

Cast Aluminium Speciality Plate

Typical Applications

- Precision equipment baseplates and side plates
- Reference plates
- Electronics supports
- Jigs and fixtures
- Computer components and baseplates
- High precision components
- Precision assembly equipment
- Robotics
- Medical equipment
- Printing equipment
- Light duty mould work

Product Description

A high precision cast aluminium speciality plate designed to meet stringent requirements for size and shape stability whilst significantly reducing through cost.

Technical Description

KASTAL 300 is a 5000 series cast aluminium plate with an unusually high strength and pre-milled on both sides to very close thickness and flatness tolerances. The 5000 series composition allows superior product attributes compared with traditional 7000 series cast plates. We recommend ALPLAN or UNIDAL wrought speciality plates where the application is more demanding.

Composition

The unique qualities possessed by KASTAL 300 are gained from its advanced composition and enhanced casting process, both of which are not fully disclosed in detail for commercial reasons.

Corrosion Resistance

KASTAL 300 has very good natural corrosion resistance and can be used in both marine and inland environments without problem. Where corrosion resistance is critical we recommend ALPLAN wrought speciality plate. KASTAL 300 is food safe

Welding

KASTAL 300 has good weldability with either the MIG or TIG processes. The weld locality will suffer from minimal loss of strength. Suggested filler metal is S-ALMg4.5Mn (5556). We recommend ALPLAN wrought speciality plate where weldability is a primary attribute of the component.

Machining

KASTAL 300 has very good machinability and produces a very good finish. We recommend ALPLAN speciality plate where surface finish is a paramount requirement. Deformation during and after machining is minimised by the excellent shape stability of KASTAL 300, leaving your products with the dimensions you intended. The resale value of the swarf and scrap products is high.

Product Attributes

5000 series cast plate

Excellent thickness tolerance
Excellent flatness tolerance
Pre-milled on both sides
Good machinability

Excellent shape stability
Specially heat treated for stress free condition

Anodisable alloy
Good corrosion resistance

Good weldability

Close tolerance cut to size service for both cut blanks and circles/rings
Immediate or just-in-time delivery

Customer Benefits

Purchase cost benefits over wrought plate for less demanding applications

Set-up time minimised and reduced machining time with less tool wear

Products retain shape after machining

Good aesthetics and high wear resistance

Easily welded

Uneconomic cutting to size and stockholding costs are removed – your highly skilled operators and resources are used more efficiently

Cut to Size Capability

Smiths Metal Centres carry the full range of KASTAL 300 plates in both imperial and metric sizes. Our close tolerance CNC plate sawing equipment can cut accurately to exact customer requirement for immediate or just-in-time delivery. We can also supply circles or rings cut to your specifications as part of our first stage engineering capability.

Handling & Storage

In common with all precision speciality plate KASTAL 300 must be stored in a manner that does not compromise its shape stability. We recommend that KASTAL 300 is stored on a flat surface with full support under the plate. To avoid surface damage we recommend the use of vacuum lifting devices during handling. Avoid stacking if possible.

Anodising

KASTAL 300 can be anodised for either decorative or protective purposes according to application. Hard anodising will produce good results. Do not etch prior to anodising. In common with all cast products there will be some mottling of the surface. We recommend ALPLAN or UNIDAL wrought speciality plates where a superior anodised finish is required.

Porosity

KASTAL 300 is cast using the most modern electromagnetic casting techniques. In common with ALL cast products, the casting process cannot guarantee total elimination of microporosity. We recommend ALPLAN or UNIDAL wrought speciality plate where any form of porosity would critically compromise the performance or aesthetics of your component

Cutting Tolerances

FLATNESS		mm per m
Thickness	≤15mm	0.35
	>15mm	0.15
Thickness	mm	±0.1
Surface Roughness	Ra max. (Both sides)	0.5 microns
CUT TO SIZE SAWN BLANKS		mm
Edge deviation over cut length/width		+1.5,-0

Typical Mechanical Properties

Tensile strength	N/mm ² (Rm)	255
0.2% Yield strength	N/mm ² (Rp)	115
Elongation	% (A5)	10%
Brinell Hardness	HB	approx. 70
Coefficient of thermal expansion	1/K	≤23.3x10 ⁻⁶
Thermal conductivity	W/m.K	110-130
Electrical conductivity	MSM/m (20 °C)	260

The mechanical properties of KASTAL 300 are adequate for most jig, fixture and mould applications. In common with all cast plates there is some 'brittleness'. Where superior all round mechanical properties are required we recommend ALPLAN wrought speciality plate which is approximately 25% stronger and far less brittle. Where a high shape stability pre-milled plate and very high strength are required we recommend the use of UNIDAL wrought speciality plate, which is approximately 250% stronger on yield strength.

Typical Machining Parameters

Drilling		Milling	Rough	Finish
Cutting fluid:	Emulsion	Cutting fluids:	None	Emulsion
Drill:	HSS	Tool:	SC	SC
Cutting speed:	80-100m/min	Cutting speed: m/min	300-700	500-1500
Feed per rev:	0.02-0.5mm	Feed per tooth: mm	0.1-0.6	0.03-0.1
Helix angle:	20-35°	Primary clearance angle:	6°	10°
Point angle:	120°	Radial rake angle	15°	20°

Technical Assistance

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

UK Service Centres:

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