834 Titanium

Smiths High Performance

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Enhancing Performance

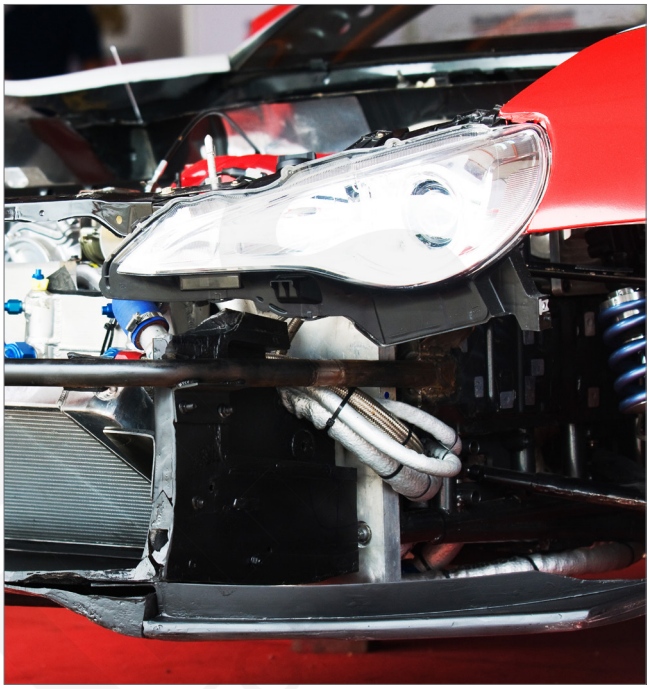
834 titanium is an engineering material which takes performance to another level.

Designed originally for use in the aerospace sector, 834 titanium is a high-performance alloy also highly suitable for motorsport applications. Our product offers improved temperature capability when compared to 6242 titanium.

Titanium is a product that can be modified by alloying to offer different performance characteristics.

In the case of **834 titanium** (near-alpha alloy), small amounts of beta-phase stabilisers; Niobium, Molybdenum and Silicon and increased alpha stabilisers; Aluminium, Zirconium and Carbon, introduced during the alloying process change the performance characteristics of the material.

Increases in tensile strength, creep resistance and fatigue resistance are the result.



Strengthening:

834 titanium undergoes solid-solution and precipitation strengthening, creating a product with superior performance capabilities compared to 6242 titanium alloy.

During production, the material also benefits from heat treatment high in the alpha plus beta phase field. Resulting features include increased creep resistance (up to 110° F (600° C)) and an overall increase in tensile strength. Fatigue resistance is also much improved when compared to 6242 titanium.

Alloy properties are maintained to a reasonable level up to bar thicknesses of 75mm (3 inches) - in greater diameters, a slight reduction in overall strength may be observed.

Applications:

- Exhaust valves
- High-performance racing engine parts
- Compressor discs
- Elevated temperature applications

Other Characteristics

834 titanium alloy is weldable using well-established techniques specific to titanium products.

About Smiths High Performance

Smiths High Performance is a leading stockholder and supplier of high-performance engineering materials. We are material supply chain partners supporting **high-technology market sectors**.

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Further technical data available on the reverse of this Datasheet

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Chemical Composition (weight,%)

	Min	Max
Aluminium	5.50	6.10
Tin	3.00	5.00
Zirconium	3.00	5.00
Niobium	0.50	1.00
Molybdenum	0.25	0.75
Silicon	0.20	0.60
Carbon	0.04	0.08
Iron	-	0.05
Oxygen	0.075	0.15
Nitrogen	-	0.03
Hydrogen	-	0.006
Residual elements, each	-	0.05
Residual elements, total	-	0.20
Titanium	Balance	

Mechanical Properties (minimum)

Test Temperature	68°F (20°C)	1112°F (600°C)
UTS ksi (MPa)	149 (1030)	85 (585)
0.2% YS ksi (MPa)	132 (910)	65 (450)
Elongation 5D %, in	6	9
Reduction Area %	15	20
Notched Tensile K_t=3	1.45 x actual tensile strength	-
Fracture Toughness K_{1c} ksi√in (MPa√m)	40 (45)	-

Physical Properties

Property	Values	
Density	0.164lb in^{-3}	4.55g cm^3
Beta Transus	1913°F	1045°C
Thermal Conductivity*	4.08 Btu $hr^{-1}ft^{-1}°F^{-1}$	7.06 W $m^{-1}K^{-1}$
Magnetic Permeability	Nonmagnetic	
Mean Coefficient of Thermal Expansion		
68-392°F (20-200°C)	5.9 x 10^{-6}in $in^{-1}°F^{-1}$	10.6 x 10^{-6}in $in^{-1}°C^{-1}$
68-752°F (20-400°C)	6.1 x 10^{-6}in $in^{-1}°F^{-1}$	10.9 x 10^{-6}in $in^{-1}°C^{-1}$
68-1112°F (20-600°C)	6.1 x 10^{-6}in $in^{-1}°F^{-1}$	10.9 x 10^{-6}in $in^{-1}°C^{-1}$
Elastic Modulus*	~17.4Msi	~120 GPa

* Typical values at room temperature of about 68-78°F (20-25°C)

Availability

We stock 834 titanium in bar and forgings

...where performance matters...

When you purchase high-performance materials from **Smiths High Performance**, you will join some of the biggest and best global engineering companies. We are a Tier 1 supply chain partner to the world's leading motorsport companies. Our unique business structure and ethos allow us to offer services otherwise unavailable in this market sector.

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