

End mill – HM series

Material group	Composition / structure / heat treatment	Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]									
				HM-2E HM-2EP HM-2ES HM-4E					HM-2EFP HM-4EL HM-4EFP				
				Shoulder milling		Shoulder milling		Shoulder milling		Shoulder milling			
				\emptyset [mm]	a_e max	\emptyset [mm]	a_e max	\emptyset [mm]	a_e max	\emptyset [mm]	a_e max		
				$0 < x \leq 20$	$0,05 \times D$			$0 < x \leq 20$	$0,05 \times D$				
				KMG555					KMG555				
				a_e / D					a_e / D				
				1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group		
P Unalloyed steel	ca. 0,15 % C	annealed	125	1									
	ca. 0,45 % C	annealed	190	2									
	ca. 0,45 % C	tempered	250	3									
	ca. 0,75 % C	annealed	270	4									
	ca. 0,75 % C	tempered	300	5									
P Low-alloyed steel		annealed	180	6									
		tempered	275	7									
		tempered	300	8									
		tempered	350	9									
High-alloyed steel and high-alloyed tool steel		annealed	200	10									
		hardened and tempered	325	11									
M Stainless steel		ferritic/martensitic	annealed	200	12								
		martensitic	tempered	240	13								
		austenitic	quench hardened	180	14								
		austenitic-ferritic		230	15								
K Grey cast iron		perlitic/ferritic		180	16								
		perlitic (martensitic)		260	17								
K Cast iron with spheroidal graphite		ferritic		160	18								
		perlitic		250	19								
Malleable cast iron		ferritic		130	20								
		perlitic		230	21								
N Aluminium wrought alloys		cannot be hardened		60	22								
		hardenable	hardened	100	23								
	Cast aluminium alloys	$\leq 12\% \text{ Si}$, cannot be hardened		75	24								
		$\leq 12\% \text{ Si}$, hardenable	hardened	90	25								
		$> 12\% \text{ Si}$, cannot be hardened		130	26								
Copper and copper alloys (bronze/brass)	machining steel, PB> 1%			110	27								
	CuZn, CuSnZn			90	28								
	CuSn, Pb-free copper, electrolytic copper			100	29								
S Heat-resistant alloys	Fe-based alloys	annealed		200	30								
		hardened		280	31								
	Ni or Co bass	annealed		250	32								
		hardened		350	33								
		cast		320	34								
Titanium alloys	pure titanium		R_m 400	35									
	α and β alloys	hardened	R_m 1050	36									
H Hardened steel		hardened and tempered	55 HRC	37	55	100	125	3	50	95	115	3	
		hardened and tempered	60 HRC	38	55	95	120	3	50	95	110	3	
H Hard cast iron		cast	400	39	70	125	160	3	65	120	145	3	
H Hardened cast iron		hardened and tempered	55 HRC	40	55	100	125	3	50	95	115	3	
X Non-metallic materials	Thermoplasts			41									
	Thermosetting plastics			42									
	Plastic, glass-fibre reinforced GFRP			43									
	Plastic, carbon fibre reinforced CFRP			44									
	Graphite			45									
	Wood			46									

Note: The given cutting values are guide values, which were determined under ideal conditions. The values have to be adapted in individual cases. Feed rate recommendations on page B444. For examples of material for cutting tool groups view page D22.

