

## MAX USAGE TEMPERATURE AIR FOR SOME MATERIALS

STEEL FAMILY	HEAT TREATMENT	DESIGNATION			ALLOYING ELEMENTS % ~	TEMP. MAX °C
		N°	EN	AISI		
Nickel alloy	+AT	2.4889	NiCr28FeSiCe		Ni46-Cr28-Si2,8-Ce0,06	+1200
Austenitic steel	+AT	1.4854	X6NiCrSiNCE35-25		Ni35-Cr25-Si1,6-Ce0,05	+1170
Nickel alloy	+AT	2.4951	NiCr20Ti		Ni74-Cr20-Ti0,40	+1150
Ferritic steel	+A	1.4749	X18CrN28		Cr28-N0,20	+1100
Ferritic steel	+A	1.4762	X10CrAlSi25	446	Cr25-Si1-Al1,4	+1095
Austenitic steel	+AT	1.4841 ~	X15CrNiSi25-21	310	Cr25-Ni20-Si2	+1095
Ferritic steel	+A	1.2780	X16CrNiSi20-12	442 ~	Cr20-Ni12-Si2	+1050
Austenitic steel	+AT	1.4950 ~	X6CrNi23-13 ~	309Cb	Cr24-Ni14-Nb0,8	+1040
Martensitic steel	+QT	1.4112	X90CrMoV18	440	Cr18-Mo1-V0,10	+970
Austenitic steel	+AT	1.4550	X6CrNiNb18-10	347	Cr18-Ni10-Nb	+930
Austenitic steel	+AT	1.4401	X5CrNiMo17-12-2	316	Cr16-Ni12-Mo2	+900
Austenitic steel	+AT	1.4310	X10CrNi18-8	302	Cr18-Ni8	+900
Austenitic steel	+AT	1.4306	X2CrNi19-11	304L	Cr19-Ni11	+870
Ferritic steel	+A	1.4016	X6Cr17	430	Cr17	+845
Ferritic steel	+A	1.4002	X6CrAl13	405	Cr12-Al0,20	+815
Austenitic steel	+AT	1.4307	X2CrNi18-9	304	Cr18-Ni9	+800
Martensitic steel	+QT	1.4006	X12Cr13	410	Cr12	+705
Alloy steel	+NT	1.7362	X12CrMo5	A 182 F5	Cr5-Mo0,5	+ 620
Alloy steel	+NT	1.5415	16Mo3	A 204 gr. A ~	Mo0,30	+500
Non alloy spec. steel	+N	1.0345	P235GH	A 414 gr. B		+400
Carbon steel	+N	1.1191	C45E	1045		+300
Carbon steel	+N	1.1133	20Mn5	1022 ~		+250
Carbon steel	+N	1.1181	C35E	1035		+200
Non alloy	+N	1.0577	S355J2	A 350 LF2		+120
Non alloy	+N	1.0038	S235JR	A 252 ~		+20
Non alloy	+N	1.0143	S275J0	A 572 gr. 42 ~		0
Non alloy	+N	1.0577	S355J2	A 350 LF2	Mn1,25	-20
Alloy steel	+QT	1.7218	25CrMo4	4130	Cr1-Mo0,20	-30
Alloy steel	+QT	1.7225	42CrMo4	A 320 L7	Cr1	-40
Alloy steel	+QT	1.6510	39NiCrMo3	9840	Cr0,80-Ni0,90-Mo0,20	-50
Steel with Mn-B	+QT	1.5523	19MnB4	A 320 L1	Mn1-B0,003	-60
Alloy steel	+QT	1.6580	30CrNiMo8	A 320 L43	Cr2-Ni2-Mo0,40	-80
Nickel alloy steel	+QT	1.5637	12Ni14	A 203 gr. D ~	Ni3,5	-90
Nickel alloy steel	+NT	1.5680	X12Ni5	A 2515 ~	Ni5	-100
Nickel alloy steel	+QT	1.5682	X10Ni9		Ni9	-120
Nickel alloy steel	+QT	1.5662	X8Ni9	A 353 ~	Ni9	-140
Austenitic steel	+AT	1.4301	X5CrNi18-10	304 ~	Cr18-Ni9	-196
Austenitic steel	+AT	1.4429	X2CrNiMoN17-13-3	F316 LN	Cr17-Ni12-Mo2,8-N0,14	-271,36 *

+QT Quenching and Tempering. +A Annealing. \* Temp. of liquefied gas employed in the space sector.  
+NT Normalization and Tempering. +AT Solubilization. +N Normalization

MATERIALS	MAX °C	MATERIALS	MAX °C
Hot work tool steels	+650	Paper, board, silk, polyamide fibers	+90
Cold work tool steels	+200	Impregnated paper to mineral oil	+105
Superalloy - oxidation begins at 750 ° C	+1100	Polyester resins, polyurethan enamels	+120
Case-hardening	+200	Asphaltic sealers	+130
Titanium alloy	+540	Thermosetting composition	+155
Intermetallic compounds Ni-Al	+1150	Insulating silicone compounds	+180
Intermetallic compounds Ti-Al	+650		
Aluminium alloy	+220		
Magnesium alloy	+250		
Glass	When exposed to direct flame, it breaks immediately. For irradiation/action on gas		+180
Toughened glass			+600

In the joint field, carbon steels are used in the temperature range of -20 to +120 ° C. For temperatures over 50 ° C and up to 100 ° C, the nominal pressure that the steel can bear should be decreased by 4 %; for temperatures over 100 ° C, the nominal pressure should be decreased by 11%. **Note:** high sulphur content weakens steel, especially at low temperatures

\* Temperature of liquefied gas employees in the field spaces them