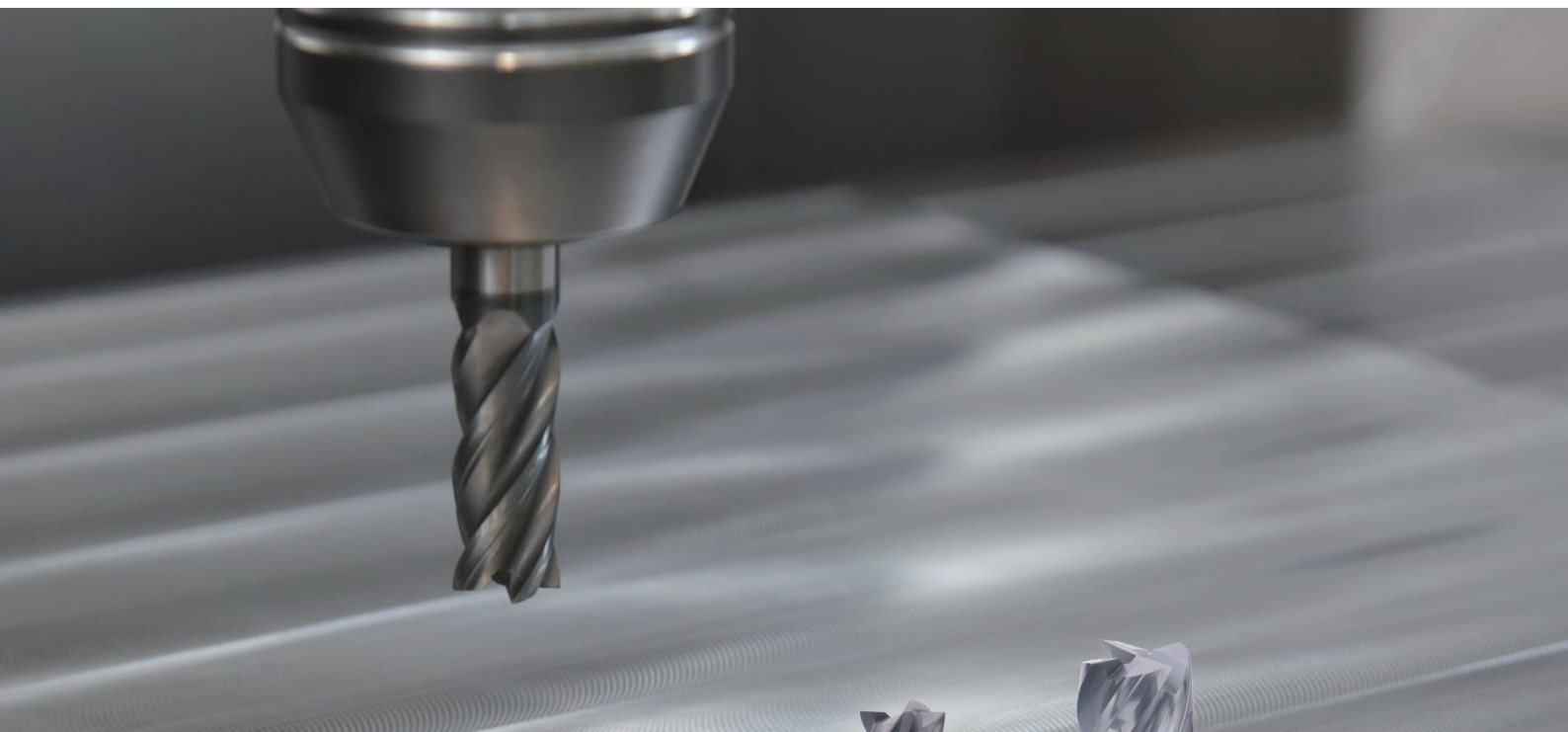


ACHTECK Universal Solid Carbide End Mills-ECO Line

















*High Cost Efficient ideal choice,
suitable for machining ISO P, M,
K and N materials*













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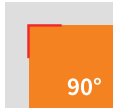


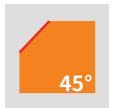


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◆ Solid Carbide End mills-ECO Line

Series	Pictures	Category	Teeth	Helix angles	Application	Cutting edge tolerance	Diameter mm	Diameter inch	Material	Information
M200-2ES		ECO	2	35°		h9	1-20		Universal type	Used in carbon steel, tool steel, alloy steel machining. The workpiece hardness is up to HRC 45°.
M200-4ES		ECO	4	35°/38°		h9	1-20	0.125-1	Universal type	Used in carbon steel, tool steel, alloyed steel machining. 4 cutting edges can achieve better surface finishing. Differential helix and tooth distance eliminate vibration. The workpiece hardness is up to HRC45°.
M200-4CS		ECO	4	35°/38°		h9	4-20		Universal type	Used in carbon steel, tool steel and alloyed steel machining. The chamfers on the corner radius can prevent edge breakage during high-speed machining. Differential helix and tooth distance eliminate vibration. The workpiece hardness is up to HRC 45°.
M200-4RS		ECO	4	35°/38°		h9	1-20	0.125-1	Universal type	Used in carbon steel, tool steel, alloyed steel machining. The round corner can prevent edge breakage during high speed cutting. Differential helix and tooth distance eliminate vibration. With 4 cutting edge design. The workpiece hardness is up to HRC45°.
M200-2BS		ECO	2	30°		h7	1-20	0.125-1	Universal type	Used in carbon steel, tool steel, alloyed steel machining. For profile milling, good toughness. The workpiece hardness is up to HRC45°.
M205-6ES		ECO	6	45°		h9	6-20		Universal type	With close pitch design, it is the first choice of high speed machining, and finishing and side milling at high feed rate. The workpiece hardness is up to HRC 45°.
M245-2ES		ECO	2	45°		h8	3-20	0.125-1	Aluminium alloy	Design for vibration resistance. With special edge treatment. It can achieve better surface finish.
M245-3ES		ECO	3	37°/39°/41°		h8	3-20		Aluminium alloy	Differential helix and tooth distance, design for vibration resistance. With special edge treatment. It can achieve better surface finish.
M245-3EL		ECO	3	45°		h8	4-20		Aluminium alloy	Differential tooth distance, design for vibration resistance. With special edge treatment. It can achieve better surface finish.

Icon description

Icons	Description
	Slot milling and square shoulder milling
	Square shoulder Rough milling
	Square shoulder Finish milling
	High feed milling
	Dynamic milling Cycloid milling
	Profile milling
	Chamfering and deburring
	AlTiN coating
	Uncoated
	AlCrN coating
	Cylindrical shank DIN6535
	Side lock shank HB DIN6535

Icons	Description
	30° Helix angle
	35° Helix angle
	35°/38° Helix angle
	40° Helix angle
	45° Helix angle
	37°/39°/41° Helix angle
	Square 90°
	Round corner CR
	Ball-nose BR
	Corner chamfer 45°
	Chamfer D
	Waved edge P

- ACHTECK ECO line of solid carbide end mills offer extremely high performance, economical with complete product range

Tool

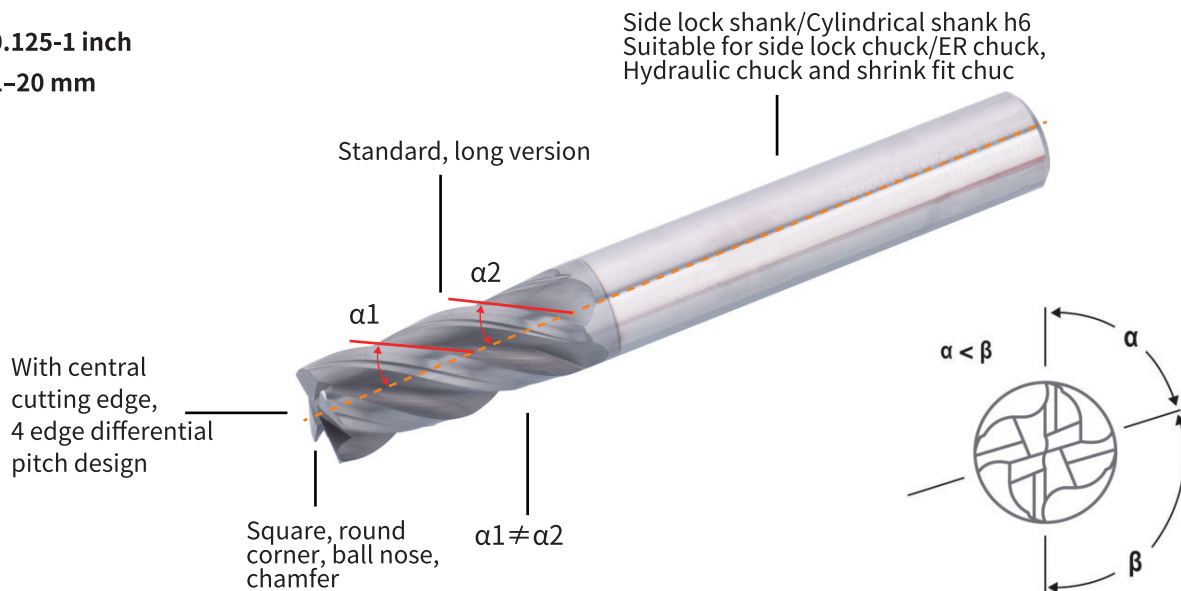
- Solid carbide end mills-ECO series
- Metric & Inch
- 4 categories with 303 dimensions
- Square, ball nose, round corner, chamfer, close pitch
- With 2, 3, 4 or 6 cutting edges
- Metric: ϕ 1-20mm, Inch: 0.125-1inch
- Brand new substrate and AlCrN coating, enhanced wear-resistance, and prolonged tool life

Application

- ISO workpiece material group: P, M, K and N
- Side milling, slot milling, pocket milling, helical interpolated milling, ramping and profile milling
- Application range: general machining, die and mold, aircraft and energy industry

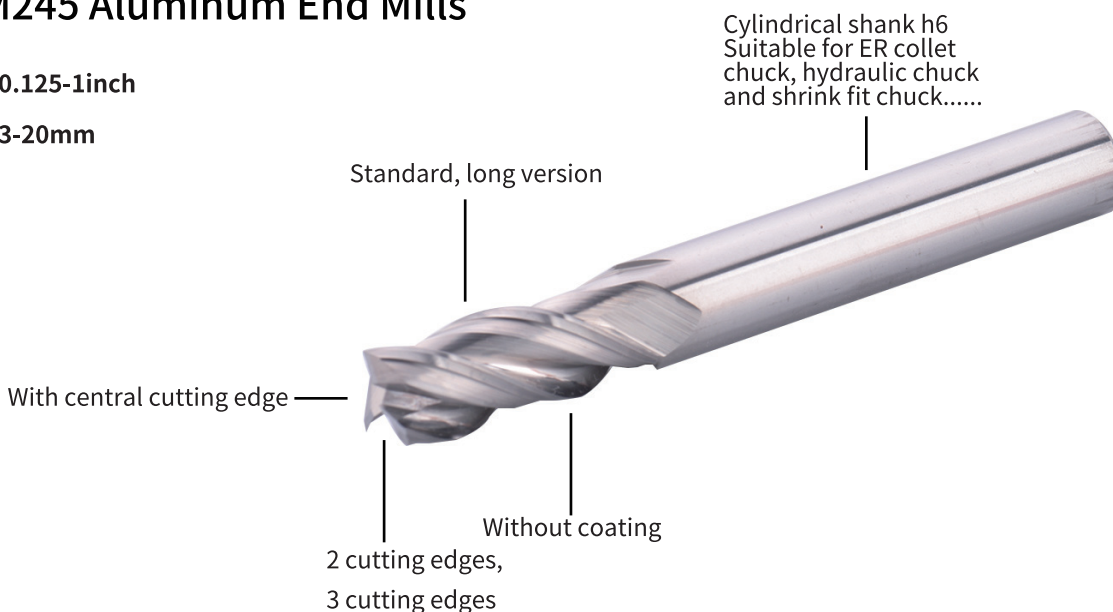
- M200 Universal End Mills

ϕ 0.125-1 inch
 ϕ 1-20 mm



- M245 Aluminum End Mills

ϕ 0.125-1inch
 ϕ 3-20mm



• **Solid Carbide End Mill Denomination**

M	1	00		2	E	S		060	002	N
1	2	3		4	5	6		7	8	9

1	2	3	4	5
Tool category	Generation	Series	Tool type	Tool type
M End Mill	1	00-09 Universal end mills HRC45°	2,3,4,5,6.....	E Square
		10-19 Universal end mills HRC55°		B Ball nose
		20-29 High performance end mills		R Round corner
		30-39 Dedicated for steel		C Chamfer
		40-49 Dedicated for aluminium alloy		P With waved edges
		50-59 Dedicated for stainless steel		W Forming end mills
		60-69 Dedicated for S group material		T Taper end mills
		70-79 Dedicated for hardened material		H High feed milling
		80-99 Others		

6	7	8	9
Length	Tool diameter	Chamfer / nose radius size	Structure type
S Standard	Inch	Inch	N Straight necking
L Long version	0.125=0.125 in=1/8 in	R015=0.015 in	C Conical necking
X Super long version	0.188=0.188 in=3/16 in	Metric	P Special shank
A Extra long version	Metric	Metric	W Side lock shank
SP Long cutting edge	060=6.0mm	002=0.2mm	Default: No necking
LP Long version & Long cutting edge	200=20.0mm		
SN Short cutting edge			

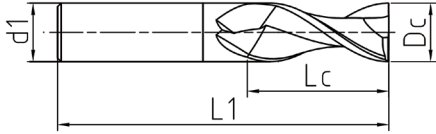
• Solid Carbide End Mills M200

Eco line

Square End Mills with 2 cutting edges

Solid Carbide End Mills

Workpiece hardness < HRC45°



P	M	K	N	S	H	O
●	●	●				

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-2ES-010	1	4	3	50	2	●
M200-2ES-015	1.5	4	4	50	2	●
M200-2ES-020	2	4	6	50	2	●
M200-2ES-025	2.5	4	8	50	2	●
M200-2ES-030	3	4	8	50	2	●
M200-2ES-040	4	4	12	50	2	●
M200-2ES-050	5	6	13	50	2	●
M200-2ES-060	6	6	16	50	2	●
M200-2ES-070	7	8	20	60	2	●
M200-2ES-080	8	8	20	60	2	●
M200-2ES-090	9	10	23	75	2	●
M200-2ES-100	10	10	25	75	2	●
M200-2ES-120	12	12	30	75	2	●
M200-2ES-140	14	14	34	100	2	●
M200-2ES-160	16	16	36	100	2	●
M200-2ES-180	18	18	40	100	2	●
M200-2ES-200	20	20	45	100	2	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

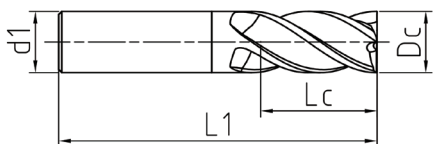
◆ Solid Carbide End Mills M200

Eco line

Square End Mills with 4 cutting edges

Solid Carbide End Mill

Workpiece hardness < HRC45



P	M	K	N	S	H	O
●	●	●				

Product code	Dc mm h9	d1 mm	LC mm	L1 mm	Z mm	Stock
M200-4ES-010	1	4	3	50	4	●
M200-4ES-015	1.5	4	4	50	4	●
M200-4ES-020	2	4	6	50	4	●
M200-4ES-025	2.5	4	8	50	4	●
M200-4ES-030	3	4	8	50	4	●
M200-4ES-030P	3	6	8	50	4	●
M200-4ES-035	3.5	4	11	50	4	●
M200-4ES-040	4	4	12	50	4	●
M200-4ES-040P	4	6	12	50	4	●
M200-4ES-045	4.5	6	12	50	4	●
M200-4ES-050	5	6	13	50	4	●
M200-4ES-055	5.5	6	16	50	4	●
M200-4ES-060	6	6	16	50	4	●
M200-4ES-065	6.5	8	16	60	4	●
M200-4ES-070	7	8	20	60	4	●
M200-4ES-075	7.5	8	20	60	4	●
M200-4ES-080	8	8	20	60	4	●
M200-4ES-085	8.5	10	23	75	4	●
M200-4ES-090	9	10	23	75	4	●
M200-4ES-095	9.5	10	25	75	4	●
M200-4ES-100	10	10	25	75	4	●
M200-4ES-110	11	12	28	75	4	●
M200-4ES-120	12	12	30	75	4	●
M200-4ES-140	14	14	34	100	4	●
M200-4ES-160	16	16	36	100	4	●
M200-4ES-180	18	18	40	100	4	●
M200-4ES-200	20	20	45	100	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4ESP-010	1	4	4	50	4	●
M200-4ESP-020	2	4	10	50	4	●
M200-4ESP-030	3	4	12	50	4	●
M200-4ESP-040	4	4	16	50	4	●
M200-4ESP-050	5	6	18	50	4	●
M200-4ESP-060	6	6	20	50	4	●
M200-4ESP-080	8	8	24	60	4	●
M200-4ESP-100	10	10	30	75	4	●
M200-4ESP-120	12	12	35	75	4	●
M200-4ESP-140	14	14	40	100	4	●
M200-4ESP-160	16	16	45	100	4	●
M200-4ESP-180	18	18	45	100	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4EL-030	3	4	15	60	4	●
M200-4EL-030P	3	6	15	60	4	●
M200-4EL-040	4	4	20	60	4	●
M200-4EL-050	5	6	25	75	4	●
M200-4EL-060	6	6	25	75	4	●
M200-4EL-080	8	8	30	75	4	●
M200-4EL-100	10	10	40	100	4	●
M200-4EL-120	12	12	45	100	4	●
M200-4EL-140	14	14	60	150	4	●
M200-4EL-160	16	16	70	150	4	●
M200-4EL-180	18	18	70	150	4	●
M200-4EL-200	20	20	70	150	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4ELP-050	5	6	30	75	4	●
M200-4ELP-060	6	6	35	75	4	●
M200-4ELP-100	10	10	50	100	4	●
M200-4ELP-120	12	12	50	100	4	●
M200-4ELP-200	20	20	80	150	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4EX-040	4	4	30	75	4	●
M200-4EX-040P	4	6	20	75	4	●
M200-4EX-060	6	6	35	100	4	●
M200-4EX-080	8	8	35	100	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Inch

Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Z	Stock
M200-4ES-0.125	1/8	0.125	3.175	1/8	0.125	0.500	2.250	4	●
M200-4ES-0.188	3/16	0.188	4.763	3/16	0.188	0.500	2.000	4	●
M200-4ES-0.250	1/4	0.250	6.350	1/4	0.250	0.750	2.500	4	●
M200-4ES-0.313	5/16	0.313	7.938	5/16	0.313	0.813	2.500	4	●
M200-4ES-0.375	3/8	0.375	9.525	3/8	0.375	1.125	3.000	4	●
M200-4ES-0.438	7/16	0.438	11.113	7/16	0.438	1.000	2.500	4	●
M200-4ES-0.500	1/2	0.500	12.700	1/2	0.500	1.000	3.000	4	●
M200-4ES-0.750	3/4	0.750	19.050	3/4	0.750	1.500	4.000	4	●
M200-4ES-1.000	1	1.000	25.400	1	1.000	2.000	4.000	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

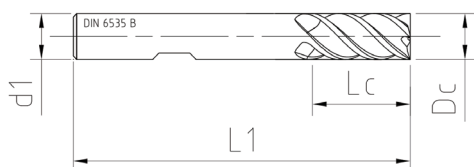
Product code	Dc in No	Dc in	Dc mm	d1 in No	d1 in	Lc in	L1 in	Z	Stock
M200-4EL-0.313	5/16	0.313	7.938	5/16	0.313	1.125	3.000	4	●
M200-4EL-0.375	3/8	0.375	9.525	3/8	0.375	1.500	3.500	4	●
M200-4EL-0.500	1/2	0.500	12.700	1/2	0.500	2.000	4.000	4	●
M200-4EL-0.625	5/8	0.625	15.875	5/8	0.625	1.250	3.500	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

● Solid Carbide End Mill M200

ECO line

Square End Mills with 4 cutting edges



Solid Carbide End Mill

Workpiece hardness < HRC45



Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4ES-030W	3	6	8	50	4	●
M200-4ES-050W	5	6	13	50	4	●
M200-4ES-060W	6	6	16	50	4	●
M200-4ES-080W	8	8	20	60	4	●
M200-4ES-100W	10	10	25	75	4	●
M200-4ES-120W	12	12	30	75	4	●
M200-4ES-140W	14	14	34	100	4	●
M200-4ES-160W	16	16	36	100	4	●
M200-4ES-180W	18	18	40	100	4	●
M200-4ES-200W	20	20	45	100	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4ESP-010	1	4	4	50	4	●
M200-4ESP-020	2	4	10	50	4	●
M200-4ESP-030	3	4	12	50	4	●
M200-4ESP-040	4	4	16	50	4	●
M200-4ESP-050	5	6	18	50	4	●
M200-4ESP-060	6	6	20	50	4	●
M200-4ESP-080	8	8	24	60	4	●
M200-4ESP-100	10	10	30	75	4	●
M200-4ESP-120	12	12	35	75	4	●
M200-4ESP-140	14	14	40	100	4	●
M200-4ESP-160	16	16	45	100	4	●
M200-4ESP-180	18	18	45	100	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4EL-030	3	4	15	60	4	●
M200-4EL-030P	3	6	15	60	4	●
M200-4EL-040	4	4	20	60	4	●
M200-4EL-050	5	6	25	75	4	●
M200-4EL-060	6	6	25	75	4	●
M200-4EL-080	8	8	30	75	4	●
M200-4EL-100	10	10	40	100	4	●
M200-4EL-120	12	12	45	100	4	●
M200-4EL-140	14	14	60	150	4	●
M200-4EL-160	16	16	70	150	4	●
M200-4EL-180	18	18	70	150	4	●
M200-4EL-200	20	20	70	150	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4ELP-050	5	6	30	75	4	●
M200-4ELP-060	6	6	35	75	4	●
M200-4ELP-100	10	10	50	100	4	●
M200-4ELP-120	12	12	50	100	4	●
M200-4ELP-200	20	20	80	150	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M200-4EX-040	4	4	30	75	4	●
M200-4EX-040P	4	6	20	75	4	●
M200-4EX-060	6	6	35	100	4	●
M200-4EX-080	8	8	35	100	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

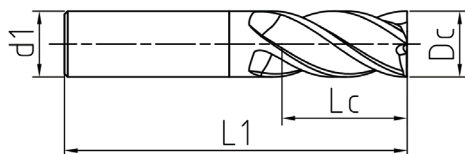
• **Solid Carbide End Mills M200**

ECO line

Square End Mills with 4 cutting edges and chamfer

Solid Carbide End Mill

Workpiece hardness < HRC45



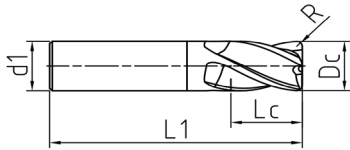
Product code	Dc mm h9	d1 mm	Chamfer mm	Lc mm	L1 mm	Z	Stock
M200-4CS-040	4	4	0.1	12	50	4	●
M200-4CS-050	5	6	0.1	13	50	4	●
M200-4CS-060	6	6	0.1	16	50	4	●
M200-4CS-080	8	8	0.1	20	60	4	●
M200-4CS-100	10	10	0.1	25	75	4	●
M200-4CS-120	12	12	0.1	30	75	4	●
M200-4CS-140	14	14	0.15	34	100	4	●
M200-4CS-160	16	16	0.15	36	100	4	●
M200-4CS-180	18	18	0.15	40	100	4	●
M200-4CS-200	20	20	0.15	45	100	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Solid Carbide End Mills M200

ECO line

Round corner end mill with 4 cutting edges



Solid Carbide End Mill

Workpiece hardness < HRC45



P	M	K	N	S	H	O
●●	●	●●				

Product code	Dc mm h9	d1 mm	Rmm ±0.02	LC mm	L1 mm	Z	Stock
M200-4RS-010002	1	4	0.2	3	50	4	●
M200-4RS-015002	1.5	4	0.2	4	50	4	●
M200-4RS-020002	2	4	0.2	6	50	4	●
M200-4RS-030002	3	4	0.2	8	50	4	●
M200-4RS-030003	3	4	0.3	8	50	4	●
M200-4RS-030005	3	4	0.5	8	50	4	●
M200-4RS-040002	4	4	0.2	12	50	4	●
M200-4RS-040003	4	4	0.3	12	50	4	●
M200-4RS-040005	4	4	0.5	12	50	4	●
M200-4RS-040010	4	4	1	12	50	4	●
M200-4RS-050002	5	6	0.2	13	50	4	●
M200-4RS-050005	5	6	0.5	13	50	4	●
M200-4RS-050010	5	6	1	13	50	4	●
M200-4RS-050015	5	6	1.5	13	50	4	●
M200-4RS-060002	6	6	0.2	16	50	4	●
M200-4RS-060005	6	6	0.5	16	50	4	●
M200-4RS-060010	6	6	1	16	50	4	●
M200-4RS-060015	6	6	1.5	16	50	4	●
M200-4RS-080002	8	8	0.2	20	60	4	●
M200-4RS-080003	8	8	0.3	20	60	4	●
M200-4RS-080005	8	8	0.5	20	60	4	●
M200-4RS-080010	8	8	1	20	60	4	●
M200-4RS-080015	8	8	1.5	20	60	4	●
M200-4RS-080020	8	8	2	20	60	4	●
M200-4RS-100002	10	10	0.2	25	75	4	●
M200-4RS-100003	10	10	0.3	25	75	4	●
M200-4RS-100005	10	10	0.5	25	75	4	●
M200-4RS-100010	10	10	1	25	75	4	●
M200-4RS-100015	10	10	1.5	25	75	4	●
M200-4RS-100020	10	10	2	25	75	4	●
M200-4RS-100025	10	10	2.5	25	75	4	●
M200-4RS-100030	10	10	3	25	75	4	●
M200-4RS-120005	12	12	0.5	30	75	4	●
M200-4RS-120010	12	12	1	30	75	4	●
M200-4RS-120015	12	12	1.5	30	75	4	●
M200-4RS-120020	12	12	2	30	75	4	●
M200-4RS-120025	12	12	2.5	30	75	4	●
M200-4RS-120030	12	12	3	30	75	4	●
M200-4RS-140010	14	14	1	34	100	4	●
M200-4RS-140020	14	14	2	34	100	4	●
M200-4RS-160005	16	16	0.5	36	100	4	●
M200-4RS-160010	16	16	1	36	100	4	●
M200-4RS-160020	16	16	2	36	100	4	●
M200-4RS-160030	16	16	3	36	100	4	●

Product code	Dc mm h9	d1 mm	Rmm ±0.02	LC mm	L1 mm	Z	Stock
M200-4RS-160040	16	16	4	36	100	4	●
M200-4RS-180010	18	18	1	40	100	4	●
M200-4RS-180020	18	18	2	40	100	4	●
M200-4RS-180040	18	18	4	40	100	4	●
M200-4RS-200010	20	20	1	45	100	4	●
M200-4RS-200020	20	20	2	45	100	4	●
M200-4RS-200030	20	20	3	45	100	4	●
M200-4RS-200040	20	20	4	45	100	4	●
M200-4RS-200050	20	20	5	45	100	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h9	d1 mm	Rmm ±0.02	LC mm	L1 mm	Z	Stock
M200-4RL-030005	3	4	0.5	8	75	4	●
M200-4RL-040002	4	4	0.2	12	75	4	●
M200-4RL-040005	4	4	0.5	12	75	4	●
M200-4RL-040010	4	4	1	12	75	4	●
M200-4RL-060002	6	6	0.2	16	75	4	●
M200-4RL-060005	6	6	0.5	16	75	4	●
M200-4RL-060010	6	6	1	16	75	4	●
M200-4RL-060015	6	6	1.5	16	75	4	●
M200-4RL-080005	8	8	0.5	20	100	4	●
M200-4RL-080010	8	8	1	20	100	4	●
M200-4RL-080015	8	8	1.5	20	100	4	●
M200-4RL-080020	8	8	2	20	100	4	●
M200-4RL-100005	10	10	0.5	25	100	4	●
M200-4RL-100010	10	10	1	25	100	4	●
M200-4RL-100015	10	10	1.5	25	100	4	●
M200-4RL-100020	10	10	2	25	100	4	●
M200-4RL-120005	12	12	0.5	30	100	4	●
M200-4RL-120010	12	12	1	30	100	4	●
M200-4RL-120015	12	12	1.5	30	100	4	●
M200-4RL-120020	12	12	2	30	100	4	●
M200-4RL-120025	12	12	2.5	30	100	4	●
M200-4RL-120030	12	12	3	30	100	4	●
M200-4RL-140020	14	14	2	36	150	4	●
M200-4RL-160005	16	16	0.5	36	150	4	●
M200-4RL-160010	16	16	1	36	150	4	●
M200-4RL-160020	16	16	2	36	150	4	●
M200-4RL-160030	16	16	3	36	150	4	●
M200-4RL-160040	16	16	4	36	150	4	●
M200-4RL-180010	18	18	1	45	150	4	●
M200-4RL-180020	18	18	2	45	150	4	●
M200-4RL-200010	20	20	1	45	150	4	●
M200-4RL-200020	20	20	2	45	150	4	●

Inch

Product code	Dc in NO	Dc in	DC mm	d1 in NO	d1 in	Lc in	L1 in	R in	Z	Stock
M200-4RS-0.125R015	1/8	0.125	3.175	1/8	0.125	0.500	2.250	0.015	4	●
M200-4RS-0.188R015	3/16	0.188	4.763	3/16	0.188	0.500	2.000	0.015	4	●
M200-4RS-0.250R015	1/4	0.250	6.350	1/4	0.250	0.750	2.500	0.015	4	●
M200-4RS-0.313R015	5/16	0.313	7.938	5/16	0.313	0.813	2.500	0.015	4	●
M200-4RS-0.375R015	3/8	0.375	9.525	3/8	0.375	1.125	3.000	0.015	4	●
M200-4RS-0.375R030	3/8	0.375	9.525	3/8	0.375	1.125	3.000	0.03	4	●
M200-4RS-0.438R015	7/16	0.438	11.113	7/16	0.438	1.000	2.500	0.015	4	●
M200-4RS-0.500R015	1/2	0.500	12.700	1/2	0.500	1.000	3.000	0.015	4	●
M200-4RS-0.500R030	1/2	0.500	12.700	1/2	0.500	1.000	3.000	0.03	4	●
M200-4RS-0.750R015	3/4	0.750	19.050	3/4	0.750	1.500	4.000	0.015	4	●
M200-4RS-0.750R030	3/4	0.750	19.050	3/4	0.750	1.500	4.000	0.03	4	●
M200-4RS-1.000R015	1	1.000	25.400	1	1.000	2.000	4.000	0.015	4	●
M200-4RS-1.000R030	1	1.000	25.400	1	1.000	2.000	4.000	0.03	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc in NO	Dc in	DC mm	d1 in NO	d1 in	Lc in	L1 in	R in	Z	Stock
M200-4RL-0.313R015	5/16	0.313	7.938	5/16	0.313	1.125	3.000	0.015	4	●
M200-4RL-0.375R015	3/8	0.375	9.525	3/8	0.375	1.500	3.500	0.015	4	●
M200-4RL-0.375R030	3/8	0.375	9.525	3/8	0.375	1.500	3.500	0.03	4	●
M200-4RL-0.500R015	1/2	0.500	12.700	1/2	0.500	2.000	4.000	0.015	4	●
M200-4RL-0.500R030	1/2	0.500	12.700	1/2	0.500	2.000	4.000	0.03	4	●
M200-4RL-0.625R015	5/8	0.625	15.875	5/8	0.625	1.250	3.500	0.015	4	●
M200-4RL-0.625R030	5/8	0.625	15.875	5/8	0.625	1.250	3.500	0.03	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

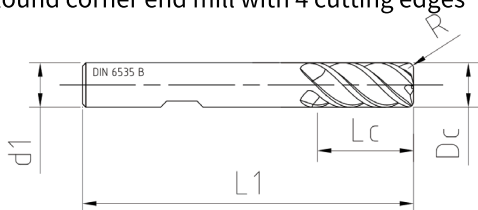
• **Solid Carbide End Mill M200**

Eco line

Solid Carbide End Mills

Round corner end mill with 4 cutting edges

Workpiece hardness < HRC45



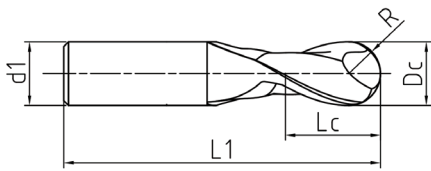
Product code	Dc mm h7	d1 mm	R mm ±0.02	Lc mm	L1 mm	Z	Stock
M200-4RS-060005W	6	6	0.5	16	50	4	●
M200-4RS-060010W	6	6	1	16	50	4	●
M200-4RS-080005W	8	8	0.5	20	60	4	●
M200-4RS-080010W	8	8	1	20	60	4	●
M200-4RS-100005W	10	10	0.5	25	75	4	●
M200-4RS-100010W	10	10	1	25	75	4	●
M200-4RS-100015W	10	10	1.5	25	75	4	●
M200-4RS-100020W	10	10	2	25	75	4	●
M200-4RS-120005W	12	12	0.5	30	75	4	●
M200-4RS-120010W	12	12	1	30	75	4	●
M200-4RS-120015W	12	12	1.5	30	75	4	●
M200-4RS-120020W	12	12	2	30	75	4	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

◆ Solid Carbide End Mill M200

ECO line

Ball nose end mill with 2 cutting edges



Solid Carbide End Mills

Workpiece hardness < HRC45

P	M	K	N	S	H	O
●	●	●				

Product code	Dc mm h7	d1 mm	R mm ±0.02	Lc mm	L1 mm	Z	Stock
M200-2BS-010	1	4	R0.5	2	50	2	●
M200-2BS-015	1.5	4	R0.75	3	50	2	●
M200-2BS-020	2	4	R1	4	50	2	●
M200-2BS-025	2.5	4	R1.25	5	50	2	●
M200-2BS-030	3	4	R1.5	6	50	2	●
M200-2BS-040	4	4	R2	8	50	2	●
M200-2BS-050	5	6	R2.5	10	50	2	●
M200-2BS-060	6	6	R3	12	50	2	●
M200-2BS-070	7	8	R3.5	14	60	2	●
M200-2BS-080	8	8	R4	14	60	2	●
M200-2BS-100	10	10	R5	18	75	2	●
M200-2BS-110	11	12	R5.5	20	75	2	●
M200-2BS-120	12	12	R6	22	75	2	●
M200-2BS-140	14	14	R7	26	100	2	●
M200-2BS-160	16	16	R8	30	100	2	●
M200-2BS-180	18	18	R9	34	100	2	●
M200-2BS-200	20	20	R10	38	100	2	●

Product code	Dc mm h7	d1 mm	R mm ±0.02	Lc mm	L1 mm	Z	Stock
M200-2BL-010P	1	6	R0.5	2	75	2	●
M200-2BL-015P	1.5	6	R0.75	3	75	2	●
M200-2BL-020	2	4	R1	4	75	2	●
M200-2BL-020P	2	6	R1	4	75	2	●
M200-2BL-030	3	4	R1.5	6	75	2	●
M200-2BL-030P	3	6	R1.5	6	75	2	●
M200-2BL-040	4	4	R2	8	75	2	●
M200-2BL-050	5	6	R2.5	10	75	2	●
M200-2BL-060	6	6	R3	12	75	2	●
M200-2BL-080	8	8	R4	14	75	2	●
M200-2BL-090	9	10	R4.5	16	100	2	●
M200-2BL-100	10	10	R5	18	100	2	●
M200-2BL-110	11	12	R5.5	20	100	2	●
M200-2BL-120	12	12	R6	22	100	2	●
M200-2BL-140	14	14	R7	26	150	2	●
M200-2BL-160	16	16	R8	30	150	2	●
M200-2BL-180	18	18	R9	34	150	2	●
M200-2BL-200	20	20	R10	38	150	2	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc mm h7	d1 mm	R mm ±0.02	Lc mm	L1 mm	Z	Stock
M200-2BX-040	4	4	R2	8	100	2	●
M200-2BX-060	6	6	R3	12	100	2	●
M200-2BX-070	7	8	R3.5	14	100	2	●
M200-2BX-080	8	8	R4	14	100	2	●
M200-2BX-100	10	10	R5	18	150	2	●
M200-2BX-120	12	12	R6	22	150	2	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Inch

Product code	Dc in NO	Dc in	DC mm	d1 in NO	d1 in	Lc in	L1 in	Z	Stock
M200-2BS-0.125	1/8	0.125	3.175	1/8	0.125	0.500	2.250	2	●
M200-2BS-0.188	3/16	0.188	4.763	3/16	0.188	0.500	2.000	2	●
M200-2BS-0.250	1/4	0.250	6.350	1/4	0.250	0.750	2.500	2	●
M200-2BS-0.313	5/16	0.313	7.938	5/16	0.313	0.813	2.500	2	●
M200-2BS-0.375	3/8	0.375	9.525	3/8	0.375	1.125	3.000	2	●
M200-2BS-0.438	7/16	0.438	11.113	7/16	0.438	1.000	2.500	2	●
M200-2BS-0.500	1/2	0.500	12.700	1/2	0.500	1.000	3.000	2	●
M200-2BS-0.750	3/4	0.750	19.050	3/4	0.750	1.500	4.000	2	●
M200-2BS-1.000	1	1.000	25.400	1	1.000	2.000	4.000	2	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

Product code	Dc in NO	Dc in	DC mm	d1 in NO	d1 in	Lc in	L1 in	Z	Stock
M200-2BL-0.313	5/16	0.313	7.938	5/16	0.313	1.125	3.000	2	●
M200-2BL-0.375	3/8	0.375	9.525	3/8	0.375	1.500	3.500	2	●
M200-2BL-0.500	1/2	0.500	12.700	1/2	0.500	2.000	4.000	2	●
M200-2BL-0.625	5/8	0.625	15.875	5/8	0.625	1.250	3.500	2	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

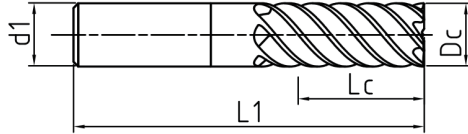
◆ Solid Carbide End Mill M205

Eco line

Square End Mill with 6 cutting edges

Solid Carbide End Mills

Workpiece hardness < HRC45



P	M	K	N	S	H	O
●●	●	●●				

Product code	Dc mm h9	d1 mm	Lc mm	L1 mm	Z	Stock
M205-6ES-060	6	6	16	50	6	●
M205-6ES-080	8	8	20	60	6	●
M205-6ES-100	10	10	25	75	6	●
M205-6ES-120	12	12	30	75	6	●
M205-6ES-140	14	14	34	100	6	●
M205-6ES-160	16	16	36	100	6	●
M205-6ES-180	18	18	40	100	6	●
M205-6ES-200	20	20	45	100	6	●

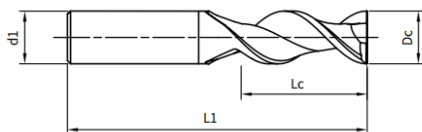
Marked: ● Stocked ○ Limited-stock
Special product is accepted

• Solid Carbide End Mill M245

ECO line

Solid Carbide End Mills

Square shoulder mill 2 cutting edges designed for aluminum alloy



P	M	K	N	S	H	O
			●●			

Product code	Dc mm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M245-2ES-030	3	4	8	50	2	●
M245-2ES-040	4	4	12	50	2	●
M245-2ES-050	5	6	13	50	2	●
M245-2ES-060	6	6	16	50	2	●
M245-2ES-080	8	8	20	60	2	●
M245-2ES-100	10	10	25	75	2	●
M245-2ES-120	12	12	30	75	2	●
M245-2ES-160	16	16	45	100	2	●
M245-2ES-200	20	20	45	100	2	●

Inch

Product code	Dc in No	Dc in	DC mm	d1 in NO	d1 in	Lc in	L1 in	Z	Stock
M245-2ES-0.125	1/8	0.125	3.175	1/8	0.125	0.500	2.250	2	●
M245-2ES-0.188	3/16	0.188	4.763	3/16	0.188	0.500	2.000	2	●
M245-2ES-0.250	1/4	0.250	6.350	1/4	0.250	0.750	2.500	2	●
M245-2ES-0.313	5/16	0.313	7.938	5/16	0.313	0.813	2.500	2	●
M245-2ES-0.375	3/8	0.375	9.525	3/8	0.375	1.125	3.000	2	●
M245-2ES-0.438	7/16	0.438	11.113	7/16	0.438	1.000	2.500	2	●
M245-2ES-0.500	1/2	0.500	12.700	1/2	0.500	1.000	3.000	2	●
M245-2ES-0.625	5/8	0.625	15.875	5/8	0.625	1.250	3.500	2	●
M245-2ES-0.750	3/4	0.750	19.050	3/4	0.750	1.500	4.000	2	●
M245-2ES-1.000	1	1.000	25.400	1	1.000	2.000	4.000	2	●

Product code	Dc in No	Dc in	DC mm	d1 in NO	d1 in	Lc in	L1 in	Z	Stock
M245-2EL-0.313	5/16	0.313	7.938	5/16	0.313	1.125	3.000	2	●
M245-2EL-0.375	3/8	0.375	9.525	3/8	0.375	1.500	3.500	2	●
M245-2EL-0.500	1/2	0.500	12.700	1/2	0.500	2.000	4.000	2	●

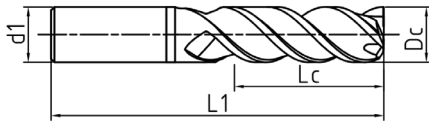
Marked: ● Stocked ○ Limited-stock
Special product is accepted

• Solid Carbide End Mill M245

Eco line

Solid Carbide End Mills

Square shoulder mill with 3 cutting edges designed for aluminum alloy



Product code	Dc mm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M245-3ES-010	1	4	3	50	3	●
M245-3ES-015	1.5	4	4	50	3	●
M245-3ES-020	2	4	6	50	3	●
M245-3ES-025	2.5	4	8	50	3	●
M245-3ES-030	3	4	8	50	3	●
M245-3ES-040	4	4	12	50	3	●
M245-3ES-050	5	6	13	50	3	●
M245-3ES-060	6	6	16	50	3	●
M245-3ES-080	8	8	20	60	3	●
M245-3ES-100	10	10	25	75	3	●
M245-3ES-120	12	12	30	75	3	●
M245-3ES-160	16	16	45	100	3	●
M245-3ES-180	18	18	45	100	3	●
M245-3ES-200	20	20	45	100	3	●

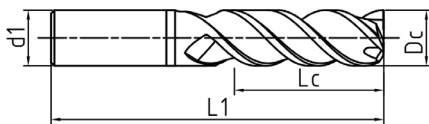
Marked: ● Stocked ○ Limited-stock
Special product is accepted

• Solid Carbide End Mill M245

Eco line

Solid Carbide End Mills

Square shoulder mill with 3 cutting edges designed for aluminum alloy



Product code	Dc mm +0.00/-0.03	d1 mm	Lc mm	L1 mm	Z	Stock
M245-3EL-040	4	4	16	60	3	●
M245-3EL-060	6	6	25	75	3	●
M245-3EL-080	8	8	32	75	3	●
M245-3EL-100	10	10	45	100	3	●
M245-3EL-120	12	12	50	100	3	●
M245-3EL-160	16	16	60	150	3	●
M245-3EL-200	20	20	70	150	3	●

Marked: ● Stocked ○ Limited-stock
Special product is accepted

• **Solid Carbide End Mill Eco Line Cutting Parameters (Metric)**

The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications.

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/ mm ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	428	
		0.25 < C ≤ 0.55%	Annealed	190	639	
		0.25 < C ≤ 0.55%	Heat-treated	210	708	
		C > 0.55%	Annealed	190	639	
		C > 0.55%	Heat-treated	300	1013	
		Free cutting steel (short-chipping)	Annealed	220	745	
	Low-alloyed steel	Annealed			175	591
		Heat-treated			300	1013
		Heat-treated			380	1282
		Heat-treated			430	1477
	High-alloyed steel and high-alloyed tool steel	Annealed			200	675
		Hardened and tempered			300	1013
		Hardened and tempered			400	1361
	Stainless steel	Ferritic/martensitic, annealed			200	675
Martensitic, heat-treated			330	1114		
M	Stainless steel	Austenitic, quench hardened		200	675	
		Austenitic, precipitation hardened (PH)		300	1013	
		Austenitic/ferritic, duplex		230	778	
K	Malleable cast iron	Ferritic		200	400	
		Pearlitic		260	700	
	Grey cast iron	Low tensile strength		180	200	
		High tensile strength/austenitic		245	350	
	Cast iron with spheroidal graphite	Ferritic		155	400	
		Pearlitic		265	700	
GGV (CGI)			230	400		
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	340	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	
		≤ 12% Si, aged		90	310	
		> 12% Si, non-aging		130	450	
	Magnesium-based alloys			70	250	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	340	
		Brass, bronze, red brass		90	310	
Cu alloys, short-chipping		110	380			
High tensile, Ampco		300	1010			
S	Heat-resistant alloys	Fe-based	Annealed	200	680	
			Hardened	280	940	
		Ni or Co based	Annealed	250	840	
			Hardened	350	1180	
	Titanium alloys	Cast		320	1080	
		Pure titanium		200	680	
		α and β alloys, hardened		375	1260	
	Tungsten alloys	β alloys		410	1400	
				300	1010	
	Molybdenum alloys			300	1010	
H	Hardened steel	Hardened and tempered		50HRC		
		Hardened and tempered		55HRC		
		Hardened and tempered		60HRC		
	Chilled cast iron	Hardened and tempered		50HRC		

• **Solid Carbide End Mill Eco Line Cutting Parameters (Metric)**

The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications.

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/ mm ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	428	
		0.25 < C ≤ 0.55%	Annealed	190	639	
		0.25 < C ≤ 0.55%	Heat-treated	210	708	
		C > 0.55%	Annealed	190	639	
		C > 0.55%	Heat-treated	300	1013	
		Free cutting steel (short-chipping)	Annealed	220	745	
	Low-alloyed steel	Annealed			175	591
		Heat-treated			300	1013
		Heat-treated			380	1282
		Heat-treated			430	1477
	High-alloyed steel and high-alloyed tool steel	Annealed			200	675
		Hardened and tempered			300	1013
		Hardened and tempered			400	1361
	Stainless steel	Ferritic/martensitic, annealed			200	675
Martensitic, heat-treated			330	1114		
M	Stainless steel	Austenitic, quench hardened		200	675	
		Austenitic, precipitation hardened (PH)		300	1013	
		Austenitic/ferritic, duplex		230	778	
K	Malleable cast iron	Ferritic		200	400	
		Pearlitic		260	700	
	Grey cast iron	Low tensile strength		180	200	
		High tensile strength/austenitic		245	350	
	Cast iron with spheroidal graphite	Ferritic		155	400	
		Pearlitic		265	700	
GGV (CGI)			230	400		
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	340	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	
		≤ 12% Si, aged		90	310	
		> 12% Si, non-aging		130	450	
	Magnesium-based alloys			70	250	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	340	
		Brass, bronze, red brass		90	310	
		Cu alloys, short-chipping		110	380	
High tensile, Ampco		300	1010			
S	Heat-resistant alloys	Fe-based	Annealed	200	680	
			Hardened	280	940	
		Ni or Co based	Annealed	250	840	
			Hardened	350	1180	
	Titanium alloys	Cast		320	1080	
		Pure titanium		200	680	
		α and β alloys, hardened		375	1260	
	Tungsten alloys	β alloys		410	1400	
Molybdenum alloys			300	1010		
H	Hardened steel	Hardened and tempered		50HRC		
		Hardened and tempered		55HRC		
		Hardened and tempered		60HRC		
	Chilled cast iron	Hardened and tempered		50HRC		

- Solid Carbide End Mill Eco Line Cutting Parameters (Inch)**
 The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications.

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	62000	
		0.25 < C ≤ 0.55%	Annealed	190	92700	
		0.25 < C ≤ 0.55%	Heat-treated	210	103000	
		C > 0.55%	Annealed	190	92700	
		C > 0.55%	Heat-treated	300	147000	
		Free cutting steel (short-chipping)	Annealed	220	108000	
	Low-alloyed steel		Annealed		175	85700
			Heat-treated		300	146900
			Heat-treated		380	186000
			Heat-treated		430	214200
	High-alloyed steel and high-alloyed tool steel		Annealed		200	97900
			Hardened and tempered		300	147000
			Hardened and tempered		400	197000
	Stainless steel		Ferritic/martensitic, annealed		200	97900
		Martensitic, heat-treated		330	162000	
M	Stainless steel	Austenitic, quench hardened		200	97900	
		Austenitic, precipitation hardened (PH)		300	147000	
		Austenitic/ferritic, duplex		230	113000	
K	Malleable cast iron	Ferritic		200	58000	
		Pearlitic		260	101000	
	Grey cast iron	Low tensile strength		180	29000	
		High tensile strength/austenitic		245	50800	
	Cast iron with spheroidal graphite	Ferritic		155	58000	
		Pearlitic		265	101000	
	GGV (CGI)			230	58000	
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	49300	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700	
		≤ 12% Si, aged		90	45000	
		> 12% Si, non-aging		130	65300	
	Magnesium-based alloys			70	36300	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	49300	
		Brass, bronze, red brass		90	45000	
		Cu alloys, short-chipping		110	55100	
High tensile, Ampco		300	146500			
S	Heat-resistant alloys	Fe-based	Annealed	200	98600	
			Hardened	280	136000	
		Ni or Co based	Annealed	250	122000	
			Hardened	350	171000	
	Titanium alloys	Pure titanium		200	98600	
		α and β alloys, hardened		375	182700	
		β alloys		410	203000	
	Tungsten alloys			300	146500	
	Molybdenum alloys			300	146500	
H	Hardened steel	Hardened and tempered		50HRC	-	
		Hardened and tempered		55HRC	-	
		Hardened and tempered		60HRC	-	
	Chilled cast iron	Hardened and tempered		55HRC	-	

- Solid Carbide End Mill Eco Line Cutting Parameters (Metric)**
 The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications.

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/ mm ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	428	
		0.25 < C ≤ 0.55%	Annealed	190	639	
		0.25 < C ≤ 0.55%	Heat-treated	210	708	
		C > 0.55%	Annealed	190	639	
		C > 0.55%	Heat-treated	300	1013	
		Free cutting steel (short-chipping)	Annealed	220	745	
	Low-alloyed steel	Annealed			175	591
		Heat-treated			300	1013
		Heat-treated			380	1282
		Heat-treated			430	1477
	High-alloyed steel and high-alloyed tool steel	Annealed			200	675
		Hardened and tempered			300	1013
		Hardened and tempered			400	1361
	Stainless steel	Ferritic/martensitic, annealed			200	675
Martensitic, heat-treated			330	1114		
M	Stainless steel	Austenitic, quench hardened		200	675	
		Austenitic, precipitation hardened (PH)		300	1013	
		Austenitic/ferritic, duplex		230	778	
K	Malleable cast iron	Ferritic		200	400	
		Pearlitic		260	700	
	Grey cast iron	Low tensile strength		180	200	
		High tensile strength/austenitic		245	350	
	Cast iron with spheroidal graphite	Ferritic		155	400	
		Pearlitic		265	700	
	GGV (CGI)			230	400	
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	340	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	
		≤ 12% Si, aged		90	310	
		> 12% Si, non-aging		130	450	
	Magnesium-based alloys			70	250	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	340	
		Brass, bronze, red brass		90	310	
		Cu alloys, short-chipping		110	380	
High tensile, Ampco		300	1010			
S	Heat-resistant alloys	Fe-based	Annealed	200	680	
			Hardened	280	940	
		Ni or Co based	Annealed	250	840	
			Hardened	350	1180	
			Cast	320	1080	
	Titanium alloys	Pure titanium		200	680	
		α and β alloys, hardened		375	1260	
		β alloys		410	1400	
	Tungsten alloys			300	1010	
	Molybdenum alloys			300	1010	
H	Hardened steel	Hardened and tempered		50HRC		
		Hardened and tempered		55HRC		
		Hardened and tempered		60HRC		
	Chilled cast iron	Hardened and tempered		50HRC		

- Solid Carbide End Mill Eco Line Cutting Parameters (Inch)**
 The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications.

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	62000	
		0.25 < C ≤ 0.55%	Annealed	190	92700	
		0.25 < C ≤ 0.55%	Heat-treated	210	103000	
		C > 0.55%	Annealed	190	92700	
		C > 0.55%	Heat-treated	300	147000	
		Free cutting steel (short-chipping)	Annealed	220	108000	
	Low-alloyed steel	Annealed			175	85700
		Heat-treated			300	146900
		Heat-treated			380	186000
		Heat-treated			430	214200
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900
		Hardened and tempered			300	147000
		Hardened and tempered			400	197000
	Stainless steel	Ferritic/martensitic, annealed			200	97900
Martensitic, heat-treated			330	162000		
M	Stainless steel	Austenitic, quench hardened		200	97900	
		Austenitic, precipitation hardened (PH)		300	147000	
		Austenitic/ferritic, duplex		230	113000	
K	Malleable cast iron	Ferritic		200	58000	
		Pearlitic		260	101000	
	Grey cast iron	Low tensile strength		180	29000	
		High tensile strength/austenitic		245	50800	
	Cast iron with spheroidal graphite	Ferritic		155	58000	
		Pearlitic		265	101000	
	GGV (CGI)			230	58000	
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	49300	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700	
		≤ 12% Si, aged		90	45000	
		> 12% Si, non-aging		130	65300	
	Magnesium-based alloys			70	36300	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	49300	
		Brass, bronze, red brass		90	45000	
Cu alloys, short-chipping		110	55100			
High tensile, Ampco		300	146500			
S	Heat-resistant alloys	Fe-based	Annealed	200	98600	
			Hardened	280	136000	
		Ni or Co based	Annealed	250	122000	
			Hardened	350	171000	
			Cast	320	156600	
	Titanium alloys	Pure titanium		200	98600	
		α and β alloys, hardened		375	182700	
		β alloys		410	203000	
	Tungsten alloys			300	146500	
	Molybdenum alloys			300	146500	
H	Hardened steel	Hardened and tempered		50HRC	-	
		Hardened and tempered		55HRC	-	
		Hardened and tempered		60HRC	-	
	Chilled cast iron	Hardened and tempered		55HRC	-	

- **solid Carbide End Mill Eco Line Cutting Parameters (Metric)**
The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/ mm ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	428	
		0.25 < C ≤ 0.55%	Annealed	190	639	
		0.25 < C ≤ 0.55%	Heat-treated	210	708	
		C > 0.55%	Annealed	190	639	
		C > 0.55%	Heat-treated	300	1013	
		Free cutting steel (short-chipping)	Annealed	220	745	
	Low-alloyed steel	Annealed			175	591
		Heat-treated			300	1013
		Heat-treated			380	1282
		Heat-treated			430	1477
	High-alloyed steel and high-alloyed tool steel	Annealed			200	675
		Hardened and tempered			300	1013
		Hardened and tempered			400	1361
	Stainless steel	Ferritic/martensitic, annealed			200	675
Martensitic, heat-treated			330	1114		
M	Stainless steel	Austenitic, quench hardened		200	675	
		Austenitic, precipitation hardened (PH)		300	1013	
		Austenitic/ferritic, duplex		230	778	
K	Malleable cast iron	Ferritic		200	400	
		Pearlitic		260	700	
	Grey cast iron	Low tensile strength		180	200	
		High tensile strength/austenitic		245	350	
	Cast iron with spheroidal graphite	Ferritic		155	400	
		Pearlitic		265	700	
GGV (CGI)			230	400		
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	340	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	
		≤ 12% Si, aged		90	310	
	> 12% Si, non-aging		130	450		
	Magnesium-based alloys			70	250	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	340	
		Brass, bronze, red brass		90	310	
Cu alloys, short-chipping		110	380			
High tensile, Ampco		300	1010			
S	Heat-resistant alloys	Fe-based	Annealed	200	680	
			Hardened	280	940	
		Ni or Co based	Annealed	250	840	
			Hardened	350	1180	
	Cast		320	1080		
	Titanium alloys	Pure titanium		200	680	
		α and β alloys, hardened		375	1260	
		β alloys		410	1400	
	Tungsten alloys			300	1010	
	Molybdenum alloys			300	1010	
H	Hardened steel	Hardened and tempered		50HRC		
		Hardened and tempered		55HRC		
		Hardened and tempered		60HRC		
	Chilled cast iron	Hardened and tempered		50HRC		

- Solid Carbide End Mill Eco Line Cutting Parameters (Inch)**
 The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications.

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	62000	
		0.25 < C ≤ 0.55%	Annealed	190	92700	
		0.25 < C ≤ 0.55%	Heat-treated	210	103000	
		C > 0.55%	Annealed	190	92700	
		C > 0.55%	Heat-treated	300	147000	
		Free cutting steel (short-chipping)	Annealed	220	108000	
	Low-alloyed steel	Annealed			175	85700
		Heat-treated			300	146900
		Heat-treated			380	186000
		Heat-treated			430	214200
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900
		Hardened and tempered			300	147000
		Hardened and tempered			400	197000
	Stainless steel	Ferritic/martensitic, annealed			200	97900
Martensitic, heat-treated			330	162000		
M	Stainless steel	Austenitic, quench hardened		200	97900	
		Austenitic, precipitation hardened (PH)		300	147000	
		Austenitic/ferritic, duplex		230	113000	
K	Malleable cast iron	Ferritic		200	58000	
		Pearlitic		260	101000	
	Grey cast iron	Low tensile strength		180	29000	
		High tensile strength/austenitic		245	50800	
	Cast iron with spheroidal graphite	Ferritic		155	58000	
		Pearlitic		265	101000	
	GGV (CGI)			230	58000	
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	49300	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700	
		≤ 12% Si, aged		90	45000	
		> 12% Si, non-aging		130	65300	
	Magnesium-based alloys			70	36300	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	49300	
		Brass, bronze, red brass		90	45000	
		Cu alloys, short-chipping		110	55100	
High tensile, Ampco		300	146500			
S	Heat-resistant alloys	Fe-based	Annealed	200	98600	
			Hardened	280	136000	
		Ni or Co based	Annealed	250	122000	
			Hardened	350	171000	
			Cast	320	156600	
	Titanium alloys	Pure titanium		200	98600	
		α and β alloys, hardened		375	182700	
		β alloys		410	203000	
	Tungsten alloys			300	146500	
	Molybdenum alloys			300	146500	
H	Hardened steel	Hardened and tempered		50HRC	-	
		Hardened and tempered		55HRC	-	
		Hardened and tempered		60HRC	-	
	Chilled cast iron	Hardened and tempered		55HRC	-	

- Solid Carbide End Mill Eco Line Cutting Parameters (Metric)**
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Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/ mm ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	428	
		0.25 < C ≤ 0.55%	Annealed	190	639	
		0.25 < C ≤ 0.55%	Heat-treated	210	708	
		C > 0.55%	Annealed	190	639	
		C > 0.55%	Heat-treated	300	1013	
		Free cutting steel (short-chipping)	Annealed	220	745	
	Low-alloyed steel	Annealed			175	591
		Heat-treated			300	1013
		Heat-treated			380	1282
		Heat-treated			430	1477
	High-alloyed steel and high-alloyed tool steel	Annealed			200	675
		Hardened and tempered			300	1013
		Hardened and tempered			400	1361
	Stainless steel	Ferritic/martensitic, annealed			200	675
Martensitic, heat-treated			330	1114		
M	Stainless steel	Austenitic, quench hardened		200	675	
		Austenitic, precipitation hardened (PH)		300	1013	
		Austenitic/ferritic, duplex		230	778	
K	Malleable cast iron	Ferritic		200	400	
		Pearlitic		260	700	
	Grey cast iron	Low tensile strength		180	200	
		High tensile strength/austenitic		245	350	
	Cast iron with spheroidal graphite	Ferritic		155	400	
		Pearlitic		265	700	
	GGV (CGI)			230	400	
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	340	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	
		≤ 12% Si, aged		90	310	
		> 12% Si, non-aging		130	450	
	Magnesium-based alloys			70	250	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	340	
		Brass, bronze, red brass		90	310	
		Cu alloys, short-chipping		110	380	
		High tensile, Ampco		300	1010	
S	Heat-resistant alloys	Fe-based	Annealed	200	680	
			Hardened	280	940	
		Ni or Co based	Annealed	250	840	
			Hardened	350	1180	
	Titanium alloys	Cast		320	1080	
		Pure titanium		200	680	
		α and β alloys, hardened		375	1260	
	Tungsten alloys	β alloys		410	1400	
				300	1010	
Molybdenum alloys			300	1010		
H	Hardened steel	Hardened and tempered		50HRC		
		Hardened and tempered		55HRC		
		Hardened and tempered		60HRC		
	Chilled cast iron	Hardened and tempered		50HRC		

- Solid Carbide End Mill Eco Line Cutting Parameters (Inch)**
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Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	62000	
		0.25 < C ≤ 0.55%	Annealed	190	92700	
		0.25 < C ≤ 0.55%	Heat-treated	210	103000	
		C > 0.55%	Annealed	190	92700	
		C > 0.55%	Heat-treated	300	147000	
		Free cutting steel (short-chipping)	Annealed	220	108000	
	Low-alloyed steel	Annealed			175	85700
		Heat-treated			300	146900
		Heat-treated			380	186000
		Heat-treated			430	214200
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900
		Hardened and tempered			300	147000
		Hardened and tempered			400	197000
	Stainless steel	Ferritic/martensitic, annealed			200	97900
Martensitic, heat-treated			330	162000		
M	Stainless steel	Austenitic, quench hardened		200	97900	
		Austenitic, precipitation hardened (PH)		300	147000	
		Austenitic/ferritic, duplex		230	113000	
K	Malleable cast iron	Ferritic		200	58000	
		Pearlitic		260	101000	
	Grey cast iron	Low tensile strength		180	29000	
		High tensile strength/austenitic		245	50800	
	Cast iron with spheroidal graphite	Ferritic		155	58000	
		Pearlitic		265	101000	
	GGV (CGI)			230	58000	
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	49300	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700	
		≤ 12% Si, aged		90	45000	
		> 12% Si, non-aging		130	65300	
	Magnesium-based alloys			70	36300	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	49300	
		Brass, bronze, red brass		90	45000	
Cu alloys, short-chipping		110	55100			
High tensile, Ampco		300	146500			
S	Heat-resistant alloys	Fe-based	Annealed	200	98600	
			Hardened	280	136000	
		Ni or Co based	Annealed	250	122000	
			Hardened	350	171000	
	Titanium alloys	Pure titanium		200	98600	
		α and β alloys, hardened		375	182700	
		β alloys		410	203000	
	Tungsten alloys			300	146500	
Molybdenum alloys			300	146500		
H	Hardened steel	Hardened and tempered		50HRC	-	
		Hardened and tempered		55HRC	-	
		Hardened and tempered		60HRC	-	
	Chilled cast iron	Hardened and tempered		55HRC	-	

- Solid Carbide End Mill Eco Line Cutting Parameters (Metric)**
 The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications.

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(N/ mm ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	428	
		0.25 < C ≤ 0.55%	Annealed	190	639	
		0.25 < C ≤ 0.55%	Heat-treated	210	708	
		C > 0.55%	Annealed	190	639	
		C > 0.55%	Heat-treated	300	1013	
		Free cutting steel (short-chipping)	Annealed	220	745	
	Low-alloyed steel		Annealed		175	591
			Heat-treated		300	1013
			Heat-treated		380	1282
			Heat-treated		430	1477
	High-alloyed steel and high-alloyed tool steel		Annealed		200	675
			Hardened and tempered		300	1013
			Hardened and tempered		400	1361
	Stainless steel		Ferritic/martensitic, annealed		200	675
		Martensitic, heat-treated		330	1114	
M	Stainless steel	Austenitic, quench hardened		200	675	
		Austenitic, precipitation hardened (PH)		300	1013	
		Austenitic/ferritic, duplex		230	778	
K	Malleable cast iron	Ferritic		200	400	
		Pearlitic		260	700	
	Grey cast iron	Low tensile strength		180	200	
		High tensile strength/austenitic		245	350	
	Cast iron with spheroidal graphite	Ferritic		155	400	
		Pearlitic		265	700	
	GGV (CGI)		230	400		
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	340	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	260	
		≤ 12% Si, aged		90	310	
		> 12% Si, non-aging		130	450	
	Magnesium-based alloys			70	250	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	340	
		Brass, bronze, red brass		90	310	
Cu alloys, short-chipping		110	380			
	High tensile, Ampco		300	1010		
S	Heat-resistant alloys	Fe-based	Annealed	200	680	
			Hardened	280	940	
		Ni or Co based	Annealed	250	840	
			Hardened	350	1180	
		Cast	320	1080		
	Titanium alloys	Pure titanium		200	680	
		α and β alloys, hardened		375	1260	
		β alloys		410	1400	
Tungsten alloys			300	1010		
Molybdenum alloys			300	1010		
H	Hardened steel	Hardened and tempered		50HRC		
		Hardened and tempered		55HRC		
		Hardened and tempered		60HRC		
	Chilled cast iron	Hardened and tempered		50HRC		

- Solid Carbide End Mill Eco Line Cutting Parameters (Inch)**
 The provided cutting data represent typical recommended values. Adjustments may be necessary for specific or unique applications.

Workpiece Materials						
ISO	Material classification			Brinell hardness (HB)	Tensile strength Rm(lbs/in ²)	
P	Non-alloyed steel	C ≤ 0.25%	Annealed	125	62000	
		0.25 < C ≤ 0.55%	Annealed	190	92700	
		0.25 < C ≤ 0.55%	Heat-treated	210	103000	
		C > 0.55%	Annealed	190	92700	
		C > 0.55%	Heat-treated	300	147000	
		Free cutting steel (short-chipping)	Annealed	220	108000	
	Low-alloyed steel	Annealed			175	85700
		Heat-treated			300	146900
		Heat-treated			380	186000
		Heat-treated			430	214200
	High-alloyed steel and high-alloyed tool steel	Annealed			200	97900
		Hardened and tempered			300	147000
		Hardened and tempered			400	197000
	Stainless steel	Ferritic/martensitic, annealed			200	97900
Martensitic, heat-treated			330	162000		
M	Stainless steel	Austenitic, quench hardened		200	97900	
		Austenitic, precipitation hardened (PH)		300	147000	
		Austenitic/ferritic, duplex		230	113000	
K	Malleable cast iron	Ferritic		200	58000	
		Pearlitic		260	101000	
	Grey cast iron	Low tensile strength		180	29000	
		High tensile strength/austenitic		245	50800	
	Cast iron with spheroidal graphite	Ferritic		155	58000	
		Pearlitic		265	101000	
	GGV (CGI)		230	58000		
N	Wrought aluminium alloys	non-aging		30	-	
		aged		100	49300	
	Cast aluminium alloys	≤ 12% Si, non-aging		75	37700	
		≤ 12% Si, aged		90	45000	
		> 12% Si, non-aging		130	65300	
	Magnesium-based alloys			70	36300	
	Copper and copper alloys (bronze/brass)	Unalloyed, electrolytic copper		100	49300	
		Brass, bronze, red brass		90	45000	
Cu alloys, short-chipping		110	55100			
High tensile, Ampco		300	146500			
S	Heat-resistant alloys	Fe-based	Annealed	200	98600	
			Hardened	280	136000	
		Ni or Co based	Annealed	250	122000	
			Hardened	350	171000	
	Titanium alloys	Pure titanium		200	98600	
		α and β alloys, hardened		375	182700	
		β alloys		410	203000	
	Tungsten alloys			300	146500	
Molybdenum alloys			300	146500		
H	Hardened steel	Hardened and tempered		50HRC	-	
		Hardened and tempered		55HRC	-	
		Hardened and tempered		60HRC	-	
	Chilled cast iron	Hardened and tempered		55HRC	-	



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