

Tube & Pipe Alloy 1100

Technical Data

ALLOY DESCRIPTION¹

The purest of the aluminum alloys. This alloy is typically used in applications requiring maximum ductility and relatively low strength. Good corrosion resistance, workability and weldability.

¹ Alloy subject to cast lot quantity restriction

TYPICAL MECHANICAL PROPERTIES

Temper	Tensile (.0625" Dia. Specimen)					Hardness Brinell 500kg 10 mm	Shear		Fatigue		Modulus	
	Ultimate		Yield		Elongation/4D %		Ultimate Shearing Strength		Endurance Limit - R.R. Moore Type		Modulus of Elasticity	
	KSI	MPa	KSI	MPa			KSI	MPa	KSI	MPa	KSI x 10 ³	Gpa
O	13	90	5	35	35	23	9	60	5	35	10	69
H14	18	125	17	115	9	32	11	75	7	50	10	69
H18	24	165	22	150	5	44	13	90	9	60	10	69

COMPARATIVE CHARACTERISTICS

Temper	Corrosion Resistance		Cold Workability ³	Machinability ³	Anodize Response ³	Brazeability ⁴	Weldability ⁴		
	General ¹	Stress ²					Gas	Arc	Spot
O	A	A	A	E	A	A	A	A	B
H14	A	A	A	D	A	A	A	A	A
H18	A	A	C	D	A	A	A	A	A

1 Ratings A through E are relative ratings in decreasing order of merit, based on exposures to sodium chloride solution by intermittent spraying or immersion. Alloys with A and B ratings can be used in industrial and seacoast atmospheres without protection. Alloys with C, D and E ratings generally should be protected at least on faying surfaces.

2 Stress-corrosion cracking ratings are based on service experience and laboratory tests of specimens exposed to the 3.5% sodium chloride alternate immersion test.

A= No known instance of failure in service or in laboratory tests.

B= No known instance of failure in service; limited failures in laboratory tests of short transverse specimens.

C= Service failures with sustained tension stress acting in short transverse direction relative to grain structure; limited failures in laboratory tests of long transverse specimens.

D= Limited service failures with sustained longitudinal or long transverse.

3 Ratings A through D for Workability (cold), A through E for Machinability and A through C for Anodize Response, are relative ratings in decreasing order of merit.

4 Ratings A through D for Weldability and Brazeability are relative ratings defined as follows:

A= Generally weldable by all commercial procedures and methods.

B= Weldable with special techniques or for specific applications that justify preliminary trials or testing to develop welding procedure and weld performance.

C= Limited weldability because of crack sensitivity or loss in resistance to corrosion and mechanical properties.

D= No commonly used welding methods have been developed.

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APPLICABLE SPECIFICATIONS

Cold Drawn	Extruded
ASTM B210	ASTM B221
AMS 4062	ASTM B241
AMS-WW-T-700/1	

CHEMICAL COMPOSITION LIMITS

Weight %	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Others	
										Each	Total
Maximum	..	..	0.05	..	..	..	..	..	..	..	..
Minimum	0.95 Si + Fe		0.20	0.05	...	...	...	0.10	...	0.05	0.15

TYPICAL PHYSICAL PROPERTIES

Characteristic		English	Metric
Nominal Density (68 °F/20 °C) <i>English: lbs./in.³</i> <i>Metric: g/cm³</i>		0.099	2.71
Melting Range		1190 °F - 1215 °F	640 °C – 655 °C
Coefficient of Thermal Expansion <i>English: micro in./in.-°F</i> <i>Metric: micro m/m -°K</i>	Linear 68 °F-212 °F 20 °C-100 °C	13.1	23.6
Thermal Conductivity (68 °F/20 °C) <i>English: BTU-in/ft²hr°F</i> <i>Metric: W/m x K</i>	O	1540	222
	H18	1510	218
Electrical Conductivity (68 °F/20 °C) <i>English: %IACS @ 68°F</i> <i>Metric: MS/M @ 20°C</i>	Equal Volume	O Temper	59
		H18	57
	Equal Weight	O Temper	194
		H18	187