



ALLOY 2324-T39 PLATE

TECHNICAL DATA

Excellent fatigue resistance and fracture toughness with high strength

DESCRIPTION

Alloy 2324-T39 plate is a higher strength version of alloy 2024-T351 and is a high-purity controlled composition variant of alloy 2024. It was developed for tension-dominated, fatigue and fracture critical plate applications. The T39 temper, developed through special fabricating practices, improves both strength and fracture toughness properties over alloy 2024 plate. Alcoa guarantees long transverse mechanical properties of 2324-T39 plate.

It is available in plate thicknesses of 0.750 inches to 1.300 inches (19.05mm to 33.02mm).

APPLICATIONS

Alloy 2324-T39 plate should be considered as a replacement for 2024-T351 where higher strength, toughness and good resistance to fatigue crack propagation is required. It is being used successfully on lower wing skin and center wing box components of new commercial transport aircraft.

CHEMICAL COMPOSITION LIMITS (WT.%)

	Alloy 2324	Alloy 2024
Si	0.10	0.50
Fe	0.12	0.50
Cu	3.8-4.4	3.8-4.9
Mn	0.30-0.9	0.30-0.9
Mg	1.2-1.8	1.2-1.8
Cr	0.10	0.10
Zn	0.25	0.25
Ti	0.15	0.15
Others, each	0.05	0.05
Others, total	0.15	0.15
Aluminum	Remainder	Remainder

Note: Value maximum if range not shown.

MECHANICAL PROPERTIES – 2324-T39 PLATE
GUARANTEED MINIMUM LONG TRANSVERSE MECHANICAL PROPERTIES.
ALLOY 2024-T351 GUARANTEED PROPERTIES ARE SHOWN FOR COMPARISON.

	2324-T39	2024-T351
Thickness: in. (mm)	0.750-1.300 (19.05-33.02)	0.500-1.000 (12.70-25.40)
Tensile Strength, ksi (Mpa)	69 (475)	63 (435)
Yield Strength, ksi (Mpa)	54 (370)	42 (290)
Elongation, %	8	8

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FRACTURE TOUGHNESS

Alloy 2324-T39 plate exhibits higher fracture toughness values compared with alloy 2024-T351. Typical K_{IC} values shown are measured in the L-T test direction.

Alloy	K_{IC} :	ksi \sqrt{in} (Mpa \sqrt{m})
2324-T39*		
0.750-1.300 in. (19.05-33.02 mm)		
thickness		35-40 (38.5-44.0)
2024-T351**		
0.500-1.000 in. (12.70-25.40 mm)		
thickness		34 (37.4)

*Alloy 2324-T39 is a controlled toughness aluminum alloy. Minimum fracture toughness values are subject to inquiry.

**Alloy 2024 fracture toughness is not guaranteed.

FATIGUE PROPERTIES

Alloy 2324-T39 fatigue properties are similar to alloy 2024-T351.

CORROSION RESISTANCE

The stress corrosion cracking and exfoliation resistance of 2324-T39 is similar to 2024-T351.

PROCUREMENT SPECIFICATIONS

Alloy 2324-T39 plate is currently ordered by customer in-house specifications. There are no federal, MIL, or AMS specifications written for alloy 2324-T39.

OTHER PRODUCT FORMS

Alloy 2224 is the companion high strength alloy for extrusions.



PRODUCT SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

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