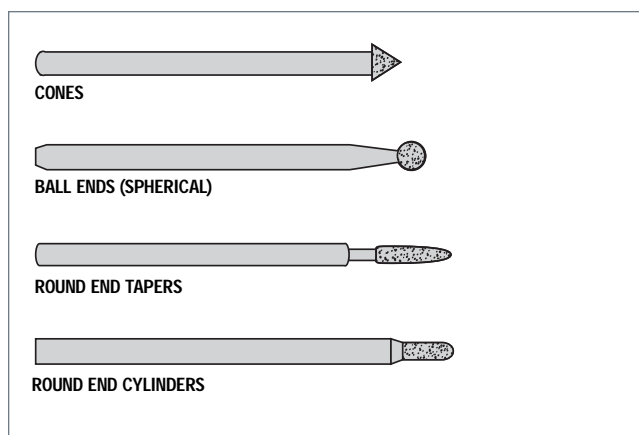
+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.
* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.

Electroplated Mounted Contour Tools

DIAMOND AND cBN MOUNTED CONTOUR TOOLS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action
• Variety of tool shapes available as stock	• Satisfies most tool and die and deburring requirements

For contour grinding applications on carbide, ceramics, glass, ferrites, and many tough alloys and cements. Best suited for blending radii and deburring operations. Operating speeds: 15,000-20,000 RPM range.



UPC NO.	PRODUCT NO.	CONE BASE DIAMETER	INCLUDED ANGLE	CONE LENGTH	GRIT SIZE
CONES – DIAMOND					
1/8" Shank x 2" Overall Length					
66260395484	C14CD	1/8	14°	1/2	100
66260395486 +	C26CD	3/16	26°	13/32	100
66260395488	C35CD	5/32	35°	1/4	100
66260395490	C60CD	11/64	60°	5/32	100
66260395492	C90CD	3/16	90°	3/32	100
CONES – cBN					
1/8" Shank x 2" Overall Length					
66260395483	C14CC	1/8	14°	1/2	100
66260395485	C26CC	3/16	26°	13/32	100
66260395487	C35CC	5/32	35°	1/4	100
66260395489	C60CC	11/64	60°	5/32	100
66260395491	C90CC	3/16	90°	3/32	100

UPC NO.	PRODUCT NO.	BALL DIAMETER	GRIT SIZE
BALL ENDS (SPHERICAL) – DIAMOND			
1/8" Shank x 2" Overall Length			
66260395434	BE1CD	3/64	100
66260395436	BE2CD	1/16	100
66260395438	BE3CD	5/64	100
66260395440	BE4CD	3/32	100
66260395442	BE5CD	1/8	100
66260395444	BE6CD	3/16	100
66260395446 +	BE7CD	1/4	100
66260395448	BE8CD	3/8	100
66260395450	BE9CD	1/2	100

UPC NO.	PRODUCT NO.	SMALL HEAD DIAMETER	LARGE HEAD DIAMETER	HEAD LENGTH	INC. ANGLE	GRIT SIZE
BALL ENDS (SPHERICAL) – cBN						
1/8" Shank x 2" Overall Length						
66260395433 +	BE1CC	3/64		100		
66260395435 +	BE2CC	1/16		100		
66260395437	BE3CC	5/64		100		
66260395439	BE4CC	3/32		100		
66260395441	BE5CC	1/8		100		
66260395443	BE6CC	3/16		100		
66260395445	BE7CC	1/4		100		
66260395447 *	BE8CC	3/8		100		
66260395449 +	BE9CC	1/2		100		

UPC NO.	PRODUCT NO.	SMALL HEAD DIAMETER	LARGE HEAD DIAMETER	HEAD LENGTH	INC. ANGLE	GRIT SIZE
ROUND END TAPERS – DIAMOND						
1/8" Shank x 2" Overall Length						
66260395506	RT44CD	.044	.066	5/16	4°	100
66260395508 +	RT60CD	.060	.082	5/16	4°	100
66260395510	RT78CD	.078	.110	5/16	6°	100

UPC NO.	PRODUCT NO.	HEAD DIAMETER	HEAD LENGTH	GRIT SIZE
ROUND END TAPERS – cBN				
1/8" Shank x 2" Overall Length				
66260395505 *	RT44CC	.044	.066	5/16 4° 100
66260395507 +	RT60CC	.060	.082	5/16 4° 100
66260395509	RT78CC	.078	.110	5/16 6° 100

UPC NO.	PRODUCT NO.	HEAD DIAMETER	HEAD LENGTH	GRIT SIZE
ROUND END CYLINDERS – DIAMOND				
1/8" Shank x 2" Overall Length				
66260395494	RE1CD	1/16	1/4	100
66260395496	RE2CD	5/64	1/4	100
66260395498	RE3CD	3/32	1/4	100
66260395500	RE4CD	1/8	1/4	100
66260395502	RE5CD	3/16	5/16	100
66260395504	RE6CD	1/4	5/16	100

UPC NO.	PRODUCT NO.	HEAD DIAMETER	HEAD LENGTH	GRIT SIZE
ROUND END CYLINDERS – cBN				
1/8" Shank x 2" Overall Length				
66260395493	RE1CC	1/16	1/4	100
66260395495	RE2CC	5/64	1/4	100
66260395497 *	RE3CC	3/32	1/4	100
66260395499	RE4CC	1/8	1/4	100
66260395501 +	RE5CC	3/16	5/16	100
66260395503 +	RE6CC	1/4	5/16	100

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES

+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.
* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.

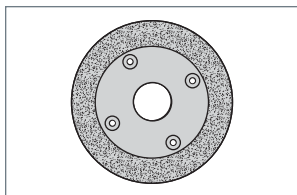


Electroplated Grinding Wheels and Files

DIAMOND TYPE 6A2C CUP WHEELS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

Extremely fast acting wheels for coarse work (100 grit) and fine finishing (200 grit) of carbide tool bits, etc.



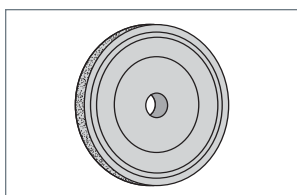
UPC NO.	PRODUCT NO.	DIMENSIONS D X T X H	DESCRIPTION	GRIT SIZE
TYPE 6A2C CUP WHEELS WITH MOUNTING HOLES, RIM 1" – DIAMOND				
66260300203*	6A2CCD	6 x 7/16 x 1-1/4	6A2C Cup Wheel	100
66260300202*	6A2CFD	6 x 7/16 x 1-1/4	6A2C Cup Wheel	200
66260302135*		6 x 5/16 x 1-1/4	Back-up Plate 6"	

FOUR 9/32" HOLES ON A 3-1/4" BOLT CIRCLE.

DIAMOND TYPE 1A1 BENCH AND PEDESTAL WHEELS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action
• Bakelite core	• Lightweight
	• Adaptable to standard bench grinders
• Maintains flat on O.D.	• Eliminates down time for dressing

Ideal for off-hand grinding. These wheels stay flat without dressing for accurate tool edges. Grind carbide, ceramic and other materials more cost effectively than with conventional silicon carbide abrasive wheels. Available in two grit sizes; 100 grit for roughing and 200 grit for finishing.



UPC NO.	PRODUCT NO.	DIMENSIONS D X T X H	MAX. RPM	GRIT SIZE
TYPE 1A1 BENCH AND PEDESTAL WHEELS – DIAMOND				
66260302087*	A1PG-CD	6 x 1 x 1	7,635	100
66260302086*	A1PG-FD	6 x 1 x 1	7,635	200

1/2", 5/8", 3/4" AND 7/8" CENTER HOLE REDUCING BUSHINGS ARE INCLUDED.

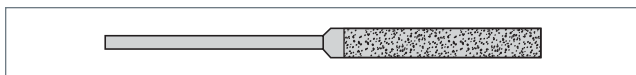
TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES

DIAMOND MACHINE FILES

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

For use in reciprocating hand profiling machines. Ideal for reworking and finishing carbide dies and molds, blending radii, and deburring and cleaning slots and grooves.



UPC NO.	PRODUCT NO.	DIMENSIONS	ABRASIVE LOCATION	GRIT SIZE
MACHINE FILES – DIAMOND				
5/8" Diamond Length, 1/8" Shank, 2" Overall Length				
66260395585	1ECD	.020 x .125		100
66260395586	2ECD	.030 x .125		100
66260395587	3ECD	.040 x .125		100
66260395588 +	2FCD	.079 x .040		100

UPC NO.	PRODUCT NO.	DIMENSIONS	ABRASIVE LOCATION	GRIT SIZE
MACHINE FILES – DIAMOND (CONTINUED)				
5/8" Diamond Length, 1/8" Shank, 2" Overall Length				
66260395589	3FCD	.120 x .040		100
66260395590	4FCD	.157 x .040		100
66260395591	5FCD	.203 x .078		100
66260395592	6FCD	.120 x .040		100
66260395593	1CCD	.098 x .196		100
66260395594	2CCD	.120 x .250		100
66260395595	2TCD	.078 side		100
66260395596	3TCD	.127 side		100
66260395597	4TCD	.157 side		100
66260395598	1RCD	.042 diam.		100
66260395599	2RCD	.080 diam.		100
66260395600	3RCD	.127 diam.		100
66260395601	4RCD	.157 diam.		100
66260395602 +	1HRCD	.040 radius		100
66260395603	2HRCD	.060 radius		100
66260395604	3HRCD	.078 radius		100

+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.
* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.

Electroplated Files

DIAMOND HAND FILES

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

Indispensable aid for the toolroom. All purpose hand-held tool useful for deburring, notching, dressing, and honing hard, brittle materials.



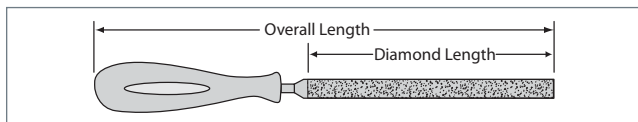
UPC NO.	PRODUCT NO.	DIMENSIONS	ABRASIVE LOCATION	GRIT SIZE
HAND FILES – DIAMOND				
6" Overall Length, 1-1/2" Diamond Length				
66260395605	DF1CD	1/8 x 1/8		100
66260392842 +	DF1FD	1/8 x 1/8		200
66260395606	DF2CD	1/8 x 1/4		100

CONTINUED

DIAMOND NEEDLE FILES

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

Indispensable aid for the toolroom. An all purpose hand-held tool, useful for deburring, notching, dressing, and honing hard, brittle materials.



UPC NO.	PRODUCT NO.	DIMENSIONS	ABRASIVE LOCATION	SHAPE	GRIT SIZE
NEEDLE FILES – DIAMOND					
4-1/4" Diamond Length, 8-1/2" Overall Length					
66260302432	LNF2CD	.400 x .100		Equaling	100
66260305611	LNF2FD	.400 x .100		Equaling	200
66260302898	LNF3CD	.45 x .150		Half Round	100
66260305612	LNF3FD	.485 x .150		Half Round	200
2-3/4" Diamond Length, 5-3/4" Overall Length, With Handle					
66260391729	1571	.055 x .190		Flat	100
66260391730	1572	.075 x .210		Half Round	100
66260391731	1573	.145 x .145		Triangle	100
66260391732	1574	.100 x .100		Square	100
66260391733	1575	.120		Round	100
66260391734	1576	.055 x .190		Pointed Flat	100
3" Diamond Length, 5-1/2" Overall Length, With Handle					
66260395575	NF1FD	.150 x .105		Oval	200
66260395576	NF2FD	.218 x .072		Half Round	200
66260395577	NF3FD	.205 x .058		Equaling	200
66260395578	NF4FD	.096 x .096		Square	200

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES

UPC NO.	PRODUCT NO.	DIMENSIONS	ABRASIVE LOCATION	GRIT SIZE
HAND FILES – DIAMOND (CONTINUED)				
6" Overall Length, 1-1/2" Diamond Length				
66260392843	DF2FD	1/8 x 1/4		200
66260395607	DF2WCD	1/8 x 1/4		100
66260395608	DF3CD	1/8 x 3/8		100
66260392844	DF3FD	1/8 x 3/8		200
66260395609	DF3WCD	1/8 x 3/8		100
66260364241	DF3SCD	1/8 x 1/2		100
66260395611	DF4CD	1/8		100
66260392845 *	DF4FD	1/8		200
66260300134	DF4WCD	1/4		100
66260395613	DF5CD	1/8		100
66260392846	DF5FD	1/8		200
66260395614	DF5WCD	1/4		100
66260395615	DF6CD	1/8		100
66260392847 *	DF6FD	1/8		200

UPC NO.	PRODUCT NO.	DIMENSIONS	ABRASIVE LOCATION	SHAPE	GRIT SIZE
NEEDLE FILES – DIAMOND (CONTINUED)					
3" Diamond Length, 5-1/2" Overall Length, With Handle					
66260395579	NF5FD	.138 x .138		Triangle	200
66260395580	NF6FD	.118		Round	200
66260395581	NF7FD	.197 x .088		Crossing	200
66260395582	NF8FD	.205 x .067		Barrette	200
NFK-6 NEEDLE FILE KIT – DIAMOND					
66260364008	NFK-6	contains one each of the following:			
	NF1FD	200			
	NF2FD	200			
	NF3FD	200			
	NF4FD	200			
	NF5FD	200			
	NF6FD	200			

DFS-6 DIE FILE KIT – DIAMOND					
66260391830	DFS-6	contains one each of the following:			
	1571	100			
	1572	100			
	1573	100			
	1574	100			
	1575	100			
	1576	100			

NEEDLE FILE SHAPE AND APPLICATION KEY:

Barrette:	A triangle with diamond on the bottom side only
Crossing:	Elongated oval, with more pointed ends than an oval file; has diamonds all around
Equaling:	A rectangle with diamond on all four sides; ideal for filing both sides of an ID simultaneously
Pointed Flat:	A cone with a flat top with diamond on the sides of the cone

+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.
* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.



Electroplated Drills

DIAMOND CORE DRILLS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

High performance on glass and ceramic applications while providing fast, reliable cutting. Submersed drilling is highly recommended for optimum operating performance.

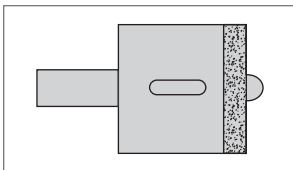


UPC NO.	PRODUCT NO.	OUTER DIAMETER	INNER DIAMETER	GRIT SIZE
CORE DRILLS – DIAMOND				
Straight Tube Type, 2" Overall Length				
66260395530	A1MD	1/16	.023	150
66260395531	A2MD	3/32	.048	150
66260395532	A3MD	1/8	.075	150
66260395533	A4MD	5/32	.110	150
66260395534	A5CD	3/16	.140	100
66260395535	A6CD	1/4	.195	100
66260395536	A7CD	5/16	.255	100
66260395537	A8CD	3/8	.325	100
66260395538 +	A9CD	7/16	.373	80
66260395539	A10CD	1/2	.398	80

DIAMOND MOUNTED CORE DRILLS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action
• Removable pilot (bulb-like extension)	• Provides added stability
	• Ensures smooth drilling with less wobbling
• 1/8" wrap: additional 1/8" of electroplated diamond on the blade core	• Increases life of blade on deep cuts, reduces binding and grinding on the core

High performance results on glass and ceramic applications.



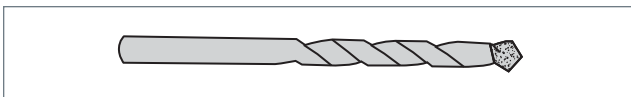
UPC NO.	PRODUCT NO.	OUTER DIAMETER	PILOT DIAMETER	GRIT SIZE
MOUNTED CORE DRILLS – DIAMOND				
1/8" Wrap, 3/8" Shank Diameter, 3.45" Overall Length				
66260392849	CD.500	1/2	1/8	40
66260392850	CD.750	3/4	1/4	40
66260392851	CD1.000	1	1/4	40
66260392852	CD1.250	1-1/4	1/4	40
66260392853	CD1.500	1-1/2	1/4	40
66260392854 +	CD2.000	2	1/4	40

PILOTS ARE REMOVABLE.

DIAMOND TWIST DRILLS

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

Recommended for precision drilling on circuit boards containing fiberglass, asbestos, nylon, and similar tough, abrasive materials. Diamond twist drills are also useful for drilling plastics and resin composites and have been successful in drilling soft ductile materials as well as "green" carbide. Operating procedures are similar to those of standard twist drills.



UPC NO.	PRODUCT NO.	DRILL DIAMETER	DRILL LENGTH	GRIT SIZE
TWIST DRILLS – DIAMOND				
66260395549	TW-1/16	1/16	1-3/4	100
66260395550	TW-1/8	1/8	2-3/4	100
66260395551	TW-1/4	1/4	4	100
66260395552	TW-3/8	3/8	5	100
66260395553	TW-1/2	1/2	6	100

DIAMETER TOLERANCE EQUALS + OR - 1/64.

+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.
* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.

TARGET MARKET SYMBOLS:

CERAMICS TOOL & DIE COMPOSITES

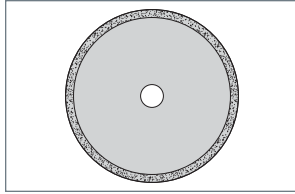


Electroplated Saw Blades

DIAMOND CONTINUOUS RIM CUT-OFF SAW BLADES ■

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

Ideal for cutting-off highly-abrasive materials such as alumina, fiberglass, plastics, and other nonmetallic composite materials.



Additional Diamond Slotted and Continuous Rim Cut-off Saw Blades, with extended wraps to avoid binding, are available as made-to-order products. Please contact your Norton representative.

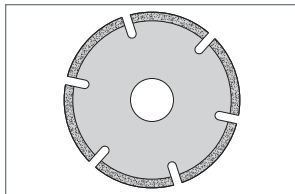
UPC NO.	PRODUCT NO.	DIAM.	OVERALL THICKNESS	HOLE SIZE	GRIT SIZE
CONTINUOUS RIM CUT-OFF SAW BLADES – DIAMOND					
66260301990	DS2062-250	2	1/16	1/4	40
66260391474	DS2094-250	2	3/32	1/4	40
66260391473	DS3094-250	3	3/32	1/4	40
66260363036	DS3094-375	3	3/32	3/8	40
66260395554	DS4094-500	4	3/32	1/2	40
66260300197	DS4094-750	4	3/32	3/4	40
66260312207 +	DS5094-500	5	3/32	1/2	40
66260395555 +	DS6094-500	6	3/32	1/2	40
66260395556 *	DS7062-500	7	1/16	1/2	40
66260395557	DS8094-625	8	3/32	5/8	40
66260391464 +	DS10125-625	10	1/8	5/8	40

HOLE SIZES CAN BE ALTERED AT AN ADDITIONAL CHARGE PER WHEEL.

DIAMOND SLOTTED CUT-OFF SAW BLADES ■

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action
• 3/4" wrap: additional 3/4" of electroplated diamond on the blade core	• Increases life of blade on deep cuts, reduces binding and grinding on the core

Ideal for cutting-off highly abrasive materials such as alumina, fiberglass, plastics, and other nonmetallic composite materials.



UPC NO.	PRODUCT NO.	DIAM.	OVERALL THICKNESS	HOLE SIZE	GRIT SIZE
SLOTTED CUT-OFF SAW BLADES – DIAMOND					
66260301989	DSS2062-250	2	1/16	1/4	40
66260364258	DSS3094-250	3	3/32	1/4	40
66260363015	DSS4094-375	4	3/32	3/8	40
66260395559	DSS4094-500	4	3/32	1/2	40
66260300360 +	DSS4094-750	4	3/32	3/4	40
66260395560	DSS6094-500	6	3/32	1/2	40
66260395561 +	DSS8094-500	8	3/32	1/2	40
66260362981	DSS10125-625	10	1/8	5/8	40
66260395563	DSS12125-500	12	1/8	1/2	40
66260362985 +	DSS12125-1	12	1/8	1	40
66260364253	DSS14156-500	14	5/32	1/2	40
66260362989	DSS14156-1	14	5/32	1	40
66260395565	DSS16156-1	16	5/32	1	40
66260395566	DSS18156-1	18	5/32	1	40
66260395567 *	DSS20156-1	20	5/32	1	40

SLOTTED CUT-OFF SAW BLADES WITH 3/4" WRAP – DIAMOND

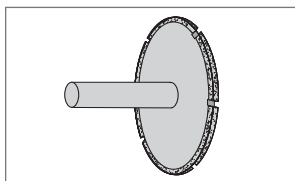
66260313421	DSSW3094-250	3	3/32	1/4	40
66260313422 *	DSSW4094-500	4	3/32	1/2	40
66260313423	DSSW4094-750	4	3/32	3/4	40
66260313428	DSSW4094-1000	4	3/32	1	40
66260313432	DSSW5094-500	5	3/32	1/2	40
66260313433 *	DSSW5094-750	5	3/32	3/4	40
66260313434	DSSW5094-1000	5	3/32	1	40

HOLE SIZES CAN BE ALTERED AT AN ADDITIONAL CHARGE PER WHEEL.

DIAMOND MOUNTED SAW BLADES ■

FEATURES	BENEFITS
• Nickel alloy matrix	• Tough, durable bond
• Single layer of abrasive	• Economical
• Exposed particles	• Aggressive cutting action

Ideal for cutting off highly abrasive materials such as alumina, fiberglass, plastics, and other nonmetallic composite materials.



UPC NO.	PRODUCT NO.	DIAM.	OVERALL THICKNESS	HOLE SIZE	GRIT SIZE
MOUNTED SAW BLADES – DIAMOND					
2" Overall Length					
66260395422	MDS1CD	1	3/32	1/4	40
66260395423	MDS1-1/2CD	1-1/2	3/32	1/4	40
66260395424	MDS2CD	2	3/32	3/8	40
66260395425	MDS3CD	3	1/8	1/2	40

TARGET MARKET SYMBOLS:

CERAMICS ■ TOOL & DIE COMPOSITES

+ AVAILABLE AS STOCK WHILE SUPPLIES LAST; THEN AVAILABLE AS NON-STOCK.
* NON-STOCK; CONTACT YOUR NORTON REPRESENTATIVE FOR CURRENT LEAD-TIMES.

TECHtip

AVOID GRINDING STEEL

- Avoid steel when grinding with diamond wheels. Keep the amount of steel ground to an absolute minimum.
- On brazed tools, use aluminum oxide wheel to back off the steel shank.
- A high lubricity grinding fluid should be used.
- For some steels, an armored (AMD) diamond wheel may prove most economical.

USE RIGID WORK SUPPORT

- All workpieces should be supported firmly during the grinding process. Any amount of vibration will cause wheel wear and produce chatter or wave marks on the ground surface.
- On work ground between centers, centerholds should be properly prepared.
- Minimize work overhang.
- If the ground work is supported by a work finger, ensure the finger is strong enough to provide vibration-free support.

COOLANT – GRIND WET

- Diamond wheels should be used with a full flood coolant properly directed toward the grinding zone. Water with a rust inhibitor is recommended.
- Vitrified diamond wheels should be used only with a coolant.
- When flood application can't be used, try mist or spray application.
 - Use compressed air to “atomize” water or soluble oil.
 - Direct the spray at the grinding zone to help dissipate heat and prevent heat damage to the work.

AVOID EXCESSIVE FEEDS

- Excessive feeds will result in premature wheel wear. Excessive feed rates are characterized by:
 - A hard grinding sound
 - Chatter
 - Burn
 - High wheel wear rate
 - Vibration

SPECcheck

TROUBLESHOOTING GUIDE – DRY GRINDING

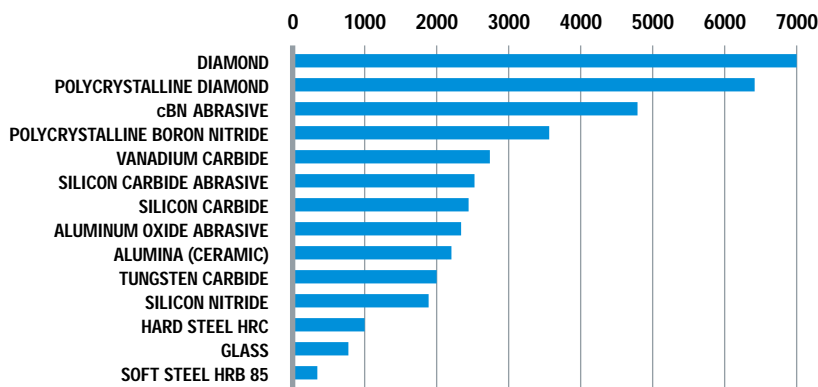
PROBLEM	POSSIBLE CAUSES	SUGGESTED CORRECTION
Burning (excessive heat)	Wheel loaded or glazed Excessive feed rate Wheel too durable	Dress wheel with a dressing stick Reduce infeed of wheel or workpiece Use freer cutting specification or slow down wheel speed
Poor finish	Grit size too coarse Excessive feed rate	Select a finer grit size Reduce infeed of wheel or workpiece
Chatter	Wheel out of truth	True wheel; ensure it is not slipping on mount (See “Mounting, Truing and Dressing Guide”)

TROUBLESHOOTING GUIDE – WET GRINDING

PROBLEM	POSSIBLE CAUSES	SUGGESTED CORRECTION
Burning (excessive heat)	Wheel glazed or loaded Poor coolant placement Excessive material removal rate	Re-dress wheel Apply coolant directly to wheel/workpiece interface Reduce downfeed and/or crossfeed
Poor finish	Excessive dressing Grit size too coarse Poor coolant flow or location	Use lighter dressing pressure Stop dressing as soon as wheel starts to consume stick rapidly Select a finer grit size Apply heavy flood so it reaches wheel/work interface
Chatter	Wheel out of truth	True wheel; ensure it is not slipping on mount
Wheel will not cut	Glazed by truing Wheel loaded	Dress lightly until wheel opens up Dress lightly until wheel opens up Increase coolant flow to keep wheel surface clean Never run wheel with coolant turned off
Slow cutting	Low feeds and speeds	Increase feed rate; increase wheel speed (Do not exceed wheel MOS)
Short wheel life	Incorrect coolant flow Low wheel speed Excessive dressing Wheel too soft or too hard	Apply coolant to flood wheel/work surface Increase wheel speed (observe maximum operating speed) Use lighter dressing pressure Change grit or grade; use higher concentration

Material Hardness Scale

Superabrasives is a term used to describe those abrasives of extreme hardness which produce outstanding results when properly used on specific applications. The following chart provides a hardness comparison (Knoop Hardness Scale) between diamond and cBN superabrasives, aluminum oxide and silicon carbide standard abrasives, and some common materials these abrasives are used to grind.



Decimal and Metric Equivalents of Common Fractions

FRACTIONS OF AN INCH	DECIMALS OF AN INCH	MILLIMETERS
1/64	.0156	0.397
1/32	.0313	0.794
3/64	.0469	1.191
1/16	.0625	1.588
5/64	.0781	1.985
3/32	.0938	2.381
7/64	.1094	2.778
1/8	.1250	3.175
9/64	.1406	3.572
5/32	.1563	3.969
11/64	.1719	4.366
3/16	.1875	4.762
13/64	.2031	5.159
7/32	.2188	5.556
15/64	.2344	5.953
1/4	.2500	6.350
17/64	.2656	6.747
9/32	.2813	7.144
19/64	.2969	7.541
5/16	.3135	7.937
21/64	.3281	8.334
11/32	.3438	8.731
23/64	.3594	9.128
3/8	.3750	9.525
25/64	.3906	9.922
13/32	.4063	10.319
27/64	.4219	10.716
7/16	.4375	11.112
29/64	.4531	11.509
15/32	.4688	11.906
31/64	.4844	12.303
1/2	.5000	12.700
33/64	.5156	13.097
17/32	.5313	13.494
35/64	.5469	13.891
9/16	.5625	14.287
37/64	.5781	14.684
19/32	.5938	15.081
39/64	.6094	15.478
5/8	.6250	15.875
41/64	.6406	16.272
21/32	.6563	16.688
43/64	.6719	17.085
11/16	.6875	17.462
45/64	.7031	17.859
23/32	.7188	18.256
47/64	.7344	18.653
3/4	.7500	19.050
49/64	.7645	19.447
25/32	.7813	19.843
51/64	.7969	20.240
13/16	.8125	20.637
53/64	.8281	21.034
27/32	.8438	21.430
55/64	.8594	21.827
7/8	.8750	22.224
57/64	.8906	22.621
29/32	.9063	23.018
59/64	.9219	23.415
15/16	.9375	23.812
61/64	.9531	24.209
31/32	.9688	24.606
63/64	.9844	25.003
1	1.0000	25.400

Expected Surface Finish by Grit Size

Use these charts as guides only. Surface finish is affected by several variables: machine type and condition, type of material ground, coolant, wheel speed, bond system, etc.

Diamond

GRIT SIZE	EXPECTED FINISH MICRO INCH AA	MAXIMUM DEPTH OF CUT PER PASS FOR GRIT SIZE
100	24 to 32	0.001" to 0.002"
120	16 to 18	0.001" to 0.002"
150	14 to 16	0.001" to 0.002"
180	12 to 14	0.0007" to 0.001"
220	10 to 12	0.0007" to 0.001"
320	8	0.0004" to 0.0006"
400	7 to 8	0.0003" to 0.0005"

cBN

GRIT SIZE	EXPECTED FINISH WITH OSCILLATION	EXPECTED FINISH PLUNGE
100	35 – 40	40 – 45
120	30 – 35	35 – 40
150	25 – 30	30 – 35
180	20 – 25	25 – 30
220	15 – 20	20 – 25
320	10 – 15	15 – 20
400	4 – 8	5 – 10

Recommended Wheel Speeds for Diamond and cBN Wheels

WET GRINDING

	CUP WHEELS	PERIPHERAL WHEELS
DIAMOND GRINDING WHEELS		
Resin Bond Wheels	11V9, 12V9, 15V9, etc. 4921 to 7874 SFPM 25 to 40 m/s	1A1, 1V1, 1A1R, etc. 4921 to 7874 SFPM 25 to 40 m/s
Metal Bond Wheels		3937 to 5906 SFPM 20 to 30 m/s
Vitrified Bond Wheels	2953 to 5906 SFPM 15 to 30 m/s	2953 to 5906 SFPM 15 to 30 m/s

cBN GRINDING WHEELS

Resin Bond Wheels	5906 to 9843 SFPM 30 to 50 m/s	5906 to 9843 SFPM 30 to 50 m/s
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DRY GRINDING

	CUP WHEELS	PERIPHERAL WHEELS
DIAMOND GRINDING WHEELS		
Resin Bond Wheels	11V9, 12V9, 15V9, etc. 2756 to 3543 SFPM 14 to 18 m/s	1A1, 1V1, 1A1R, etc. 2756 to 3543 SFPM 14 to 18 m/s
CBN GRINDING WHEELS		
Resin Bond Wheels	2953 to 5906 SFPM 15 to 30 m/s	2953 to 5906 SFPM 15 to 30 m/s

NOTE: THESE ARE NOT THE MAXIMUM OPERATING SPEEDS (MOS).
CONSULT ANSI B7.1 OR CONTACT YOUR NORTON REPRESENTATIVE FOR MOS.

Wheel Speed Calculation:

To convert m/s to SFPM:	Multiply M/S x 196.85 = SFPM
To convert SFPM to M/S:	Divide SFPM by 196.85 = M/S
To convert RPM to SFPM:	Multiply wheel diameter in inches x RPM x 0.262

M/S = METERS/SECOND RPM = REVOLUTIONS PER MINUTE SFPM = SURFACE FEET PER MINUTE



SAFETY – WHEEL SPEED CONVERSION CHART

Conversion Table – Wheel Speeds

Revolutions Per Minute for various diameters of grinding wheels – to give Surface Speed in Feet Per Minute as indicated

(for wheel marking purposes the calculated RPM figures listed below are rounded off to the next 5)

SURFACE SPEED IN FEET PER MINUTE (SFPFM)

DIAMETER OF WHEEL IN INCHES	SURFACE SPEED IN FEET PER MINUTE (SFPFM)																				
	4,000	4,500	5,000	5,500	6,000	6,500	7,000	7,500	8,000	8,500	9,000	9,500	10,000	12,000	14,200	16,000	17,000	19,685	20,000		
1	15,279	17,189	19,098	21,008	22,918	24,828	26,737	28,647	30,558	32,467	34,377	36,287	38,196	45,836	47,745	54,240	61,116	63,025	64,935	75,190	76,395
2	7,639	8,594	9,549	10,504	11,459	12,414	13,368	14,328	15,278	16,238	17,188	18,143	19,098	22,918	23,875	27,120	30,558	31,510	32,465	37,595	38,195
3	5,093	5,729	6,366	7,003	7,639	8,276	8,913	9,549	10,186	10,822	11,459	12,096	12,732	15,278	15,915	18,080	20,372	21,010	21,645	25,065	25,465
4	3,820	4,297	4,775	5,252	5,729	6,207	6,685	7,162	7,640	8,116	8,595	9,072	9,549	11,459	11,940	13,560	15,278	15,755	16,235	18,800	19,100
5	3,056	3,438	3,820	4,202	4,584	4,966	5,348	5,730	6,112	6,494	6,876	7,258	7,640	9,168	9,550	10,850	12,224	12,605	12,985	15,040	15,280
6	2,546	2,865	3,183	3,501	3,820	4,138	4,456	4,775	5,092	5,411	5,729	6,048	6,366	7,639	7,960	9,040	10,186	10,505	10,820	12,530	12,730
7	2,183	2,455	2,728	3,001	3,274	3,547	3,820	4,092	4,366	4,638	4,911	5,183	5,456	6,548	6,820	7,750	8,732	9,005	9,275	10,740	10,915
8	1,910	2,148	2,387	2,626	2,865	3,103	3,342	3,580	3,820	4,058	4,297	4,535	4,775	5,729	5,970	6,780	7,640	7,880	8,115	9,400	9,550
9	1,698	1,910	2,122	2,334	2,546	2,758	2,970	3,182	3,396	3,606	3,820	4,032	4,244	5,092	5,305	6,030	6,792	7,000	7,215	8,355	8,490
10	1,528	1,719	1,910	2,101	2,292	2,483	2,674	2,865	3,056	3,247	3,438	3,629	3,820	4,584	4,775	5,425	6,112	6,300	6,495	7,520	7,640
12	1,273	1,432	1,591	1,751	1,910	2,069	2,228	2,386	2,546	2,705	2,864	3,023	3,183	3,820	3,980	4,520	5,092	5,250	5,410	6,265	6,365
14	1,091	1,228	1,364	1,500	1,637	1,773	1,910	2,046	2,182	2,319	2,455	2,592	2,728	3,274	3,410	3,875	4,366	4,500	4,640	5,370	5,455
16	955	1,074	1,194	1,313	1,432	1,552	1,672	1,791	1,910	2,029	2,149	2,268	2,387	2,865	2,985	3,390	3,820	3,940	4,060	4,700	4,775
18	849	955	1,061	1,167	1,273	1,379	1,485	1,591	1,698	1,803	1,910	2,016	2,122	2,546	2,655	3,015	3,396	3,500	3,605	4,175	4,245
20	764	859	955	1,050	1,146	1,241	1,337	1,432	1,528	1,623	1,719	1,814	1,910	2,292	2,390	2,715	3,056	3,150	3,245	3,760	3,820
22	694	781	868	955	1,042	1,128	1,215	1,302	1,388	1,476	1,562	1,649	1,736	2,084	2,170	2,465	2,776	2,865	2,950	3,420	3,470
24	637	716	796	875	955	1,034	1,115	1,194	1,274	1,353	1,433	1,512	1,591	1,910	1,990	2,260	2,546	2,625	2,705	3,135	3,185
26	588	661	734	808	881	955	1,028	1,101	1,176	1,248	1,322	1,395	1,468	1,762	1,840	2,090	2,352	2,425	2,495	2,890	2,940
28	546	614	682	750	818	887	955	1,023	1,092	1,159	1,228	1,296	1,364	1,637	1,705	1,940	2,182	2,250	2,320	2,685	2,730
30	509	573	637	700	764	828	891	955	1,018	1,082	1,146	1,210	1,274	1,528	1,595	1,810	2,056	2,100	2,165	2,505	2,545
32	477	537	597	656	716	776	836	895	954	1,014	1,074	1,134	1,194	1,432	1,495	1,695	1,910	1,970	2,030	2,350	2,385
34	449	505	562	618	674	730	786	843	898	955	1,011	1,067	1,124	1,348	1,405	1,595	1,796	1,855	1,910	2,210	2,245
36	424	477	530	583	637	690	742	795	848	902	954	1,007	1,061	1,273	1,330	1,510	1,698	1,750	1,805	2,090	2,120
38	402	452	503	553	603	653	704	754	804	854	904	955	1,006	1,206	1,260	1,430	1,608	1,660	1,710	1,980	2,010
40	382	430	478	525	573	620	669	716	764	812	860	908	956	1,146	1,195	1,355	1,528	1,575	1,625	1,880	1,910
42	366	409	454	500	545	591	636	682	732	775	818	863	908	1,090	1,140	1,295	1,464	1,500	1,545	1,790	1,820
44	347	390	434	478	521	564	608	651	694	737	780	824	868	1,042	1,085	1,235	1,388	1,432	1,475	1,710	1,735
46	333	375	416	458	500	541	582	624	666	708	750	791	832	1,000	1,040	1,180	1,332	1,370	1,410	1,635	1,660
48	318	358	398	438	478	517	558	597	636	676	716	756	796	956	995	1,130	1,272	1,315	1,350	1,565	1,590
53	288	324	360	395	432	468	503	539	576	612	648	683	720	864	900	1,025	1,152	1,189	1,225	1,420	1,440
60	255	287	319	350	387	414	446	478	510	542	574	606	638	774	795	905	1,020	1,050	1,080	1,255	1,275
72	212	239	265	291	318	345	371	398	424	451	477	504	530	637	665	755	849	875	905	1,045	1,060

FOR INTERMEDIATE DIAMETERS NOT LISTED USE THE FORMULA LISTED IN SECTION 1.2.10 OF ANSI B7.1 (SFPFM = 262 X WHEEL DIAMETER IN INCHES X RPM.)
TO CONVERT METERS PER SECOND (M/S) TO SFPM: M/S X 196.85 = SFPM. TO CONVERT SFPM TO M/S: SFPM/196.85 = M/S. TO CONVERT RPM TO SFPM: WHEEL DIAMETER IN INCHES X RPM X 0.262 = SFPM

FOR YOUR PROTECTION



Safety Gloves

Grinding applications are conducted in harsh environments. The use of proper fitting gloves is recommended.



Face and Eye Protection

Always wear government-approved face and eye protection when using abrasive products.



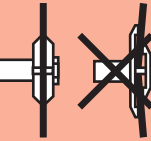
Speeds

#HECK MACHINE SPINDLE SPEED AND SPINDLE RPM BEFORE MOUNTING THE WHEEL AGAINST SAFE MAXIMUM OPERATING SPEED. Do not overspeed the wheel.



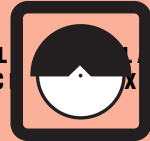
Hearing Protection

USE OF ABRASIVE PRODUCTS MAY CREATE ELEVATED NOISE LEVELS. Hearing protection must be worn WHERE REQUIRED



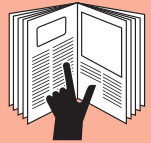
Flanges

WHEN MOUNTING MOST GRINDING WHEELS, USE EQUAL DIAMETER AND BEARING SURFACE FLANGES. see ANSI B7.1.



Wheel Guard

NEVER USE the wheel guard as supplied by the MACHINE MANUFACTURER IN THE PROPER POSITION.



Safety Guides, MSDS and Wheel Warning Messages

BEFORE USING ANY ABRASIVE MATERIAL, READ THE SAFETY GUIDES, WHEEL WARNING MESSAGES AND MATERIAL SAFETY DATA SHEETS.

Norton provides information pertaining to the safe use of all products. PLEASE TAKE THE TIME TO READ THE MATERIAL SAFETY DATA SHEETS FOR CONTACT SUPPLIERS OF THE WORKPIECE AND ABRASIVE materials for copies of the MSDS if one is not readily available. Norton abrasives MSDS can be obtained on www.nortonabrasives.com



Dust Protection

EXPOSURE TO DUST GENERATED FROM WORKPIECE GRINDING WITH ABRASIVE MATERIALS CAN RESULT IN LUNG DAMAGE AND/OR OTHER PHYSICAL INJURY.

USE DUST CAPTURE OR LOCAL EXHAUST AS STATED IN THE MSDS. Wear government-approved respiratory PROTECTION AND EYE AND SKIN PROTECTION

Failure to follow this warning can result in serious lung damage and/or physical injury.

This is a general dust warning and does not cover SPECIFIC SITUATIONS & OR MORE INFORMATION. SEE THE DUST WARNING PROVIDED WITH YOUR PRODUCT AND WORKPIECE



Blotter

USE PAPER OR PLASTIC BLOTTERS ONLY WHEN MOUNTING SUPERABRASIVE WHEELS WITH VITRIFIED CORES. Do not use paper or plastic blotters on any other core material may result in the wheel loosening during grinding.



Warning

Warning icon appears on our products and packaging. IT IS INTENDED TO DRAW YOUR ATTENTION TO SPECIFIC SAFETY WARNING PRACTICES OUTLINED AFTER IT.

SAFE OPERATING PRACTICES

Safe operating practices must be part of every grinding wheel user's operation. The greatest efficiency and lowest overall abrasive cost can be realized only if proven care and maintenance become standard practice.

BE SURE TO READ ANY SAFETY MATERIAL PROVIDED WITH THE ABRASIVE PRODUCT.

ALWAYS CHECK THE WHEEL FOR CRACKS OR DAMAGE BEFORE USE.

BEFORE MOUNTING THE WHEEL TO MEASURE THE SPINDLE SPEED.

ENSURE THE MOUNTING FLANGE ADAPTER SUPPLIED BY THE MACHINE MANUFACTURER ARE PROPERLY USED.

GOOD CONDITION !.3) SAFETY REQUIREMENTS PROVIDES WHEEL MOUNTING REQUIREMENTS. CHECK MOUNTING FLANGES FOR EQUAL DIAMETER.

NEVER USE A GRINDING WHEEL WITH A SPEED LESS THAN THE GRINDER.

ALWAYS MOUNT TRUE AND DRESS THE WHEEL TO CONFORMANCE WITH THE GUIDELINES PUBLISHED IN THE !.3) SAFETY REQUIREMENTS. INSURE THE CORRECT WHEEL SIZE IS USED BEFORE STARTING THE WHEEL. ALLOW THE WHEEL TO COME UP TO FULL OPERATING SPEED BEFORE STARTING TO GRIND FOR A MINIMUM OF ONE MINUTE AND STAND OUT OF THE PORTABLE GRINDER. USE A HIGH SPEED AIR SANDER. USE A TACHOMETER TO MEASURE THE MAXIMUM OPERATING SPEED MARKED ON THE WHEEL BEING USED. FOLLOW THE INSTRUCTIONS PROVIDED TO CALCULATE WHEEL SPEED. RPM = Spindle Speed in RPM x Wheel Diameter in inches x .262. NEVER USE THE WHEEL STORE THE WHEEL IN ITS ORIGINAL PACKING MATERIALS OR ACCORDING TO ANSB7.1. This protects the wheel and provides easy identification.

FOR MORE INFORMATION ON PRODUCT SAFETY VISIT OUR WEBSITE WWW.NORTONABRASIVES.COM OR ASK YOUR SUPERVISOR ABOUT THESE PUBLICATIONS. REFER TO PORTABLE GRINDING WHEEL SAFETY (474)

PLEASE READ THE PORTABLE GRINDING SAFETY FORM AND THE SAFETY REQUIREMENTS FOR THE CARE AND PROTECTION OF ABRASIVE WHEELS.

FEDERAL HAZARD COMMUNICATION STANDARD 1910.138 AND 1910.1200.

MATERIAL SAFETY DATA SHEETS - 353

NORTON SAFETY VIDEOS

OTHER APPLICABLE REGULATIONS