



# Carbide Burs



Description: Carbide burs are one of the most versatile metal working tools. Used in virtually every industry, burs are used in mold and pattern making, die sinking, tool making and

Application: Used widely in the automotive, aerospace, foundry, power station and engineering industries.

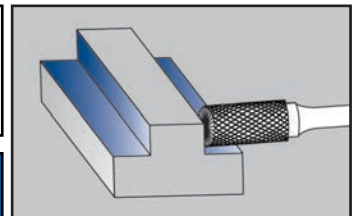
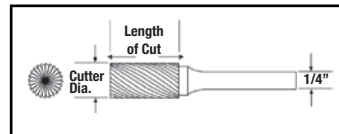
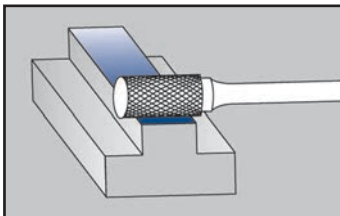
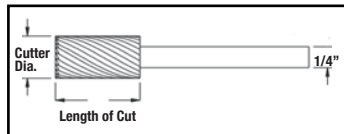
## THE QUALITY TO MEET THE MOST DEMANDING JOBS

Manufactured from C2 tungsten carbide, Champion Carbide Burs are precision machine ground using diamond wheels and automated machinery. Standard 1/4" shanks unless specified differently, producing consistent geometry, sharp cutting edges and vibration free performance. Most Champion double cut Carbide Burs are Titanium Nitride Coated for superior surface finish and long life. Ferrous burs are for cutting steel alloys such as stainless steel, cast iron etc., Non-Ferrous Burs are for cutting aluminium & other non-ferrous materials. Miniature, Non-Ferrous & Long Burs are not Titanium Nitride Coated.

### SA Cylinder Shape



### SB Cylinder End Cut



**USE FOR DEBURRING**

**USE FOR INTERIOR CONTOURING WORK**

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
1/8	1/2	SA11	-	-
1/8	5/8	SA12	-	-
5/32	5/8	SA13	-	-
3/16	5/8	SA14	-	-
1/4	5/8	SA1***	-	-
1/4	1	SA1L	-	-
1/4	3/4	-	SA1NF	-
1/4	1/2	-	-	SA1-L6*
5/16	3/4	SA2	-	-
3/8	3/4	SA3***	SA3NF	SA3-L6*
3/8	1	SA3L	-	-
3/8	1-1/2	SA3X	-	-
7/16	1	SA4	-	-
1/2	1	SA5***	SA5NF	SA5-L6*
5/8	1	SA6	SA6NF	-
3/4	1/2	SA15	-	-
3/4	3/4	SA16	-	-
3/4	1	SA7	SA7NF	-
3/4	1	-	SA7NF-3/8**	-
7/8	1	SA8	-	-
1	1	SA9	-	-

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
1/8	1/2	SB11	-	-
1/8	5/8	SB12	-	-
5/32	5/8	SB13	-	-
3/16	5/8	SB14	-	-
1/4	5/8	SB1***	-	-
1/4	1	SB1L	-	-
5/16	3/4	SB2	-	-
3/8	3/4	SB3***	-	-
3/8	1	SB3L	-	-
3/8	1-1/2	SB3X	-	-
7/16	1	SB4	-	-
1/2	1	SB5***	-	-
5/8	1	SB6***	-	-
3/4	1/2	SB15	-	-
3/4	3/4	SB16	-	-
3/4	1	SB7***	-	-
7/8	1	SB8	-	-
1	1	SB9	-	-

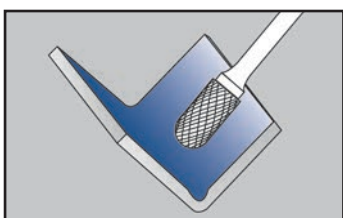
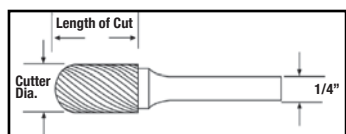
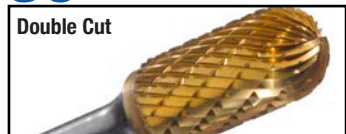
\* 6" overall length

\*\* 3/8" shank

\*\*\* Available without Titanium Nitride Coating. Specify U (uncoated) when ordering. Example, USA1

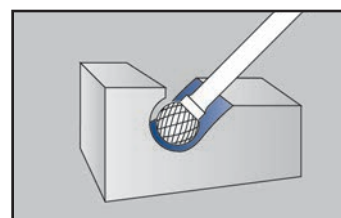
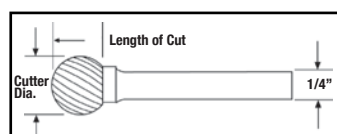


### SC Cylinder Radius End



USE FOR SURFACE MILLING/  
CONTOURING

### SD Ball Shape



USE FOR CONTOURING / HOLE  
DEBURRING / MILLING

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
1/8	1/2	SC11***	-	-
1/8	5/8	SC12	-	-
5/32	5/8	SC13	-	-
3/16	5/8	SC14	-	-
1/4	5/8	SC1***	-	-
1/4	1	SC1L	-	-
1/4	1/2	-	-	SC1-L6*
1/4	3/4	-	SC1NF	-
5/16	3/4	SC2	-	-
3/8	3/4	SC3***	SC3NF	SC3-L6*
3/8	1	SC3L	-	-
3/8	1-1/2	SC3X	-	-
7/16	1	SC4	-	-
1/2	1	SC5***	SC5NF	SC5-L6*
5/8	1	SC6	SC6NF	-
3/4	1/2	SC15	-	-
3/4	3/4	SC16	-	-
3/4	1	SC7***	SC7NF	-
3/4	1	-	SC7NF-3/8**	-
1	1	SC9	-	-

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
1/8	3/32	SD11	-	-
3/16	1/8	SD14***	-	-
1/4	7/32	SD1***	SD1NF	SD1-L6*
5/16	1/4	SD2***	-	-
3/8	5/16	SD3***	SD3NF	SD3-L6*
7/16	3/8	SD4	-	-
1/2	7/16	SD5***	SD5NF	-
5/8	9/16	SD6	SD6NF	-
3/4	11/16	SD7***	SD7NF	-
3/4	11/16	-	SD7NF-3/8**	-
1	15/16	SD9	-	-

\* 6" overall length

\*\* 3/8" shank

\*\*\* Available without Titanium Nitride Coating.

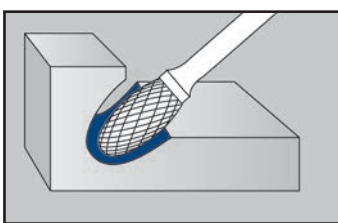
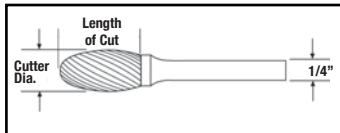
Specify U (uncoated) when ordering.

Example, USA1



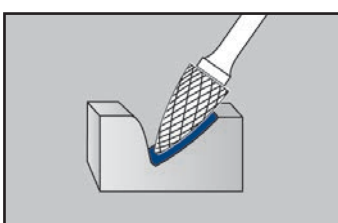
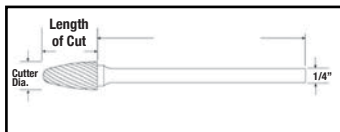
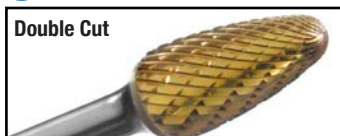


### SE Oval Shape



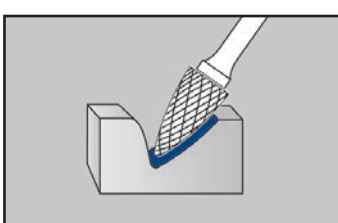
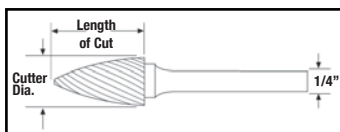
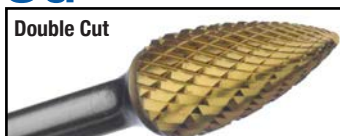
USE FOR CONTOURING

### SF Tree Shape Radius End



USE FOR WORK ON NARROW CONTOURS

### SG Tree Shape



USE FOR NARROW CONTOURS & MILLING

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
3/16	5/16	SE11	-	-
1/4	3/8	SE1***	-	SE1-L6*
3/8	5/8	SE3***	SE3NF	SE3-L6*
1/2	7/8	SE5***	SE5NF	SE5-L6*
5/8	1	SE6***	SE6NF	-
3/4	1	SE7	SE7NF	-
3/4	1	-	SE7NF-3/8**	-

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
1/8	1/2	SF11	-	-
1/4	3/4	SF1***	SF1NF	-
1/4	1/2	-	-	SF1-L6*
3/8	3/4	SF3***	SF3-NF	SF3-L6*
7/16	1	SF4	-	-
1/2	3/4	SF13	-	-
1/2	1	SF5***	SF5-NF	SF5-L6*
5/8	1	SF6	SF6-NF	-
3/4	1	SF7	-	-
3/4	1-1/4	SF14	SF14-NF	-
3/4	1-1/4	-	SF14NF-3/8**	-
3/4	1-1/2	SF15	-	-

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
1/4	5/8	SG1***	-	-
1/4	1/2	-	-	SG1-L6*
5/16	3/4	SG2	-	-
3/8	3/4	SG3***	-	SG3-L6*
1/2	3/4	SG13***	-	-
1/2	1	SG5***	-	SG5-L6*
5/8	1	SG6	-	-
3/4	1	SG7	-	-
3/4	1-1/2	SG15	-	-

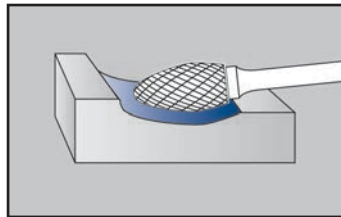
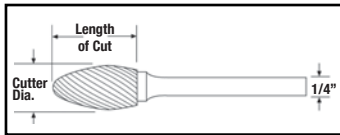
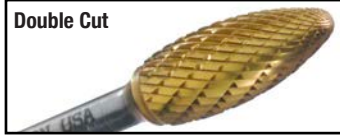
\* 6" overall length

\*\* 3/8" shank

\*\*\* Available without Titanium Nitride Coating. Specify U (uncoated) when ordering. Example, USA1



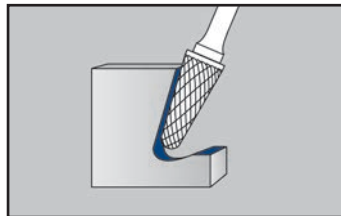
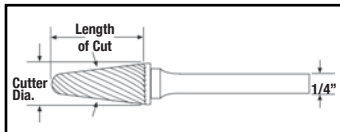
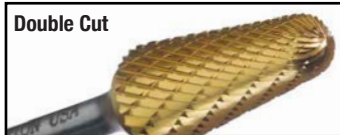
### SH Flame Shape



**USE FOR CONTOURING**

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
1/4	5/8	SH1***	-	-
5/16	3/4	SH2	-	SH2-L6
1/2	1-1/4	SH5***	-	SH5-L6
5/8	1-7/16	SH6	-	-
3/4	1-5/8	SH7***	-	-

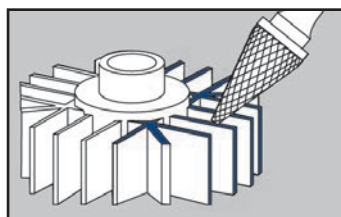
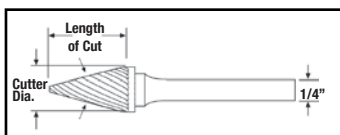
### SL SL14° Taper Radius End



**USE FOR NARROW CONTOURS / SURFACE MACHINING**

Cutter Details		List / EDP No.		
Cutter Diameter	Length of Cut	Double Cut	Non Ferrous	Long Series
1/4	5/8	SL1***	-	SL1-L6
5/16	7/8	SL2	-	-
3/8	1-1/16	SL3***	SL3-NF	SL3-L6
1/2	1-1/8	SL4***	SL4-N4	SL4-L6
5/8	1-3/16	SL5	SL5-NF	-
5/8	1-5/16	SL6	SL6-NF	-
3/4	1-1/2	SL7	SL7-NF	-
3/4	1-1/2	-	SL7NF-3/8	-

### SM Cone Shape



**USE FOR NARROW CONTOURS / SURFACE MACHINING**

Cutter Details			List / EDP No.	
Cutter Diameter	Length of Cut	Included Angle	Double Cut	Non Ferrous
1/4	1/2	22°	SM1	-
1/4	3/4	14°	SM2***	-
1/4	1	10°	SM3***	-
3/8	5/8	28°	SM4**	-
1/2	7/8	28°	SM5***	-
5/8	1	31°	SM6	-

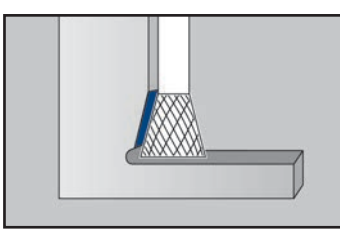
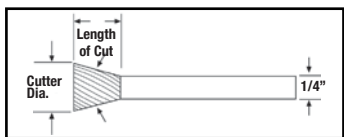
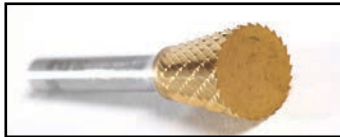
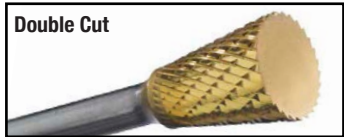
\* 6" overall length

\*\* 3/8" shank

\*\*\* Available without Titanium Nitride Coating.  
Specify U (uncoated) when ordering.  
Example, USA1



### SN Inverted Cone Shape

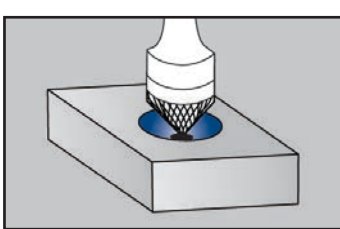
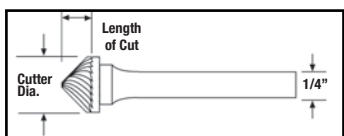
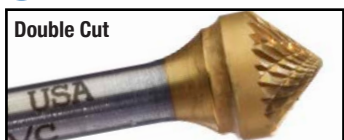


**EDGE MACHINING FROM THE REAR IN HARD TO REACH AREAS**

CUTTER DETAILS			List / EDP No.
Cutter Diameter	Length of Cut	Included Angle	Non Ferrous
1/4	5/16	10°	SN1***
3/8	3/8	13°	SN2
1/2	1/2	28°	SN4***
5/8	3/4	18°	SN6
3/4	5/8	30°	SN7

\*\*\* Available without Titanium Nitride Coating. Specify US (uncoated) when ordering.

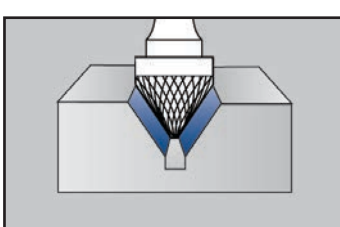
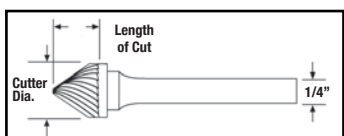
### SK 90° Cone Shape



**MACHINING OF ACUTE ANGLE AREAS / COUNTERSINKING**

CUTTER DETAILS		List / EDP No.
Cutter Diameter	Length of Cut	Double Cut
1/4	1/8	SK1
3/8	3/16	SK3
1/2	1/4	SK5
5/8	5/16	SK6
3/4	3/8	SK7
1	1/2	SK9

### SJ 60° Cone Shape



**MACHINING OF ACUTE ANGLE AREAS / COUNTERSINKING**

CUTTER DETAILS		List / EDP No.
Cutter Diameter	Length of Cut	Double Cut
1/4	3/16	SJ1
3/8	5/16	SJ3
1/2	7/16	SJ5
5/8	9/16	SJ6
3/4	11/16	SJ7
1	15/16	SJ9

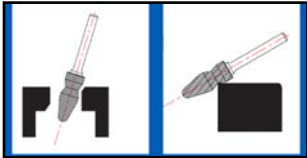


# Radius Burs



**Description:** Multi-purpose burs for a wide range of metal removal jobs. Exclusive inverted curve hugs edges. Use to round sharp edges when subsequent painting of material is required.

**Application:** Use on a wide variety of materials including titanium, bronze, stainless steel, cast iron, brass and more.

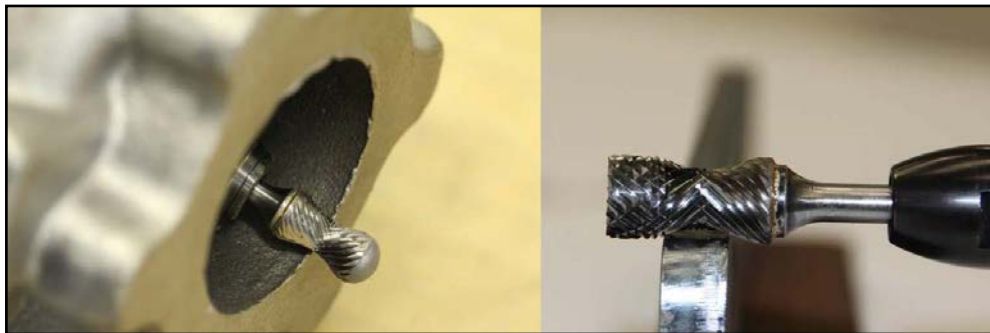
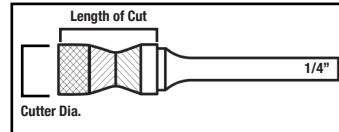


### The Inverted Versatile Bur

- Unique inverted curve - ideal for creating a smooth radius on sharp corners
- Unique guide system - for ease of control on sharp edges
- Special tooth geometry - for smooth cutting action using all faces and rapid material removal
- The highest quality sintered tungsten carbide and CNC machining for consistent quality

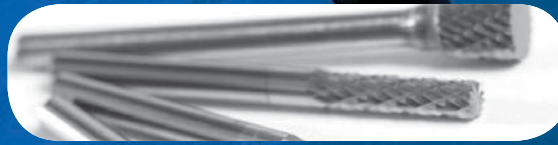
### CUTTER DETAILS

Bur Type and List No.	Cutter Diameter	Length of Cut
SB5RA	1/2"	1"
SC5RA	1/2"	1"
SF5RA	1/2"	1-1/4"





## Miniature Burs



Description: Miniature Burs have 1/8" shank diameter and 1-1/2" overall length

Application: Miniature burs are ideal for engraving and use in Dremel like power tools (often called pencil grinders).

Cutter Details			List / EDP No.
Cut Style	Cutter Diameter	Length of Cut	Double Cut
<b>SA</b>	1/16	1/4	SA41
	3/32	7/16	SA42
	1/8	9/16	SA43
	1/4	1/2	SA51
<b>SB</b>	1/8	9/16	SB-43 End Cut Only
	1/8	Double Ended	SB-43 End Cut Only
	1/4	3/16	SB51
<b>SC</b>	3/32	7/16	SC41
	1/8	9/16	SC42
	1/4	1/2	SC51
<b>SD</b>	3/32	3/32	SD41
	1/8	1/8	SD42
	1/4	7/32	SD51
<b>SE</b>	1/8	7/32	SE41
	1/4	3/8	SE51
<b>SF</b>	1/8	1/4	SF41
	1/8	1/2	SF42
	1/4	1/2	SF51

Cutter Details			List / EDP No.
Cut Style	Cutter Diameter	Length of Cut	Double Cut
<b>SG</b>	1/8	1/4	SG41
	1/8	5/16	SG42
	1/8	3/8	SG43
	1/8	1/2	SG44
	1/4	1/2	SG51
	1/8	1/4	SH41
<b>SH</b>			
<b>SJ</b>	1/8	3/32	SJ42
<b>SK</b>	1/8	1/16	SK42
<b>SL</b>	1/8	3/8	SL41
	1/4	1/2	SL42
<b>SM</b>	1/8	11/32	SM41
	1/8	7/16	SM42
	1/8	5/8	SM43
<b>SN</b>	1/4	1/2	SN51
	3/32	1/8	SN41
	1/8	3/16	SN42
	1/4	1/4	SN51



## Fiberglass Routers - Carbide



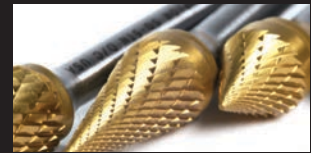
Description: Solid carbide fiberglass routers.

Application: Use to shape, cut or remove excess material in fiberglass, plastics and other non-metallic materials. Ideally suited for the production of fiberglass circuit boards and in the boating, aerospace and RV Industries.

List / EDP No.	Cutter Diameter	Shank Diameter	Flute Length	Overall Length
FGR-1	1/16	1/8	3/16	1-1/2
FGR-1-1	3/32	1/8	3/8	1-1/2
FGR-2	1/8	1/8	1/2	1-1/2
FGR-3	3/16	3/16	5/8	2
FGR-4	3/16	1/4	5/8	2
FGR-5	1/4	1/4	3/4	2
FGR-6	1/4	1/4	3/4	2-1/2
FGR-6-1	1/4	1/4	1	3
FGR-7	5/16	5/16	1	2-1/2
FGR-8	3/8	3/8	1	2-1/2
FGR-9	1/2	1/2	1	3

Please specify FGR-A (No End Cut), FGR-B (Bur End), FGR-C (End Mill Cut) or FGR-D (Drill End) when ordering.  
Ordering Example: FGR-A-6-1.





### Carbide Bur Application & Speed Recommendations

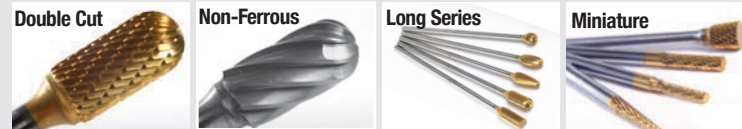
A bur is a rotary cutting tool with a tungsten carbide head of various shapes to form, reduce, shape, smooth or clean pieces of metal. Burs are used in virtually every industry for mold and pattern making, die sinking, tool making, maintenance, weld removal & casting flash removal. They are used in automotive, aerospace, foundry, power station, ship building and engineering industries. Champion carries dozens of styles of burs.

#### Selecting the Right Bur

Three factors to consider

1. Shape of work piece being de-burred determines shape of bur chosen
2. Area being de-burred determines size of bur needed
3. Material being de-burred determines double-cut or non-ferrous flute style.

#### Bur Styles



#### Best Style of Bur for Non-Ferrous Materials

Non-ferrous burs feature deeper single-cut flutes which shear non-ferrous materials (e.g. aluminum) into chips which are easily disposed of.

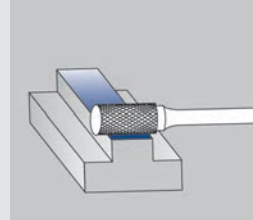
#### When to Use a Double Cut Bur

These burs have chisel type cutting edges with left and right hand spirals, providing excellent stock removal, fine surface finish, and excellent operator control.

#### Most Popular Shapes of Bur Heads

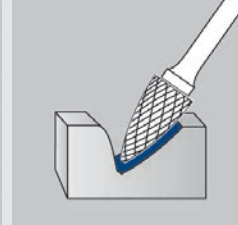
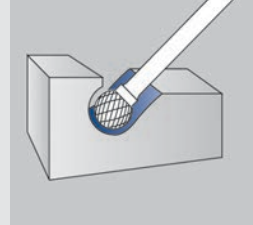
SA - Cylinder Shape

SC - Cylinder Radius Shape



SD - Ball Shape

SF - Tree Shape Radius End



#### SOLID CARBIDE BUR APPLICATION INFORMATION

Material Check List	Suitability	
	Double Cut	Non Ferrous
Aluminum	YES	YES
Brass	YES	YES
Bronze	YES	
Cast Iron	YES	
Copper		YES
Carbon Fiber		YES
Fiberglass	YES	
Inconel	YES	
Magnesium		YES
Plastics	YES	
Hard Rubber	YES	
Steel - 45-55Rc	YES	
Steel - 55-60Rc	YES	
Steel - Carbon	YES	
Steel - Nickel Chrome	YES	
Steel - Stainless	YES	
Steel - Weldments	YES	
Titanium	YES	
Zinc		YES

#### SOLID CARBIDE BUR SPEED RECOMMENDATIONS

Bur Diameter	Recommended Cutting Speed (RPM)	Maximum Cutting Speed (RPM)
1/16	60,000 - 90,000	100,000
1/8	40,000 - 70,000	90,000
3/16	35,000 - 60,000	80,000
1/4	30,000 - 50,000	70,000
5/16	20,000 - 40,000	68,000
3/8	20,000 - 40,000	66,000
7/16	15,000 - 40,000	58,000
1/2	15,000 - 40,000	50,000
5/8	12,000 - 25,000	40,000
3/4	10,000 - 20,000	33,000
1	7,500 - 20,000	25,000
1-1/8	7,000 - 13,000	20,000
1-1/2	5,000 - 10,000	17,000
1-3/4	4,500 - 9,000	14,000
2	4,000 - 8,000	12,500

#### General Information on Bur Use

1. Do not use carbide burs in a portable drill motors. Portable Drill motors run at much lower speeds.
2. It may be recommended to adjust the bur speed as shown under maximum recommended operating speeds for optimum performance. Use slower speeds for harder materials.

Use higher speeds when using small burs. Use slower speeds when using long series burs.

3. Running burs below recommended speeds may cause chipping.
4. Do not use worn out tools and collets as they will also cause chipping.
5. Running burs too fast will cause teeth to wear prematurely.
6. Apply constant pressure and movements when in use.