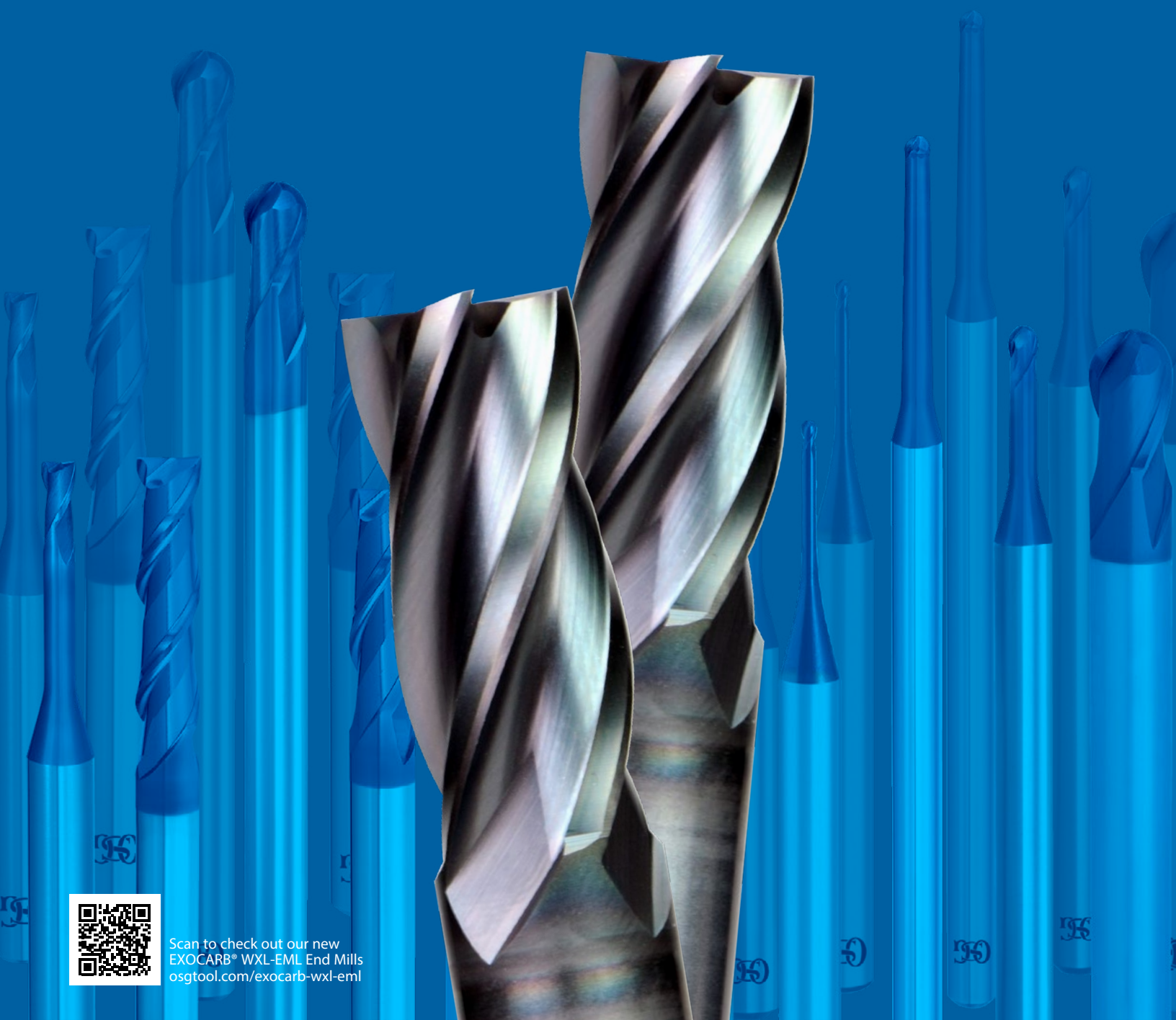




WXL Coated End Mills for a Wide Range of Applications

Vol 1

WXL-EML



Scan to check out our new
EXOCARB® WXL-EML End Mills
osgtool.com/exocarb-wxl-eml



EXOCARB® WXL

EXOCARB® WXL end mills are the new industry standard for hard milling. Everything about WXL is designed for rigidity and performance in wide variety of materials and a wide variety of milling applications. Substrates, geometry, and proprietary WXL coating are all specifically tailored for nonferrous materials, mild steels, and steels up to 50HRC.



For more information use your phone to scan the QR code to the right and visit: osgtool.com/WXL

List Numbers

Size Range

SQUARE	3604 - EXOCARB® WXL-EMS (Inch)	1/16"-1"
	3704 - EXOCARB® WX-EMS (Metric)	1mm-12mm
	3642 - EXOCARB® WXL-EML (Inch) NEW!	1/16"-5/8"
	3742 - EXOCARB® WXL-EML (Metric)	3mm-26mm
	3619 - EXOCARB® WXL-1.5D-DE (Inch)	1/16"-1/2"
	3620 - EXOCARB® WXL-2D-DE (Inch)	1/16"-3/4"
	3621 - EXOCARB® WXL-3D-DE (Inch)	1/16"-3/4"
	3720 - EXOCARB® WXL-1.5D-DE (Metric)	0.1mm-6mm
	3721 - EXOCARB® WXL-2D-DE (Metric)	0.1mm-20mm
	3722 - EXOCARB® WXL-3D-DE (Metric)	0.1mm-20mm
CR	3723 - EXOCARB® WXL-4D-DE (Metric)	0.2mm-12mm
	3670 - EXOCARB® WXL-CR-EMS (Inch)	1/16"-1"
	3770 - EXOCARB® WXL-CR-EDS (Metric)	0.6mm-12mm
	4445 - EXOCARB® WXL-CR-EHS (Inch)	1/8"-1/2"
Ball	3610 - EXOCARB® WXL-EBD (Inch)	1/32"-1/2"
	3710 - EXOCARB® WXL-EBD (Metric)	0.1mm-20mm
	3711 - EXOCARB® WXL-LS-EBD (Metric)	1mm-18mm
RIB	3690 - EXOCARB® WXL-LN-EBD (Inch)	1/64"-1/4"
	3790 - EXOCARB® WXL-LN-EBD (Metric)	0.1mm-6mm
	3791 - EXOCARB® WXL-LN-EDS (Metric)	0.2mm-5mm
	3794 - EXOCARB® WXL-LN-EMS (Metric)	1mm-3mm
	3712 - EXOCARB® WXL-PC-EBD (Metric)	0.2mm-6mm

Primary Applications

- Ideally suited for Hardened steel < 50 HRC.
- Use in combination with High Speed Machining Techniques to optimize performance.
- High Performance End Mills for Denal Applications in PMMA, PEEK, WAX and Metal.

Features & Product Solutions

Incredible Wear Resistance

Ultra-Fine Micrograin Carbide

The hardest most wear resistant carbide possible for incredible wear resistance.

High Accuracy

High Precision Geometry

High accuracy all but eliminates need for benching and rework for mold makers.

Ultimate Strength and Rigidity

High Strength Core Diameter

Tools utilize thicker core diameters for the ultimate in strength and rigidity.

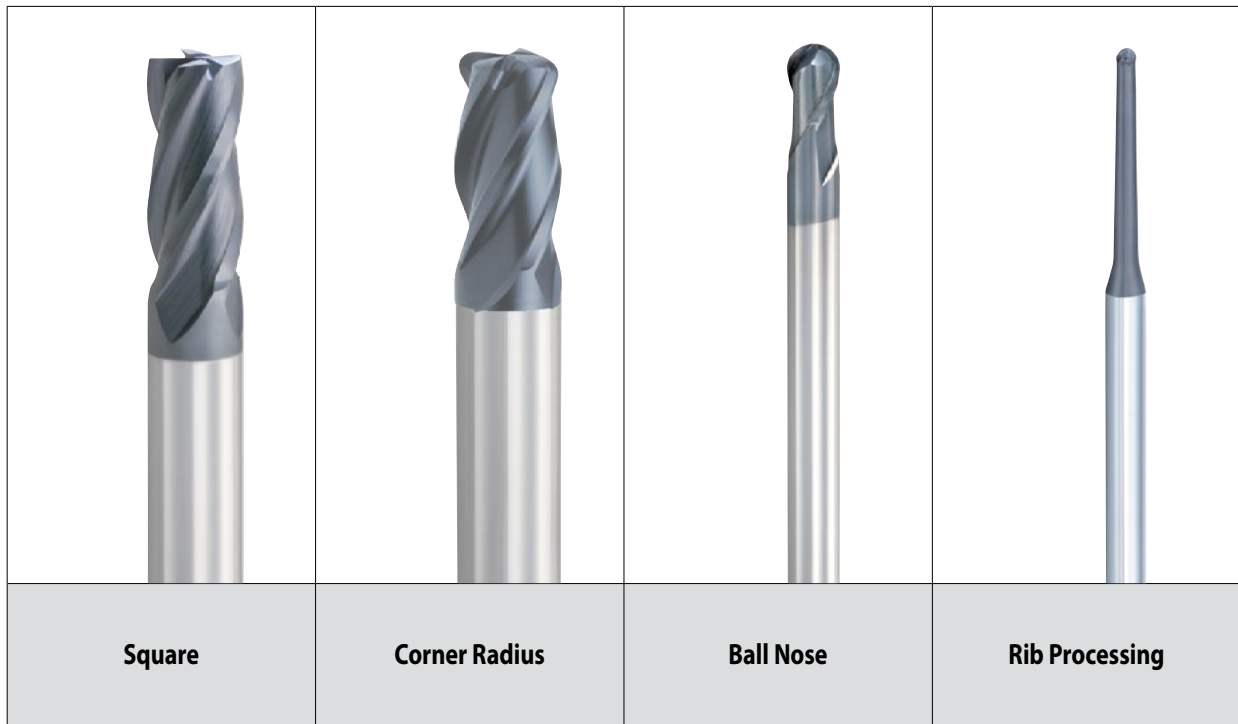
+1100 Celsius Oxidation Temp. & +3100Hv in hardness

WXL coating

Higher coating oxidation temp & hardness dramatically improve wear resistance.

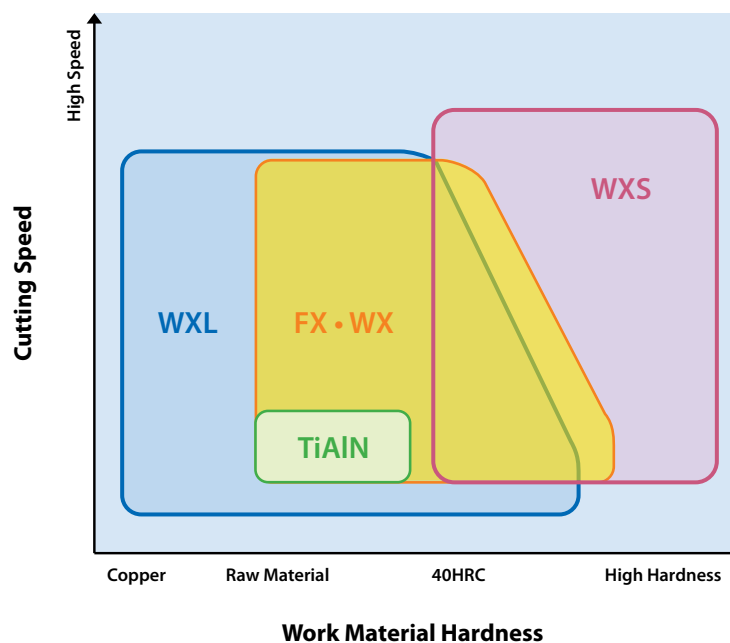
Multiple End Cut Varieties

Versatile Offering Covers Wide Range of Machining Requirements



Product Selection by Application

Application Diagram

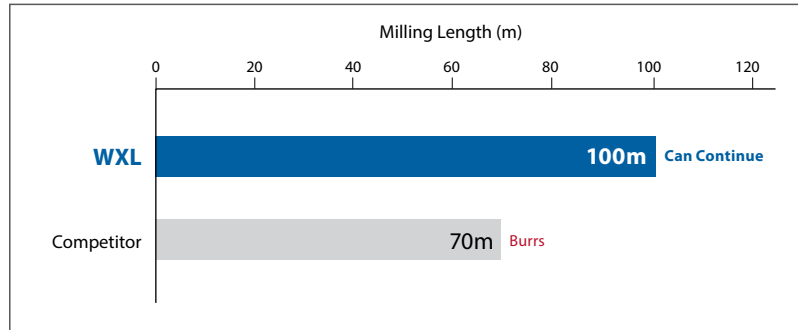


Stable Milling and Long Tool Life

Milling in Steel (SS400)

WXL's coating allowed for stable milling at high speeds with emulsion coolant, thus prolonging tool life and reducing tool usage by 25%.

Tool	WXL-2D-DE	Competitor
Tool Size	Ø0.5	
Work Material	SS400	
Milling Method	Slotting	
Cutting Speed	98 SFM (20,000 RPM)	
Feed Rate	23.6 IPM (0.0006 in/t)	
Depth of Cut	Aa=0.001" • Ar=0.020"	
Coolant	Water Soluble	
Machine	Vertical Machining Center	



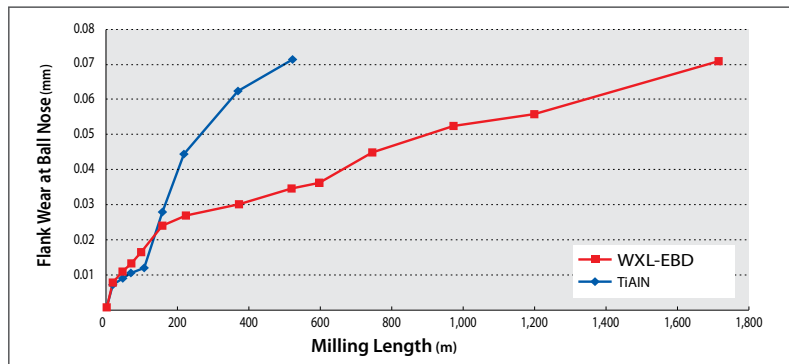
The competitor tool created burrs after milling 70 meters. The tool had to be replaced almost every two hours. The WXL-2D-DE, on the other hand, did not create burrs even after milling 100 meters, and was in good enough condition to continue milling.

Durability in Many Materials

Milling in Copper (C1100)

The WXL series is capable of performing in a wide range of materials. In copper, its durability is 3 times greater than TiAlN-coated tools.

Tool	WXL-EBD	Competitor
Tool Size	R3x12	
Work Material	C1100	
Milling Method	Pick Milling	
Cutting Speed	803 SFM (13,000 RPM)	
Feed Rate	153.5 IPM (0.006 in/t)	
Depth of Cut	Aa=0.012" • Ar=0.024"	
Coolant	Water Soluble	
Machine	Vertical Machining Center	

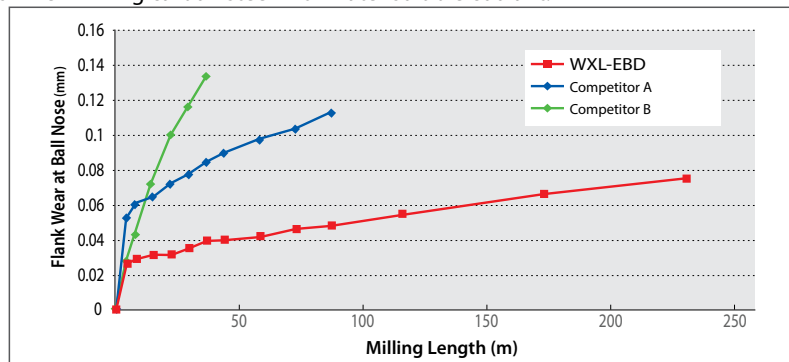


Superior Durability in Wet Applications

Milling in Carbon Steel (1050)

The WXL exhibited 3 times the durability of the competitors when milling carbon steel with water soluble coolant.

Tool	WXL-EBD	Competitors
Tool Size	R3 x 12	
Work Material	1050 Carbon Steel	
Milling Method	Pick Milling	
Cutting Speed	655 SFM (10,600 RPM)	
Feed Rate	101.2 IPM (0.005 in/t)	
Depth of Cut	Aa=0.012" • Ar=0.024"	
Coolant	Water Soluble	
Machine	Vertical Machining Center	



List 3642

WXL-EML, 4 Flute, Long Length

SPEED FEED P6-7	CARBIDE	WXL	LONG	30°	SHANK h6
---------------------------	----------------	------------	-------------	------------	--------------------

Milling Diameter Tolerance	
1/16 ≤ D ≤ 1/2	0 / -0.0008"
1/2 < D ≤ 5/8	0 / -0.0012"



Units: Inch

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36420012	1/16	1 1/2	1/4	1/8
36420112	5/64	1 1/2	5/16	1/8
36420212	3/32	1 1/2	1/2	1/8
36420312	7/64	1 1/2	1/2	1/8
36420412	1/8	1 1/2	5/8	1/8
36420512	5/32	2	11/16	3/16
36420612	3/16	2	3/4	3/16
36420712	7/32	2 1/2	7/8	1/4
36420812	1/4	2 1/2	1	1/4
36420912	5/16	3	1 1/8	5/16
36421012	3/8	4	1 3/8	3/8
36421112	1/2	4	1 5/8	1/2
36421212	5/8	5	2	5/8

Packed: 1 pc. Available WXL® coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
3642	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

○ good ⊗ best



List 3742

WXL-EML, 4 Flute, Long Length

SPEED FEED P6-7	CARBIDE	WXL	LONG	30°	SHANK h6
--------------------	---------	-----	------	-----	-------------

Milling Diameter Tolerance	
3 ≤ D ≤ 26	+0 / -0.03mm



Units: mm

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
37420000	3.0	50	12	6
37420001	3.5	50	14	6
37420002	4.0	50	17	6
37420003	4.5	50	17	6
37420004	5.0	60	20	6
37420005	5.5	60	20	6
37420006	6.0	60	20	6
37420007	6.5	70	24	8
37420008	7.0	70	24	8
37420009	7.5	70	24	8
37420010	8.0	70	28	8
37420011	8.5	80	28	10
37420012	9.0	80	28	10
37420013	9.5	80	28	10
37420014	10.0	80	34	10
37420015	10.5	90	34	12
37420016	11.0	90	34	12
37420017	11.5	90	34	12
37420018	12.0	90	40	12
37420019	13.0	100	40	12
37420020	14.0	100	40	12
37420021	15.0	105	40	16
37420022	16.0	115	48	16
37420023	18.0	115	48	16
37420024	20.0	125	56	20
37420025	23.0	140	67	25
37420026	24.0	140	67	25
37420027	25.0	140	67	25
37420028	26.0	140	67	25

Packed: 1 pc. Available WXL® coating only.



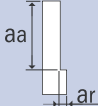
Work Material																		
List No.	P					Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Stainless Steels			Aluminum			Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels					
	Low 1010 1018	Med. 1035 1045	High 1065		300		400	17-4 PH	6061 7075				Casting	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
3742	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	⊙			⊙	⊙	⊙	○	

○ good ⊙ best



List 3642 - EXOCARB® WXL®: 4 Flute, Square End, Long Length
List 3742 - EXOCARB® WXL®: 4 Flute, Square End, Long Length

Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC																									
Work Material	Mild Steel Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels																									
Cutting Speed	200 SFM		160 SFM		130 SFM		110 SFM		80 SFM																									
Depth of Cut	<table border="1"> <tr> <td>Dia.</td> <td>aa</td> <td colspan="2">ar</td> </tr> <tr> <td>D≤20</td> <td>2.5D</td> <td colspan="2">0.05D</td> </tr> <tr> <td>20<D</td> <td>2.5D</td> <td colspan="2">0.1mm</td> </tr> </table>				Dia.	aa	ar		D≤20	2.5D	0.05D		20<D	2.5D	0.1mm				<table border="1"> <tr> <td>Dia.</td> <td>aa</td> <td colspan="2">ar</td> </tr> <tr> <td>D≤8</td> <td>1D</td> <td colspan="2">0.01D</td> </tr> <tr> <td>8<D</td> <td>1D</td> <td colspan="2">0.5mm</td> </tr> </table>		Dia.	aa	ar		D≤8	1D	0.01D		8<D	1D	0.5mm		aa = 2.5D ar = 0.02D	
	Dia.	aa	ar																															
D≤20	2.5D	0.05D																																
20<D	2.5D	0.1mm																																
Dia.	aa	ar																																
D≤8	1D	0.01D																																
8<D	1D	0.5mm																																
Mill Dia.		Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																							
Inch	mm																																	
1/16	-	11,900	8.8	10,000	7.5	7,930	5.9	6,990	0.0	3,960	2.9																							
5/64	-	9,520	8.8	8,000	7.5	6,350	5.9	5,590	0.0	3,170	2.9																							
3/32	-	7,930	8.8	6,670	7.5	5,290	5.9	4,660	0.0	2,640	2.9																							
7/64	-	6,800	8.8	5,710	7.5	4,530	5.9	3,990	0.0	2,260	2.9																							
-	3.0	6,350	8.9	5,300	7.5	4,200	5.9	3,700	5.2	2,100	2.9																							
1/8	-	5,950	8.8	5,000	7.5	3,960	5.9	3,490	0.0	1,980	2.9																							
-	3.5	5,450	8.9	4,540	7.5	3,590	5.9	3,170	5.2	1,790	2.9																							
5/32	-	4,760	8.8	4,000	7.5	3,170	5.9	2,790	0.0	1,580	2.9																							
-	4.0	4,750	8.9	3,950	7.5	3,150	5.9	2,750	5.2	1,550	2.9																							
-	4.5	4,240	8.9	3,530	7.5	2,790	5.9	2,460	5.2	1,390	2.9																							
3/16	-	3,960	8.8	3,330	7.5	2,640	5.9	2,330	0.0	1,320	2.9																							
-	5.0	3,800	8.9	3,150	7.5	2,500	5.9	2,200	5.2	1,250	2.9																							
-	5.5	3,470	8.9	2,890	7.5	2,290	5.9	2,010	5.2	1,140	2.9																							
7/32	-	3,400	8.8	2,850	7.5	2,260	5.9	2,000	0.0	1,130	2.9																							
-	6.0	3,150	8.8	2,650	7.5	2,100	5.9	1,850	5.2	1,050	3.0																							
1/4	-	2,970	8.8	2,500	7.5	1,980	5.9	1,750	0.0	990	3.0																							
-	6.5	2,930	8.9	2,440	7.5	1,930	5.9	1,700	5.2	960	3.0																							
-	7.0	2,720	8.9	2,270	7.5	1,790	5.9	1,580	5.2	890	3.0																							
-	7.5	2,540	8.9	2,110	7.5	1,670	5.9	1,470	5.2	830	3.0																							
5/16	-	2,380	8.8	2,000	7.5	1,580	5.9	1,400	0.0	790	3.0																							
-	8.0	2,350	8.8	1,950	7.5	1,550	5.9	1,350	5.1	995	3.8																							
-	8.5	2,240	8.9	1,870	7.5	1,480	5.9	1,300	5.2	740	3.8																							
-	9.0	2,120	8.9	1,760	7.5	1,390	5.9	1,230	5.2	690	3.8																							
-	9.5	2,010	8.9	1,670	7.5	1,320	5.9	1,160	5.2	660	3.8																							
3/8	-	1,980	8.8	1,660	7.5	1,320	5.9	1,160	0.0	660	3.8																							
-	10.0	1,900	8.9	1,550	7.5	1,250	5.9	1,100	5.2	795	3.7																							
-	10.5	1,810	8.9	1,510	7.5	1,190	5.9	1,050	5.2	590	3.7																							
-	11.0	1,730	8.9	1,440	7.5	1,140	5.9	1,000	5.2	570	3.7																							
-	11.5	1,660	8.9	1,380	7.5	1,090	5.9	960	5.2	540	3.7																							
-	12.0	1,550	8.7	1,300	7.5	1,050	6.0	925	5.3	660	3.8																							
1/2	-	1,480	8.8	1,250	7.5	990	6.0	870	0.0	490	3.8																							
-	13.0	1,460	8.8	1,220	7.5	960	6.0	850	5.2	480	3.8																							
-	14.0	1,350	8.8	1,100	7.5	905	6.0	795	5.2	565	3.7																							
-	15.0	1,270	8.9	1,050	7.5	830	6.0	730	5.2	410	3.7																							
5/8	-	1,190	8.8	1,000	7.5	790	6.0	700	0.0	390	3.7																							
-	16.0	1,150	8.6	995	7.5	795	6.2	695	5.4	495	3.8																							
-	18.0	1,050	8.8	880	7.5	705	6.0	615	5.2	440	3.7																							
-	20.0	955	8.9	795	7.5	635	5.9	555	5.2	395	3.7																							
-	23.0	830	8.9	690	7.5	540	5.9	480	5.2	270	3.7																							
-	24.0	795	8.7	660	7.1	530	5.8	460	5.0	330	3.6																							
-	25.0	760	8.3	635	6.7	505	5.5	445	4.9	315	3.4																							
-	26.0	730	7.9	610	6.3	480	5.2	420	4.6	240	3.1																							

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously,
3. Use a suitable cutting fluid with high smoke retardant.





shaping your dreams

 **Safe use of cutting tools**

- Use safety cover, safety glasses and safety shoes during operation.
- Do not touch cutting edges with bare hands.
- Do not touch cutting chips with bare hands. Chips will be hot after cutting.
- Stop cutting when the tool becomes dull.
- Stop cutting operation immediately if you hear any abnormal cutting sounds.
- Do not modify tools.
- Please use appropriate tools for the operation. Check dimensions to ensure proper selection.

osgtool.com

OSG USA, Inc. : 800-837-2223

OSG Canada, Ltd. : 905-632-8032 • OSG Royco (Mexico) : (52) 477 478-02-00

