LAMINERIES MATTHEY
NOTZ group advanced metal solutions

Hastelloy®
C-276

		EN Nr.	UNS (ASTM)	AISI	LMSA
Designation	**NiMo16Cr15W**	2.4819	N10276	-	**B620**

Chemical composition

Ni	Mo	Cr	Fe	W	Co	V
Balance	15.0 - 17.0	14.5 - 16.5	4.00 - 7.00	3.00 - 4.50	≤ 2.50	0.13 - 0.35
C	Mn	P	S	Si	Cu	-
≤ 0.01	≤ 1.00	≤ 0.025	≤ 0.015	≤ 0.08	≤ 0.50	-

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precisely than the composition indicated.

Main technical properties and features

Hastelloy® C-276 is a nickel-molybdenum-chromium-tungsten alloy well known for its exceptional corrosion resistance in a wide range of severe environments. The molybdenum and tungsten content make the alloy specially resistance to pitting and crevice corrosion in reducing media, while chromium is responsible to resistance to oxidizing media. The combination of these alloying elements makes the alloy resistant to chloride stress corrosion cracking and general corrosion. The low carbon content minimizes carbide precipitation during welding maintaining a high corrosion resistance in the as-welded condition. Hastelloy® is ductile, easy to form and weld.

Alloy C-276 exhibits high resistance to chloride-induced pitting and crevice attack, forms of corrosion to which austenitic stainless steel are particularly inclined. Furthermore, the alloy is extremely resistant to seawater corrosion. It is also one of the few materials that withstands the corrosive effects of wet chlorine gas, hypochlorite and chlorine dioxide. The alloy is also resistant against concentrated solutions of oxidizing salts (such as iron III and copper chloride II). Hastelloy® C-276 can be welded by all standard methods (GWAT, GMAW) as well as the fusion arc welding processes. Moreover, it does not need to be heat treated after welding, it provides good fabricability and is resistant to intergranular corrosion.

Typical uses

Hastelloy® C-276 is suitable to be used in chemical applications, severe environments such as mixed acid processing, pollution control. Oil and natural gas production, such as pumping systems. Chemical engineering, e.g. heat exchangers, reaction vessels and evaporators. Pulp and paper industry for digestion and bleaching tanks. Pharmaceutical industry, e.g. reactor vessels, pumps and valves.

Typical manufacturing range

		Thickness (mm)	Width (mm)	Length (mm)
Rolled products	Strip in coils [1]	0.010 - 1.000	1.5 - 200.0	-
	Strip as sheets [1]	0.010 - 1.000	10.0 - 200.0	100 - 3000

[1] Not all our production possibilities are presented here. Other dimensions or product forms available upon request. Some combinations of thicknesses and widths are not possible.

Mechanical properties of strips

Temper			R_m (N/mm^2)	$Rp_{0.2}$ (N/mm^2)	A_{50mm} (%)	Hardness HV
R750	H200	soft	750 - 1000	400 - 800	25 min.	200 - 270
R1200	H360	½ hard	1200 1500	800 - 1200	-	360 - 460
R1450	H410	hard	1450 min.	-	-	410 min.

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Physical properties

Modulus of elasticity	kN/mm²	205.5
Poisson's ratio		0.33
Density	g/cm³	8.89
Melting point / Melting range	°C	1325 - 1370
Linear dilatation coefficient (20 to 100ºC)	10^{-6}·/ ºC	12.0
Thermal conductivity at 20°C	W/m °K	10.2
Heat Capacity at 20°C	J/(kg. K)	425
Electrical resistivity at 20°C	μΩcm	122.9
Permeability at 200 Oersted		1.0002

Tolerances (strip and foil)

Thickness

The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.

Our "LMSA Precision" and "LMSA Extreme" tolerances are available upon request.

Thickness (mm)		EN Standard		Lamineries MATTHEY		
≥	<	10140 Precision	10258 Precision	LMSA Standard	LMSA Precision	LMSA Extreme
	0.025	-	-	-	-	± 0.001
0.025	0.050	-	-	± 0.003	± 0.002	± 0.0015
0.050	0.065	-	± 0.003	± 0.003	± 0.0025	± 0.002
0.065	0.100	-	± 0.004	± 0.004	± 0.0035	± 0.003
0.100	0.125	± 0.005	± 0.006	± 0.005	± 0.004	± 0.003
0.125	0.150	± 0.005	± 0.006	± 0.005	± 0.005	± 0.004
0.150	0.250	± 0.010	± 0.008	± 0.008	± 0.006	± 0.004
0.250	0.300	± 0.010	± 0.009	± 0.009	± 0.007	± 0.005
0.300	0.400	± 0.010	± 0.010	± 0.010	± 0.007	± 0.005
0.400	0.500	± 0.015	± 0.012	± 0.012	± 0.008	± 0.006
0.500	0.600	± 0.015	± 0.014	± 0.014	± 0.010	± 0.007
0.600	0.800	± 0.015	± 0.015	± 0.015	± 0.010	± 0.007
0.800	1.000	± 0.015	± 0.018	± 0.018	± 0.012	± 0.009
1.000	1.200	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
1.200	1.250	± 0.020	± 0.020	± 0.020	± 0.015	± 0.012
1.250	1.500	± 0.020	± 0.020	± 0.020	± 0.015	± 0.014

Width

Our width tolerances "Standard" is +0.2, -0.0 (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request.

Camber

Our tolerance "LMSA Standard" respects the EN Standard 1654 (Length of measurement 1000 mm).
Other tolerances upon request.

Width (mm)		Camber max. (mm/m)			
		LMSA Standard		LMSA Extreme	
>	≤	≤ 0.5 mm	> 0.5 mm	≤ 0.5 mm	> 0.5 mm
3	6	12	-	6	-
6	10	8	10	4	5
10	20	4	6	2	3
20	250	2	3	1	1.5

Surface	Special surface qualities upon request
Flatness	Special requirement on the longitudinal or transversal flatness upon request

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