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7075 aluminum sheet plate

Introduction Of 7075 Aluminum Sheet Plate

High-strength, high-hardness aluminum alloy plates are known as 7075 aluminum sheets. Its exceptional mechanical qualities, corrosion resistance, and wear resistance are a result of its distinct composition and manufacturing technique. It is extensively utilized in the fields of electronics, construction, vehicles, and aviation, among others.

Since its introduction by Alcoa in 1943, the 7075 aluminum alloy has served as the standard alloy in the 7xxx family of alloys.

The strongest heat-treatable alloy is 7075 aluminum, which is an alloy using zinc as the primary alloying ingredient. When fully softened and annealed, it is fairly formable and may be heat-treated to strength levels that are on par with many steel alloys.

7075 aluminum sheet composition

Chemical Composition Limits Weight%	Al	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other Each	Others Total
Alloy 7075 min	Rem	–	–	1.2	–	2.1	0.18	5.1	–	–	–
Alloy 7075 max	Rem	0.40	0.50	2.0	0.30	2.9	0.28	6.1	0.20	0.05	0.15

Typical Physical Properties

Characteristic	English	Metric
Nominal Density (68° F / 20°C)	0.101 lbs./in.³	2.80 Mg/m³
Melting Range	990° F – 1175° F	532°C – 635 °C
Specific Heat (212 °F / 100°C)	0.23 BTU/lb – °F	960 J/kg-°K
Thermal Conductivity	32.9 (% IACS)	/
Electrical Conductivity	33 (6% IACS)	/
Modulus of Elasticity	72 BTU/lb 10 N/mm²	/

Mechanical Properties Of 7075 Aluminum Sheet

Material	Temper	Thickness (in)	Tensile Strength (ksi)	Yield Strength (ksi)	Elongation %
Alloy 7075 Sheet	T6 Bare	0.125 – 0.25	78	69	8
Alloy 7075 Sheet	T651 Bare	0.25 – 0.50	78	67	9
Alloy 7075 Sheet	T651 Bare	0.5 – 1.0	78	68	7
Alloy 7075 Sheet	T6 Clad	0.188 – 0.25	75	64	8
Alloy 7075 Sheet	T651 Clad	0.25 – 0.50	75	65	9
Alloy 7075 Sheet	T651 Clad	0.5 – 1.00	78	68	7

The exceptional weight-to-strength ratio of 7075 aluminum sheet makes it suitable for use in applications involving severely stressed structural components.

It is a well-liked option for usage in aerospace and defense equipment as well as parts for

commercial airplanes. Aluminum sheet 7075 is commonly referred to as aircraft-grade aluminum sheet.
This metal has excellent formability but poor weldability. The alloy must be heated to temperatures between 700 and 900 degrees Fahrenheit when forging is being used. Solution heat treatment should then be applied.
It is not advised to weld 7075 aluminum alloy in general. However, resistance welding alloys may yield positive results. The alloy's inherent resistance to corrosion may be diminished by the use of gas or arc welding.

Typical characteristics of 7075 aluminum sheet

7075 aluminum sheet is a common aircraft-grade aluminum that is part of the Al-Zn-Mg-Cu super duralumin family. Because of its high zinc content, 7075 possesses strength comparable to steel and exceptional fatigue resistance.
Military aircraft frequently use 7075 aluminum sheet plate because it is simple to produce.
The strongest alloy that can be reinforced by heat treatment is 7075 aluminum.
1.6% copper, 2.5% magnesium, and 5.6% zinc make up 7075-T6. Manufacturers of airplanes frequently employ it to reinforce the aircraft's construction. It has good machinability but low weldability because of the copper concentration.

Plasticity is good after solution treatment, and heat treatment has a particularly strong impact. Below 150°C, it is quite strong, especially at low temperatures.
inadequate welding performance and susceptibility to stress corrosion and cracking. The alloy's resistance to stress corrosion cracking can be enhanced by two-stage aging.
It is not advised to weld 7075 aluminum sheet in general. Nonetheless, resistance welding alloys can provide positive outcomes.
The alloy's inherent resistance to corrosion may be diminished by the use of gas or arc welding.
In the annealed and just-quenched states, the plasticity is marginally better than that of 7A04 and marginally worse than that of 2A12 in the same condition. It performs better than 7A04 in terms of stress corrosion.

The best product in aluminum alloy is 7075 T651. It is stronger and better than mild steel. It is a common aluminum alloy used in aerospace and military applications, and it also has strong mechanical and anodic reaction qualities.

7075 aluminum sheet plate applications

Aerospace industry

The aerospace industry frequently uses 7075 aluminum sheet because of its exceptional performance, high strength-to-weight ratio, great machinability, corrosion resistance, etc.
The majority of the machine's windward components, including the wing rib, longitudinal beam, empennage, upper outer panel of the wing, and the fuselage bulkhead fastening, are made of 7075 aluminum.

Auto industry

7075 aluminum sheet also has important applications in automobile manufacturing. It can be used to manufacture high-performance racing components such as body frames, chassis structures, and high-performance engine parts, helping to improve the car’s performance and fuel efficiency.

Because of its excellent strength-to-weight ratio, 7075 aluminum alloy is crucial to cars' lightweight design.
Tesla electric cars' battery pack shell is made of 7075 aluminum sheet for improved corrosion and impact resistance.

Marine application

Ships, offshore platforms, and other marine engineering structures can also be made from 7075 aluminum plate. It can guarantee the longevity and safety of maritime engineering

structural components because of its great strength and resistance to corrosion. For instance, 7075 aluminum plates are used in the structural components of some oil platforms. Apart from the aforementioned applications, 7075 aluminum sheet may also be utilized in the production of construction materials, medical equipment, sports equipment, etc. For instance, 7075 aluminum plates are used in some expensive bicycle and medical equipment frames to increase the items' strength and resistance to corrosion.

Why choose GNEE 7075 aluminum sheet plate

The 7075 aluminum sheet won't distort or deform after stress release. All 7075 aluminum sheets undergo ultrasonography testing to assure quality and guard against impurities and sand holes.

Because of its excellent heat conductivity, the 7075 aluminum sheet may increase work efficiency and reduce forming time.

The physical characteristics, processability, and corrosion resistance of 7075 aluminum sheet are excellent. Age hardening therapy might boost its strength. The 7xxx alloys acquire great strength and are less prone to fracture even in their naturally aged form.

The strength of the weld can be increased by restoring the welded part's strength using solid solution strengthening treatment.

Utilizing advanced processing technology, we offer 7075 aluminum sheet at the most affordable price to our customers.

6061 aluminum sheet VS 7075 aluminum sheet

Although 6061 and 7075 aluminum sheets are two of the most often used types for structural purposes, they differ greatly from one another.

Chemical composition

Whereas 7075 alloy has more zinc, 6061 aluminum contains more silicon. 7075 has more copper and a little more magnesium.

Mechanical properties

Heat treatment is an option for both 6061 and 7075 aluminum sheets. Compared to 6061-T6, 7075-T6 has nearly twice the tensile strength. Compared to 6061-T6, 7075-T6 has a shear strength that is almost 1.5 times greater.

Weldability

Whereas 7075 is typically regarded as non-solderable, 6061 may be soldered. After welding, 6061 aluminum must undergo heat treatment and age treatment to return the welded region to its initial T condition. When 7075 is welded, it is easily cracked.

Use

Although they have a wide range of applications, the components of those applications differ. For instance, 6061 is more frequently utilized in more pliable sections in the aerospace sector, whereas 7075 is more frequently utilized for gears or rods.