4032 Aluminium Alloy

Product Data Sheet

Motorsport Pistons

4032 Aluminium has numerous motorsport applications including racing engine pistons

4032 aluminium is a wrought alloy product which offers superior service in both low and high-temperature. Motorsport applications for 4032 include racing pistons, engines components and chassis components.

The addition of silicon increases the strength of the alloy at the expense of overall ductility. The addition of nickel reduces thermal expansion while increasing mechanical strength, although susceptibility to corrosive pitting is possible. 4032 offers the highest tensile strength of all aluminium alloys in the 4000 series.

The grade offers fair to good machinability, and we recommend an oil lubricant when the material is machined. Alloy 4032 is weldable using arc welding or inert gas methods.

Delivery Condition

We supply 4032 aluminium alloy in the F temper. Other tempers are available on request.

Benefits:

- Strongest 4000 series aluminium
- Fair to good machinability
- Can be welded
- Can be used in low and high-temperature applications
- More durable and lighter than 2618A

Typical Applications:

- Racing pistons
- Engine components
- Chassis components

About Smiths High Performance

Smiths High Performance is a leading stockholder and supplier of high-performance engineering materials to the global motorsport sector. We are supply partners in a range of specialist motorsport markets including **Formula 1, Formula E, NASCAR, MOTO GP, WEC & WRC.**

Further technical data available on the reverse of this Datasheet

4032 Aluminium Alloy

Chemical Composition

Aluminium	Balance
Chromium	0.1 max
Copper	0.5 - 1.3
Iron	1 max
Magnesium	0.8 - 1.3
Nickel	0.5 - 1.3
Remainder Each	0.05 max
Remainder Total	0.15 max
Silicon	11 - 13.5
Zinc	0.25 max

Physical Characteristics

Density (lb / cu. in.)	0.097
Specific Gravity	2.68
Melting Point (Deg F)	995
Poissons Ratio	0.33
Modulus of Elasticity Tension	11.4
Modulus of Elasticity Torsion	4.3

Comparisons with 2618A

2618A with a lower silicon content offers greater malleability, which is of benefit under high load and high-stress applications. However, with reduced silicon content, linear expansion is far greater than 4032, and therefore more clearance will be required if used in piston design.

4032 has a much higher silicon content (around 12%) which makes manufactured pistons more durable and lighter than if produced in 2618A. The high silicon content reduces overall ductility – this reduces the resistance of the piston to high impact loads. Curiously to the naked eye, it is challenging to differentiate between the two products, but each offers unique benefits.

Availability

We stock 4032 aluminium in bar and tube

...where performance matters...

When you purchase high-performance materials from **Smiths High Performance**, you will be joining 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 allows us to offer services which are otherwise unavailable in this market sector.

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