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Aluminum 5180

◆ INTRODUCTION

Aluminum 5180 falls within the Al-Zn-Mg alloy family and responds to post-weld thermal treatments, thus producing very high weld mechanical properties. When AL5180 is used, both the weld and the adjacent heat-affected zone become solution heat treated by the welding operation. After normal air-cooling, these zones age harden to high strengths without reheat treatment. Strength increases with time at normal ambient temperatures. The rate can be accelerated by a post-weld artificial age thermal treatment. AL5180 also has very low weld crack sensitivity when compared to other 5XXX series filler alloys. AL5180 gives significantly stronger welds than filler metals 5556, 5356, 4043, or 5554. Listed in the tables below are typical weld strength values for 7005 welded with AL5180.

◆ APPLICATIONS

- Welding filler wire

◆ GENERAL INFORMATION

- Heat treatable
- Principle alloying elements: Magnesium, Manganese, Zinc, Titanium, Zirconium

◆ CHEMICAL COMPOSITION

<u>Silicon</u>	<u>Iron</u>	<u>Copper</u>	<u>Beryllium</u>	<u>Manganese</u>	<u>Magnesium</u>	<u>Zinc</u>	<u>Titanium</u>	<u>Others</u>	
(1)	(1)	0.10	0.0008	0.20-0.7	3.5-4.5	1.7-2.8	0.06-0.20	<u>Each</u>	<u>Total</u>
<u>Aluminum</u>									
Remainder									
<u>Chromium</u>									
0.10									

(1) Silicon + Iron = 0.35% maximum

Note: Zirconium 0.08-0.25%

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

◆ TYPICAL MECHANICAL PROPERTIES OF 7005 WELDED WITH 5180

Base Metal Temper	Base Metal Thickness (in)	Weld Method	Postweld Treatment	Tensile Strength (ksi)	Yield Strength (ksi)	Elongation % in 2"
-T6	0.063	GTA	Nat. Age 1 mo.	50	37	5.0
-W	0.063	GTA	Art. Age tp -T6	52	44	9.5
-T6	0.125	GTA	None	39	28	3.5
-T6	0.125	GTA	Nat. Age 1 wk.	45	29	5.5
-T6	0.125	GTA	Nat. Age 1 mo.	50	35	8.2
-T6	0.125	GTA	Nat. Age 3 mo.	51	36	8.5
-T6	0.125	GTA	Nat. Age 6 mo.	52	39	8.5
-T6	0.375	GTA	Nat. Age 1 mo.	48	37	13.0
-T6	0.375	GTA	Nat. Age 3 mo.	49	40	13.5
-T6	0.125	Unwelded	Base Metal	54	47	13.2