

trimal<sup>®</sup>-37



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Alloy for ductile applications

**trimet**

# trimal<sup>®</sup>-37

## Alloy for ductile applications

**trimal<sup>®</sup>-37** (AlSi9Mn) alloy was developed specially for the high pressure die casting process. In comparison to common die cast alloys, it has excellent ductility, which is evident from its high elongation and good energy absorption capability. As a result, **trimal<sup>®</sup>-37** is particularly suited for applications that require ductility and are not intended for heat treatment.

**trimal<sup>®</sup>-37** has a silicon content of about 9% and is thus ideally suited for casting complicated structures. The low iron content in **trimal<sup>®</sup>-37** prevents the formation of coarse intermetallic phases; manganese prevents sticking to the die. By modification with strontium, the structure of the eutectic silicon is so fine that it cannot be observed under a light-optical microscope even with a magnification of 1000x.

Copper, zircon and manganese create the necessary strength at room temperature and provide good heat stability at higher temperatures. The silicon can be globulized through short annealing that is performed below the blister temperature, thus increasing the ductility even further. The low magnesium content of less than 0.08% prevents the material from short or long-term aging.

### Chemical composition in weight%

%	Si	Fe	Cu	Mn	Mg	Mo
Min.	8.5		0.02	0.3		
Max.	10.5	0.15	0.05	0.6	0.08	0.3

%	Zr	Zn	Ti	V	Other	Balance
Min.	0.1			0.03		
Max.	0.3	0.05	0.06	0.10	0.15	Al

### Mechanical properties

The following mechanical properties were determined using real parts and are considered to be reference values for the use of the alloy.

Temper	Young's modulus GPa	Yield strength Rp0.2 MPa	Tensile Strength Rm MPa	Elongation A %	Hardness HB
F	65 - 75	120 - 140	250 - 290	8 - 15	80 - 90
O	65 - 75	100 - 120	200 - 240	10 - 18	65 - 75

Measured with a wall thickness of 2 – 3 mm

### Short- and longterm heat stability

Temper	Young's modulus GPa	Rp0.2 MPa	Rm MPa	A %
205°C - 60min.	65	134	280	10
150°C - 1000h	65	135	250	11

Measured with a wall thickness of 2 – 3 mm

The alloy has been modified with strontium

### Summary

**trimal<sup>®</sup>-37** die cast alloy

- has excellent cast and die-filling behavior
- can be easily removed from the die
- has high heat stability
- has high ductility in combination with good strength
- has good corrosion resistance
- is weldable with all common welding methods.



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