

# Corrosion-resistant alloys

**Nicrofer 5219 Nb – alloy 718**

**Cronifer 1925 hMo – alloy 926**

**Nicrofer 5520 Co – alloy 617**

Sheet/strip    Tube/pipe    Rod/bar    Sheet/strip    Tube/pipe    Rod/bar

## DESIGNATIONS AND SPECIFICATIONS

D	Designation	NiCr19NbMo		NiCrMoCuN 25 20 6		NiCr23Co12Mo
	Material N.	2.4668		1.4529		2.4663
	VdTUV	-		502	502	485
USA	UNS	N 07718		N 08926 (previous N 08925)		N 06617
	ASTM(B) ASME(SB)	670	637	625	673/674/677	649
GB	Designation BS	-	-	-	-	-
	BS	-	-	-	-	-
F	AFNOR	NC 19 FeNb				

## CHEMICAL COMPOSITION (%)

	Nicrofer 5219 Nb	Cronifer 1925 hMo	Nicrofer 5520 Co
Nickel	50 - 55	24.5 - 25.5	Balance
Chromium	17 - 21	20 - 21	20 - 23
Iron	Balance		max. 2
Molybdenum	2.8 - 3.3	6 - 6.8	8 - 10
Carbon	0.02 - 0.08	max. 0.020	0.05 - 0.1
Titanium	0.7 - 1.15		0.2 - 0.6
Aluminum	0.3 - 0.7		0.6 - 1.5
Others	Nb: 4.8 - 5.5    B: 0.002 - 0.006	N: 0.18 - 0.20	Co: 10 - 13

## MECHANICAL PROPERTIES (N/mm<sup>2</sup>, %)

Temperature (°C)	Rp 0.2 <sup>1</sup>	Rp 1.0	Rm <sup>1</sup>	A5 <sup>1</sup>	Rp 0.2	Rp 1.0	Rm	A5	Rp 0.2	Rp 1.0	Rm	A5
20	Min. 1040	-	Min. 1240	Min. 12	Min. 300	Min. 340	Min. 650	Min. 40	Min. 350	Min. 380	Min. 750	Min. 35
100	1060	-	-	-	Min. 230	Min. 270	Min. 610	-	Min. 270	Min. 300	Min. 650	-
200	1040	-	-	-	Min. 190	Min. 225	Min. 560	-	Min. 230	Min. 260	Min. 620	-
280	-	-	-	-	-	-	-	-	-	-	-	-
300	1020	-	-	-	Min. 170	Min. 205	Min. 525	-	Min. 220	Min. 250	Min. 600	-
400	1000	-	-	-	Min. 160	Min. 190	Min. 510	-	Min. 210	Min. 240	Min. 570	-
500	980	-	-	-	Min. 120	Min. 150	-	-	Min. 200	Min. 225	Min. 540	-
550	-	-	-	-	Min. 105	Min. 135	-	-	-	-	-	-
600	950	-	-	-	-	-	-	-	Min. 190	Min. 210	Min. 510	-
700	870	-	-	-	-	-	-	-	Min. 185	Min. 205	Min. 400	-
750	-	-	-	-	-	-	-	-	Min. 180	Min. 200	Min. 340	-
800	640	-	-	-	-	-	-	-	-	-	-	-

## CREEP PROPERTIES (N/mm<sup>2</sup>)

Temperature (°C)	Rp 1.0/10 <sup>4</sup> h	Rm/10 <sup>4</sup> h	Rp 1.0/10 <sup>5</sup> h	Rm/10 <sup>5</sup> h	Rp 1.0/10 <sup>4</sup> h	Rm/10 <sup>4</sup> h	Rp 1.0/10 <sup>5</sup> h	Rm/10 <sup>5</sup> h
600	580	620	430	505	220	260	140	190
700	200	248	88	132	99	123	66	95
800	19	36	6.1	12	45	65	28	43
900					19	30	10	16
1000					5.5	10	1.0	4.5

## PHYSICAL PROPERTIES AT ROOM TEMPERATURE OR AS INDICATED

Density	g/cm <sup>3</sup>	8.2	8.1	8.4
Specific heat	J/Kg K	432	415	420
Thermal conductivity	W/m K	11.1	12.0	13.4
Electrical resistivity	μΩ	123	96	122
Thermal expansion	10 <sup>-6</sup> /K	13.8	16.1	13.1
20-300°C				
Modulus of elasticity	kN/mm <sup>2</sup>	205	193	212

## FABRICATION CHARACTERISTICS

Formability	Good	Good	Good
Weldability	annealed: satisfactory	Good	Good

## WELDING PRODUCTS

Filler wire	Nicrofer S 5219 - FM 718	Nicrofer S 6020 - FM 625/S 5923 - FM 59	Nicrofer S 5520 - FM 617
Covered electrode	-	2.4621    2.4609	2.4628

## MATERIAL DESCRIPTION, MAIN CHARACTERISTICS

Niobium and molybdenum - containing nickel-iron-chromium alloy, age-hardenable through aluminum and titanium additions. Excellent corrosion resistance at high and low temperatures, good resistance to pitting and stress-corrosion cracking. Good mechanical properties, high fatigue strength and creep rupture strength up to 700°C (1300°F) and resistance to oxidation up to 1000°C (1840°F).  
1) Solution-annealed, age-hardened.

Austenitic iron-nickel-chromium alloy similar to Cronifer 1925 LC - alloy 904 L, but with increased molybdenum and nitrogen contents. Exceptional resistance to pitting, crevice corrosion and to stress-corrosion cracking in halide media. High strength. Excellent resistance to a wide range of chemicals.

Solid solution nickel-chromium-cobalt-molybdenum alloy, with extremely high creep strength and exceptional resistance to carburization, very good resistance to oxidation and excellent metallurgical stability.