



Alcoa Specialty Alloys: **370 EZCast™**

Optimizing high-pressure thin wall die casting performance

370 EZCast alloys are the result of several decades of development in the area of high-pressure die castings (HPDC). This effort initially yielded the alloys used for the all-aluminum space frame in the Audi A8 and the Ferrari 360 Modena. Ongoing development has produced a new world of crash-resistant structural components for automotive applications.

370 EZCast is highly customizable, achieving a wide range of mechanical properties by optimizing chemistry and heat treatment practices for specific applications.

Engine cradles | Cross-members | Side doors

Radiator mounting | Engine mounts

Sub-frames | Frame Nodes | Shock towers and tunnels

The innovation behind casting thin wall HPDC components

Extensive experimental measurements and theoretical considerations led to a proprietary computer model designed to predict an alloy's die soldering properties (i.e., die sticking). This model allows Alcoa to accurately optimize the alloy composition to deliver quality components with reduced die wear, while also producing a higher, more consistent elongation in castings for desired strength levels.

370 EZCast™ Technical Data

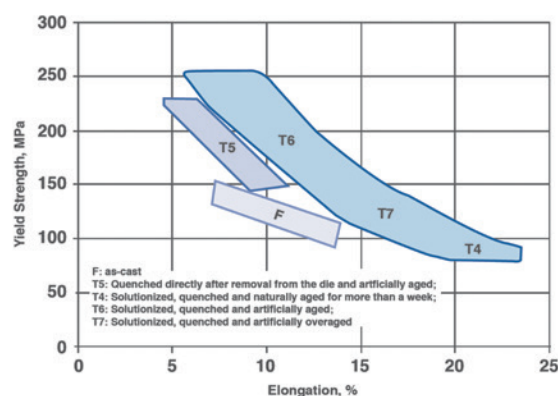
CHEMICAL COMPOSITION (all in wt%. Single values indicate maximum content)

Si	Fe	Mn	Mg	Ti	Sr	Others Each	Others Total
6.0-9.0	0.20	0.10-0.8	0.15-0.8	0.20	0.025	0.05	0.15

MECHANICAL PROPERTIES*

Temper	Yield Strength (MPa)	UTS (MPa)	Elongation (%)
F	105-140	250-280	7.5-13
T5	150-220	245-310	5.5-10
T4	100-120	205-235	18-23
T6	135-250	195-300	7-16

*The achievable mechanical properties are strongly dependent on the casting process used. The table and plot refer to typical properties obtained in thin-walled high-pressure vacuum die cast (HPDC) components.



PHYSICAL PROPERTIES (TYPICAL VALUES)

Density (g/cm ³)	Young's Modulus (GPa)	Coeff. Of Thermal Expansion (CTE) 20-300°C (mm/m/K)	Thermal Conductivity [W/(mK)]	Solidification Range (°C)
2.64	70-74	21	135-170	608-552

OTHER PROPERTIES

- Good castability, reduced die sticking
- Excellent weldability
- Excellent corrosion resistance