I

M Stainless steels

Hardness	Group
Rm < 650 [N/mm²]	2a
Rm 650 - 950 [N/mm²]	2b
Rm > 950 [N/mm²]	2c

1	2	3	4
Machining type	Material group p.III	Recommended tools	Cutting Parameters de coupe

Rough milling / contour milling

ap: 1.0xØ
ae: 0.5xØ

Group Index p.III	Recommended Reference	Recommended Coating	V_c uncoated [m/min]	V_c coated [m/min]	F_z Ø 0.25 [mm]	F_z Ø 0.5 [mm]	F_z Ø 1 [mm]	F_z Ø 2 [mm]	F_z Ø 4 [mm]	F_z Ø 6 [mm]	F_z Ø 8 [mm]	F_z Ø 10 [mm]	F_z Ø 12 [mm]	F_z Ø 16 [mm]	F_z Ø 20 [mm]
2a	115-1	Trio	60	80	0.003	0.0035	0.0040	0.008	0.015	0.020	0.030	0.040	0.050	0.070	0.090
	1510→1540 /1620/...	Trio	50	60	0.002	0.0025	0.0030	0.005	0.009	0.015	0.020	0.030	0.040	0.050	0.070
2b	115-1	Trio	50	75	0.003	0.0035	0.0035	0.007	0.013	0.020	0.027	0.037	0.047	0.065	0.080
	1510→1540/1620/...	Trio	40	50	0.002	0.0025	0.0025	0.005	0.008	0.015	0.018	0.025	0.032	0.045	0.060
2c	115-1	Trio	34	65	0.003	0.0035	0.0030	0.006	0.012	0.017	0.025	0.032	0.045	0.060	0.075
	1510→1540 /1620/...	Trio	30	40	0.002	0.0025	0.0020	0.004	0.007	0.013	0.016	0.020	0.030	0.040	0.050

Finish milling / contour milling

ap: 1.5xØ
ae: 0.1xØ

Group Index p.III	Recommended Reference	Recommended Coating	V_c uncoated [m/min]	V_c coated [m/min]	F_z Ø 0.25 [mm]	F_z Ø 0.5 [mm]	F_z Ø 1 [mm]	F_z Ø 2 [mm]	F_z Ø 4 [mm]	F_z Ø 6 [mm]	F_z Ø 8 [mm]	F_z Ø 10 [mm]	F_z Ø 12 [mm]	F_z Ø 16 [mm]	F_z Ø 20 [mm]
2a	1620	Trio	90	110	0.003	0.0035	0.0040	0.008	0.015	0.020	0.030	0.040	0.050	0.070	0.090
	1510→1540 /1620/...	Trio	50	60	0.002	0.0025	0.0030	0.005	0.009	0.015	0.020	0.030	0.040	0.050	0.070
2b	1620	Trio	80	100	0.003	0.0035	0.0035	0.007	0.013	0.020	0.027	0.037	0.047	0.065	0.080
	1510→1540 /1620/...	Trio	40	50	0.002	0.0025	0.0025	0.005	0.008	0.015	0.018	0.025	0.032	0.045	0.060
2c	1620	Trio	55	70	0.003	0.0035	0.0030	0.006	0.012	0.017	0.025	0.032	0.045	0.060	0.075
	1510→1540 /1620/...	Trio	35	45	0.002	0.0025	0.0020	0.004	0.007	0.013	0.016	0.020	0.030	0.040	0.050

Centering

Group Index p.III	Recommended Reference	Recommended Coating	V_c uncoated [m/min]	V_c coated [m/min]	F [mm]	Pecking
2a	337	Nemo	20	30	Ø/90	-
2b	337	Nemo	20	30	Ø/90	-
2c	337	Nemo	20	30	Ø/90	-

Drilling

Group Index p.III	Recommended Reference	Recommended Coating	V_c uncoated [m/min]	V_c coated [m/min]	F [mm]	Pecking
2a	343-6→343-12/370	Nemo	25	30	Ø/100	Ø/3
2b	343-6→343-12/370	Nemo	25	30	Ø/100	Ø/3
2c	343-6→343-12/370	Nemo	25	30	Ø/100	Ø/3

Sawing

Group Index p.III	Recommended Reference	Recommended Coating	V_c uncoated [m/min]	V_c coated [m/min]	F_z [mm]
2a	223-2/226/227	Trio	90	100	Ø/10000
2b	223-2/226/227	Trio	75	90	Ø/10000
2c	223-2/226/227	Trio	45	50	Ø/10000

Engraving

Group Index p.III	Recommended Reference	Recommended Coating	n [rpm]	F_z↓ [mm]	F_z→ [mm]
2a	119	Hot	28000	0.002	0.006
2b	119	Hot	28000	0.002	0.006
2c	119	Hot	28000	0.002	0.006

II

Formulas

$$F = F_z \cdot Z$$

$$V_c = \frac{\pi \cdot d_1 \cdot n}{1000}$$

$$V_F = F_z \cdot Z \cdot n$$

$$n = \frac{V_c \cdot 1000}{\pi \cdot d_1}$$

$$f_z = \frac{V_f}{Z \cdot n}$$

Caption

F [mm]:Feed per rotation
F_z [mm]: Feed per tooth
Z : Number of teeth
V_f [mm/min]: Feed speed
n : Spindle speed

III

M Index - Stainless steels

N° Wsn	DIN	AFNOR	AISI/ATSM	Gr.
1.2083	X42Cr13	Z40C14		2b
1.4000	X6Cr13	Z6C13		2c
1.4002	X6CrAl13	Z6CA13		2b
1.4005	X12CrS13	Z12CF13		2a
1.4006	X10Cr13	Z12C13		2a
1.4016	X8Cr17	Z8C17		2a
1.4021	X20Cr13	Z20C13		2c
1.4028	X30Cr13	Z33C13		2c
1.4031	X38Cr13	Z40C14		2c
1.4034	X46Cr13	Z40C14		2c
1.4057	X22CrNi17	Z15CN16.02		2c
1.4104	X12CrMoS17	Z10CF17		2a
1.4113	X8CrMo17	Z8CD17.01		2a
1.4125	X105CrMo17	Z100CD17		2c
1.4301	X5CrNi18 – 10	Z7CN18 – 09		2b
1.4301	X5CrNi18.09	Z6CN18.09	304	2b
1.4303	X5CrNi1812	Z8CN18.12		2b
1.4305	X10CrNiS18 – 9	Z8CNF18 – 09		2b
1.4305	X12CrNiS18.08	Z10CNF18.09	303	2b
1.4306	X2CrNi19 – 11	Z3CN19 – 11		2b
1.4306	X2CrNi18.09	Z2CN18.10	304 L	2b
1.4308	G-X6CrNi189	Z6CN18.10M		2b
1.4310	X12CrNi177	Z12CN17.07		2a
1.4311	X2CrNiN1810	Z2CN18.10		2b
1.4313	X5CrNi134	Z5CN13.4		2b
1.4401	X5CrNiMo17 – 12 – 2	Z7CND17 – 12 – 2		2b
1.4401	X5CrNiMo18.10	Z6CND17.11	316	2b
1.4404	X2CrNiMo17 – 13 – 2	Z3CND18 – 11 – 2	316 L	2b
1.4404	X2CrNiMo18.10	Z2CND17.12		2b
1.4406	X2CrNiMoN17122	Z2CND17.12Az		2c
1.4429	X2CrNiMo18.12	Z2CND17.13	316 LN	2b
1.4429	X2CrNiMoN17133	Z2CND17.13Az		2c
1.4435	X2CrNiMo18143	Z2CND17.13		2b
1.4436	X2CrNiMo18.12	Z6CND17.12		2b
1.4438	X2CrNiMo18164	Z2CND19.15	317 L	2b
1.4462	X2CrNiMoN225	Z2CND225Az		2c
1.4510	X8CrTi17	Z8CT17		2b
1.4100	X12CrNi177		301	2b
1.4441	X2CrNiMo18153	Z2CN18.14.3	316 L	2b
1.4511	X8CrNb17	Z8CNb17		2b
1.4512	X5CrTi12	Z6CT12		2b
1.4539	X2NiCrMoCu25205	Z1CNDU2520		2c
1.4541	X10CrNiTi18.09	Z6CNT18.10		2b
1.4541	X6CrNiTi18 – 10	Z6CNT18 – 10		2b
1.4542	X5CrNiCuNb1714	Z5CNU17.4		2c
1.4550	X10CrNiNb18.09	Z6CNNb18.10		2b
1.4571	X6CrNiMoTi17122	Z6CNT17.12	316 Ti	2b
1.4571	X6CrNiMoTi17-12-2	Z6CNDT17-12		2c
1.4571	X10CrNiMoTi18.10	Z6CNDT17.12		2c
1.4580	X10CrNiMoNb18.10	Z6CNDNb17.12		2b
1.4581	X5CrNiMoNb1810	Z4CNDNb18.12M		2b
1.4718	X45CrSi93	Z45CS9		2b
1.4724	X10CrAl13	Z10C13		2c
1.4747	X80CrNiSi20	Z80CSN20.02		2b
1.4828	X15CrNiSi2012	Z15CNS20.12		2b
1.4841	X15CrNiSi2520	Z15CNS25.20		2c
1.4845	X12CrNi2521	Z12CN25.20		2b
1.4864	X12NiCrSi3616	Z12NCS37.18		2c
1.4871	X53CrMnNiN219	Z52CMN21.09		2c
1.4873	X45CrNiW189	Z35CNWS20.09		2c
1.4876	X10NiCrAlTi3320	Z8NC32.21		2c
1.4876	X10NiCrAlTi3220	Incoloy800		2c
1.4878	X12CrNiTi189	Z6CNT18.12 (B)		2b

N° Wsn	DIN	AFNOR	AISI/ATSM	Gr.
			302	2b
			304 LN	2b
			305	2b
			309	2b
			310 S	2b
			314	2b
			316 Cb	2b
			318	2b
			321	2b
			329	2b
			330	2b
			347	2b
			348	2b

Steels from manufacturers

Böhler	A205	2c
Böhler	A500	2b
Böhler	A506	2a
Böhler	H160	2a
Böhler	H525	2c
Böhler	M310	2c
Böhler	M333	2c
Böhler	N350	2c
Böhler	N540	2b
Böhler	N685	2c
Böhler	N700	2c
Matthey	Durnico	2c