

Global Perovskite Solar Cells for Automotive Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Perovskite Solar Cells for Automotive market size is expected to reach \$ 65.41 million by 2032, rising at a market growth of 48.8% CAGR during the forecast period (2026-2032).

Perovskite solar cells for automotive applications are photovoltaic products that use metal-halide perovskites as the principal light-absorbing layer. They are manufactured as flexible films, curved-glass modules or perovskite-silicon tandem modules and integrated into vehicle roofs, panoramic glazing, hoods, tailgates or other body surfaces of passenger cars, commercial vehicles and special-purpose vehicles. Electricity generated by the modules is supplied through maximum-power-point tracking and direct-current conversion systems to auxiliary electrical systems, parked-vehicle loads or traction batteries.

Unlike conventional rigid crystalline-silicon vehicle panels, automotive perovskite products offer low weight, mechanical flexibility, compatibility with complex curved surfaces, relatively strong low-light response and the option of semi-transparent or dimmable designs. Automotive-grade products must meet requirements related to vibration, mechanical impact, thermal cycling, damp heat, ultraviolet exposure, salt spray, hail, flame resistance, electrical insulation, lead containment and vehicle crash safety. Commercialization therefore depends not only on conversion efficiency but also on long-term stability, large-area manufacturing yield, encapsulation reliability and automotive qualification.

In 2025, the global shipment of Perovskite Solar Cells for Automotive with rated power is approximately 0.24MW, with an FOB equivalent price of approximately US\$16,250/kW and a gross margin of approximately 10% to 25% for manufacturing

projects.

The increasing electricity consumption of air-conditioning, digital cockpits, sensors, communications and parked-vehicle systems creates a clearer value proposition for body-integrated photovoltaics. Perovskite materials can be deposited on lightweight films and curved substrates and can be combined with silicon in high-efficiency tandem structures. These characteristics are particularly relevant to vehicles, where installation area is limited, surfaces are curved and additional weight is tightly controlled. Early commercial value will primarily come from reducing parked-vehicle consumption, supporting ventilation and thermal management, supplying auxiliary electrical systems and marginally extending driving range rather than fully solar-powered propulsion.

Initial demand is expected to concentrate on premium electric passenger cars, panoramic-roof vehicles, recreational vehicles, logistics vans, refrigerated trucks, buses and special-purpose vehicles that remain outdoors for extended periods. Passenger-car programs place greater emphasis on styling, transparency, power density and curved-surface integration, while commercial-vehicle customers focus more heavily on available area, lifetime energy yield and the economic value of reducing auxiliary fuel or battery consumption. The supply model will increasingly involve joint development among perovskite manufacturers, automotive-glass suppliers, body-component manufacturers, power-electronics suppliers and vehicle OEMs.

Significant automotive-qualification barriers remain. Perovskite materials are sensitive to moisture, oxygen, sustained heat and ultraviolet exposure, while vehicle surfaces experience severe temperature variation, vibration, stone impact, washing, collision and long-term outdoor exposure. Lead-containing systems also require containment, collection and recycling solutions following module damage. Rapidly changing shadows, partial shading and differently oriented curved surfaces require more sophisticated distributed power optimization. The transition from concept vehicles to series production will depend on achieving automotive-grade operating life, repairable or replaceable module structures, full quality traceability and competitive lifetime electricity costs.

This report studies the global Perovskite Solar Cells for Automotive production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Perovskite Solar Cells for Automotive and provides market size (US\$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Perovskite Solar Cells for

Automotive that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Perovskite Solar Cells for Automotive total production and demand, 2021-2032, (MW)

Global Perovskite Solar Cells for Automotive total production value, 2021-2032, (USD Million)

Global Perovskite Solar Cells for Automotive production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (MW), (based on production site)

Global Perovskite Solar Cells for Automotive consumption by region & country, CAGR, 2021-2032 & (MW)

U.S. VS China: Perovskite Solar Cells for Automotive domestic production, consumption, key domestic manufacturers and share

Global Perovskite Solar Cells for Automotive production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (MW)

Global Perovskite Solar Cells for Automotive production by Type, production, value, CAGR, 2021-2032, (USD Million) & (MW)

Global Perovskite Solar Cells for Automotive production by Application, production, value, CAGR, 2021-2032, (USD Million) & (MW)

This report profiles key players in the global Perovskite Solar Cells for Automotive market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include EneCoat Technologies Co., Ltd., Perovskia Solar AG, Swift Solar Inc., Oxford Photovoltaics Limited, RenShine Solar (Suzhou) Co., Ltd., BOE Technology Group Co., Ltd., UtmoLight Co., Ltd., Guangdong Mellow Energy Co., Ltd., SolaEon Technology Co., Ltd., Hangzhou Microquanta Semiconductor Co., Ltd., etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Perovskite Solar Cells for Automotive market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US\$ Millions), volume (production, consumption) & (MW) and average price (US\$/KW) by

manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Perovskite Solar Cells for Automotive Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Perovskite Solar Cells for Automotive Market, Segmentation by Type:

Single-Junction Perovskite Cells

Perovskite-Silicon Tandem Cells

All-Perovskite Tandem Cells

Others

Global Perovskite Solar Cells for Automotive Market, Segmentation by Rated Power Per Vehicle:

Up To 300 Watts

300 To 600 Watts

600 To 1,000 Watts

Above 1,000 Watts

Global Perovskite Solar Cells for Automotive Market, Segmentation by Module Form:

Flexible Film Modules

Curved Glass Modules

Rigid Lightweight Modules

Others

Global Perovskite Solar Cells for Automotive Market, Segmentation by Application:

Commercial Vehicle

Passenger Car

Companies Profiled:

EneCoat Technologies Co., Ltd.

Perovskia Solar AG

Swift Solar Inc.

Oxford Photovoltaics Limited

RenShine Solar (Suzhou) Co., Ltd.

BOE Technology Group Co., Ltd.

UtmoLight Co., Ltd.

Guangdong Mellow Energy Co., Ltd.

SolaEon Technology Co., Ltd.

Hangzhou Microquanta Semiconductor Co., Ltd.

Kunshan GCL Perovskite Materials Co., Ltd.

Key Questions Answered:

1. How big is the global Perovskite Solar Cells for Automotive market?
2. What is the demand of the global Perovskite Solar Cells for Automotive market?
3. What is the year over year growth of the global Perovskite Solar Cells for Automotive market?
4. What is the production and production value of the global Perovskite Solar Cells for Automotive market?
5. Who are the key producers in the global Perovskite Solar Cells for Automotive market?
6. What are the growth factors driving the market demand?

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