



FERROUS METALS

Alloy Steels, Nickel and Cobalt Alloys

SPECIFICATION	GRADE	TYPE OF STEEL	AFNOR	DIN	WERKSTOFF	AISI	ACI	AMS	BS970 BRITISH/ USA	1970 EN	UTS		EI	IZOD	HARDNESS		CHARACTERISTICS AND TYPICAL APPLICATIONS
											Min	N/mm ² Max			Min	HB Max	
ANC 1	A B C	13% Cr Martensitic Steels	Z10C13 Z15C13 Z20C13	GX12 Cr14 GX20 Cr14 GX22 Cr14	1.4008 1.4027	403 420 420	CA 15 CA40	5349:5350D	410C21 420C29 BS3100:1976*	410 S21 56A 420 S29 56B 420 S37 56C	540 620 695	- - -	15 13 13		207 183 201	229 255	Medium corrosion resistance and a range of strengths and hardnesses. ANC 1A—Chemical industry, High ductility engineering parts. ANC 1B—Heat resistant parts not highly stressed. ANC 1C—Cutting blades, pumps, steam turbines.
ANC 2		18% Cr 2% Ni Martensitic Steel	Z22 CN 1802	GX22 Cr Ni 17	1.4059	431	CB 30	5363	S80 BS3100:1976	431 S29 57	850	1000	8		248	302	High tensile stainless with improved corrosion resistance. Resists oxidising atmospheres to 760°C. Pumps valves, highly stressed aircraft and engineering parts.
ANC 3	A B	Austenitic 18% Cr 8% Ni Steels	Z12 CN 1810 Z8 CN MB 1810	GX10 Cr Ni 18.8 GX7 Cr Ni Nb 18.9	1.4312 1.4552	304 347	CF 8 CF 8C	5358:5341 5362E	304C15 347C17	302 S25 58A 347 S17 58F	460 460	- -	20 20				ANC 3A—Corrosion and acid resistant stainless, excellent stability to – 225°C. Chemical, textile, dairy food industries eg pumps and valves. ANC 3B—Weldable version usable up to 800°C. Some exhaust and marine parts. Corrosion/acid resisting parts not heat-treated after welding.
ANC 4	A B C	Austenitic 18% Cr 10% Ni 3% Mo Steels 17.11.03	Z6 CND 19.12.03 Z6 CND 17.11.03 Z6 CND NB nb	GX6 Cr Ni Mo 18.10 GX6 Cr Ni Mo 18.10 GX7 Cr Ni Mo 18.10	1.4408 1.4408 1.4581	317 316 318	CG 8M CF 8M	5524C	317C16 316C16 318C17	317 S16 58J 316 S16 58H 320 S17 58H	- 500 500	- - -	12 12 12				Good corrosion and acid resistance with medium tensile strength. Chemical and processing industries—valves/pumps for acids at high temperature, chlorides and salts.
ANC 5	A B C	Nickel Chromium Steels	Z12 CNS 25.21 Fe N37 C18S NC15 Fe	Ni Cr 25.20 GX40 Ni Cr Si 36.16 Ni Cr 60.5	1.4843 1.4865 2.4867	310 330	CK 20:HK CK 20:HU CK 20:HW	5366B	310C45 331C60 334C11	310 S24			- - -				Heat resistant alloys. Resistant to cyclic heating and useful creep strength up to 650°C. Good resistance to scaling. Furnace parts, salt and lead baths.
ANC 6	A B C	Nickel Chromium Steels	Z20 CNS 25.12 Z25 CNS W22 Z15 CNWS 22.13	GX 35 Cr Ni Si 25.12	1.4837	309	CH20:HF		309C30 309C30	55	- 460 460	- - -	17 17 17				Heat resistant with good strength up to 900°C and useful creep strength to 650°C. Heat treatment parts and superheaters, welding fixtures, nozzle guide vanes for gas turbines.
ANC 8		Nickel 20% Cr 0.4% Ti Alloy	NC20 T	Ni Cr 20 Ti	2.463				Nimocast 75* Nimonic 75*	† †							Readily weldable heat resistant alloy. Excellent resistance to oxidation up to 1100°C and with useful strength. Furnace parts.
ANC 9		Nickel 20% Cr 2.5% Ti 1.2% Al Alloy	NC20TA	Ni Cr 20 Ti Al	2.4631				Nimocast 80* Nimonic 80*	† †			-				
ANC 10		Nickel 20% Cr 16.5% Co 2.4% Ti 1.3% Al Alloy	NC20K17TA	Ni Cr 20 Co 18 Ti	2.4632				Nimocast 90* Nimonic 90*	† †							
ANC 11		Nickel 21% Cr 10% Mo 10% Co Alloy	NC21DK 10						C242†	40							
ANC 13		Cobalt 26% Cr 10% Ni 7% W Alloy	KC 25 NW	Co Cr 25 Ni W	2.4966			5382E	X40† Atellite 31†								
ANC 14		Cobalt 27% Cr 5.5% Mo 2.7% Ni Alloy	KD 27 DN	Co Cr 28 Mo	2.4979			5385D	Stellite 8†	34							
ANC 15		Nickel 28% Mo Alloy	ND28FeKV	Ni Mo 30	2.4482			5396	Hastelloy B†								
ANC 16		Nickel 17% Mo 16.5% Cr 4.5% W Alloy	NCD 16 Fe	Ni Mo 16 Cr W	2.4537		CW 12	5388C	Hastelloy C†								
ANC 17		Nickel 9% Si 3% Cu Alloy		Ni Si 10 Cu	2.4566				Hastelloy D†								
ANC 18	A B C	Nickel 31% Cu 1.4% Si Alloy	NU30Fe	Ni Cu 30 Fe*	2.4360*			4544*	Monel*† Monel H*† Monel H*†								
ANC 19		PH Nickel-Cr Nb Mo Fe W Alloy	NC20NbDW						PE 10† MC 102†								
ANC 20	A B	PH-Cr Ni Cu Mo Steels							PV 520† FV 520†		1200 1250	1500	12 8	15 8			High strength with good corrosion resistance, good weldability. Variety of strengths depending on heat treatment. Aerospace and marine parts.
ANC 21		Cr Ni Cu Mo Steel					CD 4 MCu										

This list gives details of the main alloys cast but we would be pleased to discuss any other materials required. As this is intended to be a guide only, the full relevant standard specifications should be referred to when determining suitable materials for a particular product and its application.