Alcoa Specialty Alloys:
C891F EZCastPlus™

C891F is part of the EZCast™ alloy family. It is a high-pressure die casting (HPDC) alloy with exceptional strength that maintains optimal mechanical properties for thin-wall structures and weldable castings, enhancing further lightweighting for high-demanding structural applications.

Advantages of the C891F EZCastPlus™ Alloy

- Superior strength, with yield strength 20% higher than competitive alloys.
- Outstanding fatigue performance, improved more than 20% versus competitive alloys.
- High fluidity makes it ideal for high-pressure die casting (HPDC) applications.
- Strong resistance to hot tearing and die soldering, improving casting reliability.
- Very good corrosion resistance and machinability.
- Engineered for efficient and precise machining, reducing production time and tool wear.

AC891F EZCastPlus™ Technical Data

CHEMICAL COMPOSITION*

Si	Fe	Mn	Mg	Ti	Others
7.0 - 10.0	<0.2	0.4 - 1.0	0.2 - 0.7	<0.5	0.05 - 0.5

*all in wt%. Single values indicate maximum content

Megacastings | Battery boxes | Shock towers | Radiator mounting
Connection nodes | Sub-frames | Engine cradles | Cross members

Physical and Mechanical Characterization of C891F EZCastPlus™

PHYSICAL PROPERTIES (TYPICAL VALUES)

Density (g/cm^3)	Young's Modulus (GPa)	Coeff. Of Thermal Expansion (CTE) 20-300°C (µm/m/K)	Thermal Conductivity [W/(mK)]	Solidification Range (°C)
2.67	70 - 74	21.5	135- 170	600 - 510

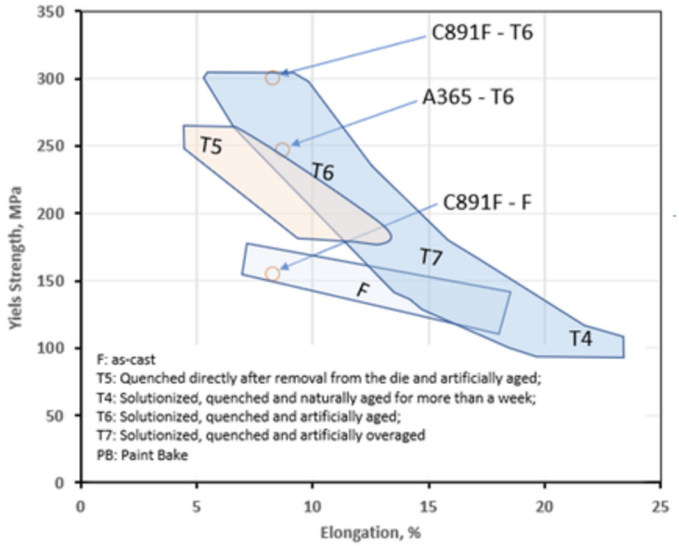
MECHANICAL PROPERTIES

All properties below reflect cooling after injection (water quench)

	Ultimate Tensile Strength, Mpa	Yield Strength, Mpa	Elongation, %
C891F - F	288	155	8.3
C891F - T6	357	300	8.3
A365[1] - T6	309	247	8.7

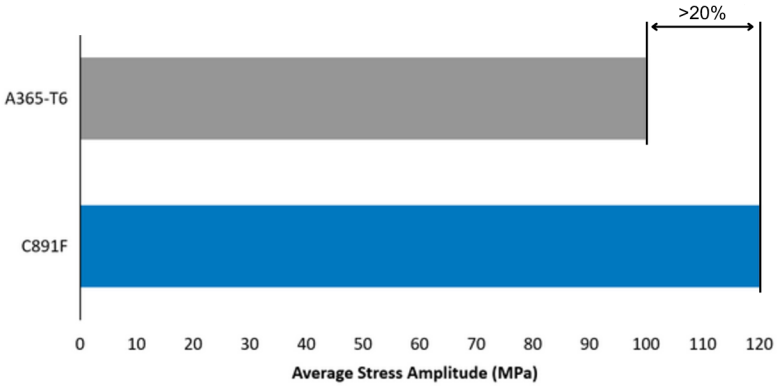
** The achievable mechanical properties are strongly dependent on the casting process used. The table and plot refer to typical properties obtained in thin-walled high-pressure vacuum die cast (HPDC) components.*

1) A365 (AlSi10MnMg).



FATIGUE STRENGTH

C891F EZCastPlus™ shows improved fatigue strength vs. A3651-T6 alloy.



**Axial fatigue samples machined in vacuum HPDC brackets with wall thickness 3mm. Testing at room temperature with R-ratio -1, operating at 50 Hz frequency for 10,000,000 cycles.

1) A365 (AlSi10MnMg).

WELDABILITY

High quality weld between C891F EZCastPlus™ cast node and 6082 extrusion tube sheet.

Scan the QR code to learn more about the full range of Alcoa special alloys and applications.