

ALLOY 5183 WELD DATA SHEET

TYPICAL APPLICATIONS

- Welding Filler Wire

GENERAL INFORMATION

- Non-Heat treatable
- Similar to AlMg4.5Mn (Germany)
- ISO designation: AlMg4.5Mn0.7(A)
- Principle alloying elements: Magnesium, Manganese, Chromium
- Applicable specifications: ANSI/AWS A5.10 (ER & R)

WELDING APPROVALS

- American Bureau of Shipping (ABS)
- Canadian Welding Bureau (CWB)
- Det Norske Veritas (DNV)
- Korean Register of Shipping (KR)

TYPICAL PROPERTIES

Melting range: 1075 - 1180°F
Density: 0.096 lbs./cu. in.

Resistance to corrosion: A(Gen) A(SCC)
Anodize Color: White

CHEMISTRY

<u>SILICON</u>	<u>IRON</u>	<u>COPPER</u>	<u>MANGANESE</u>	<u>MAGNESIUM</u>	<u>CHROMIUM</u>	<u>ZINC</u>	<u>TITANIUM</u>	<u>BERYLLIUM</u>	<u>OTHERS</u>		<u>ALUM</u>
									<u>EACH</u>	<u>TOTAL</u>	<u>REM</u>
0.40	0.40	0.10	0.50-1.0	4.3-5.2	0.05-0.25	0.25	0.15	0.0003	0.05	0.15	

NOTE: SINGLE VALUES ARE MAXIMUM UNLESS OTHERWISE NOTED.

ALLOY CHARACTERISTICS

ALLOY 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 5356 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.

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TYPICAL MECHANICAL PROPERTIES OF GMAW GROOVE JOINT WELDS

Base Alloy	Base Alloy			As Welded		
	UTS(KSI)	UYS(KSI)	ELONG(%)	UTS(KSI)	UYS(KSI)	ELONG(%)
5083-O	42	21	22	40	18	16
7039-T61	60	50	14	47	32	14
7039-T64	65	55	13	45	26	12

TYPICAL SEMIAUTOMATIC GMA PROCEDURES FOR FILLET AND LAP WELDING ALUMINUM

Wire Dia Inches	DC(EP) ³ Range		Base ¹ Thickness Inches	DC(EP) ³ Suggested		Wire Feed IPM	Argon Gas Flow CFH	Approximate Consumption ² Lbs/100Ft
	Amps	Volts		Amps	Volts			
.030	100-130	18-22	.094	100	22	500	30	0.75
	125-150	20-24	.125	120	22	600	30	1
.035	85-120	20-23	.094	110	22	480	30	0.75
	125-150	20-24	.125	130	22	566	30	1
	170-190	21-26	.250	170	23	740	35	4
.047	125-150	20-24	.125	150	23	360	30	1
	180-210	22-26	.187	180	23	410	30	2.3
	170-240	24-28	.250	190	24	470	40	4
.062	190-260	21-26	.250	200	23	265	50	4
	240-300	22-27	.375	230	24	300	50	9
	260-310	22-27	.500	260	26	340	60	16
	280-320	24-28	.750	280	27	385	65	36
	290-340	26-30	1.000	300	28	420	70	64
.094	280-360	26-30	.750	320	29	170	60	36
	300-400	26-32	1.000	330	30	180	80	64

1. Metal thickness of 3/4" or greater for fillet welds sometimes employs a double vee bevel of 50 deg or greater included vee with 3/32 to 1/8 inch land thickness on the abutting member.
2. Number of weld passes and electrode consumption given for weld on one side only.
3. For 5XXX series electrodes use a welding current in the high side of the range given and an arc voltage in the lower portion of the range. 1XXX, 2XXX, and 4XXX series electrodes would use the lower currents and higher arc voltages.

THIS INFORMATION IS BASED ON DATA DEVELOPED UNDER LABORATORY CONDITIONS AND IS DESIGNED AS A GUIDELINE ONLY. INDIVIDUAL CONDITIONS, WELDING EQUIPMENT AND ENVIRONMENT CAN AFFECT SUGGESTED SETTINGS.

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