Aluminum 5183

Aufhauser
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♦ INTRODUCTION

Aluminum 5183 was originally developed in 1957 to provide the highest strengths possible in the as-welded condition of alloy 5083 and other similar high magnesium alloys. The more common filler alloy AL5356, will typically fail to meet the as-welded tensile specification requirements of alloy 5083. The alloy is typically utilized in marine and structural applications where high strengths, high fracture toughness for impact resistance, and exposure to corrosive elements are important. The alloy is not recommended for elevated temperature applications due to its susceptibility to stress corrosion cracking.

♦ APPLICATIONS

- Welding filler wire for marine and structural applications.

♦ GENERAL INFORMATION

- Non-Heat treatable
- ISO Designation: AlMg4.5Mn0.7 (A)
- Principle alloying elements: Magnesium, Manganese, Chromium

♦ CHEMICAL COMPOSITION

Silicon	Iron	Copper	Beryllium	Manganese	Magnesium	Zinc	Titanium	Others Each	Others Total
0.40	0.40	0.10	0.0008	0.50-1.0	4.3-5.2	0.25	0.15	0.05	0.15

Aluminum	Chromium
Remainder	0.05-0.25

Note: All values are maximum percentage, unless shown in range.

♦ PHYSICAL PROPERTIES

Melting Range:	1075-1180°F
Density, at 68°F:	0.096 lb/in^3
Resistance to Corrosion:	A (Gen) A (SCC)
Anodize Color:	White

♦ SPECIFICATIONS MEET or EXCEED

- ANSI/AWS A5.10 (ER & R 5183)

♦ STANDARD SIZES AND DIAMETERS

Diameters	Package Form
.030, .035, 3/64, 1/16, 3/32, 1/8	4 & 12 in. Spools
1/16, 3/32, 1/8, 5/32, 3/16, 1/4	Straight lengths

♦ TYPICAL MECHANICAL PROPERTIES OF GMAW GROOVE JOINT WELDS

	BASE ALLOY			AS WELDED		
BASE ALLOY	UTS (KSI)	UYS (KSI)	ELONG (%)	UTS (KSI)	UYS (KSI)	ELONG (%)
5083-0	42	21	22	40	18	16
7039-T61	60	50	14	47	32	14
7039-T64	65	55	13	45	26	12

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♦ TYPICAL GMAW PARAMETERS

Wire diameter	Range		Base material thickness	Suggested		Wire feed	Gas flow	Consumption 100 ft of weld
Inches	Amps	Volts	Inches	Amps	Volts	Ipm	Cfh	pounds
0.030	60-170	13-24	0.062	90	21	350	35	1.5
			0.094	100	22	560		1.8
			0.125	120	22	670		2
			0.187	140	23	780		4
0.035	70-180	15-26	0.062	100	21	350	35	1.5
			0.125	130	22	420		2
			0.250	170	23	640		6
0.047	140-260	20-29	0.094	100	22	150	45	1.8
			0.125	150	23	220		2
			0.250	190	24	320		6
			0.375	220	25	400		16
0.062	190-350	25-30	0.250	200	23	200	55	6
			0.375	230	24	220		16
			0.500	260	26	270		30
			0.750	280	27	300		50
			1.000	300	28	320		105
0.094	280-400	26-31	>1.000	350	30	180	60	150+

NOTE: Parameters based on flat position, groove joint, backing strip, and 100% argon gas.