

Technical Data: Cast Aluminum A356

Product Description

Precision casting, particularly aluminum die casting, finds A356 a preferred material due to its excellent castability. Its properties allow for intricate designs, precise detailing, and fine surface finishes in the manufactured parts. Die casting, utilizing A356, is ideal for creating complex shapes, thin walls, and intricate components, making it a top choice in the automotive, lighting, and consumer electronics industries. Sand casting with A356 is also prevalent, especially in applications requiring cost-effective production of more significant parts or components. Its fluidity and low shrinkage characteristics make it suitable for creating larger castings with intricate details, making it popular in producing engine components, automotive parts, and structural components.

Gravity casting, another method using A356, is favored for its simplicity and cost-effectiveness in producing high-quality parts. This method suits larger production runs where precision and fine details might be less critical. It finds applications in marine, sporting goods, and general machinery industries.



Chemical Comparison of Cast Aluminum A356

Element	Aluminum (Al)	Silicon (Si)	Magnesium (Mg)	Copper (Cu)	Iron (Fe)	Manganese (Mn)	Zinc (Zn)	Titanium (Ti)	Other Elements
Composition (%)	91.0 - 92.6	6.5 - 7.5	0.20 - 0.35	0.20 - 0.35	0.10 - 0.35	0.05 - 0.20	0.05 - 0.20	0.05 - 0.20	≤ 0.15

Physical and Mechanical Properties of Cast Aluminum A356

Property	Tensile Strength	Yield Strength	Hardness (Brinell)	Shear Strength	Impact Strength	Fatigue Strength	Thermal Conductivity	Density	Melting Range
Value (Typical)	280 MPa	240 MPa	75 HB	170 MPa	55 J	130 MPa	159 W/m·K	2.68 g/cm ³	570-640°C

Typical Applications of Aluminum A356 Castings

AISI 1010 (Plain Carbon steel, Low Carbon Steel) Investment Castings



AISI 1010, a type of plain carbon steel known for its low carbon content, offers distinct advantages when utilized in investment casting processes. Its key features lie in its exceptional formability and cost-effectiveness. This steel grade can be easily molded into intricate and precise shapes, making it an ideal choice for investment casting where intricate patterns and designs are crucial. The low carbon content minimizes the risk of cracking during solidification, ensuring a high-quality final product.

In investment casting applications within industries such as Consumer Electronics and telecommunications, AISI 1010 is often chosen for its ability to create intricate components with remarkable precision. This precision is particularly vital in manufacturing components for devices like smartphones and communication equipment, where the exacting tolerances of AISI 1010 enhance product performance and quality. Furthermore, its cost-effectiveness is a significant advantage, making it an attractive choice for investment casting projects in these industries.

Note

The above data are reference material science data. This data reference is not binding and is not considered as authoritative test data. If your material requirements are extremely precise, please contact our material engineers. Tel | +86 18926788217 | Web | www.newayprecision.com | Contact Neway



Cast Aluminum A356

Aluminum Alloy for Casting

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Aluminum A356 Die Casting LED Lighting Heat Sinks

Aluminum A356 die castings are preferred for LED lighting heat sinks primarily due to their exceptional thermal conductivity. The alloy efficiently conducts heat away from the LED components, preventing overheating and ensuring optimal performance. It is crucial in LED applications where heat dissipation is vital for maintaining the longevity and efficiency of the lighting system.

Furthermore, the lightweight and formable nature of the A356 makes it ideal for intricate heat sink designs. The die-casting process allows for the creating of complex geometries that enhance the surface area and promote efficient heat dissipation. This lightweight characteristic is advantageous for LED fixtures, as it contributes to the overall weight reduction of lighting systems.

In addition to its thermal properties, the corrosion resistance of A356 ensures the durability of LED heat sinks in diverse environmental conditions. LED lighting fixtures often operate in various settings, and the ability of A356 to withstand corrosion helps maintain the heat sink's functionality and aesthetics over an extended lifespan. The cost-effectiveness of die casting with A356 further reinforces its suitability for high-volume production of LED heat sinks, making it a pragmatic choice for manufacturers seeking efficiency without compromising performance.



Aluminum A356 Die Casting Electric Device Housings



Aluminum A356 die castings are well-suited for electric device housings owing to a combination of advantageous properties that meet the specific requirements of such applications. Firstly, A356 exhibits excellent thermal conductivity, facilitating the efficient dissipation of heat generated by electronic components within the housing. It is crucial for preventing overheating and maintaining the optimal operating temperature of sensitive electrical devices.

Moreover, the die-casting process allows for creating intricate and precisely detailed housing designs. A356's formability and ability to fill complex molds enable the production of housings with specific features such as heat sinks, ventilation channels, and customized shapes. This versatility in design not only enhances the aesthetics of the electric device but also contributes to effective heat management.

Aluminum A356 Die Casting Automotive Engine Heat Sinks

Aluminum A356 die castings offer optimal solutions for automotive engine heat sinks due to their exceptional properties in precision casting. Precision casting methods, including aluminum die casting, are crucial in manufacturing components like heat sinks, ensuring efficiency and durability.

Precision casting, such as aluminum die casting, provides intricate and complex shapes with high dimensional accuracy. It is particularly beneficial for heat sinks in automotive engines, where intricate designs are essential for effective heat dissipation. The A356 aluminum alloy, known for its excellent castability, corrosion resistance, and high strength, further enhances the suitability of die castings for this purpose. In the context of precision casting, aluminum die castings offer a streamlined production process that facilitates the creation of intricately designed heat sinks with reduced machining needs. It contributes to cost-effectiveness and aligns with Neway's commitment to providing one-stop services for custom parts.



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