

TYPICAL APPLICATIONS

Precision equipment baseplates and sideplates
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 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

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.

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 platesawing 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.

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
Elastic modulus	kN/mm ²	70
Coefficient of thermal expansion	1/K	23.3x10 ⁻⁶
Thermal conductivity	W/m.K	110-130
Electrical conductivity	MS/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.

TOLERANCES/CUTTING

FLATNESS	mm per m	
Thickness	≤12.7mm	0.40
	>12.7mm	0.13
THICKNESS	mm	±0.1
Surface roughness	Ra max. (Both sides)	0.6 microns
CUT TO SIZE SAWN BLANKS	mm	

Edge deviation over cut length/width +1.5,-0
Turned circles/rings and sawn circles/rings are manufactured by our in-house engineering centre from a minimum 75mm O.D. to a maximum 1200mm O.D.

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 micro porosity. We recommend ALPLAN or UNIDAL wrought speciality plate where any form of porosity would critically compromise the performance or aesthetics of your component.

HANDLING AND 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.

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.

TYPICAL MACHINING PARAMETERS

DRILLING

Cutting fluid:	Emulsion
Drill:	HSS
Cutting speed:	80-100m/min
Feed per revolution:	0.02-0.5mm
Helix angle:	20-35°
Point angle:	120°
Lip relief angle:	15°

MILLING ROUGH FINISH

Cutting fluids:	None	Emulsion
Tool:	SC	SC
Cutting speed: m/min	300-700	500-1500
Feed per tooth: mm	0.1-0.6	0.03-0.1
Primary clearance angle:	6°	10°
Radial rake angle	15°	20°
Depth of cut: mm	2-20	≤0.5
Helix angle:	up to 30°	up to 30°

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SMITHS METAL CENTRES are the exclusive UK distributors for KASTAL 300 high technology speciality plate – for further information on how KASTAL 300 can reduce your through cost contact your local metal centre. We have 16 strategically placed Metal Centres to guarantee the most competitive TOTAL service package in the U.K.

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