

Magnesium Alloys Die Casting

Magnesium Alloy for Die Casting

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Technical Data: Cast Magnesium Alloys

Product Description

Die-cast magnesium alloys are known for their lightweight yet robust properties, making them popular in various applications. Their key features include high strength-to-weight ratios, excellent dimensional stability, and outstanding corrosion resistance. These qualities make magnesium alloys suitable for components in the automotive industry, such as lightweight engine parts and structural components that enhance fuel efficiency.

Moreover, the aerospace sector benefits from magnesium die-cast parts because they can withstand high-temperature conditions while maintaining precision. Magnesium alloys offer biocompatibility in medical devices and are used for lightweight, durable medical instruments. Additionally, magnesium die-casting is utilized in the electronics industry for lightweight yet sturdy component electronics and telecommunications equipment. Its versatility extends to power tools, where strength and low weight are crucial for ease of use and durability, making die-cast magnesium alloys a popular choice across various industries.



Chemical Composition

Alloy Grade	Aluminum (Al)	Zinc (Zn)	Manganese (Mn)	Copper (Cu)	Silicon (Si)	Other Elements
AZ91D	8.5-9.5	0.45-0.9	0.15-0.50	0.0001-0.005	0.1 max	0.001 max
AM60B	5.7-6.7	0.15 max	0.17-0.25	0.003 max	0.15 max	0.30 max
AZ63A	5.3-6.7	2.5-3.5	0.15 max	0.03 max	0.10 max	0.30 max
AM50A	4.5-5.5	0.2 max	0.13-0.3	0.001 max	0.08 max	0.30 max

Physical and Mechanical

Grade	Tensile Strength	Yield Strength	Hardness	Shear Strength	Impact Strength	Fatigue Strength	Thermal Conductivity	Density	Melting Range
	(MPa)	(MPa)	(Brinell)	(MPa)	(J)	(MPa)	(W/m·K)	(g/cm ³)	(°C)
AZ91D	230	140	75	150	60	80	60	1.81	510-595
AM60B	195	95	65	100	30	60	48	1.81	540-640
AZ63A	290	175	85	185	70	95	76	1.81	580-690
AM50A	165	85	55	75	25	50	42	1.81	510-580

Note

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Typical Properties

AZ91D Die Casting



AZ91D (MgAl9Zn1(A)) or AZ91, a well-known magnesium alloy in die casting. This alloy boasts a remarkable combination of mechanical properties, making it a popular choice in various industries. Notably, it exhibits high strength and excellent corrosion resistance, rendering it particularly suitable for applications where lightweight yet robust components are imperative, such as in the automotive industry. In die casting, AZ91D stands out for its lightweight nature and exceptional strength. Its key features include a favorable strength-to-weight ratio, which is vital for achieving fuel efficiency in automotive applications. Additionally, it offers excellent corrosion resistance, ensuring longevity and durability in harsh environmental conditions. These attributes make AZ91D an ideal choice for producing components like engine parts, transmission housings, and other structural elements in the automotive sector, where maintaining structural integrity while reducing weight is of utmost importance.

AM60B Die Casting

AM60B, a well-regarded magnesium alloy in die casting, is known by its aliases, including "AM60" and "MgAl6Zn." This alloy is distinguished by its exceptional castability, impact resistance, and strength, making it a sought-after choice for various applications.

In die casting, AM60B shines due to its impressive attributes. Its key features include excellent castability, simplifying the manufacturing process, and enhancing productivity. Moreover, its notable impact resistance ensures the durability of components, even under demanding conditions. The alloy's strength is a valuable asset, contributing to the longevity and robustness of the cast parts. These characteristics collectively make AM60B an ideal material for producing components used in various applications. Notably, it finds its place in the Power Tools industry, where its durability and strength are essential for manufacturing rugged and reliable tools. Additionally, AM60B is employed in Lighting Solutions, where its castability and resilience are leveraged to create high-quality, long-lasting lighting components, emphasizing its versatility and utility in die-casting applications.



AZ63A Die Casting



AZ63A, also known by its aliases such as AE43 and EK41, is a remarkable alloy renowned for its exceptional properties. Its key features make it a preferred choice in die-casting applications. This alloy exhibits outstanding creep resistance, a property crucial for components operating under elevated temperatures and enduring substantial stress levels. AZ63A stands out due to its excellent precision and durability in die casting.

This alloy finds invaluable applications in the Aerospace industry, where precision and durability are paramount. In the Aerospace sector, AZ63A is employed for critical components, ensuring they can withstand the demanding conditions of high temperatures and mechanical stress. Its remarkable creep resistance makes it a reliable choice for parts that need to perform consistently in these extreme environments. Its unique combination of properties positions AZ63A as an indispensable material in die casting, especially in the Aerospace industry, where precision and durability are non-negotiable requirements.

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