ALUMOLD® -500 forged

Reference specification: IS 5505

TECHNICAL DATASHEET

Edition January 2013

BRIEF DESCRIPTION

Forged thick blocks in Alumold® 500 have been developed to provide **high and consistent strength across the thickness**, **good dimensional stability** and **excellent machinability,** in order to respond to the high requirements of the applications in plastics transformation.

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*

* Forged blocks in Alumold® 500 are stress relieved by compression. No further thermal treatment is recommended.

CHEMICAL COMPOSITION

Alumold® 500 forged blocks are produced in 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. resp. typical tensile properties for various thicknesses
(long-transverse direction, at ¼-thickness)

Thickness (over .. to ..)	Rm [MPa] min.	Rm [MPa] typ.	Rp0.2 [MPa] min.	Rp0.2 [MPa] typ.	A50 [%] min.	A50 [%] typ.	HB* typ.
300 - 400 mm	450	520	370	460	3	8	165
400 - 450 mm	430	520	350	460	3	7	160
450 - 700 mm	410	480	340	420	3	7	150

*only for information

TOLERANCES

Thickness (over .. to ..)	Thickness tolerance	Flatness tolerance long.	Flatness tolerance transv.
300 - 700 mm	+ 10 / - 0 mm	1 mm/m	1 mm/m

AVAILABILITY

Alumold® 500 forged blocks are available in temper T652 in the following dimensions:

Thickness [mm]	Width [mm]	Length [mm]
300	1500	2720
	1200	3570
325	1500	2490
	1200	3300
350	1500	2290
	1200	3060
375	1500	2120
	1200	2810
400	1500	1970
	1200	2615
425	1500	1830
	1200	2445
450	1500	1630
		2075
	1200	2290
		2840
475	1500	1520
		1940
	1200	2150
		2670

Thickness [mm]	Width [mm]	Length [mm]
500	1500	1415
		1820
	1200	2020
		2520
	1000	2570
		2920
550	1200	2255
	1000	2850
600	1200	2035
	1000	2585
650	1200	1845
	1000	2360
700	1200	1680
	1000	2165

(other dimensions on request)

Constellium