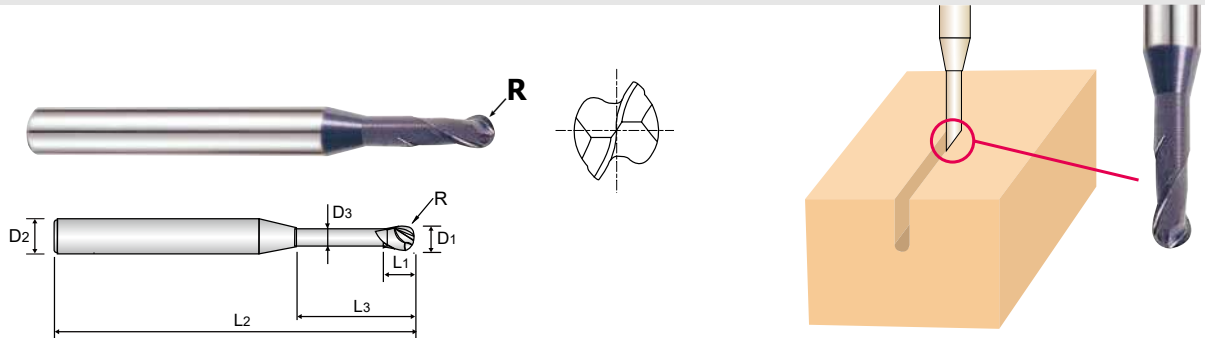


CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- **VOLLHARTMETALL, 2 SCHNEIDEN KUGELSTIRN für SCHMALE RIPPEN**
- **Fraise carbure, 2 dents, hémisphérique pour usinage de rainure**
- **2 TAGLIENTI, SEMISFERICA PER NERVATURE**



CARBIDE 2 30° R ±0.01 PLAIN P.374-375

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R(±0.01)	D1	D2	L1	L3	L2	D3
GM886005	R0.25	0.5	4	0.7	2	45	0.45
GM886962	R0.25	0.5	4	0.7	4	45	0.45
GM886957	R0.3	0.6	4	0.9	2	45	0.55
GM886915	R0.3	0.6	4	0.9	4	45	0.55
GM886916	R0.3	0.6	4	0.9	6	45	0.55
GM886919	R0.4	0.8	4	1.2	4	45	0.75
GM886008	R0.4	0.8	4	1.2	6	45	0.75
GM886921	R0.5	1.0	4	1.5	4	45	0.95
GM886923	R0.5	1.0	4	1.5	5	45	0.95
GM886010	R0.5	1.0	4	1.5	6	45	0.95
GM886902	R0.5	1.0	4	1.5	8	45	0.95
GM886903	R0.5	1.0	4	1.5	10	45	0.95
GM886904	R0.5	1.0	4	1.5	12	45	0.95
GM886927	R0.5	1.0	4	1.5	16	50	0.95
GM886012	R0.6	1.2	4	1.8	8	45	1.15
GM886930	R0.75	1.5	4	2.3	6	45	1.45
GM886015	R0.75	1.5	4	2.3	8	45	1.45
GM886931	R0.75	1.5	4	2.3	10	45	1.45
GM886906	R0.75	1.5	4	2.3	12	45	1.45
GM886940	R1.0	2.0	4	3	6	45	1.95
GM886020	R1.0	2.0	4	3	8	45	1.95
GM886941	R1.0	2.0	4	3	10	45	1.95
GM886942	R1.0	2.0	4	3	12	50	1.95
GM886909	R1.0	2.0	4	3	16	50	1.95

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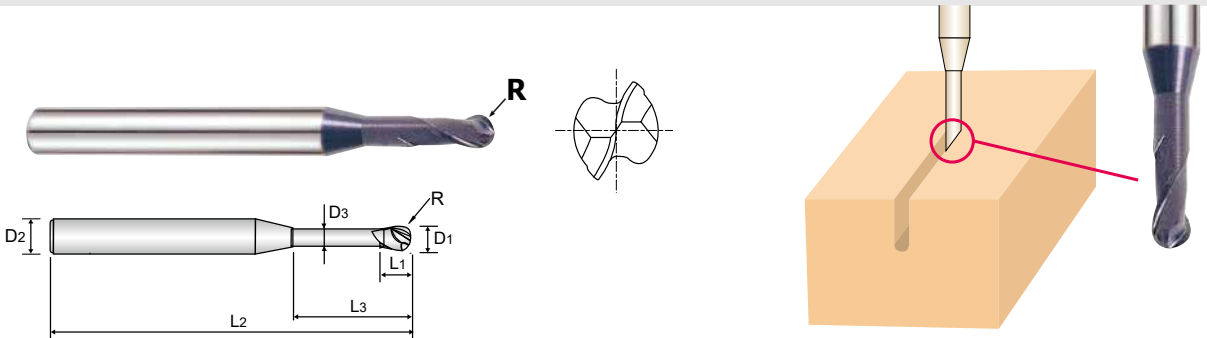
Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.02	h5

◎ : Excellent ○ : Good

ISO Material Description	P											M				K					
	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎				○	○	○	○	○	○	
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- VOLLHARTMETALL, 2 SCHNEIDEN KUGELSTIRN für SCHMALE RIPPEN
- Fraise carbure, 2 dents, hémisphérique pour usinage de rainure
- 2 TAGLIANTI, SEMISFERICA PER NERVATURE



CARBIDE
2
30°
R ±0.01
PLAIN
P.374-375

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R(±0.01)	D1	D2	L1	L3	L2	D3
GM886910	R1.0	2.0	4	3	20	55	1.95
GM886945	R1.0	2.0	4	3	25	60	1.95
GM886967	R1.0	2.0	4	3	30	70	1.95
GM886947	R1.5	3.0	6	4.5	10	50	2.85
GM886948	R1.5	3.0	6	4.5	12	50	2.85
GM886030	R1.5	3.0	6	4.5	16	55	2.85
GM886911	R1.5	3.0	6	4.5	20	60	2.85
GM886968	R1.5	3.0	6	4.5	25	65	2.85
GM886040	R2.0	4.0	6	6	16	60	3.85
GM886912	R2.0	4.0	6	6	20	65	3.85
GM886913	R2.0	4.0	6	6	25	70	3.85
GM886971	R2.0	4.0	6	6	30	70	3.85
GM886972	R2.0	4.0	6	6	35	80	3.85
GM886050	R2.5	5.0	6	7.5	16	60	4.85
GM886060	R3.0	6.0	6	9	20	80	5.85
GM886954	R3.0	6.0	6	9	30	90	5.85

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.02	h5

◎ : Excellent ○ : Good

ISO Material Description	P											M				K								
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
HRC	125	130	135	140	145	150	155	160	165	170	175	180	185	190	200	210	220	230	240	250				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230				
Recommend	○	○	○	○	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○				

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

CARBIDE

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER CFRP END MILLS

ROUTERS

CRX S END MILLS

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-POWER END MILLS

GENERAL HSS END MILLS

MILLING CUTTERS

TECHNICAL DATA

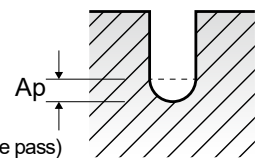
GM886 SERIES

2 FLUTE BALL NOSE RIB PROCESSING

Vc = m/min.
fz = mm/tooth
RPM = rev./min.
FEED = mm/min.
Ap = mm

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)					
				0.5	0.6	0.8	1.0	1.2	1.4
P	1-4	Non-alloy steel	Vc	49~63	58~75	78~101	91~115	90~115	92~114
			fz	0.003~0.006	0.004~0.008	0.004~0.008	0.004~0.010	0.005~0.013	0.006~0.015
			RPM	32550~42000	32550~42000	32550~42000	30450~38330	25200~32030	22050~27300
			FEED	185~515	235~660	235~660	265~735	265~820	265~820
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Vc	35~45	42~54	57~72	64~82	64~81	66~79
	5	Non-alloy steel	fz	0.002~0.005	0.002~0.006	0.002~0.006	0.003~0.008	0.004~0.009	0.004~0.011
			RPM	23630~29930	23630~29930	23630~29930	21530~27300	17850~22580	15750~18900
			FEED	90~285	115~370	115~370	130~410	130~410	130~410
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Vc	49~63	58~75	78~101	91~115	90~115	92~114
			fz	0.003~0.006	0.004~0.008	0.004~0.008	0.004~0.010	0.005~0.013	0.006~0.015
6-7	Low alloy steel	RPM	32550~42000	32550~42000	32550~42000	30450~38330	25200~32030	22050~27300	
		FEED	185~515	235~660	235~660	265~735	265~820	265~820	
		Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
		Vc	35~45	42~54	57~72	64~82	64~81	66~79	
		fz	0.002~0.005	0.002~0.006	0.002~0.006	0.003~0.008	0.004~0.009	0.004~0.011	
		RPM	23630~29930	23630~29930	23630~29930	21530~27300	17850~22580	15750~18900	
8-9	Low alloy steel	FEED	90~285	115~370	115~370	130~410	130~410	130~410	
		Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
		Vc	49~63	58~75	78~101	91~115	90~115	92~114	
		fz	0.003~0.006	0.004~0.008	0.004~0.008	0.004~0.010	0.005~0.013	0.006~0.015	
		RPM	32550~42000	32550~42000	32550~42000	30450~38330	25200~32030	22050~27300	
		FEED	185~515	235~660	235~660	265~735	265~820	265~820	
10	High alloyed steel, and tool steel	Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
		Vc	35~45	42~54	57~72	64~82	64~81	66~79	
		fz	0.002~0.005	0.002~0.006	0.002~0.006	0.003~0.008	0.004~0.009	0.004~0.011	
		RPM	23630~29930	23630~29930	23630~29930	21530~27300	17850~22580	15750~18900	
		FEED	90~285	115~370	115~370	130~410	130~410	130~410	
		Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
11.1 11.2	High alloyed steel, and tool steel	Vc	49~63	58~75	78~101	91~115	90~115	92~114	
		fz	0.003~0.006	0.004~0.008	0.004~0.008	0.004~0.010	0.005~0.013	0.006~0.015	
		RPM	32550~42000	32550~42000	32550~42000	30450~38330	25200~32030	22050~27300	
		FEED	185~515	235~660	235~660	265~735	265~820	265~820	
		Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
		Vc	35~45	42~54	57~72	64~82	64~81	66~79	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	fz	0.002~0.005	0.002~0.006	0.002~0.006	0.003~0.008	0.004~0.009	0.004~0.011
			RPM	23630~29930	23630~29930	23630~29930	21530~27300	17850~22580	15750~18900
			FEED	90~285	115~370	115~370	130~410	130~410	130~410
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Vc	49~63	58~75	78~101	91~115	90~115	92~114
			fz	0.003~0.006	0.004~0.008	0.004~0.008	0.004~0.010	0.005~0.013	0.006~0.015
H	38.1 38.2	Hardened steel	RPM	15020~18900	15020~18900	15020~18900	13650~17120	11340~14390	9870~12290
			FEED	90~185	115~235	115~235	130~265	130~265	130~265
			Ap	0.005~0.009	0.005~0.011	0.007~0.014	0.009~0.018	0.010~0.022	0.012~0.025
			Vc	22~28	27~34	36~45	41~51	41~52	41~51
			fz	0.003~0.005	0.004~0.006	0.004~0.006	0.005~0.008	0.006~0.009	0.007~0.011
			RPM	15020~18900	15020~18900	15020~18900	13650~17120	11340~14390	9870~12290
	40	Chilled Cast Iron	FEED	90~185	115~235	115~235	130~265	130~265	130~265
			Ap	0.005~0.009	0.005~0.011	0.007~0.014	0.009~0.018	0.010~0.022	0.012~0.025
			Vc	35~45	42~54	57~72	64~82	64~81	66~79
			fz	0.002~0.005	0.002~0.006	0.002~0.006	0.003~0.008	0.004~0.009	0.004~0.011
			RPM	23630~29930	23630~29930	23630~29930	21530~27300	17850~22580	15750~18900
			FEED	90~285	115~370	115~370	130~410	130~410	130~410
41	Hardened Cast Iron	Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
		Vc	22~28	27~34	36~45	41~51	41~52	41~51	
		fz	0.003~0.005	0.004~0.006	0.004~0.006	0.005~0.008	0.006~0.009	0.007~0.011	
		RPM	15020~18900	15020~18900	15020~18900	13650~17120	11340~14390	9870~12290	
		FEED	90~185	115~235	115~235	130~265	130~265	130~265	
		Ap	0.005~0.009	0.005~0.011	0.007~0.014	0.009~0.018	0.010~0.022	0.012~0.025	

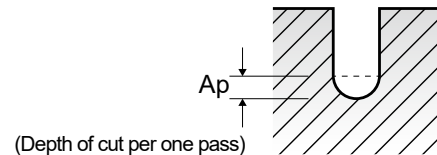
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Vc = m/min.
fz = mm/tooth
RPM = rev./min.
FEED = mm/min.
Ap = mm

GM886 SERIES 2 FLUTE BALL NOSE RIB PROCESSING

VDI 3323		Diameter (Ø)							
		1.5	1.6	1.8	2.0	3.0	4.0	5.0	6.0
1-4	Vc	90~113	90~118	96~122	97~119	99~123	107~138	107~138	107~138
	fz	0.007~0.016	0.007~0.017	0.007~0.018	0.008~0.021	0.012~0.030	0.015~0.035	0.018~0.044	0.022~0.053
	RPM	19950~25200	18900~24680	17850~22580	16280~19950	11030~13650	8930~11550	7140~9240	5990~7670
	FEED	265~820	265~820	265~820	265~820	265~820	265~820	265~820	265~820
5	Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
	Vc	64~82	66~83	68~85	69~85	66~85	73~98	72~97	74~98
	fz	0.005~0.011	0.005~0.012	0.005~0.013	0.006~0.014	0.009~0.022	0.011~0.025	0.014~0.031	0.016~0.038
	RPM	14180~18380	13860~17330	12600~15750	11550~14180	7350~9450	6090~8190	4830~6510	4100~5460
6-7	FEED	130~410	130~410	130~410	130~410	130~410	130~410	130~410	130~410
	Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
	Vc	90~113	90~118	96~122	97~119	99~123	107~138	107~138	107~138
	fz	0.007~0.016	0.007~0.017	0.007~0.018	0.008~0.021	0.012~0.030	0.015~0.035	0.018~0.044	0.022~0.053
8-9	RPM	19950~25200	18900~24680	17850~22580	16280~19950	11030~13650	8930~11550	7140~9240	5990~7670
	FEED	265~820	265~820	265~820	265~820	265~820	265~820	265~820	265~820
	Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
	Vc	64~82	66~83	68~85	69~85	66~85	73~98	72~97	74~98
10	fz	0.005~0.011	0.005~0.012	0.005~0.013	0.006~0.014	0.009~0.022	0.011~0.025	0.014~0.031	0.016~0.038
	RPM	14180~18380	13860~17330	12600~15750	11550~14180	7350~9450	6090~8190	4830~6510	4100~5460
	FEED	130~410	130~410	130~410	130~410	130~410	130~410	130~410	130~410
	Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
11.1 - 11.2	Vc	90~113	90~118	96~122	97~119	99~123	107~138	107~138	107~138
	fz	0.007~0.016	0.007~0.017	0.007~0.018	0.008~0.021	0.012~0.030	0.015~0.035	0.018~0.044	0.022~0.053
	RPM	19950~25200	18900~24680	17850~22580	16280~19950	11030~13650	8930~11550	7140~9240	5990~7670
	FEED	265~820	265~820	265~820	265~820	265~820	265~820	265~820	265~820
15 - 20	Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
	Vc	41~50	42~52	42~53	43~54	43~54	49~62	49~61	49~62
	fz	0.007~0.016	0.007~0.017	0.007~0.018	0.008~0.021	0.012~0.030	0.015~0.035	0.018~0.044	0.022~0.053
	RPM	19950~25200	18900~24680	17850~22580	16280~19950	11030~13650	8930~11550	7140~9240	5990~7670
38.1 - 38.2	FEED	265~820	265~820	265~820	265~820	265~820	265~820	265~820	265~820
	Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
	Vc	41~50	42~52	42~53	43~54	43~54	49~62	49~61	49~62
	fz	0.007~0.012	0.008~0.012	0.008~0.013	0.009~0.015	0.014~0.022	0.016~0.026	0.020~0.032	0.024~0.038
40	RPM	9140~11240	8720~10920	7770~9870	7250~9030	4830~5990	4100~5150	3260~4100	2730~3470
	FEED	130~265	130~265	130~265	130~265	130~265	130~265	130~265	130~265
	Ap	0.014~0.028	0.015~0.030	0.016~0.032	0.018~0.035	0.028~0.055	0.035~0.070	0.044~0.088	0.053~0.105
	Vc	64~82	66~83	68~85	69~85	66~85	73~98	72~97	74~98
41	fz	0.005~0.011	0.005~0.012	0.005~0.013	0.006~0.014	0.009~0.022	0.011~0.025	0.014~0.031	0.016~0.038
	RPM	14180~18380	13860~17330	12600~15750	11550~14180	7350~9450	6090~8190	4830~6510	4100~5460
	FEED	130~410	130~410	130~410	130~410	130~410	130~410	130~410	130~410
	Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
41	Vc	41~50	42~52	42~53	43~54	43~54	49~62	49~61	49~62
	fz	0.007~0.012	0.008~0.012	0.008~0.013	0.009~0.015	0.014~0.022	0.016~0.026	0.020~0.032	0.024~0.038
	RPM	9140~11240	8720~10920	7770~9870	7250~9030	4830~5990	4100~5150	3260~4100	2730~3470
	FEED	130~265	130~265	130~265	130~265	130~265	130~265	130~265	130~265
41	Ap	0.014~0.028	0.015~0.030	0.016~0.032	0.018~0.035	0.028~0.055	0.035~0.070	0.044~0.088	0.053~0.105



SELECTION GUIDE



SERIES	GM876	GM813	GM886	GM902
FLUTE	2	2	2	2
HELIX ANGLE	30°	30°	30°	30°
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE
SIZE MIN	R0.5	R0.5	R0.25	R0.5
SIZE MAX	R8.0	R10.0	R3.0	R4.0
PAGE	350	351	352	354

SOLID CARBIDE
X-POWER PRO
END MILLS

for Pre-Hardened Steels up to HRC55,
 Mold & Die, Dry & Wet Cutting

SHORT LENGTH	LONG LENGTH	RIB PROCESSING	TAPER NECK
Y-Coating	Y-Coating	Y-Coating	Y-Coating



Please visit
globalyg1.com/mat
 for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P 372

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRC					
P	1	Non-alloy steel	About 0.15% C Annealed	125		○	○	○	○	
	2		About 0.45% C Annealed	190	13	○	○	○	○	
	3		About 0.45% C Quenched & Tempered	250	25	○	○	○	○	
	4		About 0.75% C Annealed	270	28	◎	◎	◎	○	
	5		About 0.75% C Quenched & Tempered	300	32	◎	◎	◎	○	
	6	Low alloy steel	Annealed	180	10	○	○	○	○	
	7		Quenched & Tempered	275	29	◎	◎	◎	○	
	8		Quenched & Tempered	300	32	◎	◎	◎	◎	
	9		Quenched & Tempered	350	38	◎	◎	◎	◎	
	10		High alloyed steel, and tool steel	Annealed	200	15	○	○	○	○
	11			Quenched & Tempered	325	35	◎	◎	◎	◎
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15					
	13		Martensitic Quenched & Tempered	240	23					
	14		Austenitic	180	10					
K	15	Grey cast iron	Pearlitic / ferritic	180	10	○	○	○		
	16		Pearlitic (Martensitic)	260	26	○	○	○		
	17	Nodular cast iron	Ferritic	160	3	○	○	○		
	18		Pearlitic	250	25	○	○	○		
	19		Ferritic	130		○	○	○		
20	Malleable cast iron	Pearlitic	230	21	○	○	○			
N	21	Aluminum-wrought alloy	Not Curable	60						
	22		Curable Hardened	100						
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75						
	24		≤ 12% Si, Curable Hardened	90						
	25		> 12% Si, Not Curable	130						
	26	Copper and Copper Alloys	Cutting Alloys, PB>1%	110						
	27		CuZn, CuSnZn (Brass)	90						
	28	(Bronze / Brass)	CuSn, lead-free copper and electrolytic copper	100						
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic						
	30	Rubber, Wood, etc.								
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15				
	32			Cured	280	30				
	33		Annealed	250	25					
	34		Ni or Co Based	Cured	350	38				
	35			Cast	320	34				
	36	Titanium Alloys	Pure Titanium	400 Rm						
	37		Alpha + Beta Alloys	Hardened	1050 Rm					
H	38	Hardened steel	Hardened	550	55	○	○	○	○	
	39		Hardened	630	60	○	○	○	○	
	40	Chilled Cast Iron	Cast	400	42	◎	◎	◎	◎	
	41	Hardened Cast Iron	Hardened	550	55	○	○	○	○	