

### NICKEL ALLOY

### ALLOY C276

### (UNS N10276)

#### Application

C276 is a nickel-molybdenum-chromium superalloy with an addition of tungsten designed to have excellent corrosion resistance in a wide range of severe environments. The high chromium, molybdenum and tungsten contents make the alloy especially resistant to pitting and crevice corrosion in reducing environments while chromium conveys resistance to oxidizing media. The low carbon content minimizes carbide precipitation during welding to maintain corrosion resistance in as-welded structures.

Alloy C276 is resistant to the formation of grain boundary precipitates in the weld heat-affected zone, thus making it suitable for most chemical process application in an as welded condition. Alloy C276 is widely used in the most severe environments such as mixed acid chemical processing, pollution control, pulp and paper production, industrial and municipal waste treatment, and recovery of sour oil and gas.

#### Available tube product forms

**STRAIGHT** || **COILED** || **SEAMLESS**

#### Typical manufacturing specifications

**ASTM B622**

**Also individual customer specifications.**

#### Industries predominantly using this grade

**Chemical processes, Oil and gas etc.**

#### Maximum Coil Length per Dimension (Unit : meter)

		Wall thickness (mm)					
		0.51	0.71	0.89	1.24	1.65	2.11
Outside diameter (mm)	3.175	-	-	-	-	-	-
	6.35	-	425	350	268	219	-
	9.53	-	-	221	166	131	109
	12.7	-	-	162	120	93	76
	19.05	-	-	-	77	59	48
	25.4	-	-	-	57	43	35

can provide longer length according to customer requirement

#### Technical Data

#### Chemical composition(% by weight)

Element	Cr	Mo	Fe	W	C	Si	Co	Mn	V	P	S	-
Minimum	14.5	15.0	4.0	3.0	-	-	-	-	-	-	-	-
Maximum	16.5	17.0	7.0	4.5	0.01	0.08	2.50	1.0	0.35	0.04	0.03	-
Aiming	15.5	16.0	6.0	3.5	0.003	0.02	0.8	0.1	0.05	0.001	0.001	-

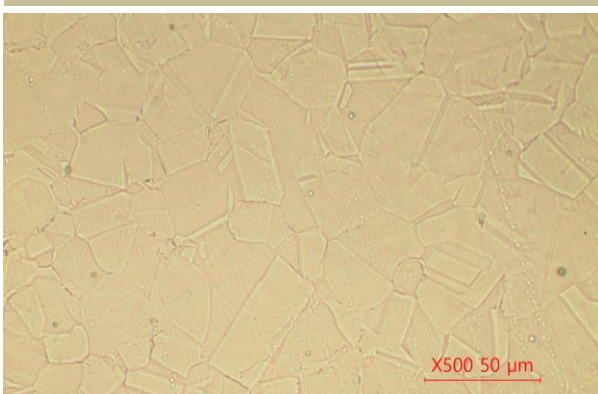
#### Mechanical Properties

	Specifications(Tubing, Annealed)		Actual data	
Tensile Rm	100	ksi (min.)	108~130	ksi (min.)
Tensile Rm	690	MPa (min.)	750~900	MPa (min.)
Yield (R.p. 0.2%)	41	ksi (min.)	50~72	ksi (min.)
Yield (R.p. 0.2%)	283	MPa (min.)	350~500	MPa (min.)
Elongation	40	% (min.)	50~60	% (min.)

#### Physical Properties(Room Temperature)

Specific Heat (0-100°C)	427	J.kg <sup>-1</sup> .°K <sup>-1</sup>
Thermal Conductivity	9.4	W.m <sup>-1</sup> .°K <sup>-1</sup>
Thermal Expansion	11.2	mm/m/°C
Modulus Elasticity	221	GPa
Electrical Resistivity	1.3	μohm.cm
Density	8.89	g/cm <sup>3</sup>

#### Microstructure



#### Maximum allowable pressure (Unit : BAR)

		Wall thickness (mm)						
		1.5	0.89	1.24	1.65	2.18	2.77	3.96
Outside diameter (mm)	6.35	529	769	1052	1404			
	9.53	340	487	671	916	1186		
	12.7	250	356	486	664	869		
	19.05		232	313	423	551		
	25.4		172	231	310	401	596	738
	31.8			183	245	315	464	572
	38.1			152	202	260	381	468
	50.8			113	150	193	280	342

\* We follow customer requested dimensions.

\* Select tubes according to design pressure