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Technical Datasheet

Alumold® 500 rolled

Reference specification: IS 5615

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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%