

# Nickel-Chromium-Iron Alloys : JLC 800 series

Wire • Bar • Strip • Ribbon

**JLC 800** offers corrosion resistance, heat resistance, and strength under high temperature conditions up to 600°C. It is also resistant to stress corrosion cracking, oxidation, carburization, and sulfidation at high temperatures. It is readily formable, weldable, and machinable. The alloy maintains a stable austenitic structure during prolonged exposure to high temperatures.

**JLC 810** is similar to JLC 800, but with a slightly higher carbon content and an optimized grain size. The higher carbon helps with better creep and stress rupture properties. This alloy is preferred over JLC 800 when service temperatures range between 600-800°C.

**JLC 825** is a nickel-chromium-iron alloy with molybdenum, copper, and titanium additions. It offers excellent resistance to general and localized corrosion in many different environments. It is resistant against pitting, crevice corrosion, chloride-ion stress corrosion cracking, and reducing environments containing aggressive sulfuric and phosphoric acids.

Standards				
Alloy	British Standard	Werkstoff Nr	ASTM	UNS designation
<b>JLC 800</b>	BS 3072-3076 (NA15)	1.4876	B 163	N08800
<b>JLC 810</b>	-	1.4876	-	N08810
<b>JLC 825</b>	BS 3072-3074, 3076 (NA16)	2.4858	B 163	N08825

Nominal Chemical Composition (%)											
Alloy	Ni	Mn	Fe	Si	Cr	C	Al	S	Ti	Mo	Cu
<b>JLC 800</b>	30-35	Max 1.50	Balance	Max 1.0	19-23	Max 0.10	0.15-0.60	Max 0.015	0.15-0.60	-	Max 0.75
<b>JLC 810</b>	30-35	Max 1.50	Balance	Max 1.0	19-23	0.05-0.10	0.15-0.60	Max 0.015	0.15-0.60	-	Max 0.75
<b>JLC 825</b>	38-46	Max 1.00	Min 22.0	Max 0.5	19.5-23.5	Max 0.05	Max 0.20	Max 0.03	0.60-1.20	2.5-3.5	1.5-3.0

Note: Other Grades of nickel-chromium-iron alloys are also available.

Nominal Physical, Electrical & Mechanical Properties (at room temperature for annealed wire)							
Alloy	Density g/cm <sup>3</sup>	Thermal Conductivity W/mK	Electrical Resistivity at 20°C μΩ-cm	Tensile strength N/mm <sup>2</sup>		Elongation % at L <sub>0</sub> =100 mm Nominal dia in mm	
				Min	Max	Min	Max
<b>JLC 800</b>	7.94	11.5	99	600	800	25	40
<b>JLC 825</b>	8.14	11.1	113	500	700	25	40

Size Range			
Form	Dia (mm)	Width (mm)	Thickness (mm)
<b>Wire</b>	0.12-8.0	-	-
<b>Strip</b>	-	0.4-100	≥ 0.10
<b>Ribbon</b>	-	0.2-0.5	2.0-4.0

## Applications

**JLC 800** is used to make heat-treating equipment like baskets, trays, fixtures, etc. Wire mesh made of this alloys is used in chemical and petrochemical industries. It also finds use in nuclear applications. This alloy is also used for sheathing of electric heating elements in domestic appliances. **JLC 825** is used in a variety of applications. It is used in chemical processing plants, oil and gas recovery, acid production, pickling operations equipment, etc.