

# MATÉRIAUX À USINER

## MATERIALS TO BE MACHINED

GROUPES & SOUS-GROUPES DE MATÉRIAUX MATERIALS GROUPS & SUBGROUPS		DÉSIGNATION DESIGNATION	EXEMPLES EXAMPLES	
1. ACIERS / STEELS				
1.1	Aciers doux magnétiques Magnetic soft steels Resistance <= 400 Mpa		1.0718 S 250 Pb	
1.2	Aciers de construction et de cémentation Structural steels and case carburising steels Resistance <= 700 Mpa	Aciers de construction Structural steels	1.0035 A33 1.1141 XC 18	1.0060 A60-2 1.0038 E24-2
1.3	Aciers au carbone Carbon steels Resistance <= 850 Mpa		1.1158 XC 25 1.0904 55 S 7	1.1181 XC 38 1.1191 XC 48
1.4	Aciers alliés Alloyed steels Resistance <= 850 MPa	Aciers à outils Tool steels Aciers rapides High Speed Steels Aciers alliés Alloyed Steels	1.2363 Z 100 CDV 5 1.3243 HS 6-5-2-5 1.5919 16 NC 6 1.7220 35 CD 4 1.7361 30 CD 12	1.2343 Z 38 CDV 5 1.3247 HS 2-9-1-8 1.7225 42 CD 4 1.7218 25 CD 4 1.8509 40 CAD 6-12
1.5	Aciers alliés / aciers traités Alloyed steels / tempered steels Resistance de 850 - 1200 MPa	Aciers à outils Tool steels  Aciers traités Temperd steels Aciers de nitruration Nitride steels	1.3207 HS 10-4-3-10 1.2379 Z160 CDV 12 1.7225 42 CD 4 1.6580 30 CND 8	1.2067 100 C 6  1.2311 40 CMD 8 1.6582 35 NCDV 6
1.6	Aciers alliés / aciers traités Alloyed steels / tempered steels Resistance de 1200 - 1600 MPa		1.2713 55 NCDV 7	1.6747 35 NCD 16
1.7	Aciers traités Tempered steels Dureté / Hardness : 50 - 56 HRC		1.2343 Z 38 CDV 5 1.2713 55 NCDV 7	1.3505 100 C 6
1.8	Aciers traités Tempered steels Dureté / Hardness : 56 - 62 HRC		1.2379 Z 160 CDV 12	
2. ACIERS INOXYDABLES / STAINLESS STEELS				
2.1	Aciers INOX Stainless steels Resistance <= 850 MPa		1.4104 Z 13 CF 17	1.4305 Z 10 CNF 18-09
2.2	Aciers austénitiques Austenitic steels Resistance <= 850 MPa		1.4404 Z 3 CND 17-12-03 (316L) 1.4306 Z 2 CN 18-10 (304L)	1.4571 Z 6 CNDT 17-12
2.3	Aciers ferritiques + austénitiques et martensitiques Ferritic + austenitic and martensitic steels Resistance <= 1100 MPa		1.4125 Z 100 CD 17 1.4545 Z 7 CNU 15-05	1.4027 Z 20 C13
3. FONTE / CAST IRON				
3.1	Fonte grise à graphite lamellaire Lamellar cast iron Resistance <= 500 MPa		0.6020 Ft 20 0.6030 Ft 30	0.6025 Ft 25 0.6035 Ft 35
3.2	Fonte grise à graphite lamellaire Lamellar cast iron Resistance 500 - 1000 MPa		0.6030 Ft 30 0.6040 Ft 40	0.6025 Ft 25 0.6035 Ft 35
3.3	Fonte grise à graphite sphéroïdale Nodular cast iron Resistance <= 700 MPa		0.7043 FGS 370-17 0.7050 FGS 500-7	0.7040 FGS 400-12
3.4	Fonte grise à graphite sphéroïdale Nodular cast iron Resistance 700 - 1000 MPa		0.7070 FGS 700-2	
4. TITANE / TITANIUM				
4.1	Titane pur Pure titanium Resistance <= 700 MPa		3.7034 Ti 99.7	3.7024 Ti 99.5
4.2	Alliages de titane Titanium alloys Resistance <= 900 MPa		3.7164 TA 6 V	3.7124 TU2
4.3	Alliages de titane Titanium alloys Resistance 900 - 1200 MPa		3.7164 TA 6 V	3.7124 TU2

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<b>5. ALLIAGES RÉFRACTAIRES (NICKEL / COBALT / FER) / HEAT RESISTANT ALLOYS (NICKEL / COBALT / IRON)</b>			
5.1	Nickel pur Pure nickel Resistance <= 700 MPa	Ni 99 C Si	Ni 99.6
5.2	Alliages de nickel Nickel alloys Résistance <= 900 MPa	2.4816 Inconel 600 2.4665 Hastelloy X	2.4602 Hastelloy C 2.4856 Inconel 625
5.3	Alliages de nickel Nickel alloys Resistance 900 - 1200 MPa	2.4631 Nimonic 80 2.6554 Waspaloy	2.4668 Inconel 718
<b>6. CUIVRE / COPPER</b>			
6.1	Cuivre pur Pure copper Resistance <= 350 MPa	2.0060 E-Cu	2.0090 SF-Cu
6.2	Alliages de cuivre à copeaux courts Copper alloys with short chips Resistance <= 700 MPa	Laiton Brass 2.0360 CuZn40 2.0410 CuZn44Pb2	2.0380 CuZn39Pb2
6.3	Alliages de cuivre à copeaux longs Copper alloys with long chips Resistance <= 700 MPa	Bronze Bronze 2.1020 CuSn6 2.1245 CuBe 1.7 2.1247 CuBe2	CuSn8 CuBe 2
6.4	Alliages Cu-Al-Fe Cu-Al-Fe alloys Resistance <= 1500 MPa	Ampco 18 (Cu Al Fe 10.3) Ampco 20 (Cu Al Fe 11.4)	CuSn6Zn6
<b>7. ALUMINIUM MAGNÉSIUM / ALUMINIUM MAGNESIUM</b>			
7.1	Al, Mg non alliés Al, Mg not alloyed Resistance <= 350 MPa	3.0305 Al 99.9 Mg Al 2	3.3308 Al 99.9 Mg 0,5
7.2	Alliages d'aluminium Si < 0,5 % Aluminium alloys Si < 0,5 % Resistance <= 500 MPa	3.1325 Al CuMg4 3.4365 AlZnMg Cu 1.5	3.3535 AlMg3
7.3	Alliages d'aluminium Si > 0,5% < 10 % Aluminium alloys Si > 0,5% < 10% Resistance <= 400 MPa	3.2341 AlSi5Mg	1.2161 AlSi8Cu
7.4	Alliages d'aluminium Si > 10% Aluminium alloys Si > 10% Resistance <= 400 MPa	3.2381 AlSi10Mg	3.2581 AlSi12
<b>8. MATIÈRES SYNTHÉTIQUES / SYNTHETICS</b>			
8.1	Matières thermoplastiques Thermoplastics	Makrolon / Plexiglas (PMMA) Polyamide (PA) Nylon Polyacétal (POM) Delrin PVC / PTFE Polystyrene (PS) ABS	Polypropylene (PP) Polyéthylène (PEHD) PEEK / PPS Polycarbonate (PC)
8.2	Matières thermodurcissables Thermosets	Phenoplaste (Bakelite) Polyester	Epoxy
8.3	Matières synthétiques renforcées par des fibres Synthetics reinforced with fibres	CFC (carbon fibre) GFC (glass fibre)	
<b>9. MATERIAUX FRITTÉS / SINTERED MATERIAL</b>			
9.1	Cermets Cermets Resistance <= 1700 Mpa	Ferro-Tic Ferro-Titanit	
9.2	Alliages de tungstène Tungsten alloys Resistance <= 1800 Mpa	Denal	Densimet
<b>10. GRAPHITE / GRAPHITE</b>			
10.1	Graphite Graphite		