

Aluminium Casting Alloy LM24

This alloy conforms to BS 1490:1988 LM24.

Mechanical Properties

	<i>Chill Cast</i>	<i>Die Cast</i>
0.2% Proof Stress (N/mm ²)	100-120	150
Tensile Strength (N/mm ²)	180	320
Elongation (%)	1.5	1-3
Impact resistance Izod (Nm)	-	3.4
Brinell Hardness	85	85
Modulus of Elasticity (x10 ³ N/mm ²)	71	71
Shear Strength (N/mm ²)	-	185

Strength at elevated temperatures

Room temperature tensile strength is largely retained up to temperatures in the order of 150°C, and approximately halved at 250°C. It should be noted that other factors may restrict the use of die castings at elevated temperatures.

Physical Properties

Coefficient of Thermal Expansion (per °C @ 20-100°C)	0.000021
Thermal conductivity (cal/cm ² /cm/°C @ 25°C)	0.23
Electrical conductivity (% copper standard @ 20°C)	24
Density (g/cm ³)	2.79
Freezing range (°C) approx.	580-520

Machinability

Machining practice is similar to that for other Aluminium castings alloys containing Silicon. Whilst there is not the tendency to drag associated with high silicon alloys such as LM6, tool wear is more rapid than in the case of alloys containing relatively small amounts of Silicon. The use of carbide-tipped tools is recommended but a good finish can be obtained with high speed tools. Lower alloy steel tools may be used, provided they are frequently reground to maintain a sharp cutting edge. A cutting lubricant and coolant should be employed.

Corrosion resistance

Resistance to attack under normal atmospheric conditions is similar to that of alloy LM4, i.e. fairly good. In marine atmospheres, or under other severe conditions, castings should be protected by painting.

Anodising

Anodising treatment by either the chromic or sulphuric acid process produces an anodic film grey in colour. The surfaces of die castings are not generally suitable for decorative anodising. Anodising would be necessary if this alloy is for use in a corrosive environment.

Applications and General Notes

LM24 is essentially a pressure die casting alloy, for which it has excellent casting characteristics and is generally a little simpler to die cast than the high Silicon containing alloys. Die castings in LM24 are suitable for most engineering applications and have an advantage over an alloy such as LM6 when maximum mechanical properties are required. In practice LM6 is preferred to LM24 only for die castings in which a high resistance to corrosion is the primary requirement. LM24 has poor weldability and brazeability. For the vast majority of die castings, the alloys LM2 and LM24 are equally suitable. Castings in LM24 are not usually heat treated.