



E STEEL SDN BHD (891338-A)

NO 3, Lorong Sungai Puloh 7/KU 6,
Kawasan Perindustrian Sungai Puloh, 42100 Selangor D.E
Tel : 03-3292 8686 / 32928666 / 32928777
Fax : 03-3292 8383



HASTELLOY® C-22, UNS N06022, 2.4602

Hastelloy C22, also known as alloy C22, is a versatile austenitic nickel-chromium-molybdenum-tungsten alloy with enhanced resistance to pitting, crevice corrosion and stress corrosion cracking. The high chromium content provides good resistance to oxidizing media while the molybdenum and tungsten content give good resistance to reducing media. This nickel steel alloy also has excellent resistance to oxidizing aqueous media including wet chlorine and mixtures containing nitric acid or oxidizing acids with chlorine ions. Other corrosives Hastelloy C-22 has resistance to are oxidizing acid chlorides, wet chlorine, formic and acetic acids, ferric and cupric chlorides, sea water, brine and many mixed or contaminated chemical solutions, both organic and inorganic. This nickel alloy also offers optimum resistance to environments where reducing and oxidizing conditions are encountered in process streams. This is beneficial in multi-purpose plants where such “upset” conditions occur frequently.

This nickel alloy resists the formation of grain-boundary precipitates in the weld heat-affected zone, thus making it suitable for most chemical process applications in the as-welded condition.

Alloy C-22 should not be used in service temperatures above 1250° F due to the formation of detrimental phases which form above this temperature.

Characteristics of Hastelloy C22

- Resistant to pitting, crevice corrosion and stress corrosion cracking
- Outstanding resistance to both reducing and oxidizing media
- Excellent resistance to oxidizing aqueous media
- Exceptional resistance to a wide variety of chemical process environments including strong oxidizers such as ferric acids, acetic anhydride, and seawater and brine solutions
- Resists the formation of grain-boundary precipitates in the weld heat-affected zone
- Excellent weldability

Chemical Composition, %

C	Cr	Co	Fe	Mn	Mo	Ni	P
.010 max	20-22.5	2.5 max	2.0-6.0	.50 max	12.5-14.5	Balance	.02 max
Si	S	W	V				
.08 max	.02 max	2.5-3.5	.35 max				



E STEEL SDN BHD (891338-A)

NO 3, Lorong Sungai Puloh 7/KU 6,
Kawasan Perindustrian Sungai Puloh, 42100 Selangor D.E
Tel : 03-3292 8686 / 32928666 / 32928777
Fax : 03-3292 8383



Applications of Hastelloy C22

- Pharmaceutical industries use alloy C-22 fittings and tubing to avoid contamination caused by corrosion related failures
- Cellophane manufacturing
- Chlorination systems
- Pesticide production
- Incineration scrubber systems
- Chemical process industry in equipment like flue gas scrubbers, chlorination systems, sulfur dioxide scrubbers, pulp and paper bleach plants, pickling systems, and nuclear fuel reprocessing
- Waste water processing

Fabrication of Hastelloy C-22

Although ductile enough to be formed by cold working, intermediate annealing may be necessary due to work hardening. Forging should be performed between 1750-2050° F followed by rapid cooling. Annealing can be performed at a temperature range between 2020-2150° F followed by a rapid quench. Cooling at an accelerated rate avoids the formation of detrimental phases which form between 1400-1800° F. Welding can be done by gas tungsten-arc, gas metal-arc and shielded metal-arc processes.

Mechanical Properties

Condition	Solution Annealed
Tensile Strength (Mpa)	794
0.2% Yield Strength (Mpa)	402
Elongation (%)	57
Hardness (HB)	197