



High Performance Cutting Tools



## HIGH QUALITY FLEXIBLE CARBIDE BURRS FOR SPECIAL CASTINGS

### FEATURES

- Flexible Shank Carbide burs is for Specialty cleaning of impeller, Pump housings, and all Castings, Excellent for the cleaning of burnt sand, welding, fins, and inner Pipe cleaning, and all other blending operations.
- Available in 6", 8", 10", & 12" length and all shapes. For special length and shapes, please send us email – [sales@forbes.co.in](mailto:sales@forbes.co.in)
- Our rotary burrs are brazed by the advanced welding equipment automatically. The cutters are made by the modern CNC grinding machines.
- Flexible shank carbide burrs manufactured to your drawings to meet your demands of particular stock removal.
- TOTEM flexible shank carbide burs can be coated with TiN, TiCN, TiALN
- Best Suited to castings in areas that are difficult to reach with standards.
- Focus on Turbine blade assemblies, Pump Casings, Pump Impellers.



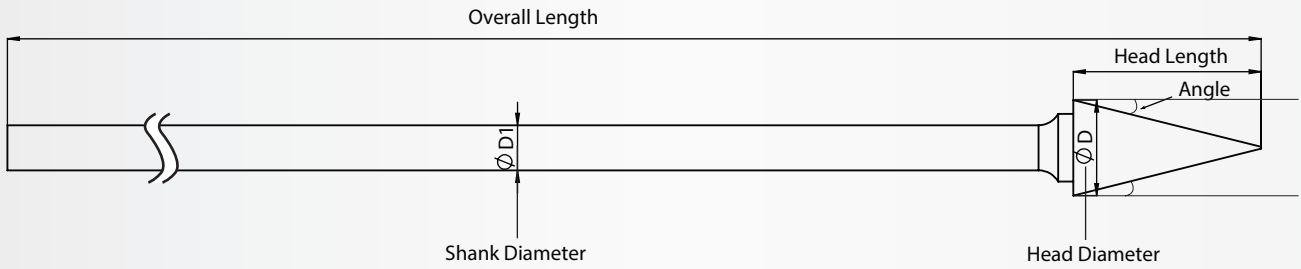
Forbes Precision Tools and Machine Parts Limited

## FLEXIBLE CARBIDE BURR

	6mm Shank							
	Head Diameter	Head length	Overall Length	Shank Dia	Tool No			
						Standard cut	Supreme cut	Deluxe cut
	Ø D1	L2	L1	D		EDP No.	EDP No.	EDP No.
 CYLINDRICAL WITHOUT END CUT	8.00	19.00	150.00	6.00	C3L2 FLEXI BURR	FAC0203021	FAC0203022	FAC0203023
	9.50	19.00	150.00	6.00	C4L2 FLEXI BURR	FAC0203024	FAC0203025	FAC0203026
	12.70	19.00	150.00	6.00	C5L2 FLEXI BURR	FAC0203027	FAC0203028	FAC0203029
 CYLINDRICAL WITH END CUT	8.00	19.00	150.00	6.00	CE3L2 FLEXI BURR	FAC0203030	FAC0203031	FAC0203032
	9.50	19.00	150.00	6.00	CE4L2 FLEXI BURR	FAC0203033	FAC0203034	FAC0203035
	12.70	19.00	150.00	6.00	CE5L2 FLEXI BURR	FAC0203036	FAC0203037	FAC0203038
 CYLINDRICAL WITH RADIUS END	8.00	19.00	150.00	6.00	B2L2 FLEXI BURR	FAC0203016	FAC0203039	FAC0203040
	9.50	19.00	150.00	6.00	B3L2 FLEXI BURR	FAC0203017	FAC0203041	FAC0203042
	12.70	19.00	150.00	6.00	B4L2 FLEXI BURR	FAC0203018	FAC0203043	FAC0203044
 BALL SHAPE	8.00	6.40	150.00	6.00	S2L2 FLEXI BURR	FAC0203045	FAC0203046	FAC0203047
	9.50	8.00	150.00	6.00	S3L2 FLEXI BURR	FAC0203048	FAC0203049	FAC0203050
	12.70	11.00	150.00	6.00	S4L2 FLEXI BURR	FAC0203051	FAC0203052	FAC0203053
 OVAL SHAPE BURR	8.00	12.00	150.00	6.00	O1L2 FLEXI BURR	FAC0203054	FAC0203055	FAC0203056
	12.70	19.00	150.00	6.00	O2L2 FLEXI BURR	FAC0203057	FAC0203058	FAC0203059
 TREE SHAPE WITH RADIUS END WITH POINTED	9.50	19.00	150.00	6.00	TB2L2 FLEXI BURR	FAC0203060	FAC0203061	FAC0203062
	12.70	25.00	150.00	6.00	TB3L2 FLEXI BURR	FAC0203063	FAC0203064	FAC0203065
 TREE SHAPE WITH POINT END	9.50	19.00	150.00	6.00	T2L2 FLEXI BURR	FAC0203066	FAC0203067	FAC0203068
	12.70	25.00	150.00	6.00	T3L2 FLEXI BURR	FAC0203069	FAC0203070	FAC0203071
 FLAME SHAPE	8.00	19.00	150.00	6.00	F2L2 FLEXI BURR	FAC0203020	FAC0203072	FAC0203073
	9.50	25.00	150.00	6.00	F3L2 FLEXI BURR	FAC0203074	FAC0203075	FAC0203076
	12.70	32.00	150.00	6.00	F4L2 FLEXI BURR	FAC0203077	FAC0203078	FAC0203079
 CONE WITH RADIUS BURR	9.50	19.00	150.00	6.00	K1L2 FLEXI BURR	FAC0203080	FAC0203081	FAC0203082
	12.70	19.00	150.00	6.00	K2L2 FLEXI BURR	FAC0203083	FAC0203084	FAC0203085
	16.00	33.00	150.00	6.00	K3L2 FLEXI BURR	FAC0203086	FAC0203087	FAC0203088
 CONE SHAPED BURR	6.00	19.00	150.00	6.00	A1L2 FLEXI BURR	FAC0203089	FAC0203090	FAC0203091
	9.50	20.00	150.00	6.00	A2L2 FLEXI BURR	FAC0203092	FAC0203093	FAC0203094
	12.70	25.00	150.00	6.00	A3L2 FLEXI BURR	FAC0203095	FAC0203096	FAC0203097
 RIM SHAPE BURRS	9.50	2.00	150.00	6.00	R1L2 FLEXI BURR	FAC0203098	FAC0203099	FAC0203100
	12.70	10.00	150.00	6.00	R3L2 FLEXI BURR	FAC0203101	FAC0203102	FAC0203103

\*\* Also available in Shank Length 8", 10", 12"

## FLEXIBLE CARBIDE BURRS NOMENCLATURE



## TYPE OF CUTS



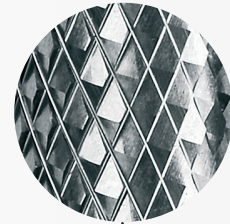
### STANDARD CUT (SINGLE CUT)

This flute structure is designed for superior material removal and general purpose application. These can be used on Steel, Steel alloys, Cast Iron, Stainless Steel, Hard Bronze and Copper. Produces longer chips.



### SUPREME CUT (DOUBLE CUT / CROSS CUT):

This burr allows for efficient stock removal in the harder materials. Its design reduces tool chatter and breaks the chips into granular shapes. These smaller chips also help to eliminate loading on the flutes. This design helps to have better control on the burr and grinder.



### DELUXE CUT (DIAMOND CUT):

This design of tool is like triangular style of point, which produces extremely small chips (powder like chips). The cut eliminates pulling action of the main cut, and offers the operator good control over the tool and produces excellent finish. Effective in heat treated Steels and Tough alloy steels.

## CUTTING PARAMETERS

Material	6mm	8mm	10mm	12mm	16mm
Steel	30-45	25-35	20-30	15-25	10-18
Hardened / Tool Steel	15-20	10-15	10-15	8-10	5-8
Stainless Steel	15-25	12-20	10-15	9-12	7-10
Nickel / Titanium	15-20	10-15	10-15	8-10	5-8
Cast Iron	30-45	25-35	20-30	15-20	10-18
Aluminium / Plastics	15-60	12-50	10-50	8-35	6-30
Brass	20-30	15-20	13-17	10-15	8-12
Copper	15-60	12-50	10-50	8-35	6-30
Zinc	30-45	25-35	20-30	15-25	10-18

The table lists recommended rotational speeds (RPM) as a function of burr diameter.

## SAFETY NOTE

Tools with long shanks must be placed on the workpiece, or inserted into the bore or groove, before the power source is switched on. For safety reasons we urge you to reduce idling speeds (RPM) by up to one-third from the values stated.

## FLEXIBLE CARBIDE BURRS APPLICATIONS

Material Groups			Application	Cut Type		
				Standard	Supreme	Deluxe
Steel and steel castings	Non Hardened, non heat treated steels upto 1200 N/mm <sup>2</sup> (<35 HRC)	Constructional steels Carbon steels Tool steels	Coarse machining = high stock removal	X	X	
		Non-alloyed steels Case-hardened steels Steel castings	Fine machining - eg: deburring			X
	Hardened, heat-treated steels exceeding 1200 N/mm <sup>2</sup> (>35 HRC)	Tool steels Tempering steels	Coarse machining = high stock removal	X	X	
		Alloyed steels Steel castings	Fine machining - eg: deburring			X
High-grade steels	Stainless steels	Austenitic and ferritic high-grade steels	Coarse machining = high stock removal			
			Fine machining - eg: deburring			X
Non - ferrous metals	Soft non-ferrous metals	Aluminium alloys Brass Copper Zinc	Coarse machining = high stock removal			
			Fine machining - eg: deburring			
	Hard non-ferrous metals	Bronze Titanium / titanium alloys Very hard aluminium alloys (high Si content)	Coarse machining = high stock removal	X	X	
			Fine machining - eg: deburring			X
	Heat resisting alloys	Nickel based alloys NiCo alloys (aircraft engine and turbine construction)	Coarse machining = high stock removal	X	X	
			Fine machining - eg: deburring			X
Cast Iron		Grey Cast Iron Spheroidal Graphite cast iron	Coarse machining = high stock removal	X	X	
			Fine machining - eg: deburring			X
Plastics / Other materials		Fibre Reinforced plastics Thermoplastics hard rubber	Coarse machining = high stock removal			
			Fine machining - eg: deburring			

## RECOMMENDATIONS FOR USE

TOTEM Tungsten Carbide Burrs are designed for machining materials of virtually any strength; the superior performance reflects an optimum combination of key parameters such as shape, number of flutes, spiral angle, rake angle and concentricity. The precise concentricity of TOTEM tungsten carbide burrs

- Ensures an improved protection of operator safety and health
- Reduces power tool wear
- Provides smooth operating behaviour
- Prevents chatter marks

An optimum power output and RPM of the power source (air-powered or electric machine, flexible shaft system) are necessary conditions for an economically efficient use of tungsten carbide burrs. We therefore recommend you to observe the following rules:

- Work with maximum RPM. Do not use speeds below 3000 RPM except in special cases (eg: on stationery machines or when countersinking with fully immersed burr).
- Chucks and collets must be absolutely concentric to avoid chipping. Tool runout and chatter will result in premature wear.
- Work with significantly reduced RPM on poorly heat conducting materials (eg: stainless steel, titanium alloys, etc.) to prevent tool damage. Avoid the typical blue Discoloration of the shank and the tool.
- In light cutting applications (deburring, chamfering, light surface work) the tool speed may be increased upto twice indicated rate.