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7050 Aircraft Aluminum

7050 aircraft aluminum alloy increased the content of zinc and copper, increased the ratio of zinc to magnesium, and replaced chromium with zirconium as a grain refiner, and greatly reduced the content of iron and silicon. These improvements and over aging treatment make the 7050 type alloys have good comprehensive properties such as good toughness, high fatigue strength and good corrosion resistance at high strength level. Another outstanding advantage of type 7050 Alloy is good hardenability, especially for the manufacture of heavy section parts such as forgings.

The 7050 aluminum alloy plate profile forgings is mainly used for aircraft structure parts, such as fuselage frames, partitions, wing panels, wing beams, wing ribs, landing gear support parts and rivets, which require high light, high stress corrosion and peeling corrosion resistance and good fracture toughness. When the temperature rises, the strength of the alloy will be reduced, and the long-term use temperature can not exceed 125ºC.

The force components of different state materials were used for different use conditions: T76 State General requirements for the structure exfoliation corrosion resistance and high strength; T74 state for high strength and anti stress corrosion structure, especially the structure of a thick section; the T73 state is mainly used for rivet wire of high strength, corrosion resistance.

7050 aluminum alloy plate profile forgings has good comprehensive performance, the main supply state is T7651 thick plate, T7451 thick plate and T7452 forgings. Because of the 7050 Alloy state variety, application technology is mature, so it is widely used in the manufacture of the fuselage frame and bulkhead, wing skin, extrusion reinforcing rod, stringers and ribs, forging parts, gear supporting components, such as rivets, 7050 aluminum alloy plate profile forgings is currently the most widely used of the 7 series alloy.

7050 aluminum Chemical Composition

Cu	Mg	Mn	Fe	Si	Zn	Ti	Cr	Zr	Other	Al
2.0~2.6	1.9~2.6	0.1	0.15	0.12	5.7~6.7	0.06	0.04	0.08~0.15	0.15	Remainder

7050 A7050 EN AW-7050 A97022 Aluminum specification

Alloy Series	Alloy	Tempe	Thickness(MM)	Width(MM)	Length(MM)
7series	7050	T351,T451,T7651,T7451	4~12	1000~2600	2000-24000
7series	7050		12~260	1000~3800	2000~38000

The application of Aluminum plate 7050 T7651 alloy in aerospace

Item	Alloy	Temper	Application
1	7050	T7651,T7451	fuselage ring and frame of aerospace

7050, it is one of the most widely used and comprehensive high strength aluminum alloys. It has high strength, high resistance to stress corrosion cracking and good fracture toughness. The main varieties are thick plates, profiles and forgings. The 7050 thick plate has two kinds of use state T7651 and T7451. T7651 has good anti peeling corrosion performance and medium stress corrosion resistance, and has high static strength. T7451 has the best anti stripping




corrosion ability, and the ability to resist stress corrosion is also better than T7651, but the strength is slightly lower. At present, the short transverse properties of the 7050 Alloy thick plate have been further improved.

Alloy	Alloy series	Σb Value/MPa	Working temperatue/ºC
7050	7050 series	495~530	<125

Physical Properties of 7050 Alloy

Alloy	Type	Temper	Specification/mm	Directio n	σb/MPa		σp 0.2/MPa	
					A	B	A	B
7050	Aluminum sheet	T7451	δ6.35~38.1	L	217.6	524.4	448.5	462.3
				LT	510.6	524.4	441.6	455.4
			δ38.125~76.2	L	510.6	524.4	448.5	455.4
				LT	517.5	524.4	441.6	455.4
			δ76.225~101.6	L	510.6	517.5	448.5	455.4
				LT	510.6	517.5	441.6	455.4
				ST	469.2	496.8	407.1	414.0
			δ101.625~127	L	496.8	503.7	427.8	448.5
				LT	496.8	510.6	420.9	441.6
				ST	462.3	476.1	400.2	414.0
			δ127.025~152.4	L	489.9	496.8	414.0	434.7
				LT	483.0	503.7	414.0	427.8
				ST	455.4	476.1	393.3	393.3
		T7651	δ25.425~38.1	L	531.3	552.0	462.3	489.9
				LT	524.4	545.1	455.4	483.0
			δ38.125~50.8	L	524.4	538.2	455.4	483.0
				LT	517.5	538.2	448.5	476.1
				ST	496.8	517.5	407.1	434.7
			δ50.825~63.5	L	517.5	538.2	455.4	483.0
				LT	517.5	538.2	448.5	476.1
				ST	483.0	503.7	414.0	427.8
	Aluminum profile	T76511	δ≤12.675	L	531.3	545.1	469.2	489.9
				LT	524.4	538.2	462.3	476.1
	Free aluminum forgings	T7452	δ152.425~177.8	L	469.2	489.9	386.4	420.9
				LT	462.3	483	386.4	407.1
				ST	448.5	476.1	358.8	386.4

7050 A7050 EN AW-7050 A97022 Aerospace aluminum :

Product characters:

1: High strength,

2: High ductility,

3 : High damage tolerance,

4: High performance aircraft plate,