



## AA 6056

### Strength and machinability for a low total cost solution.

#### Brief introduction

AA 6056 has been designed to respond to market demand for a steel replacement in general engineering applications, with focus on mechanical strength, machinability, toughness and corrosion resistance. The typical characteristics of aluminium alloys such as low specific weight and thermal conductivity are maintained.

An optimum balance of key alloying elements such as magnesium, silicon and copper combined with specially designed heat treatments give AA 6056 its main characteristics :

- strength levels equivalent to low grade steels, 15% superior to 6061 T651
- better machinability than 6061 T651
- better corrosion resistance and weldability than 2024 T351 / 2017A T451.

#### Targeted applications

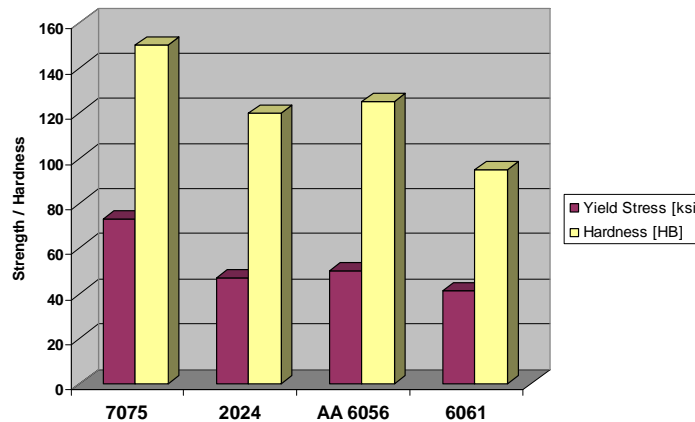
- machinery applications where moderate to high strength, toughness, weldability and lighter weight are required.
- transportation applications where higher strength and toughness than conventional 6xxx series alloys are required.

#### Technical data

	7075	2024	AA 6056	6061
Temper	T651	T351	<b>T651</b>	T651
Thermal conductivity (Btu/ft.h.°F)	75	70	<b>95</b>	96
Weldability	Bad	Poor	<b>Excellent</b>	Excellent
Corrosion resistance	Fair	Bad	<b>Excellent</b>	Excellent
Anodizing: Technical	Fair	Bad	<b>Fair/Good</b>	Good
Anodizing: Decorative	No	No	<b>Fair</b>	Fair
Density (lb/in <sup>3</sup> )	0.101	0.100	<b>0.098</b>	0.098
Coefficient of expansion (µin./in.°F)	13.1	12.9	<b>13.0</b>	13.1
Elastic modulus	10.4	10.6	<b>10.1</b>	10.0
Machinability*	Good	Good	<b>Excellent</b>	Good
Shape Stability	Medium	Low	<b>Good</b>	Good

\* chlorine free cutting fluids are recommended

#### Yield Strength and hardness comparison



See next page for a detailed technical datasheet

## Technical Datasheet

### AA 6056

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## BRIEF DESCRIPTION

Fortal® 6056 is a medium-high strength alloy with good corrosion resistance, mechanical strength and welding properties.

The combination of these three properties enables it to be used for machine parts and welded constructions.

## PROCESSING METHODS

### Weldability

- TIG/MIG filler alloy excellent AA 4043 AA 4047
- by resistance excellent

### Anodizing

- technical excellent
- decorative good

### Machinability

good

### Corrosion behaviour

- good in inland atmosphere
- fair in marine atmosphere

## AVAILABILITY

Fortal® 6056 plates are available in temper T651 (quenched – stretched – artificially aged) up to the following sizes:

Thickness (over... to)	Max. width
0.3" – 4.0"	88.6"
4.0" – 4.8"	79.5"
4.8" – 5.9"	72.8"

## CHEMICAL COMPOSITION (weight %)

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti +Zr
0.7	max.	0.5	0.4	0.6	max.	0.1	max.
1.3	0.5	1.1	1.0	1.2	0.25	0.7	0.20

## PHYSICAL PROPERTIES (nominal values)

Density	0.098 lb/in. <sup>3</sup>
Elastic modulus	10.1·10 <sup>6</sup> psi
Lin. thermal expansion coefficient (68° - 212°F)	13.0 µin./in.·°F
Thermal conductivity (Temper T651, 77°F)	95 Btu/ft·h·°F
Electrical conductivity (Temper T651, 68°F)	43 %IACS

## MECHANICAL STRENGTH

### Min. tensile properties (Temper T651)

Thickness (over ... to)	Ultimate [ksi]	Yield [ksi]	Elongation [% in 2" or 4D]
0.250 - 1.500	53	44	5
1.500 - 3.000	54	47	5
3.000 - 5.900	55	47	4

### Typical tensile strength for various thicknesses

Thickness (over ... to)	Ultimate [ksi]	Yield [ksi]	Elongation [% in 2" or 4D]	HB
0.250 - 1.500	54	50	8.5	125
1.500 - 3.000	58	47	8.0	120
3.000 - 5.900	58	47	7.0	115

Heating the alloy can result in loss of strength and / or corrosion resistance.

The information in this publication does not imply a guarantee of properties or of capability for fabrication, assembly or application in a particular case. The appendix to technical datasheets is an integral part of this datasheet. Design rules presented must be taken into account by the user. Alcan Aluminium Valais Ltd reserves the right to modify this data sheet without prior warning. This edition June 2008 replaces all previous editions.

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