

BRIEF DESCRIPTION

ALCAST® cast blocks are principally used to build moulds for medium and low pressure processing of plastics, as well as for prototype moulds. The material properties are enhanced by its stringent casting process which insures a minimal porosity throughout the thickness of the plate.

Examples of applications :

- Gas or water-assisted injection moulds
- RIM moulds (or RRIM provided an adequate surface coating)
- Thermoforming moulds (moulds temperature below 110°C)
- RTM moulds (provided an adequate surface coating)

PROCESSING METHODS

Weldability

- TIG DC possible
Filler alloy AA 5183
Please contact Constellium for recommendations
- by resistance excellent

Anodizing

- technical good
- decorative not suitable

Machinability

excellent

Corrosion behaviour

- good in normal atmosphere
- critical in marine atmosphere

AVAILABILITY

Alcast® blocks are available in temper T6 (solution heat treated – quenched – artificially aged) in thicknesses from 150 mm to 600 mm with following dimensions :

Thickness (over ... to ...)	Dimensions
149 – 400 mm	1520 x 3020 mm
400 – 600 mm	1450 x 2500 mm

Plate dimensions 500 x 2020 x 4020 mm are available on request, with dimensional tolerances as indicated herewith.

(other dimensions on request)

CHEMICAL COMPOSITION

Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Zr
max. 0.25	max. 0.40	max. 0.10	max. 0.10	1.2	max. 0.05	5.0	max. 0.10	0.04
				1.8		6.0		0.18

this chemical composition matches EN AW-7021 according to EN 573-3, excepting the element Zr

PHYSICAL PROPERTIES (nominal values)

Density	2.78 g/cm ³
Elastic modulus	72000 MPa
Lin. thermal expansion coefficient (20°-100°C)	23.7 10 ⁻⁶ K ⁻¹
Thermal conductivity	150 W/mK
Electrical conductivity (20°C)	19 – 23 MS/m

MECHANICAL PROPERTIES

Guaranteed minimum tensile properties (Temper T6, at 1/8-thickness)

Thickness (over ... to ...)	Rm [MPa]	Rp0.2 [MPa]	A50 [%]
150 – 600 mm	310	280	1.5

Typical mechanical properties for various thicknesses (at 1/8-thickness)

Thickness (over ... to ...)	Rm [MPa]	Rp0.2 [MPa]	A50 [%]	HB
150 - 400 mm	355	330	3.0	135
400 - 600 mm	350	320	2.5	130

TOLERANCES

Thickness (over ... to ...)	Tolerances		
	Thickness	Width	Length
150 – 400 mm ¹⁾	+ 5 / - 0 mm	+ 2 / - 0 mm	+ 4 / - 0 mm
400 – 600 mm	+ 5 / - 0 mm	+ 5 / - 0 mm	+ 5 / - 0 mm

¹⁾400 mm thick plates are obtained by scalping the ingot; thickness tolerance is +8/-0 mm. Other thicknesses are obtained by slicing.

Thickness (over ... to ...)	Longitudinal flatness (typical value)
150 – 600 mm	2 mm / 1000 m

If ALCAST® can be used for prototype injection moulds, complex geometries (sharp radiusses, cores with high slender ratios) or moving elements have to be avoided. For such applications, wrought products are recommended.