

SupremEX® 620XF Alloy

A high-quality aerospace grade aluminum alloy (6061B) reinforced with 20 vol.% silicon carbide particles which produces a metal matrix composite (MMC). 620XF is manufactured via a powder metallurgy route using a mechanical alloying process to ensure a homogeneous reinforcement distribution. This provides a refined grain structure enhancing mechanical properties. The MMC is heat treatable, offering high strength and modulus for structural applications, and is available in billet, forged and extruded forms. Designation: – 6061B/SiC/20p (0.7µm).

Typical Physical Properties

Density g/cm ³ (lb/in ³)	Elastic Modulus GPa (msi)	Specific Stiffness GPa/g/cm ³	Poisson's Ratio
2.80 (0.101)	103 (14.9)	36	0.3

Thermal Conductivity W/m ² K (BTU/hr. ft. °F)	Thermal Expansion ppm/°C (ppm/°F) at 25 °C	Solidus °C (°F)	Specific Heat Capacity J/g/°C (BTU/lb/°F)
150 (87)	17 (9.4)	570 (1058)	0.850 (0.203)

Typical Mechanical Properties

Product Form	Billet	Forged	Precision Extrusion	
Heat Treatment	T6 CWQ [†]	T6 CWQ [†]	T5	T6 CWQ [†]
R _{p0.2} MPa (ksi)	430 (62.4)	410 (59.4)	240 (34.8)	380 (55.1)
R _m MPa (ksi)	500 (72.5)	490 (71.1)	360 (52.2)	470 (68.2)
Elongation to Failure %	4	7	8	7

*Data is for information purposes only; it does not constitute a guarantee.

[†]CWQ refers to "cold water quench."

620XF Alloy Advantages

- Precision section extrusion using standard dies
- Reduced wall thickness offering weight saving
- High stiffness and strength
- Robust and ductile for damage resistance
- Good corrosion and fatigue performance
- Thermally stable

Disclaimer:

Only the buyer can determine the appropriateness of any processing practice, end-product or application. Materion does not make any warranty regarding its recommendations, the suitability of Materion's product, or its processing suggestions for buyer's end product, application or equipment.

The properties presented on this data sheet are for reference purposes only, intended only to initiate the material selection process. They do not constitute, nor are they intended to constitute, a material specification. Material will be produced to one of the applicable industry standards, if any, listed in the Industry Standards and Specification section.

Actual properties may vary by thickness and/or part number. Please contact your local sales engineer for detailed properties to be used in simulation.

Any properties marked as preliminary are subject to change at any time as the manufacturing process is further refined.