



trimal[®]-04

High pressure die casting alloy for high ductility and energy absorption capability in as-cast state

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The **trimal[®]-04** (AlSi10MnMg) is a recycling alloy with reduced iron content, which makes it highly ductile in its as-cast state. The alloy composition gives the material a good energy absorption capability. The alloy is produced at the TRIMET Aluminium SE recycling plants in Gelsenkirchen and Harzgerode using selected scrap.

The outstanding castability and mold-filling behavior of the **trimal[®]-04** alloy is primarily due to a silicon content of approx. ten percent by weight. Due to the reduced iron content a defined addition of manganese reliably prevents sticking to the die and provides a long die life. The strength and hardness are controlled by the magnesium content. In addition to the above-mentioned measures, a modification of the eutectic silicon with strontium makes the material more ductile and gives it a good energy absorption capability in as-cast state.

Chemical composition

%	Si	Fe	Cu	Mn	Mg	Ni
Min.	9,0			0,4	0,15	
Max.	11,00	0,3	0,1	0,8	0,30	0,10

%	Zn	Pb	Ti	Sr	o. each	o. total
Min.				modified		
Max.	0,10	0,10	0,15		0,05	0,2

Mechanical properties

The following mechanical properties were measured on oil pans. The elongation figures are related to the bottom area with a medium wall thickness of 2.5 mm. The hardness was measured in the flange (wall thickness of 6.5 mm). Partial T0 heat treatment in the bottom area is possible to increase the ductility. The figures should be viewed as reference values for this alloy using the high pressure die casting process.

Temper	Yield Strength Rp0.2 MPa	Tensile Strength Rm, MPa	Elongation A %	Hardness HB
F	> 130	> 290	> 7	> 75
T0	> 85	> 190	>10	> 75

Applications

trimal[®]-04 is suitable for die casting parts which have to possess good elongation and energy absorption capabilities in the as-cast state. Possible applications include ductile oil pans, covers, or housing components with similar requirements.



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