

Airware[®] 2050-T84 PLATE

DESCRIPTION

Constellium patented Airware[®] 2050-T84 is a low density aluminium-based alloy, developed to provide a lower density, higher modulus and higher corrosion resistance than currently available incumbent plate alloys. With higher strength, it provides an ideal low density and high damage tolerance balance solution, resulting in unique weight savings potential. Leveraging aluminium's infinite recyclability without property losses, Airware[®] 2050 can be repeatedly recycled.

APPLICATIONS

Airware[®] 2050 plates are particularly recommended for parts that need high strength and high toughness levels, such as lower wing structures or heavy gauge parts like frames, beams, spars or ribs. Airware[®] 2050 combines high strength, high damage tolerance and low density in a thick plate product, resulting in a unique weight savings potential.

MECHANICAL PROPERTIES

Thickness range mm (in)	DIR		12.7 ≤ th ≤ 38.1 (0.5 ≤ th ≤ 1.5)	38.1 < th ≤ 50.8 (1.5 < th ≤ 2)	50.8 < th ≤ 76.2 (2 < th ≤ 3)	76.2 < th ≤ 101.6 (3 < th ≤ 4)	101.6 < th ≤ 127 (4 < th ≤ 5)	125 ≤ th ≤ 175 (5 < th ≤ 6.9)
Tensile strength MPa (ksi)	L	min	503 (73)	496 (72)	496 (72)	490 (71)	490 (71)	490 (71)
Yield strength MPa (ksi)	L	min	476 (69)	462 (67)	462 (67)	462 (67)	455 (66)	455 (66)
Elongation %	L	min	8 (9)	8 (9)	7 (8)	6 (7)	5 (6)	4 (5)
Toughness K1c MPa√m (ksi√in)	L-T	min	36 (33)	34 (31)	31 (28)	29 (26)	28 (25)	24 (22)
E (tension) Gpa (Msi)		Typ.	76.5 (11.1)					
SCC MPa (ksi) ASTM G47	*	max	450 (65.2) *LT	350 (50.7) *ST				
Density g/cm ³ (lb/in ³)		Typ.	2.7 (0.098)					

CHEMICAL COMPOSITION LIMITS (WT %)

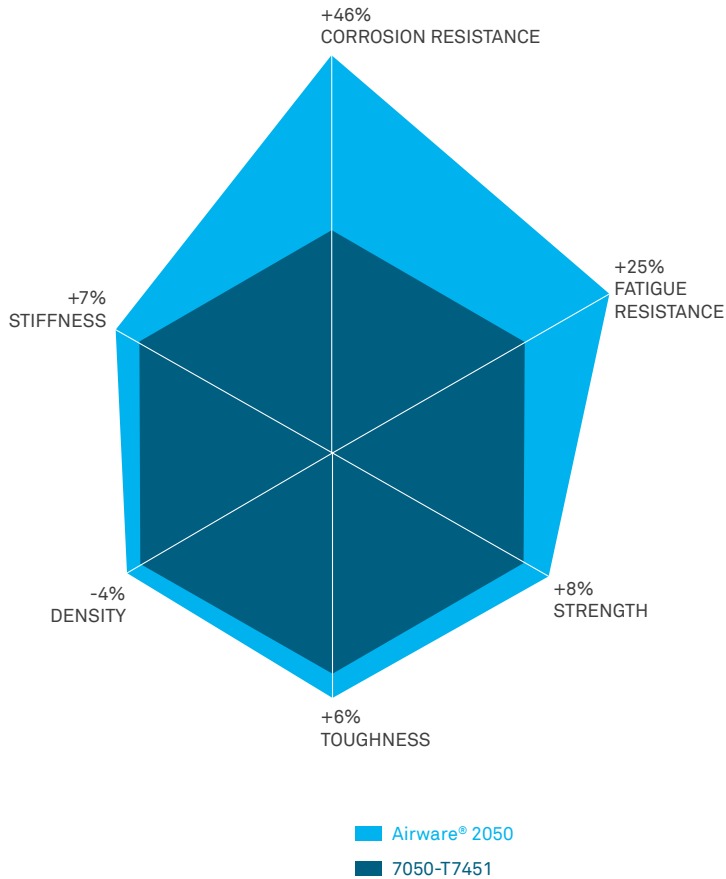
Si	0.08 max
Fe	0.10 max
Cu	3.2 - 3.9
Mn	0.20 - 0.50
Mg	0.20 - 0.60
Zn	0.25 max
Ti	0.10 max
Ag	0.20 - 0.70
Li	0.7 - 1.3
Zr	0.06 - 0.14

(According to The Aluminium Association)

TEMPER

T84 temper is obtained through a conventional one step aging treatment, preceded by a moderate level of cold work. Artificial aging is optimised to provide a good balance of static properties, fracture toughness and excellent stress corrosion resistance.

MATERIAL PERFORMANCE



Comparison for a 75 mm plate.

EASE OF MANUFACTURING

Airware® 2050 can be machined using current high speed machining technology. Low internal stresses and minimal distortion is achieved via targeted thermo-mechanical treatments. Airware® 2050 can also be chemically milled and surface coated using standard treatments and processes. Likewise it can also be chemically milled and is compatible with current surface treatments.

Airware® 2050 can be welded using conventional processes as well as Friction Stir Welding. Constellium patented recycling process permits 100% recycling of off-cuts and machining chips resulting from the manufacturing process.

AVAILABILITY

Airware® 2050 is available in the thickness range 12.7 to 175 mm (0.5 to 6.9 in).

PROCUREMENT SPECIFICATIONS

Airware® 2050 is covered by AMS 4413 and MMPDS. AMS covers 0.5-6.5 in. Material Safety Data Sheet, A and B-values and a full data package are available on request.

INFORMATION

For additional information, please contact us via email : salesat@constellium.com.

The present brochure is not contractual, and shall, in no way, incur the liability of Constellium on account of the information contained herein. This information is given purely as a guide ; it is up to the readers to check that it is accurate and to consult Constellium and other specialists before use.

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