

BRIEF DESCRIPTION

The Alumold[®] 500 alloy has been optimised to provide **excellent machinability, good shape stability and high strength properties throughout the plate thickness.** Uniform strength is an important property for mould and tool construction.

Typical applications include compression or injection moulds for plastics.

PROCESSING METHODS

Weldability

- Repair welding TIG/MIG possible
filler alloys: AA 5180, AA 5356,
AA 4047, AA 4145

* Repair welding possible under specific conditions. A drop of strength in the proximity of the weld shall be taken into account. Contact Constellium for other repair methods, especially by means of inserts.

- Welding TIG/MIG not suitable*

** Alloy not suitable for mechanically loaded assembly welds.

Surface treatments

Anodizing:

- technical / hard good
- decorative not suited
- Polishing excellent
- Hard chrome plating well adapted
- Chemical nickel plating well adapted
- Chemical texturing well adapted

Machinability excellent*

* Plates in Alumold[®] 500 are supplied in stress relieved condition, either by stretching or by compression. No further thermal treatment is recommended.

AVAILABILITY

Alumold[®] 500 rolled plates are available in tempers T651 or T652 in following dimensions :

Thickness (over ... to ...)	Width	
	T651	T652
25 - 76.2 mm	1500 mm	
76.2 - 101.6 mm	1500 mm	
101.6 - 152.4 mm	1000 mm	
152.4 - 203.2 mm	750 mm	1500 mm
203.2 - 305 mm		1450 mm

(other dimensions on request)

CHEMICAL COMPOSITION

Alumold[®] 500 is based on an alloy of the 7000 series.

PHYSICAL PROPERTIES (nominal values)

Density	2.82 g/cm ³
Elastic modulus, tensile	72000 MPa
Elastic modulus, compression	73000 MPa
Poisson's coefficient	0.33
Lin. thermal expansion coefficient (20°-100°C)	23.7 · 10 ⁻⁶ K ⁻¹
Thermal conductivity (20°C)	153 W/m·K
Specific heat (20°C)	857 J/kg·K
Thermal diffusivity	63 · 10 ⁻⁶ m ² /s

MECHANICAL STRENGTH

Min. tensile properties (Tempers T651 / T652, at ¼-thickness)

Thickness (over ... to ...)	Rm [MPa]	Rp0.2 [MPa]	A50 [%]
25 - 76.2 mm	560	504	5
76.2 - 127 mm	550	497	4
127 - 152.4 mm	540	476	2.5
152.4 - 203.2 mm	525	473	1
203.2 - 254 mm	505	455	1
254 - 305 mm	470	435	0.5

Typical strength for various thicknesses

Thickness (over ... to ...)	Rm [MPa]	Rp0.2 [MPa]	A50 [%]	Hardness HB*
25 - 76.2 mm	590	540	10	185
76.2 - 127 mm	580	530	6	185
127 - 152.4 mm	570	520	4	180
152.4 - 203.2 mm	555	510	2	180
203.2 - 254 mm	535	490	1.5	175
254 - 305 mm	510	470	1.5	175

*only for information

TOLERANCES

Plate thickness (over ... to ...)	Temper	Thickness tolerance	Flatness toler.	
			long.	transv.
25 - 50.8 mm	T651	+ 1.9 / - 0 mm	0.2%	0.2%
50.8 - 76.2 mm	T651	+ 2.2 / - 0 mm	0.2%	0.2%
76.2 - 203.2 mm	T651	+ 3.2 / - 0 mm	0.2%	0.2%
150 - 305 mm	T652	+ 10 / - 0 mm	0.1%	0.1%

Heating the alloy can result in loss of strength of properties or of capability for fabrication, assembly or application in a particular case. Whenever a new application of this alloy is contemplated, and if this application involves special properties such as corrosion resistance, toughness, fatigue strength, it is strongly recommended that the user should consult the producer in order to make a precise and appropriate selection of the material.

The information in this publication does not imply a guarantee of properties or of capability for fabrication, assembly or application in a particular case. The appendix to technical datasheets is an integral part of this datasheet. The processing instructions presented in the appendix shall be taken into account by the user. Constellium reserves the right to modify this data sheet without prior warning. This edition replaces all previous editions.