

Cromgard C18-4

Introduction

Cromgard C18-4 is a low carbon, dual stabilized, molybdenum containing ferritic stainless steel.

With 18% chromium and 2% molybdenum, the steel has good pitting resistance and crevice corrosion resistance, similar to grade 316L SS.

Cromgard C18-4 is thus suitable for roofing and cladding in marine environments, as well as hot water tanks, heat exchanger tubing and food processing equipment.

Cromgard C18-4 is a chromium based stainless steel alloyed with molybdenum and can be stabilized with niobium and/or titanium.

Annealed Cromgard C18-4 is ductile and can be formed using a wide variety of roll forming or mild stretch bending operations as well as the more common drawing and bending operations. C18-4 does not harden excessively during cold working.

As a ferritic grade of Stainless Steel, Cromgard C18-4 is not susceptible to stress corrosion cracking (SCC).

Corrosion Resistance

Cromgard C18-4 has good resistance to a wide variety of corrosive environments. With 18% chromium and 2% molybdenum the steel has good uniform and pitting corrosion resistance, similar to grade 316L SS in most environments. Cromgard C18-4 is thus suitable for use in marine atmospheres.

Welding

Cromgard C18-4 has limited weldability and should not be used in the as-welded condition for dynamic or impact loaded structures. C18-4 can undergo grain growth in the heat affected zone of weldments, which may adversely affect the mechanical properties in these zones.

Applications involving welded C18-4 are thus generally limited to a maximum thickness of 2.5mm (0.098"). Edge welds are not recommended for applications using Cromgard C18-4. This grade is not recommended for cryogenic applications as brittle fracture could occur at sub-zero temperatures.

Chemical Composition

Element	Range (%)
Carbon	0.025 max
Silicon	1.000 max
Manganese	1.000 max
Phosphorus	0.040 max
Sulfur	0.015 max
Nitrogen	0.030 max
Chromium	17.50-19.50
Nickel	1.000 max
Niobium	$4 \times (C+N) + 0.20 - 0.80$
Molybdenum	1.80 - 2.50

Mechanical Properties

Property	Value
Tensile Strength (ksi)	60
0.2% Proof Strength (ksi)	46
Elongation*	20%

Per ASTM A240 at transverse at ambient temperature
Values are minimum unless stated

* Elongation over a length of 50.8 mm

Physical Properties

Property		Value
Density (lb./in ³)		0.28
Specific Heat Capacity (J/kg K)		430
Thermal Conductivity	100° C (W/m K)	26.8
	500°C (W/m K)	27.1
Resistivity (x10 ⁻⁹ Ωm)		570
Coefficient of Thermal Expansion	0-100°C (x10 ⁻⁶ K ⁻¹)	10.8
	0-300°C (x10 ⁻⁶ K ⁻¹)	11.6
	0-500°C (x10 ⁻⁶ K ⁻¹)	11.9
	0-700°C (x10 ⁻⁶ K ⁻¹)	12.5
Melting Point (°C)		1480-1495
Magnetic		YES

Per ASTM A240 & EN 10088-2



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