

# Airware<sup>®</sup> 2195-T84 PLATE

## DESCRIPTION

Constellium patented Airware<sup>®</sup> 2195 in T84, T8 and T82 tempers is a low density aluminium-based alloy, developed to provide a high-strength, high damage tolerance and Friction Stir Weldable alternative to currently available incumbent plate alloys. It presents an excellent balance of high tensile/compressive strength, fracture toughness and Stress Corrosion Cracking resistance combined with a 5% lower density and 8% higher modulus of elasticity. Leveraging aluminium's infinite recyclability without property losses, Airware<sup>®</sup> 2195 can be repeatedly recycled.

## APPLICATIONS

Airware<sup>®</sup> 2195 plates are successfully used for both cryogenic and non-cryogenic applications. Low density, high stiffness, very high strength, good damage tolerance make this plate product a very attractive choice for direct and engineered substitutions in all weight-critical applications.

## MECHANICAL PROPERTIES

Gauge mm (in)	DIR	Test Temp °C (°F)	Tensile strength MPa (ksi)	Yield strength MPa (ksi)	Elongation (%)	Toughness MPa√m (ksi√in)	E Modulus GPa (Msi)	Density g/cm <sup>3</sup> (lb/in <sup>3</sup> )
6.35 - 12.7 (0.25 - 0.5)	L	20 (68)	615 (89)	580 (84)	9	40 (36.4)	78 (11.3)	2.7 (0.097)
	LT	20 (68)	600 (87)	556 (82)	11	40 (36.4)		
	45	20 (68)	525 (76)	490 (71)	12	35 (31.8)		
	L	-196 (-321)	695 (101)	640 (93)	11	45 (40.9)		
	LT	-196 (-321)	715 (104)	635 (92)	8	42 (38.2)		
	45	-196 (-321)	680 (99)	600 (87)	10	38 (34.6)		

(Application driven non-standard tensile test locations)

## CHEMICAL COMPOSITION LIMITS (WT %)

Si	0.12 max
Fe	0.15 max
Cu	3.70 - 4.30
Mn	0.25 max
Mg	0.25 - 0.80
Ag	0.25 - 0.60
Li	0.80 - 1.2
Zr	0.08 - 0.16

(According to The Aluminium Association)

## TEMPER

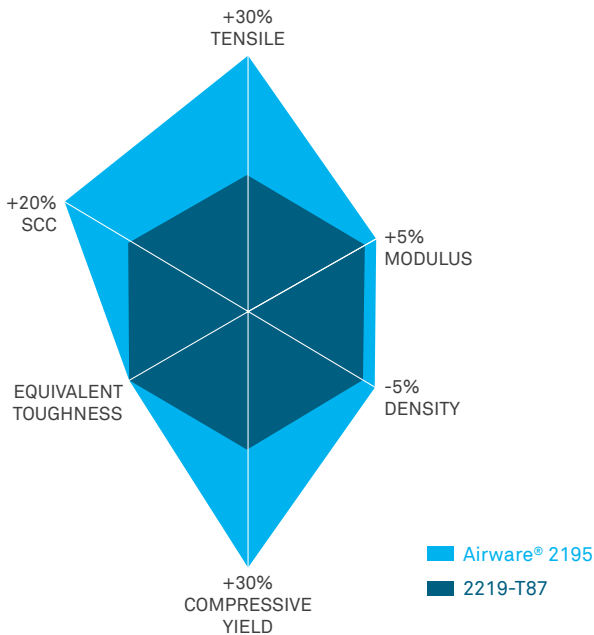
T84 temper is obtained through a conventional one step aging treatment, preceded by a moderate level of cold work. Artificial aging is optimized to provide a good balance of static properties, fracture toughness with excellent stress corrosion resistance. Material can also be supplied in a very formable T34 temper. After forming, end user can convert parts or components to T84 condition.

## MECHANICAL PROPERTIES

Gauge mm (in)	DIR	Test Temp °C (°F)	Tensile strength MPa (ksi)	Yield strength MPa (ksi)	Elongation (%)	Toughness MPa√m (ksi√in)	E Modulus GPa (Msi)	Density g/cm <sup>3</sup> (lb/in <sup>3</sup> )
38 - 50 (1.5 - 2.0)	L	20 (68)	555 (80)	530 (77)	9	37 (33.7)	78 (11.3)	2.7 (0.097)
	LT	20 (68)	575 (83)	530 (77)	8	35 (31.8)		
	45	20 (68)	560 (81)	505 (73)	9			
	ST	20 (68)	595 (86)	500 (72)	3.5			
	L	-196 (-321)	695 (101)	640 (93)	11	40 (36.4)		
	LT	-196 (-321)	715 (104)	635 (92)	8	35 (31.8)		
	45	-196 (-321)	680 (99)	600 (87)	10			
	ST	-196 (-321)	775 (112)	600 (87)				

(Application driven non-standard tensile test locations)

## MATERIAL PERFORMANCE



## EASE OF MANUFACTURING

Airware® 2195 can be machined using current high speed machining technology, with minimal distortion thanks to its low level of residual stresses. Optimization of the thermomechanical processing yields low residual stresses in Airware® 2195. It can be easily chemically milled and is compatible with current surface treatment. Constellium patented recycling process permits 100% recycling of off-cuts and machining chips resulting from the manufacturing process.

## AVAILABILITY

Airware® 2195 is available in the thickness range of 3.18 to 50.8 mm (0.25 to 2.0 in).

## PROCUREMENT SPECIFICATIONS

Airware® 2195 is produced in accordance with several customer specifications. It is also covered by AMS 4472 and AMS 4474. A and B-values and a complete set of design allowables was included in MMPDS-07. Material Safety Data Sheet are available on demand.

## INFORMATION

For additional information, please contact us via email : [salesat@constellium.com](mailto: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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