

**ALLOY DESCRIPTION**

Magnesium/Silicon alloy. One of the most popular of the Heat Treatable alloy group. Products include Extruded and Drawn Tube, Pipe, Rod, Bar and Profiles. Good corrosion resistance, good weldability and good anodizing response.

**TYPICAL MECHANICAL PROPERTIES**

Temper	Tensile (.500" 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 <sup>3</sup>
O	13	90	7	50	18	25	10	70	8	55	10.0	69
T1	22	150	13	90	20	42	14	95	9	60	10.0	69
T4	25	170	13	90	22	...	...	...	...	...	10.0	69
T5	27	185	21	145	12	60	17	115	10	70	10.0	69
T52	27	185	21	145	12	*	*	*	*	*	*	69
T6	35	240	31	215	12	73	22	150	10	70	10.0	69

**COMPARATIVE CHARACTERISTICS**

Temper	Corrosion Resistance		Cold Workability <sup>3</sup>	Machinability <sup>3</sup>	Anodize Response <sup>3</sup>	Brazeability <sup>4</sup>	Weldability <sup>4</sup>		
	General <sup>1</sup>	Stress <sup>2</sup>					Gas	Arc	Spot
T1	A	A	B	D	*	A	A	A	A
T4	A	A	B	D	*	A	A	A	A
T6	A	A	C	C	*	A	A	A	A

- 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.
- 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.
- 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.
- 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.

\* DATA NOT AVAILABLE

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**APPLICABLE SPECIFICATIONS**

Cold Finished	Extruded

**CHEMICAL COMPOSITION LIMITS**

Weight %	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Others	
										Each	Total
Nominal	0.20 – 0.6	0.35	0.1	0.1	0.45 – 0.9	0.10	...	0.1	0.1	0.05	0.15

**TYPICAL PHYSICAL PROPERTIES**

Characteristic		English	Metric
Nominal Density (68 °F/20 °C)		0.097	g/cm <sup>3</sup>
Melting Range		1140 °F - 1210 °F	°C
Specific Heat (212 °F/100 °C)			
Coefficient of Thermal Expansion	Linear 68 °F-212 °F 20 °C-100 °C		
	Volumetric 68 °F/20 °C	13	pm/ x K
Thermal Conductivity (68 °F/20 °C)	O	1510	W/m x K
	T1	1340	W/m x K
	T6	1390	
Electrical Conductivity (68 °F/20 °C)	Equal Volume		
	Equal Weight		

\* DATA NOT AVAILABLE