

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 | | | | |
| | | | | \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 | 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 | | | | | | | | | |
| | $\leq 12\%$ Si, cannot be hardened | | 75 | 24 | | | | | | | | | |
| | $\leq 12\%$ Si, hardenable | hardened | 90 | 25 | | | | | | | | | |
| | $> 12\%$ 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.

