nydia@aluminumhm.com

6061 Aircraft Aluminum - Haomei Aircraft Grade Aluminum

6061 aircraft aluminum is an extremely versatile heat treatable aluminum alloy due to its content of silicon and magnesium. 6061 has a wide range of mechanical and corrosion resistance properties as well as having most of the good qualities of aluminum. 6061 is used in a many applications from aircraft structures to screw machine parts.

Aluminum and its alloys are divided into two general classes – casting alloys and wrought alloys. Casting alloys are those that can be cast in sand, or poured into molds to give them a shape. The wrought alloys, which include the 6061 aluminum alloy, are cast and then hand-worked by extruding, rolling or forging them into the desired shapes. Some of these alloys can be heat-treated by different methods to increase their strength and hardness.

6061 Aluminum Properties

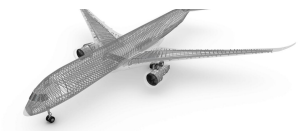
6061 aluminum properties include its structural strength and toughness, its good surface finish, its good corrosion resistance to atmosphere and sea water, its machinability, and its ability to be easily welded and joined. Most other aluminum alloys are difficult to weld due to their chemical composition and lack of conductivity. While welded 6061 aluminum alloy materials may lose some strength, they can be re-heat-treated and artificially aged again to restore strength, making this one of the superior alloys.

Technical Data Sheet of 6061 aircraft aluminum

Chemical Composition Limits											
Weight%	**Al**	**Si**	**Fe**	**Cu**	**Mn**	**Mg**	**Cr**	**Zn**	**Ti**	**Other Each**	**Others Total**
6061	Bal	0.40 - 0.80	0.70 max	0.15-0.40	0.15	0.8-1.2	0.04-0.35	0.25 max	0.15 max	0.05 max	0.15 max

Typical Mechanical Properties of 6061 aircraft grade aluminum

Material	Thickness (in	Tensile Strength (ksi)	Yield Strength (ksi)	Elongation
Alloy 6061 Sheet T6	0.020-0.500	42	35	10
Alloy 6061 Sheet T6	0.500-1.000	42	35	9
Alloy 6061 Sheet T6	1.00-2.00	42	35	8
Alloy 6061 Sheet T6	2.00-4.00	42	35	6
Alloy 6061 Sheet T6	4.00-6.00	40	35	6




nydia@aluminumhm.com

Material	Temper	Diameter (in)	Tensile Strength (ksi)	Yield Strength (ksi)	Elongation
Alloy 6061 Bar Cold Finished	T651	All	42	35	10
Alloy 6061 Bar Cold Finished	T6511	<0.25"	38	35	8
Alloy 6061 Bar Cold Finished	T6511	>0.25"	38	35	10
Alloy 6061 Bar - T651 / T6 condition and extruded T6511/T6					

6061 Aluminum Uses:

6061 aluminum is used extensively as a construction material, most commonly in the manufacture of automotive components. The 6061 alloy is well-suited to the construction of yachts, motorcycles, bicycle frames, scuba tanks, camera lenses, fishing reels, electrical fittings, couplings and valves. It's used in the construction of aluminum cans, and the inside foil wrapper on food containers is often made with 6061 aluminum alloy. Aluminum-magnesium-silicon alloys are also used in wide-span roof structures for bridge decks and arenas.

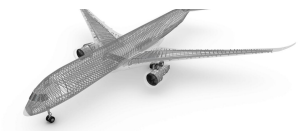
Alloy 6xxx series as cold-treated forging material meets the needs of products that have strict requirements on corrosion resistance and high oxidation. The 6xxx series alloy equips with many outstanding characteristics like fine usability, smooth connector, easily coating and perfect processability. The 6xxx series alloy are suitable for the accessory parts on the low-pressure weapons and aircraft joints.

Specifications of 6xxx series alloy applied on the aerospace:

Alloy	Chemical components (%)								
	Fe	Si	Cu	Mn	Mg	Zn	Cr	Ti	Al
6005	0.35	0.6-0.9	0.1	0.1	0.4-0.6	0.1	0.1	0.1	Remain
6061	0.7	0.4-0.8	0.15-0.4	0.15	0.8-1.2	0.25	0.04-0.35	0.15	Remain
6063	0.35	0.2-0.6	0.1	0.1	0.45-0.9	0.1	0.1	0.1	Remain
6082	0.5	0.7-1.3	0.1	0.40-1.0	0.6-1.2	0.2	0.25	0.1	Remain

Typical features and applications of regular alloy 6xxx series:

Alloy	Features	Applications
6061/6063	Processed with heat treatment pre stretching,	Airplane, rocket forged ring;transportation device such




	strength not good as 2024 and 7075 but 6061 has very good formability,welding quality and anti-rust quality, 6061 does not become deformed after shaping and it has good quality for polishing, anodizing and color film.	as subway train, vehicle, parts for engineer;packing such as can use thin coil of 6061,; PS plate for printing; construction and decoration using good welding and surface treatment quality of 6061; home appliance parts such as electric devices etc
6082	Medium strength and good welding quality and anti-rust quality.	For transportation and construction project like high-speed boat, heavy-lift, roofing structure etc