Solid Electrolyte - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 100 pages | Mordor Intelligence

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Report description:

The Solid Electrolyte Market is expected to register a CAGR of greater than 15% during the forecast period.

The market was negatively impacted by COVID-19 in 2020. Presently, the market has reached pre-pandemic levels.

Key Highlights
- Over the long term, factors such as the increasing demand for an energy storage system with high energy density and longer cycle life are likely to drive the market. Increasing uses of electronic devices and electric vehicles are expected to increase the use of solid-state batteries and solid electrolytes in the coming years.
- On another note, the high cost of a solid-state battery is likely to hinder the solid electrolyte market during the forecast period.
- Electric vehicles (EVs) are expected to account for nearly 10-12% of total vehicle sales by 2030. Multiple factors, such as government regulations in various regions of the world and technological developments in batteries, are likely to boost the EV market. Moreover, as per industry experts, existing lithium-ion battery technology used in electric vehicles is expected to maintain a high price in the upcoming years. Additionally, drawbacks such as lower energy density and limited safety features of a lithium-ion battery are likely to create an opportunity for the markets like solid-state batteries and solid electrolytes in the near future.
- Asia-Pacific is expected to dominate the market, with most of the solid electrolyte demand coming from countries like China and India.

Solid Electrolyte Market Trends

Thin-Film Battery to Witness a Significant Growth

- Thin-film batteries are one of the All-Solid-State Batteries (ASSB) that utilize ceramic solid electrolytes such as Lithium phosphorous oxy-nitride (LiPON) to transfer the ions between the cathode and anode.
- Cathode materials are often made of lithium-oxide, such as LiCoO2, LiMn2O4, and LiFePO4, while anode materials are typically made of graphite, Li metal, or other metallic materials.
- The majority of thin-film battery applications are directed toward improving current consumer and medical products. Thin-film batteries are used in thinner electronic devices, as the thickness of the battery is much less than that of conventional Li-ion batteries.
- With the increasing use of RFID tags in shipping and inventory control and a cardiac pacemaker to treat irregular heart rhythms of patients, they are likely to have a high use of solid-state batteries and solid electrolytes in the coming years.
- The global demand for batteries is expected to increase from 185 GWh in 2020 to over 2,000 GWh by 2030. Despite the prevalence of consumer electronics in 2020, the small energy capacities of gadgets such as phones mean that, in terms of gigawatts, the demand was relatively low. This large increase was mainly due to the electrification of transport, which will account for the vast majority of battery demand in 2030 in terms of total energy storage capacity.
- In August 2022, the Colorado Department of Education identified a new sodium-ion-based solid electrolyte composition that may enable ultrafast battery charge and discharge. The new rechargeable battery utilized for powering electric vehicles, mobile phones, and many other applications could be a step closer following a breakthrough discovery by NUS researchers.
- In November 2021, Dutch start-up LionVolt BV, a spin-off from the Netherlands Organization for Applied Scientific Research (TNO), announced it had secured EUR 4 million from the development agency of the region of Brabant to develop a 3D solid-state thin film battery, which it expects to apply initially in wearables and electric cars.
- Owing to the above-mentioned points and the recent developments, thin film battery is expected to dominate the solid electrolyte market during the forecast period.

Asia-Pacific is Likely to Dominate the Market

- The Asia-Pacific market majorly consists of 18 countries, with 59.76% of the world's population. China and India dominate the region, with the highest valuation of export and import bills.
- Apart from trade, the region has the highest population of nearly 4.6 billion. China and India have the highest populations in the region, with a higher number of electric vehicle populations. Cumulatively, China and India had more than 1.2 million electric vehicles in 2021.
- High trade value indicates high shipments and high uses of RFID, a high population indicates higher chances of heart diseases and implantation of cardiac pacemakers, and a high population of EVs indicates high uses of rechargeable batteries.
- Moreover, in August 2022, SVOLT Energy Technology Co. Ltd (SVOLT), a high-tech company headquartered in China, announced that it was progressing in the development of solid-state batteries. The company produced an initial batch of 20Ah cells with sulfide-based solid-state electrolyte.
- Furthermore, in February 2022, Tesla planned to build a second electric vehicle (EV) facility in China to help it keep up with the increasing demand both locally and in export markets. In the short-term, Tesla plans to increase capacity in China to at least 1 million cars per year, with a second plant planned near its present production site in Shanghai's Lingang free trade zone.
- Thus, developments of solid-state battery for electric vehicles and the increasing population, along with growing trade and cardiac patients in the region, is likely is expand the solid-state battery and solid electrolyte market in the near future.

Solid Electrolyte Industry Overview

The solid electrolyte market is consolidated. Some of the key players in the market (in no particular order) include NEI Corporation, Ohara Inc., Empower Materials, Ampcera Corp., Iconic Material Inc., and Toshima Manufacturing Co. Ltd.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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