Material Specifications | Stainless Steel & Alloys

dean group Cast from a better mould

BS 3146 Part 2 1975	Grade	Material	Chemical Composition %																Mechanical Properties								Characteristics	Typical Applications
			C		Si		Mn		Ni		Cr		Mo		Cu		Other		UTS N/mm²		0.2% PS N/mm²		El %	Izod ft lbs	Angle of Bend	HB			
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max				Min	Max		
ANC 1	A	13% Cr Martenisitic steels	-	0.15	0.2	1.2	0.2	1	-	1	11.5	13.5					-	S = 0.035*, P = 0.035	540	-	340	-	15		120	152	207	A general engineering type stainless steel, offering a range of strengths and hardnesses. Medium corrosion resistance.	A. Gas, chemical and petroleum industries; high ductility engineering fittings, golf club heads.
	B		0.12	0.2	0.2	1.2	0.2	1	-	1	11.5	13.5					-	S = 0.035*, P = 0.035	620	-	415	-	13		90	183	229		B. Heat resistant parts not subject to high stresses.
	C		0.2	0.3	0.2	1.2	0.2	1	-	1	11.5	13.5					-	S = 0.035*, P = 0.035	695	-	435	-	11		(radius of bend = 2 x test piece thickness)	201	255		C/ Cutting blades, pump and steam turbine parts.
ANC 2		18% Cr 2% Ni Martenisitic steel	0.12	0.25	0.2	1	0.2	1	1.5	3	15.5	20					-	S = 0.035*, P = 0.035	850	1000	630	-	8			248	302		
ANC 3	A	18% Cr 11% Ni 3% Mo Austenitic steels	-	0.12	0.2	2	0.2	2	8	12	17	20					-	S = 0.035*, P = 0.035	460	-	200	-	20		120 (radius of bend = 1 1/2 x test piece thickness)				
	B		-	0.12	0.2	2	0.2	2	8.5	12	17	20					-	S = 0.035*, P = 0.035	460	-	200	-	20						
ANC 4	A	18% Cr 11% Ni 3% Mo Austenitic steels															-	S = 0.035*, P = 0.035							120 (radis of bend = 2 x test piece thickness			Stainless steels with good corrosion and acid resistance with medium tensile strength	In the chemical and processing industries, e.g. valves and pumps handing acids at high temperatures and also chlorides and salts.
	B		-	0.08	0.2	1.5	0.2	2	10	-	17	20	2	3			-	S = 0.035*, P = 0.035	500	-	210*	-	12						
	C																-	S = 0.035*, P = 0.035											

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			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max				Min	Max		
ANC 5	A	Ni-Cr Steels		0.5	0.2	3	0.2	2	17	22	22	27																Heat resistant alloys with resistance to cyclic heating and a useful creep strenghth upto 650C and good resistance to saling.	Furnace parts, salt and lead baths
	B			0.5	0.2	3	0.2	2	36	46	15	25																	
	C			0.75	0.2	3	0.2	2	55	65	10	20																	
ANC 6	A	Cr-Ni Steels	0.15	0.3	0.75	2	0.2	1	10	15	20	25					-	S = 0.035*, P = 0.035	460	-			17					Heat resistant alloys with good strength up to 900C and useful creep strength to 650C	Heat treatment parts and super heaters, welding fixtures. High temperature castings. Nozzle guide vanes for gas turbines.
	B		0.15	0.3	0.75	2	0.2	1	10	15	20	25					W = 2.5	W = 3.5, S = 0.035*, P = 0.035	460	-			17						
	C		0.05	0.15	0.75	2	0.2	1	10	18	20	25						W = 3.5, S = 0.035*, P = 0.035	460	-			17						

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			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max				Min	Max		
ANC 8		Ni-base 20% Cr 0.4 Ti alloy	0.08	0.15	0.2	1	0.2	1	Remainder		18	22					Ti = 0.2	Ti = 0.6, W = 5, Al = 0.3										A readily weldable heat-resistant alloy with excellent resistance to oxidation up to 1100C and useful strength.	Furnace parts.
ANC 9		Ni-base 20% Cr 2.5% Ti 1.2 Al alloy	0.04	0.1	0.2	1	0.2	1	Remainder		18	22					Ti = 2.2, Al = 0.8	Ti = 3, Co = 2, Fe = 2, Al = 1.6										A heat resistant alloy with good creep and oxidation resistance up to 870C.	Diesel engine pre-combustion chambers, gas turbine parts.
ANC 10		Ni-base 20% Cr 16.5% Co, 2.4 Ti 1.3% Al alloy	0.05	0.13	0.2	1	0.2	1	Remainder		18	21					Ti = 2, Co = 15, Al = 1	Ti = 2.7, Co = 18, Fe = 2, Al = 1.6										Increased strength over the ANC9 alloy with good creep and oxidation resistance up to 870C	Turbine and turbocharger rotors.
ANC 11		Ni-base 21% Cr 10% Co 10 Mo alloy	0.27	0.4	0.2	0.45	0.2	0.5	Remainder		18	23	9.5	11			Co = 9	Ti = 0.3, Co = 11, Fe = 1, Al = 0.2										Medium strength alloy with excellent resistance to oxidaton and thermal fatigue at temperatures over 1000C, good thermal shock resistance up to 1100C	Gas turbine stator blades

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			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max				Min	Max		
ANC 13		Co-base 26% Cr 10% Ni 7% W alloy	0.4	0.55	0.5	1	0.5	1	9.5	11.5	24.5	26.5					W = 7, Co = Remainder	Fe = 2, W = 8, Co = Remainder											A high strength head resistant alloy. Resistant to oxidation at high temperatures, corrosion, galling and wear. Good resistance to creep and thermal shock.	Impellers, hot metal dies and valve components.
ANC 14		Co-base 27% Cr 5.5% Mo 2.7% Ni alloy	0.2	0.3	0.2	1	0.2	1	1.75	3.75	25	29	5.06.0				Co = Remainder	Fe = 3, Co = Remainder	650	-	450	-	6						A high strength heat resistant alloy. Resistant to oxidation at high temperatures and corrosion resistant. Resistant to wear and with good low temperature impact properties.	Impellers, gas turbine and valve components for high temperature service.
ANC 15		Ni-base 28% Mo alloy	0.02	0.12	0.5	1.2	0.5	1.2	Remainder		26	30					Fe = 4	Fe = 7, S = 0.3											A corrosion and heat-resistant alloy. Good resistance to sulphuric and phosphoric acids; excellent reistance to concentrated, hot hydrochloric acid and acid chrlorides. Useful creep strength upto 800C.	Chemical and petroleum plant components and pickling equipment.
ANC 16		Ni-base 17% Mo 16.5% Cr 4.5% W alloy	0.05	0.15	0.5	1.2	0.5	1.2	Remainder		15.5	17.5	16	18			Fe = 4, W = 3.75	Fe = 7, W = 5.25, S = 0.3											A corrosion and heat-resistant alloy. Resistant to oxidizing acids (eg nitric) at high temperatures. Useful creep strength upto 800C.	Chemical and petroleum plant components.

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			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max				Min	Max		
ANC 17		Ni-base 9% Si 3% Cu alloy	0.05	0.12	8.5	10	0.5	1.2	Remainder						2	4		Fe = 2, S = 0.3										A corrosion resistant alloy, particularly against hot sulphuric acid.	Chemical and petroleum plant components.
ANC 18	A	Ni-base 31% Cu Si alloys	0.1	0.3	0.5	1.5	0.5	1.5	Remainder						28	34	Mg = 0.07	Fe = 3, Mg = 0.13, S = 0.05										Corrosion resistant alloys with a range of hardness for general engineering purposes. Resistant to superheated steam, sea-water, mineral acids. Retention of strength and toughness up to 450C	Power plant, marine equipment, chemical and process industry components.
	B		0.05	0.15	2.5	3	0.5	1.5	Remainder						28	34		Fe = 3											
	C		0.05	0.15	3.5	4.5	0.5	1.5	Remainder						28	34		Fe = 3											
ANC 19		Ni-base 20% Cr 7% Nb 6% Mo 3% Fe 3% W alloy	-	0.06	0.1	0.4	0.1	0.5	Remainder		19	21	5.5	6.5	-	0.2	Fe = 2, W = 2, Nb = 6.2	Co = 0.2, Fe = 4, W = 3, Nb = 7, S = 0.015										A high strength precipitation hardening alloy resistant to thermal shock and oxidation.	Diesel engine combustion chamber inserts
ANC 20	A	14% Cr 5% Ni 2% Cu 1% Mo steels	-	0.07	0.2	2	0.2	1	3	6	12.5	15.5	0.5	2.5	1	3.5		Nb = 0.5, S = 0.025, P = 0.025	950	1200	800	-	12	15				A high strength precipitation hardening steel with good corrosion resistance and good weldability.	Marine applications where high strength and good corrosion resistance are required.
	B		-	0.07	0.2	2	0.2	1	3	6	12.5	15.5	0.5	2.5	1	3.5		Nb = 0.5, S = 0.025, P = 0.025	1250	1500	950	-	8	8					

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			C		Si		Mn		Ni		Cr		Mo		Cu		Other		UTS N/mm²		0.2% PS N/mm²		El %	Izod ft lbs	Angle of Bend	HB				
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max				Min	Max			
ANC 21		26% Cr 5% Ni 3% Cu 2% Mo steel	-	0.05	-	0.75	-	0.75	4.75	6	25	27	1.75	2.25	2.75	3.25		S = 0.05, P = 0.05	700	-	500	-	18	10							Good corrosion resistance; comparable to ANC3 with higher strength	Marine applications
ANC 22	A	16% Cr 4% Ni 3% Cu steels	-	0.06	-	1	-	0.7	3.6	4.6	15.5	16.7			2.8	3.5	Nb = 0.15	Nb = 0.4, S = 0.03, P = 0.035	1230	-	1030	-	8	15		361	40					
	B																		1030	-	895	-	8	20		313	34				
	C																		900	-	830	-	8	20		294	32				

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