



## Aluminum 6061

### Chemistry Data

Aluminum	Balance
Chromium	0.04 - 0.35
Copper	0.15 - 0.4
Iron	0 - 0.7
Magnesium	0.8 - 1.2
Manganese	0.15 max
Other	0.15 max
Remainder Each	0.05 max
Silicon	0.4 - 0.8
Titanium	0.15 max
Zinc	0.25 max

### General Information

#### Principal Design Information

Probably the most commonly available, heat treatable aluminum alloy.

#### Applications

Commonly used in the manufacture of heavy-duty structures requiring good corrosion resistance, truck and marine components, railroad cars, furniture, tank fittings, general structural and high pressure applications, wire products, and in pipelines.

#### Machinability

Machinability in the harder T 4 and T6 tempers is good. It is notably less easy to machine in the annealed temper.

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## General Information (cont'd)

### Forming

Easily cold worked and formed in the annealed condition. Stamping, bending, spinning, deep drawing are all readily accomplished using standard methods.

### Welding

The alloy has very good welding characteristics and may be welded by all of the common welding techniques. Gas tungsten arc welding is generally used for thin sections (less than 0.032") and gas metal arc welding is used for heavier sections. Use alloy 4043 filler wire for best results, although a decrease in T 6 properties will result

### Heat Treatment

Solution heat treat at 990 F for adequate time to allow for thorough heating and then water quench. Precipitation hardening is done at 320 F for 18 hours and air cool, followed by 350 F for 8 hours and air cooling.

### Forging

The alloy is capable of being hot forged at temperatures in the range of 900 F to 750 F.

### Hot Working

Hot working may be done in the temperature range of 700 F to 500 F.

### Cold Working

Cold working in the O temper condition is readily performed. The alloy is notably less easy to cold form in the T 4 and T 6 tempers.

### Annealing

Annealing should be done at 775 F for 2 to 3 hours followed by controlled cooling at 50 f per hour down to 500 F, then air cool.



## General Information (cont'd)

### Aging

The aging precipitation heat treatment is done at 350 F for 8 hours followed by air cooling. This produces the T6 temper.

### Tempering

Not applicable to this alloy.

### Hardening

See "Aging".

### Other Physical Properties

Electrical conductivity 40% of copper.

### Other Mechanical Properties

Shear strength for O temper is 12 ksi and for T 6 temper it is 30, ksi

## Physical Data

Density (lb / cu. in.)	0.098
Specific Gravity	2.7
Melting Point (Deg F)	1090
Modulus of Elasticity Tension	10
Modulus of Elasticity Torsion	3.8

## Mechanical Data

MSO has no data available for this grade.