



EC926 (UNS N08926) SUPERAUSTENITIC 6% Mo STAINLESS ALLOY

Electralloy's EC926 Mo is a superaustenitic stainless steel containing nickel, chromium, molybdenum, copper, and nitrogen for corrosion resistance and strength. This alloy has excellent resistance to a variety of corrosive environments including high chloride streams and sulfuric, phosphoric, and organic acids.

CHEMICAL COMPOSITION

EC926 Mo

UNS N08367

UNS S31254

Carbon (<i>max</i>)	0.020	0.030	0.020
Phosphorus (<i>max</i>)	0.03	0.040	0.030
Manganese (<i>max</i>)	2.00	2.00	1.00
Silicon (<i>max</i>)	0.50	1.00	0.80
Chromium	19.00 / 21.00	20.00 / 22.00	19.50 / 20.50
Molybdenum	6.00 / 7.00	6.00 / 7.00	6.00 / 6.50
Nickel	24.00 / 26.00	23.50 / 25.50	17.50 / 18.50
Sulfur (<i>max</i>)	0.01	0.030	0.010
Copper	0.50 / 1.00	0.75 (<i>max</i>)	0.50 / 1.00
Nitrogen	0.15 / 0.25	0.18 / 0.25	0.18 / 0.22
Iron	Balance	Balance	Balance

TYPICAL APPLICATIONS

Chemical Processing

- Evaporators, Tanks/Pressure Vessels, Heat Exchangers

Pulp and Paper

- Bleaching Plants—Washers, Vats/Tanks, Press Rolls, Piping

Pharmaceutical and Food Processing

- Vessels, Filters, Columns, Piping

Pollution Control Equipment

- Scrubbers, Quenchers, Ducts, Absorbers

Power Generation

- Condensers, Service Water Pumps, Feed-water Heaters

Seawater

- Offshore Oil & Gas Production, Desalination Plants, Coastal Power Plants

SPECIFICATIONS: ASTM B472, B649 Bar & Wire, B625 Plate

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EC926 Mo (UNS N08926) SUPERAUSTENITIC 6% Mo STAINLESS ALLOY

PHYSICAL PROPERTIES

Melting Temperature:	2500°F to 2575°F (1370°C to 410°C)		
Density:	0.290 lb./in. ³ (8.03 gm/cm ³)		
Magnetic Permeability:	(H=200 Oersteds) < 1.01		
Coefficient of Thermal Expansion			
Temperature			
°F	°C	In./in./°F	
70 to 212	21 to 100	8.5 x 10 ⁻⁶	
70 to 932	21 to 500	8.9 x 10 ⁻⁶	
70 to 1472	21 to 800	10.0 x 10 ⁻⁶	
Thermal Conductivity			
Temperature			
°F	°C	Btu/ft ² /ft./hr./°F	
70	21	7.9	
Modulus of Elasticity (E)			
Temperature			
		Tension	
°F	°C	10 ⁴ psi	10 ³ MPa
75	24	27.8	191

HEAT TREATMENT

Optimum ductility is achieved by annealing at 2150°F and rapid air-cooling or water quenching as the method of cooling. Prolonged temperature excursions in the 950°F to 1600°F temperature range can cause harmful phases such as sigma, or sensitization, which may lead to intergranular attack or increased susceptibility to stress corrosion cracking.

HOT WORKING

Recommended hot working temperature range for this alloy is 2250°F down to 1850°F (1232°C to 1010°C). The recommended ingot breakdown temperature is 2250°F.

CORROSION & OXIDATION RESISTANCE

Electralloy EC926 Mo performs well in high chloride streams where pitting, crevice corrosion and stress corrosion cracking may occur. It has excellent general corrosion resistance in sulfuric, phosphoric and organic acids, especially when they contain chloride impurities.

WELDING

EC926 Mo can be readily welded using conventional methods such as gas tungsten arc (GTAW), gas metal arc (GMAW), shielded metal arc (SMAW), submerged arc (SAW), and plasma arc (PAW). Since 6% molybdenum alloys are susceptible to molybdenum segregation during weld solidification, use an overalloyed filler metal (molybdenum ≥ 9%) such as (UNS N06022) ANSI / AWS A5.14/A5.14M) to ensure that welds are more resistant to corrosion than the base metal.

MINIMUM MECHANICAL PROPERTIES

Tensile Data: (2100°F anneal water quenched)						
Test Temp.		UTS		YS		EL
°F	°C	psi	MPa	psi	MPa	%
70	21	94,000	650	43,000	295	35
Typical Hardness:						85 Rockwell B

CORROSION RESISTANCE

Test Solution	Temp °C	6% Mo	6% Mo	EC926 Mo
		UNS S31254	UNS N08367	UNS N08926
		Corrosion Rate (mils/yr.)	Corrosion Rate (mils/yr.)	Corrosion Rate (mils/yr.)
0.2% HCl acid	90	0.87	0.90	0.27
60% sulfuric acid	50	7.11	8.04	4.06
95% sulfuric acid	30	0.45	0.45	<0.01
85% phosphoric acid	70	0.18	0.35	0.21
10% nitric acid	90	<0.1	<0.1	<0.01
65% nitric acid	116	3.09	3.21	2.01
70% nitric acid	116	19.03	18.05	13.45
60% nitric acid + 2% HCl	50	2.58	2.99	2.39
10% nitric acid + 3% HF	70	8.15	6.96	5.35
80% acetic acid	103	0.10	0.17	0.02
50% formic acid	105	4.79	2.29	2.04

PITTING & CREVICE CORROSION

Alloy in Acidified 6% Ferric Chloride Solution	CCT		CPT		PREN No.
	°C	°F	°C	°F	
316L	< 0	< 32	60	140	25
UNS N08367	40	104	70	158	47
EC926 Mo	40	104	70	158	48

CCT = Critical Crevice Temperature; CPT = Critical Pitting Temperature; PREN = $-(\%Cr) + 3.3(\%Mo) + 30(\%Ni)$

MACHINING

EC926 Mo should be machined at slightly slower speeds than other austenitic stainless steel using rigid tooling, optimum lubrication and cooling. Positive rake angles should be utilized with cemented carbide tools. The work hardening characteristics are comparable to 304 stainless steel, but EC926 Mo is harder to drill. It does produce chips that break easier, allowing better chip control and lubrication.

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