

## AyontEX 4632 ALLOY

AyontEX™ 4632 alloy is a high-quality hypereutectic aluminum-silicon alloy. This lightweight alloy is manufactured by a powder metallurgy method to ensure a refined grain structure with homogeneous distribution and enhanced mechanical properties. AyontEX 4632 material is used to replace conventional aluminum alloys such as AA4032 and AA2618 in a range of components from automotive to aerospace. It aids in weight reduction and improves stability at elevated temperatures.

### AyontEX 4632 ADVANTAGES

- Weight-saving
- Increased modulus versus conventional aluminum alloys
- High fatigue resistance
- Low CTE compared to conventional aluminum alloys
- Lightweight CTE match to copper alloys
- Hardness, wear resistance and low friction characteristics
- Good machinability using conventional techniques
- Refined, homogeneous and stable microstructure

### APPLICATIONS

- Heat sinks and thermal management for defense and commercial applications
- High-stability aerospace/space structures
- Automotive pistons, engine blocks and suspension components
- Replacement for conventional aluminum alloys with low CTE or higher modulus requirements

### Typical Physical Properties

Elastic Modulus	Specific Stiffness	Poisson's Ratio	Density	Thermal Expansion Coefficient (20-100°C)	Thermal Conductivity (25°C)	Melting Point (Solidus)	Specific Heat Capacity
13,600 ksi 94 GPa	140 msi/lb/in <sup>3</sup> 36 GPa/g/cm <sup>3</sup>	0.3	0.097 lb/in <sup>3</sup> 2.7 g/cm <sup>3</sup>	9.5 x 10 <sup>-6</sup> in/in °F 17.1 x 10 <sup>-6</sup> m/m °C	82 BTU/hr ft °F 141 W/m °C	1018°F 548°C	0.20 BTU/lb °F 0.84 J/g °C

### Typical Mechanical Properties

Product Form	Heat Treatment	R <sub>p0.2</sub> Mpa (ksi)	R <sub>m</sub> MPa (ksi)	Elongation to Failure
Billet	T6 CWQ	390 (56.5)	450 (65.3)	1
	T6 PGQ	335 (48.6)	410 (59.5)	1
Forged Plate	T6 CWQ	360 (52.2)	435 (63.0)	2
Extrusion	T1	165 (24.0)	260 (37.7)	5
	T6 PGQ	330 (47.9)	415 (60.2)	2

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.

### Forms Available

AyontEX 4632 is available in billet/shaped HIP consolidated forms, forged plates and shapes, and extrusions.

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.

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