Profiles Extruded Alloy 7003

Technical Data

ALLOY DESCRIPTION

Used in medium strength structural applications where post weld heat treating is impractical. Developed in Japan as a corrosion resistant, extrudable, medium strength alloy.

TYPICAL MECHANICAL PROPERTIES (LONGITUDINAL)

Temper	Tensile (.500" Dia. Specimen)					Hardness	Shear		Fatigue		Modulus	
	Yield		Ultimate		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
T5	50	345	42	290	15	-	-	-	-	-	-	-

*In 10E7 cycles, axially loaded specimens tested at R = 0.1

COMPARATIVE CHARACTERISTICS

Temper	Corrosion Resistance		Cold Workability[3]	Machinability[3]	Anodize Response[3]	Brazeability[4]	Weldability[4]		
	General[1]	Stress[2]					Gas	Arc	Spot
T5	C	C	C	C	B	D	B	B	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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APPLICABLE SPECIFICATIONS

Cold Finished	Extruded
	AMS 4157
	AMS 4159

CHEMICAL COMPOSITION LIMITS

										Others	
Weight %	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Zr	Each	Total
Minimum	-	-	-	-	0.50	-	5.0	-	0.05	-	-
Maximum	0.30	0.35	0.20	0.30	1.0	0.20	6.5	0.20	0.25	0.05	0.15

TYPICAL PHYSICAL PROPERTIES

Characteristic		English	Metric
Nominal Density (68 °F/20 °C)		0.103 lbs./in.^{3}	2.84 Mg/m^3
Melting Range			
Specific Heat (212 °F/100 °C)			
Coefficient of Thermal Expansion	Linear 68 °F-212 °F 20 °C-100 °C		
	Volumetric 68 °F/20 °C		
Thermal Conductivity (68 °F/20 °C)	T6, T651		
	T7, T7351		
Electrical Conductivity (68 °F/20 °C)	Equal Volume		
	Equal Weight		