

**ALLOY DESCRIPTION**

Alloy 7033 is a new material designed specifically for use in high strength automotive and All Terrain Vehicle (ATV) forgings.

**TYPICAL MECHANICAL PROPERTIES**

Temper	Tensile (.500" Dia. Specimen)**					Hardness Rockwell "E" 100kg 1/16" Ball	Shear		Fatigue*	
	Ultimate		Yield		Elongation/4D %		Ultimate Shearing Strength		Endurance Limit – R.R. Moore Type	
	KSI	MPa	KSI	MPa			KSI	MPa	KSI	MPa
T6	70	480	65	445	14	85	30	205	20	140

\*5x10E4 cycles of reversed stress

\*\*Actual material properties to be agreed upon based on final design..

**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
T6	B	A	C	C	B	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 applied stress.
- 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 procedures 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.

Continued Page 2 of 2

**APPLICABLE SPECIFICATIONS**

	Extruded
	ASTM B221, B807, ASME SB221

**CHEMICAL COMPOSITION LIMITS**

Weight %	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Ga	Va	Others	
											Each	Total
Minimum	--	-	0.70	-	1.3	-	4.6	-	-	-	-	-
Maximum	0.15	0.30	1.30	0.10	2.2	0.20	5.6	0.10	0.03	0.05	0.05	0.15

Also contains 0.08-0.20 Zr

**TYPICAL PHYSICAL PROPERTIES**

Characteristic		English	Metric
Nominal Density (68 °F/20 °C)		0.098 lbs./in. <sup>3</sup>	2.71 Mg/m <sup>3</sup>
Melting Range		1078 °F - 1204 °F	582 °C - 652 °C
Specific Heat (212 °F/100 °C)		-	-
Coefficient of Thermal Expansion	Linear 68 °F-212 °F 20 °C-100 °C	- micro in./in.-°F	- micro m/m-°K
	Volumetric 68 °F/20 °C	- x 10 <sup>-5</sup> in. <sup>3</sup> /in. <sup>3</sup> -°F	- x 10 <sup>-6</sup> m <sup>3</sup> /m <sup>3</sup> -°K
Thermal Conductivity (68 °F/20 °C)		- BTU/ft. - hr. - °F	- W/m - °K
Electrical Conductivity (68 °F/20 °C)	Equal Volume		- IACS
	Equal Weight		- IACS