

## SupremEX® 640XA

A high quality aerospace grade aluminum alloy (6061B) reinforced with 40 vol.% silicon carbide particles which produce a metal matrix composite (MMC). **640XA** is manufactured via a powder metallurgy route using a mechanical alloying process to ensure a homogeneous reinforcement distribution, providing 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/40p (3µm).

### 640XA ADVANTAGES

- Weight saving
- Static strength which compares with high strength Al alloys
- Increased component stiffness
- High fatigue resistance
- Hardness, wear resistance & low friction characteristics
- Good machinability using conventional techniques
- Homogenous stable microstructure

### PRODUCT FORMS

- Billet / Shaped Billet (DPT)
- Forgings
- Near-net-shape forgings
- Plate
- Extrusions

### APPLICATIONS

- Very high specific stiffness applications
- Optics
- Thermal Stability
- Low CTE applications

### PHYSICAL PROPERTIES

Density g/cm <sup>3</sup> (lbs/in <sup>3</sup> )	2.9 (0.105)	Thermal Conductivity @ 25°C W/m <sup>2</sup> K (BTU/hr.ft. <sup>2</sup> °F)	130 (75)
Elastic Modulus GPa (msi)	140 (20.3)	Thermal Expansion @ 25°C ppm/°C (ppm/°F)	13 (7.4)
Specific Stiffness GPa/g/cm <sup>3</sup>	48	Solidus °C (°F)	570 (1058)
Poisson's Ratio	0.3	Specific Heat Capacity J/g°C (BTU/lb/°F)	0.800 (0.191)

### TYPICAL MECHANICAL PROPERTIES

Material	640XA			
Product Form	Billet		Forged Plate	
Heat Treatment	T6 CWQ	T6 PGQ	T6 PGQ	T7
R <sub>p0.2</sub> MPa (ksi)	490 (71.1)	450 (65.3)	400 (58.0)	350 (50.8)
R <sub>m</sub> MPa (ksi)	560 (81.2)	540 (78.3)	530 (76.9)	470 (68.2)
Elongation to Failure %	1.0	1.3	2.0	2.0

Data is for information purposes only, it does not constitute a guarantee. CWQ refers to Cold Water Quench and PGQ refers to Poly-Glycol Quench.