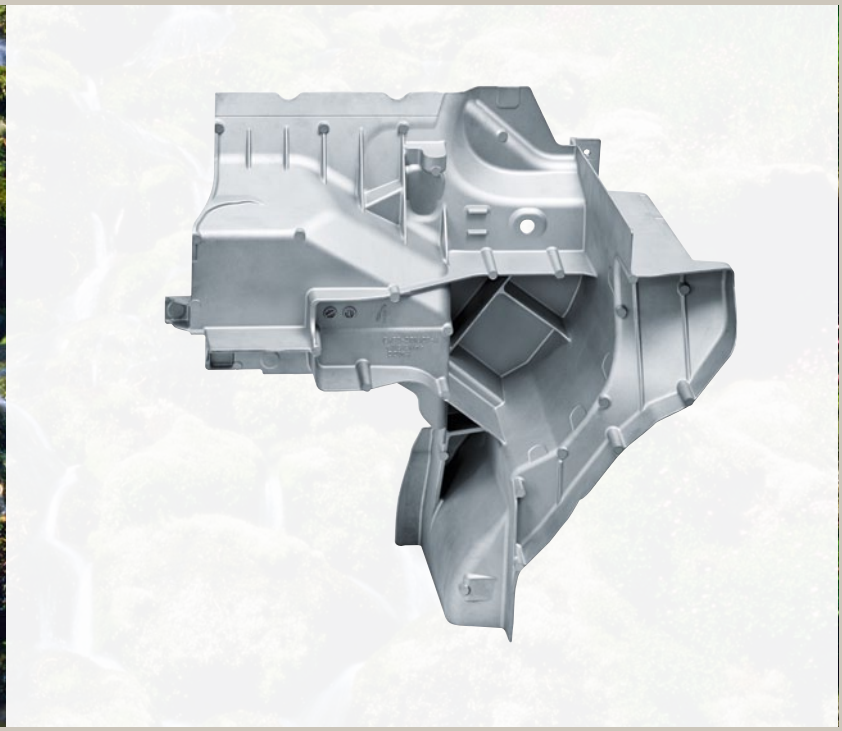
Silafont®-38

An infinite wealth of properties



The HPDC alloy Silafont-38 was developed by RHEIN-FELDEN ALLOYS to further increase yield strength in compare to Silafont-36 without significant change in ductility.

Even with an air cooling to lower distorsion the complex alloyed Silafont-38 reaches 180 MPa yield strength.

Besides these moderate cooling rates it is possible to cool down with water after the solutionizing treatment to achive highest strength.

Additionally Silafont-38 has also following properties required for the pressure die casting process:

- excellent castability even with varying wall thicknesses
- no sticking to the die; the low-iron Silafont-38 is there for alloyed with manganese and strontium
- excellent machinability

In more and more applications, mainly in car manufacturing, other properties of Silafont-36 are of increasing importance:

- very good corrosion resistance due to specially balanced composition
- high fatigue strength and crash performance due to reduced effect of disturbing Fe and Si phases
- excellent weldability for aluminium profil-cast designs
- suitable for self-piercing riveting

Silafont®-38 [AlSi9MnMgZn]

Areas of use

Weight reduced car body structures for vehicles, mechanical engineering

Distinguishing charcteristics

Casting alloy with very high mechanical properties after T6 treatment including a air quenching for reduced distorsion. Very high yield strenght combined with high values of elongation for crash relevant structural die castings. Silafont-38 substitutes sheet designs in vehicle design and offers high cost and weight reduction.

Alloy denomination

Chemical denomination: AlSi9MnMgZn

Chemical composition [% of mass]

[%]	Si	Fe	Cu	Mn	Mg	Zn	Ti	Sr	others
min.	**8.0**		**0.1**	**0.5**	**0.1**	**0.1**		**0.010**	
max.	**10.0**	0.15	**0.4**	**0.8**	**0.5**	**0.4**	**0.15**	**0.02**	0.10

Mechanical properties

Casting method	Treatment state	Quenching cooling	YTS $R_{p0.2}$ [MPa]	UTS R_m [MPa]	Elongation A [%]
HPDC	F		140–160	270–300	3–7
HPDC	T6	Water	230–270	300–345	6–9
HPDC	T6	Air	180–200	250–275	8–10

Note chapter "Technical Information"!

Processing properties compared to standard pressure die casting alloys

Alloy type	Silafont-38	Silafont-36	Silafont-09
Sticking tendency	low	low	low
Die life	100%	100%	100%
Linear shrinkage	0.4–0.6%	0.4–0.6%	0.4–0.6%