



## HASTELLOY® C-276

UNS NO - N10276

### Other common names: Alloy C276, Hastelloy C, Inconel® C-276

Hastelloy C-276 is a nickel-molybdenum-chromium super alloy with an expansion of tungsten designed to have excellent corrosion resistance in an extensive variety of serious situations. The high nickel alloy and molybdenum substance make the nickel steel alloy particularly resistant to pitting and crevice corrosion in reducing situations while chromium passes on resistance to oxidizing media. The low carbon content minimizes carbide precipitation during welding to keep up corrosion resistance in as-welded structures. These nickel alloys are resistant to the formation of grain limit accelerates in the weld heat-influenced area, along with thus making it suitable for most chemical process applications in an as welded condition. Although the fact that there are a few varieties of the Hastelloy nickel alloy, Hastelloy C-276 is by far the most generally utilized. Alloy C-276 is mostly utilized as a part of the most serious situations, for example, chemical processing, pollution control, pulp and paper production; industrial and municipal waste treatment and recovery of sour natural gas.

### Applications

- Pollution control stack liners, ducts, dampers, scrubbers, stack-gas reheaters, fans and fan housings
- Flue gas desulfurization systems
- Chemical processing components like heat exchangers, reaction vessels, evaporators, and transfer piping
- Sour gas wells
- Pulp and paper production
- Waste treatment
- Pharmaceutical and food processing equipment

### Characteristics

- Excellent corrosion resistance in reducing environments
- Exceptional resistance to strong solutions of oxidizing salts, such as ferric and cupric chlorides
- High nickel and molybdenum contents providing good corrosion resistance in reducing environments
- Low carbon content which minimizes grain-boundary carbide precipitation during welding to maintain resistance to corrosion in heat-affected zones of welded joints
- Resistance to localized corrosion such as pitting and stress-corrosion cracking
- One of few materials to withstand the corrosive effects of wet chlorine gas, hypochlorite and chlorine dioxide

# HASTELLOY® C-276

## Corrosion Resistant

Considered a standout amongst the most versatile corrosion resistant alloys available, Hastelloy C-276 displays magnificent resistance in a wide assortment of chemical process situations incorporating those with ferric and cupric chlorides, hot contaminated organic and inorganic media, chlorine, formic and acetic acids, acetic anhydride, seawater, brine and hypochlorite and chlorine dioxide solutions. Additionally, alloy C-276 resists development of grain limit precipitates in the weld heat influenced area, making it beneficial for most chemical processes in the as-welded condition. This alloy has magnificent resistance to pitting and stress corrosion cracking.

## Fabrication

Hastelloy C-276 alloy can be forged, hot-upset and effect expelled. In spite of the fact that the alloy tends to work-harden, you can have it effectively spun, deep drawn, press shaped or punched. The greater part of the regular strategy for welding can be utilized, in spite of the fact that the oxyacetylene and submerged arc process are not recommended when the created thing is for use in corrosion service.

## Machining

Marvelous machinability, in spite of the fact that the alloy work hardens as is valid for the nickel base alloy in general.

## Forming

Can be cold worked by all standard techniques.

## Welding

Weldable by every normal strategy with the exception of that excessive heat input should be avoided. It can be utilized as a part of the "as-welded" condition without further heat treatment for most corrosive applications.

## Heat Treatment

Created types of this alloy are outfitted in the solution heat-treated condition unless generally indicated. The C-276 alloy is typically solution heat-treated condition unless generally determined. C-276 alloy is regular solution heat-treated at 2050°F (1121°C) and fast extinguished. In the event that conceivable, parts which have been hot-shaped should be solution heat-treated before final fabrication or installation.

## Forging

The alloy can be forged or hot-upset by standard means.

## Hot Working

Can be hot formed or extruded. Should be solution heat treated after hot forming.

## Cold Working

Promptly cold worked by standard methods.

## Annealing

Normally supplied and utilized in the solution treated condition, a 2050 F soaks followed by fast extinguished.

## Aging

Not normally supplied and utilized in the solution treated condition.

## Hardening

Hardened are done by cold working only.

## Other Props

"U" notch impact strength at -320 F of 263 ft. lbs. in solution treated condition.

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## Chemical Properties

C	Si	P	S	V	Cr	Mn	Fe	Co	Ni	Mo	W
0.01 max	0.08 max	0.04 max	0.03 max	0.35 max	14.5 - 16.5	1.0 max	4.0 - 7.0	2.5 max	Remainder	15.0 - 17.0	3.0 - 4.5

## Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation in 2 in. (50.8) %
100	41	40

## Physical Properties

Properties	Units	Temperature in °C
Density	8.69 g/cm <sup>3</sup>	22°
Specific Heat	0.102 Kcal/kg.C	Room
Melting Range	1323-1371°C	-
Modulus of Elasticity	205 KN/mm <sup>2</sup>	Room
Electrical Resistivity	129.5 μΩ.cm	24°
Coefficient of Expansion	11.2 μm/m °C	24-93°
Thermal Conductivity	10.2 W/m-°K	38°

## ASTM Specifications

Pipe / Tube (SMLS)	Pipe Welded	Tube Welded	Sheet / Plate	Bar	Forging	Fitting
B 622	B 619	B 626	B 575	B 574	B 564	B 366

## Availability

MANUFACTURING
Refractory Anchors
Fasteners
Custom Machining
Custom Fabrication
Piping / Spools
Stamped Parts
B/W Fittings
S/W Fittings
Flanges
Compression Fittings

RAW MATERIALS
Pipes
Tubes
Bars
Sheets
Plates
-
-
-
-

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