

Lead Acid Battery Market Report by Product (SLI, Stationary, Motive), Construction Method (Flooded, Valve Regulated Sealed Lead–acid Battery (VRLA)), Sales Channel (OEM, Aftermarket), Application (Automotive, UPS, Telecom, and Others), and Region 2024-2032

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Abstracts

The global lead acid battery market size reached US\$ 34.3 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 48.0 Billion by 2032, exhibiting a growth rate (CAGR) of 3.7% during 2024-2032. The growing need for power backup in critical infrastructures, rising demand for batteries that deliver high current in a short time, and increasing preference for renewable energy sources are some of the major factors propelling the market.

A lead-acid battery is a type of rechargeable energy storage device that utilizes a chemical reaction between lead dioxide (PbO₂) and sponge lead (Pb) immersed in a sulfuric acid (H₂SO₄) electrolyte to generate electrical energy. It operates on the principle of reversible electrochemical reactions that can release electrical energy when needed and be recharged by applying an external electrical voltage. It is cost-effective and offers enhanced reliability and durability with a relatively longer lifespan. As a result, lead-acid battery is employed in various applications, such as automotive starting batteries, backup power systems, uninterruptible power supplies (UPS), and energy storage in renewable energy systems across the globe.

At present, the increasing demand for warehouse automation and material handling equipment is influencing the market positively. Moreover, the rising adoption of lead-acid batteries, as they are highly recyclable, that benefit in maintaining sustainability

and reducing environmental pollution is impelling the growth of the market. Apart from this, the growing demand for lead-acid batteries due to the increasing dependence on electronic devices is offering a favorable market outlook. Additionally, the rising need for continuous power supply to perform various tasks is providing lucrative growth opportunities to industry investors. Besides this, the increasing adoption of these batteries in off-grid and microgrid systems to provide essential electricity for lighting and basic appliances is strengthening the growth of the market. In addition, the rising demand for these batteries in medical devices to enhance patient treatment is supporting the growth of the market.

Lead Acid Battery Market Trends/Drivers:

Rising demand for batteries that deliver high current in a short time

The rising demand for lead-acid batteries in the automotive sector to deliver high current in a short time is contributing to the growth of the market. In addition, these batteries are ideal for starting, lighting, and ignition (SLI) systems. Apart from this, consumers are increasingly purchasing electric vehicles (EVs) due to rapid urbanization and industrialization around the world. In addition, the rising demand for advanced lead-acid battery technologies, as EVs use enhanced flooded batteries (EFBs) or absorbent glass mat (AGM) batteries, is bolstering the growth of the market. Furthermore, these batteries play a crucial role in the automotive industry in supplying power to vehicles.

Increasing need for power backup in critical infrastructures

The rising need for power these batteries for backup power in critical infrastructure sectors, such as data centers, telecommunications, and emergency lighting systems, is supporting the growth of the market. In line with this, there is an increase in the reliance on uninterrupted power supply (UPS) solutions to safeguard data and maintain communication during power outages. Apart from this, various industries, such as healthcare, manufacturing, and transportation, rely on backup power systems that are equipped with lead-acid batteries to ensure uninterrupted operations. In addition, these batteries offer improved reliability and cost-effectiveness, which makes them a preferred choice for such applications.

Growing preference for renewable energy sources

The rising preference for renewable energy sources, such as solar and wind power, is propelling the growth of the market. In addition, these batteries serve as a key energy storage solution for renewable energy systems, storing surplus energy generated during

periods of high production and releasing it when needed. Apart from this, off-grid solar installations and wind farms often rely on these batteries to store energy for use during nighttime or low-wind conditions. Moreover, the rising awareness about maintaining sustainability in the environment is bolstering the growth of the market. These batteries can provide dependable energy storage and comparatively have lower upfront costs, which makes them an attractive option in this sector.

Lead Acid Battery Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global lead acid battery market report, along with forecasts at the global, regional, and country levels for 2024-2032. Our report has categorized the market based on product, construction method, sales channel, and application.

Breakup by Product:

SLI

Stationary

Motive

SLI represents the largest market segment

The report has provided a detailed breakup and analysis of the market based on the product. This includes SLI, stationary, and motive. According to the report, SLI represented the largest segment. Starting, lighting, and ignition (SLI) batteries are specifically designed for use in automotive applications, where they play a crucial role in starting the engine, providing power for vehicle lighting, and facilitating the ignition system. These batteries are characterized by their ability to deliver short bursts of high current, which makes them ideal for powering an engine starter motor of a vehicle. SLI batteries are available in various sizes and types to cater to different vehicle types and performance requirements. Conventional flooded lead-acid batteries, enhanced flooded batteries (EFBs), and absorbent glass mat (AGM) batteries are common variants used in the automotive industry.

Breakup by Construction Method:

Flooded

Valve Regulated Sealed Lead-acid Battery (VRLA)

Flooded accounts for the majority of the market share

The report has provided a detailed breakup and analysis of the market based on the construction method. This includes flooded and valve regulated sealed lead–acid battery (VRLA). According to the report, flooded represented the largest segment. Flooded lead-acid batteries, also known as wet cell batteries, are a traditional and widely used type of lead-acid battery construction. They consist of lead plates immersed in a liquid electrolyte solution of diluted sulfuric acid. The plates are typically made of lead dioxide (PbO₂) and sponge lead (Pb). During the charging and discharging process, chemical reactions occur between the lead plates and the sulfuric acid, resulting in the generation or release of electrical energy. These batteries are also equipped with vent caps to allow the release of gases produced during operation.

Breakup by Sales Channel:

OEM

Aftermarket

The report has provided a detailed breakup and analysis of the market based on the sales channel. This includes OEM and aftermarket.

OEM sales channel involves the direct supply of lead-acid batteries to manufacturers of various products and equipment that require batteries as integral components. In the automotive industry, OEM lead-acid batteries are supplied directly to automobile manufacturers to be installed as original equipment in newly manufactured vehicles. Similarly, in the industrial and telecommunications sectors, OEM batteries are integrated into equipment during the manufacturing process. OEM sales typically involve long-term contracts and large-volume orders.

Aftermarket sales channel comprises the distribution of lead-acid batteries to consumers, retailers, and service centers for replacement or retrofitting purposes. These batteries are sold separately from the original equipment and are intended for use in existing vehicles, equipment, or systems that require battery replacements due to wear and tear or the end of their operational life. These batteries are widely available through retail stores, automotive service centers, and online platforms. They cater to a broad range of end-users, such as vehicle owners, industrial facilities, and individuals in need of backup power solutions.

Breakup by Application:

Automotive

UPS

Telecom

Others

Automotive holds the biggest market share

The report has provided a detailed breakup and analysis of the market based on the application. This includes automotive, UPS, telecom, and others. According to the report, automotive represented the largest segment. In the automotive industry, these batteries are widely utilized to power various functions within vehicles. These batteries primarily serve three key purposes, such as starting, lighting, and ignition. They are widely available in various sizes and types to accommodate different vehicle types and performance requirements. They are recognized for their enhanced reliability, cost-effectiveness, and ability to deliver high current, which makes them the preferred choice for automotive manufacturers. Additionally, they are often used in vehicles equipped with start-stop systems, where they can withstand frequent cycling.

Breakup by Region:

Lead Acid Battery Market

North America

United States

Canada

Asia-Pacific

China

Japan

India

South Korea

Australia

Indonesia

Others

Europe

Germany

France

United Kingdom

Italy

Spain

Russia

Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

Asia Pacific exhibits a clear dominance, accounting for the largest lead acid battery market share

The market research report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, Asia Pacific accounted for the largest market share.

Asia Pacific held the biggest market share due to the increasing demand for vehicles among individuals. In addition, the presence of key manufacturers is strengthening the growth of the market in the region. Besides this, the growing demand for backup power solutions to avoid uninterrupted operations is offering a favorable market outlook. In line with this, the increasing need for renewable energy storage systems to curb harmful emissions is contributing to the growth of the market in the Asia Pacific region.

Competitive Landscape:

Major players in the industry are improving battery performance, lifespan, and energy density. They are advancing the materials and design of the product to enhance efficiency and environmental sustainability. Apart from this, companies are expanding their product portfolios to offer a range of batteries tailored to specific applications, such as automotive, industrial, and renewable energy storage, which allows them to cater to a broader customer base. In line with this, key manufacturers are adopting advanced manufacturing technologies to streamline production processes and reduce costs. They are utilizing automation and quality control systems that are used to ensure consistent product quality. Furthermore, they are focusing on eco-friendly practices by implementing recycling programs for these batteries.

The report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

C&D Technologies Inc.
Clarios International Inc.
East Penn Manufacturing Co.
EnerSys
Exide Industries Limited
GS Yuasa Corporation
HBL Power Systems Limited
HOPPECKE Batterien GmbH & Co. KG
Leoch International Technology Limited
Panasonic Holdings Corporation
Teledyne Technologies Incorporated

Recent Developments:

In 2020, GS Yuasa Corporation launched its SNS-TN series of valve-regulated stationary lead-acid batteries. They offer enhanced durability, which makes them ideal for applications with a high discharge frequency and for applications requiring the float charge.

In 2021, EnerSys®, the global leader in stored energy solutions for industrial applications and the manufacturer of ODYSSEY® batteries, partnered with TravelCenters of America (TA) to offer ODYSSEY® Performance and NorthStar® PRO Group 31 batteries for heavy duty applications in all TA locations throughout the United States.

In 2023, C&D Technologies, a global leader in energy storage solutions for uninterruptible power supply (UPS) in the data center industry, introduced its premium Pure Lead Max (PLM) VRLA battery. It is the long-lasting VRLA battery for UPS systems in C&D's line-up and has an industry-leading eight-year warranty.

Key Questions Answered in This Report

1. What was the size of the global lead acid battery market in 2023?
2. What is the expected growth rate of the global lead acid battery market during 2024-2032?
3. What has been the impact of COVID-19 on the global lead acid battery market?
4. What are the key factors driving the global lead acid battery market?
5. What is the breakup of the global lead acid battery market based on the product?
6. What is the breakup of the global lead acid battery market based on the construction method?
7. What is the breakup of the global lead acid battery market based on the application?

8. What are the key regions in the global lead acid battery market?
9. Who are the key players/companies in the global lead acid battery market?

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