

# SOLID CARBIDE END MILLS



**METAL REMOVAL**  
BY **WIDIA™**



## QUALITY

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From raw material through final inspection, our products are manufactured to significantly boost your productivity and profitability.

## SERVICE

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We are committed to providing the grades and technologies to maximize your output.

## PERFORMANCE

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MR cutting tools perform well in a variety of materials, machine set-ups, and applications.

Metal Removal provides local machine shops with value-priced milling and turning tools through a select group of distribution partners.

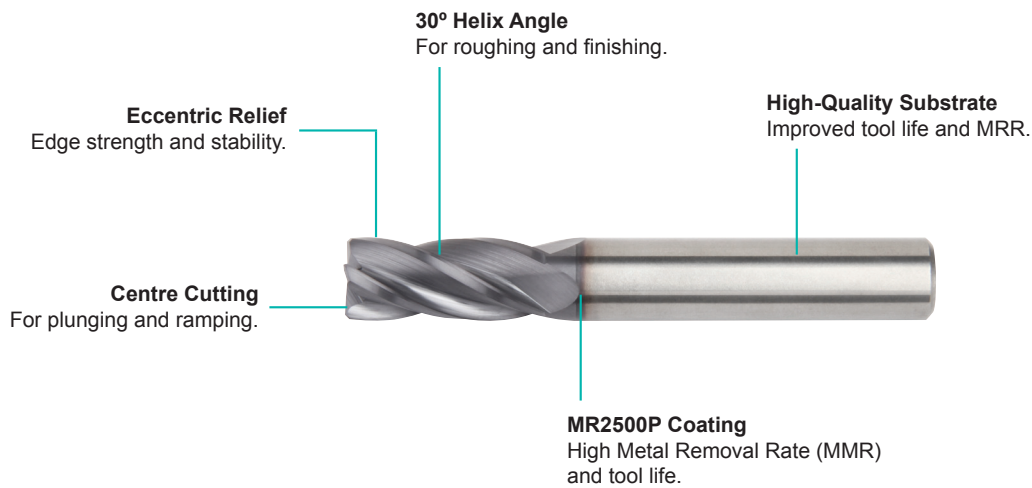
MR tools are manufactured and designed in India for India.

Metal Removal is from the house of **WIDIA™** brands.


## GEOMETRY

### 4-Flute

- Multipurpose tools for a wide range of workpiece materials
- Roughing and finishing with one tool
- Various lengths-of-cut and overall lengths
- Four flutes for high Metal Removal Rates (MRR) and tool life

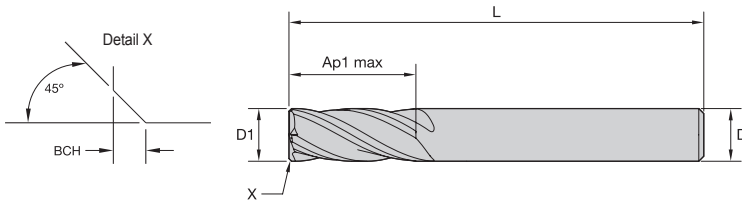


## GRADE

Coating		Grade Description	wear resistance ← → toughness									
			05	10	15	20	25	30	35	40	45	
MR2500P		Coated carbide grade with MR2500P coating for use at higher cutting speeds. For universal use due to its high wear resistance and hardness.	P									
			M									
			K									

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

- End mills
- Centre cutting
- Four flutes
- Coated



End Mill Tolerances

D1	tolerance e8	D	tolerance h6 +/-
≤3	-0,014/-0,028	≤3	0/0,006
>3-6	-0,020/-0,038	>3-6	0/0,008
>6-10	-0,025/-0,047	>6-10	0/0,009
>10-18	-0,032/-0,059	>10-18	0/0,011

Order number	Material description	D1	L	Ap1 max	D	BCH
6919264	MRW SC END MILL 4FL 3x3x9,5x38 SQ	3	38	9.5	3	-
6919265	MRW SC END MILL 4FL 3x3x19x63 SQ	3	63	19	3	-
6919266	MRW SC END MILL 4FL 4x4x11x50 CHF	4	50	11	4	0.1
6919267	MRW SC END MILL 4FL 4x4x30x75 CHF	4	75	31	4	0.1
6919268	MRW SC END MILL 4FL 5x5x13x50 CHF	5	50	13	5	0.1
6919269	MRW SC END MILL 4FL 5x5x30x75 CHF	5	75	30	5	0.1
6919270	MRW SC END MILL 4FL 6x6x16x50 CHF	6	50	16	6	0.1
6919291	MRW SC END MILL 4FL 6x6x28x75 CHF	6	75	28	6	0.1
6919292	MRW SC END MILL 4FL 8x8x19x63 CHF	8	63	19	8	0.2
6919293	MRW SC END MILL 4FL 8x8x28x75 CHF	8	75	28	8	0.2
6919294	MRW SC END MILL 4FL 10x10x22x72 CHF	10	72	22	10	0.2
6919295	MRW SC END MILL 4FL 10x10x45x100 CHF	10	100	45	10	0.2
6919296	MRW SC END MILL 4FL 12x12x26x83 CHF	12	83	26	12	0.3
6919297	MRW SC END MILL 4FL 12x12x45x100 CHF	12	100	45	12	0.3

## APPLICATIONS



Slotting:  
Square End



Side Milling/  
Shoulder Milling:  
Square End



Ramping:  
Blank



DIN 6527



Corner Style:  
Square End



Corner Style:  
Corner Chamfer



Helix Angle:  
30°



Cylindrical/Plain  
Shank



Tool Dimensions:  
Flute Configuration:  
4

# Solid Carbide End Mills



## SPEED AND FEED RECOMMENDATIONS

Material Group																					
	Side Milling (A) and Slotting (B)			TiAlN		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.															
	A		B	Cutting Speed – Vc m/min		mm	D1 – Diameter														
	ap	ae	ap	min	max		1,0	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0		
P	0	Ap1 max	0,1 x D	0,5 x D	150	-	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	1	Ap1 max	0,1 x D	0,5 x D	150	-	200	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	140	-	190	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	3	Ap1 max	0,1 x D	0,5 x D	120	-	160	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	4	Ap1 max	0,1 x D	0,5 x D	90	-	150	fz	0,005	0,010	0,016	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088
M	1	Ap1 max	0,1 x D	0,5 x D	90	-	115	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101
	2	Ap1 max	0,1 x D	0,5 x D	60	-	80	fz	0,005	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081
K	1	Ap1 max	0,1 x D	0,5 x D	120	-	150	fz	0,007	0,014	0,021	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114
	2	Ap1 max	0,1 x D	0,5 x D	110	-	140	fz	0,006	0,011	0,017	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.  
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.  
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on greater than 12mm diameters.  
Suitable for machining work piece materials up to 45 HRC.

## ADAPTOR SELECTION FOR SOLID END MILLS

	Collet Chuck	Weldon® Chuck	Hydraulic Chuck	ShrinkFit	High-Performance Milling Chuck	HydroForce	Safe-Lock™	Slim Line
Application/ Criteria								
Runout accuracy	●	✗	●	●	●	●	●	●
Vibration dampening	✗	✗	●	✗	●	●	●	●
Roughing	●	●	✗	●	●	●	●	✗
Finishing	●	✗	●	●	●	●	●	●
Handling	✗	●	●	●	●	●	●	●
Torque transmission	✗	●	●	●	●	●	●	●
Pull-out protection	●	●	●	●	●	●	●	●
Balance quality	●	●	●	●	●	●	●	●
	● First Choice	● Alternative	✗ Not Recommended					



**METAL REMOVAL**  
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**INDIA HEADQUARTERS**

**WIDIA**

8/9th Mile, Tumkur Road  
Bangalore, Karnataka 560073  
Phone: +91 80 2839 4321

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