KAISER ALUMINUM

Best in Class

Tube & Pipe Alloy 7075

Technical Data

ALLOY DESCRIPTION

This alloy offers the highest strength of standard aircraft alloys. The superior stress corrosion resistance of the T73 temper makes it a logical replacement for 2024, 2014 and 2017 in many of the most critical applications. The T6 temper has fair machinability, resistance welding and corrosion resistance ratings. This alloy is heavily utilized by the aircraft and ordnance industries because of its superior strength.

TYPICAL MECHANICAL PROPERTIES

Temper	Tensile (.500" Dia. Specimen)					Hardness	Shear		Fatigue*		Modulus	
	Ultimate		Yield		Elongation/4D	Brinell 500kg 10 mm	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
0	33	228	15	103	17	60	22	152	-	-	10.3	71.0
T6	83	572	73	503	11	150	48	331	23	158	10.3	71.0
T73	73	503	63	434	13	-	44	303	23	158	10.3	71.0

*5 x 10E8 cycles of reversed stress

COMPARATIVE CHARACTERISTICS

Temper	Corrosion Resistance		Cold Workability[3]	Machinability[3]	Anodize Response[3]	Brazeability[4]	Weldability[4]		
	General[1]	Stress[2]					Gas	Arc	Spot
T6	C	C	D	C	B	D	D	D	B
T73	C	B	D	C	B	D	D	D	B

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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Continued Page 2 of 2

APPLICABLE SPECIFICATIONS

Cold Drawn	Extruded
ASTM B210	ASTM B221
AMS-WW-T-700/7	ASTM B241
	AMS 4154
	AMS-QQ-A-200/11

CHEMICAL COMPOSITION LIMITS

									Others	
Weight %	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Each	Total
Minimum	-	-	1.2	-	2.1	0.18	5.1	-	-	-
Maximum	0.40	0.50	2.0	0.30	2.9	0.28	6.1	0.20	0.05	0.15

TYPICAL PHYSICAL PROPERTIES

Characteristic		English	Metric
Nominal Density (68 ℉/20 ℃)		0.101 lbs./in.^{3}	2.80 Mg/m^3
Melting Range		990 °F - 1175 °F	532 °C - 635 °C
Specific Heat (212 ℉/100 ℃)		0.23 BTU/lb. - °F	960 J/kg - °K
Coefficient of Thermal Expansion	Linear 68 ℉-212 ℉ 20 ℃-100 ℃	13.0 micro in./in.-°F	23.4 micro m/m -°K
	Volumetric 68 ℉/20 ℃	3.78 x 10^{-5}in.^{3}/in.^{3} -°F	68 x 10^{-6}m^3/m^3 -°K
Thermal Conductivity (68 ℉/20 ℃)	T6, T651	75 BTU/ft. - hr. - °F	130 W/m - °K
	T73, T7351	90 BTU/ft. - hr. - °F	155 W/m - °K
Electrical Conductivity (68 ℉/20 ℃)	Equal Volume	T6	33% IACS
		T73	40% IACS
	Equal Weight	T6	105% IACS
		T73	-