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Automotive Parts Aluminum Die Casting Market– Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Production Process (Pressure Die Casting, Vacuum Die Casting, Squeeze Die Casting, Gravity Die Casting), By Application (Body Parts, Engine Parts, Transmission Parts, Battery and Related Components, Other), By Region & Competition, 2020-2030F

https://marketpublishers.com/r/A6D936F7974CEN.html
Date: August 2025
Pages: 185
Price: US$ 4,500.00 (Single User License)
ID: A6D936F7974CEN

Abstracts

Market Overview:

Global Automotive Parts Aluminum Die Casting Market was valued at USD 24.54 Billion in 2024 and is expected to reach USD 33.48 Billion by 2030 with a CAGR of 5.31% during the forecast period. The global automotive parts aluminum die casting market is witnessing steady growth, driven by the increasing emphasis on vehicle weight reduction to enhance fuel efficiency and performance. Automakers are integrating more aluminum components into vehicles to comply with stringent emission regulations and improve structural integrity without compromising strength. The growing popularity of electric and hybrid vehicles is further contributing to the demand, as lightweight materials extend battery range and support powertrain efficiency. For instance, global electric vehicle (EV) sales surged by 49% in the first half of 2023, reaching 6.2 million units. EVs now account for 16% of global light vehicle sales, with China leading at 55% of the market share. Europe and the U.S. followed, showing strong growth, especially in the latter’s 97% year-on-year increase. Tesla and BYD dominate global sales, with Tesla's Model Y leading, and BYD witnessing impressive sales growth. The overall market has grown by almost 39% in 2023, reinforcing the EV sector's transformative

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momentum. Technological advancements in die casting processes, including high-pressure and vacuum die casting, are enabling the production of complex and precise components with reduced defects. The market also benefits from the rising demand for cost-effective, scalable manufacturing solutions that ensure consistent part quality across high-volume production.

Market Drivers

Demand for Lightweight Vehicles

The need to enhance fuel efficiency and reduce emissions is pushing manufacturers to adopt lightweight materials in automotive production. Aluminum die casting plays a central role in achieving weight reduction while maintaining structural strength and performance. As regulations become stricter regarding vehicle emissions, manufacturers are substituting heavier components with aluminum-based parts such as engine blocks, transmission cases, and structural brackets. The weight savings offered by aluminum help improve acceleration, braking efficiency, and overall energy consumption. In electric vehicles, lighter parts directly translate into extended battery life and greater driving range. These benefits make aluminum die casting essential for future vehicle designs. For instance, according to a 2023 survey by Ducker Carlisle, aluminum content in light vehicles is projected to grow by nearly 100 net pounds per vehicle from 2020 to 2030, driven by rising demand for sustainable transportation. Castings will remain the dominant aluminum product form, while extrusions are expected to gain 58 pounds per vehicle during 2022–2030. With electric vehicles becoming mainstream, aluminum’s lightweight properties make it a preferred material for reducing overall vehicle weight and extending battery range. Total aluminum usage is forecasted to reach 556 pounds per vehicle by 2030, with battery electric light trucks averaging over 644 pounds. Key growth areas include body-in-white structures, battery housings, e-motors, and drive units. Leading manufacturers are ramping up R&D to introduce advanced aluminum grades and technologies that align with emission reduction goals.

Key Market Challenges

Fluctuating Raw Material Prices

Aluminum prices are subject to volatility due to global supply chain disruptions, mining output, energy costs, and geopolitical influences. These fluctuations create uncertainties in production cost planning for die casting manufacturers, who operate under tight

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margins and high-volume contracts. When aluminum prices spike, it becomes challenging for manufacturers to maintain profitability or offer stable pricing to automotive OEMs. The procurement strategies must adapt frequently to account for cost swings, which adds complexity to operations. Even with long-term supply agreements, unpredictable price movements can affect contract negotiations and supplier relationships.

Key Market Trends

Shift Toward Structural Aluminum Components

Automakers are increasingly using aluminum die casting not just for small engine components but for large structural parts such as subframes, shock towers, and cross members. This trend is being driven by the need to reduce overall vehicle weight while maintaining safety and crashworthiness. Structural components benefit from aluminum's excellent strength-to-weight ratio and corrosion resistance. The shift is also influenced by new die casting techniques that allow the creation of large, complex parts in a single shot, eliminating the need for welding and assembly. These single-piece castings reduce production time, improve structural integrity, and lower costs associated with multi-part assemblies. Automakers are leveraging this trend to design modular platforms that simplify production while improving performance.

Key Market Players

Form Technologies Inc. (Dynacast)

Nemak

Endurance Technologies Ltd (CN)

Sundaram Clayton Ltd

Shiloh Industries Inc.

Georg Fischer Limited

Kochi Enterprises (Gibbs Die Casting Corporation)

Bocar Group

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Engtek Group

Rheinmetall AG

Report Scope:

In this report, the global Automotive Parts Aluminum Die Casting Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Automotive Parts Aluminum Die Casting Market, By Production Process:

Pressure Die Casting

Vacuum Die Casting

Squeeze Die Casting

Gravity Die Casting

Automotive Parts Aluminum Die Casting Market, By Application:

Body Parts

Engine Parts

Transmission Parts

Battery and Related Components

Other

Automotive Parts Aluminum Die Casting Market, By Region:

North America

United States

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Canada

Mexico

Europe & CIS

Germany

France

U.K.

Spain

Italy

Asia-Pacific

China

Japan

India

Vietnam

South Korea

Australia

Thailand

Middle East & Africa

South Africa

Saudi Arabia

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UAE

Turkey

South America

Brazil

Argentina

Colombia

Competitive Landscape

Company Profiles: Detailed analysis of the major companies presents in the global Automotive Parts Aluminum Die Casting Market.

Available Customizations:

Global Automotive Parts Aluminum Die Casting Market report with the given market data, TechSci Research offers customizations according to the company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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