



Magsimal[®]-59 *Of filigree lightness, but extremely resilient*

Ductile HPDC alloy with excellent mechanical and dynamic properties of thin wall thicknesses at as cast state F.

Excellent mechanical properties are achieved already at as cast state F:

Wall thickness	0.2% YTS	UTS	Elongation A
2 - 4 mm:	160 - 220 MPa	310 - 340 MPa	12 - 18%
4 - 6 mm:	140 - 170 MPa	250 - 320 MPa	9 - 14%
6 - 12 mm:	120 - 145 MPa	220 - 260 MPa	8 - 12%

- **Superior dynamic properties.**
Very high fatigue strength = bending fatigue strength 5% = 100 MPa.
- **No T5, T4, T6 and T7 heat treatment required.**
Additional costs for heat treatment of a usual AlSi10Mg alloy could be saved.
- **No blistering and no distortions on casted parts.**
Costly straightening processes after a heat treatment can be avoided.
- **Advanced application range for die casting work pieces in the as cast state F.**
- **Very suitable for applications in vehicle constructions.**
Excellent energy absorption capacity in the event of a vehicle crash is given.
- **Substitution of complex steel sheet constructions in vehicle construction is possible.**
Significant cost and weight reductions are realizable.
- **Substitution of aluminium forgings and magnesium HPDC in vehicle construction is representable.**
Cost reduction potentials through less costly die casting processes, elimination of potential corrosion problems.
- **Very good castable HPDC alloy** for thin-walled castings from 2.0 mm wall thickness.
- **Excellent machinable and weldable.**
- **Excellent corrosion resistance:** Coatings are often unnecessary.
- **Excellent resistance to sea water atmosphere.**
- **Excellent resistance to stress corrosion cracking.**
- Well suitable for self-riveted joints, clinched joints, crimped joints and adhesive bonds.
- **Further increase in ductility by up to 20% by single-stage heat treatment is possible:**
(depending on the quality of cast pieces and cast parts wall thickness)
State O = annealing 350 °C to 380 °C / 30 Min.
- **Increasing the strength (yield strength) by up to 40% by T5 heat treatment is representable:** (depending on the quality of cast pieces and cast parts wall thickness)
State T5 = water quenching / annealing 250 °C / 60 Min.



DISCLAIMER:

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New alloy developments made as technology progresses after printing are included in later versions.

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