

Amorphous Silicon Solar Cell Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Installation Type (Rooftop, Ground-mounted, Portable Devices), By Distribution Channel (Direct Sales, Distributors & Dealers, Online Retail), By End-Use Industry (Residential, Commercial, Industrial, Utility), By Region & Competition, 2020-2030F

<https://marketpublishers.com/r/A75AE2BC74A0EN.html>

Date: June 2025

Pages: 185

Price: US\$ 4,500.00 (Single User License)

ID: A75AE2BC74A0EN

Abstracts

Market Overview

The Global Amorphous Silicon Solar Cell Market was valued at USD 17.69 Billion in 2024 and is projected to reach USD 29.67 Billion by 2030, growing at a CAGR of 8.84% during the forecast period. This market encompasses solar photovoltaic cells that utilize amorphous (non-crystalline) silicon deposited in thin layers onto substrates like glass, plastic, or metal. These thin-film cells are valued for their flexibility, lightweight structure, and ability to perform well in shaded or low-light conditions. Though they typically offer lower efficiency compared to crystalline silicon cells, amorphous silicon cells excel in specific applications such as portable devices, building-integrated photovoltaics (BIPV), and urban installations where cost, weight, and adaptability are key. With the increasing emphasis on clean energy and miniaturized energy solutions, demand for a-Si solar cells continues to grow, particularly in sectors requiring lightweight and low-power generation options.

Key Market Drivers

Increasing Global Demand for Renewable Energy Sources

The market is being propelled by the rising global focus on renewable energy adoption, driven by the urgency to mitigate climate change and reduce carbon emissions. Countries worldwide are setting ambitious clean energy goals, promoting technologies like amorphous silicon solar cells due to their adaptability and cost-effectiveness. These cells are particularly suitable for non-traditional applications, including building-integrated photovoltaics, off-grid systems, and portable electronics. Their deposition on diverse substrates via low-temperature methods makes them ideal for flexible and urban energy solutions. Supportive government policies, including subsidies and renewable energy targets—as seen in nations like China and India—are further accelerating market growth and encouraging investment in amorphous silicon technology as a viable clean energy option.

Key Market Challenges

Limited Energy Conversion Efficiency Compared to Crystalline Alternatives

A major constraint for the Amorphous Silicon Solar Cell Market lies in its relatively low energy conversion efficiency when compared to crystalline silicon technologies. While monocrystalline cells can exceed 20% efficiency, amorphous silicon cells generally achieve under 10%. This disparity limits their use in high-performance or utility-scale projects. The inherent disordered atomic structure of amorphous silicon leads to defects and lower electron mobility, resulting in higher recombination rates and reduced output. Additionally, their thin active layer restricts light absorption, further affecting performance. These efficiency limitations make it difficult for a-Si cells to compete in applications where space and power output are critical, despite their advantages in cost and versatility.

Key Market Trends

Rising Adoption in Portable and Wearable Electronic Devices

A growing trend in the Amorphous Silicon Solar Cell Market is their increasing use in compact, mobile, and wearable electronics. The lightweight, flexible, and low-light efficient nature of a-Si cells makes them ideal for products such as fitness bands, smartwatches, calculators, and e-paper displays. Unlike rigid crystalline panels, amorphous silicon can be seamlessly integrated into curved or soft surfaces without sacrificing durability or performance. This is particularly beneficial for IoT devices and

low-power electronics that demand continuous yet decentralized energy sources. The shift toward energy-autonomous and eco-conscious consumer products is driving manufacturers to explore a-Si integration with flexible substrates and smart textiles, signaling a move toward specialized markets where traditional solar technologies fall short.

Key Market Players

Sharp Corporation

Panasonic Corporation

Kaneka Corporation

Solartek Films Ltd.

Xunlight Corporation

Hanergy Thin Film Power Group Limited

Trony Solar Holdings Co. Ltd.

MiaSol? Hi-Tech Corp.

Flisom AG

Solar Frontier K.K.

Report Scope:

In this report, the Global Amorphous Silicon Solar Cell Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Amorphous Silicon Solar Cell Market, By Installation Type:

Rooftop

Ground-mounted

Portable Devices

Amorphous Silicon Solar Cell Market, By Distribution Channel:

Direct Sales

Distributors & Dealers

Online Retail

Amorphous Silicon Solar Cell Market, By End-Use Industry:

Residential

Commercial

Industrial

Utility

Amorphous Silicon Solar Cell Market, By Region:

North America

United States

Canada

Mexico

Europe

Germany

France

United Kingdom

Italy

Spain

South America

Brazil

Argentina

Colombia

Asia-Pacific

China

India

Japan

South Korea

Australia

Middle East & Africa

Saudi Arabia

UAE

South Africa

Competitive Landscape

Amorphous Silicon Solar Cell Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmente...

Company Profiles: Detailed analysis of the major companies present in the Global Amorphous Silicon Solar Cell Market.

Available Customizations:

Global Amorphous Silicon Solar Cell Market report with the given market data, TechSci Research offers customizations according to a 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).

Contents

1. PRODUCT OVERVIEW

- 1.1. Market Definition
- 1.2. Scope of the Market
 - 1.2.1. Markets Covered
 - 1.2.2. Years Considered for Study
 - 1.2.3. Key Market Segmentations

2. RESEARCH METHODOLOGY

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Key Industry Partners
- 2.4. Major Association and Secondary Sources
- 2.5. Forecasting Methodology
- 2.6. Data Triangulation & Validation
- 2.7. Assumptions and Limitations

3. EXECUTIVE SUMMARY

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, and Trends

4. VOICE OF CUSTOMER

5. GLOBAL AMORPHOUS SILICON SOLAR CELL MARKET OUTLOOK

- 5.1. Market Size & Forecast
 - 5.1.1. By Value
- 5.2. Market Share & Forecast
 - 5.2.1. By Installation Type (Rooftop, Ground-mounted, Portable Devices)
 - 5.2.2. By Distribution Channel (Direct Sales, Distributors & Dealers, Online Retail)
 - 5.2.3. By End-Use Industry (Residential, Commercial, Industrial, Utility)
 - 5.2.4. By Region (North America, Europe, South America, Middle East & Africa, Asia)

Pacific)

5.3. By Company (2024)

5.4. Market Map

6. NORTH AMERICA AMORPHOUS SILICON SOLAR CELL MARKET OUTLOOK

6.1. Market Size & Forecast

6.1.1. By Value

6.2. Market Share & Forecast

6.2.1. By Installation Type

6.2.2. By Distribution Channel

6.2.3. By End-Use Industry

6.2.4. By Country

6.3. North America: Country Analysis

6.3.1. United States Amorphous Silicon Solar Cell Market Outlook

6.3.1.1. Market Size & Forecast

6.3.1.1.1. By Value

6.3.1.2. Market Share & Forecast

6.3.1.2.1. By Installation Type

6.3.1.2.2. By Distribution Channel

6.3.1.2.3. By End-Use Industry

6.3.2. Canada Amorphous Silicon Solar Cell Market Outlook

6.3.2.1. Market Size & Forecast

6.3.2.1.1. By Value

6.3.2.2. Market Share & Forecast

6.3.2.2.1. By Installation Type

6.3.2.2.2. By Distribution Channel

6.3.2.2.3. By End-Use Industry

6.3.3. Mexico Amorphous Silicon Solar Cell Market Outlook

6.3.3.1. Market Size & Forecast

6.3.3.1.1. By Value

6.3.3.2. Market Share & Forecast

6.3.3.2.1. By Installation Type

6.3.3.2.2. By Distribution Channel

6.3.3.2.3. By End-Use Industry

7. EUROPE AMORPHOUS SILICON SOLAR CELL MARKET OUTLOOK

7.1. Market Size & Forecast

- 7.1.1. By Value
- 7.2. Market Share & Forecast
 - 7.2.1. By Installation Type
 - 7.2.2. By Distribution Channel
 - 7.2.3. By End-Use Industry
 - 7.2.4. By Country
- 7.3. Europe: Country Analysis
 - 7.3.1. Germany Amorphous Silicon Solar Cell Market Outlook
 - 7.3.1.1. Market Size & Forecast
 - 7.3.1.1.1. By Value
 - 7.3.1.2. Market Share & Forecast
 - 7.3.1.2.1. By Installation Type
 - 7.3.1.2.2. By Distribution Channel
 - 7.3.1.2.3. By End-Use Industry
 - 7.3.2. France Amorphous Silicon Solar Cell Market Outlook
 - 7.3.2.1. Market Size & Forecast
 - 7.3.2.1.1. By Value
 - 7.3.2.2. Market Share & Forecast
 - 7.3.2.2.1. By Installation Type
 - 7.3.2.2.2. By Distribution Channel
 - 7.3.2.2.3. By End-Use Industry
 - 7.3.3. United Kingdom Amorphous Silicon Solar Cell Market Outlook
 - 7.3.3.1. Market Size & Forecast
 - 7.3.3.1.1. By Value
 - 7.3.3.2. Market Share & Forecast
 - 7.3.3.2.1. By Installation Type
 - 7.3.3.2.2. By Distribution Channel
 - 7.3.3.2.3. By End-Use Industry
 - 7.3.4. Italy Amorphous Silicon Solar Cell Market Outlook
 - 7.3.4.1. Market Size & Forecast
 - 7.3.4.1.1. By Value
 - 7.3.4.2. Market Share & Forecast
 - 7.3.4.2.1. By Installation Type
 - 7.3.4.2.2. By Distribution Channel
 - 7.3.4.2.3. By End-Use Industry
 - 7.3.5. Spain Amorphous Silicon Solar Cell Market Outlook
 - 7.3.5.1. Market Size & Forecast
 - 7.3.5.1.1. By Value
 - 7.3.5.2. Market Share & Forecast

- 7.3.5.2.1. By Installation Type
- 7.3.5.2.2. By Distribution Channel
- 7.3.5.2.3. By End-Use Industry

8. ASIA PACIFIC AMORPHOUS SILICON SOLAR CELL MARKET OUTLOOK

- 8.1. Market Size & Forecast
 - 8.1.1. By Value
- 8.2. Market Share & Forecast
 - 8.2.1. By Installation Type
 - 8.2.2. By Distribution Channel
 - 8.2.3. By End-Use Industry
 - 8.2.4. By Country
- 8.3. Asia Pacific: Country Analysis
 - 8.3.1. China Amorphous Silicon Solar Cell Market Outlook
 - 8.3.1.1. Market Size & Forecast
 - 8.3.1.1.1. By Value
 - 8.3.1.2. Market Share & Forecast
 - 8.3.1.2.1. By Installation Type
 - 8.3.1.2.2. By Distribution Channel
 - 8.3.1.2.3. By End-Use Industry
 - 8.3.2. India Amorphous Silicon Solar Cell Market Outlook
 - 8.3.2.1. Market Size & Forecast
 - 8.3.2.1.1. By Value
 - 8.3.2.2. Market Share & Forecast
 - 8.3.2.2.1. By Installation Type
 - 8.3.2.2.2. By Distribution Channel
 - 8.3.2.2.3. By End-Use Industry
 - 8.3.3. Japan Amorphous Silicon Solar Cell Market Outlook
 - 8.3.3.1. Market Size & Forecast
 - 8.3.3.1.1. By Value
 - 8.3.3.2. Market Share & Forecast
 - 8.3.3.2.1. By Installation Type
 - 8.3.3.2.2. By Distribution Channel
 - 8.3.3.2.3. By End-Use Industry
 - 8.3.4. South Korea Amorphous Silicon Solar Cell Market Outlook
 - 8.3.4.1. Market Size & Forecast
 - 8.3.4.1.1. By Value
 - 8.3.4.2. Market Share & Forecast

- 8.3.4.2.1. By Installation Type
- 8.3.4.2.2. By Distribution Channel
- 8.3.4.2.3. By End-Use Industry
- 8.3.5. Australia Amorphous Silicon Solar Cell Market Outlook
 - 8.3.5.1. Market Size & Forecast
 - 8.3.5.1.1. By Value
 - 8.3.5.2. Market Share & Forecast
 - 8.3.5.2.1. By Installation Type
 - 8.3.5.2.2. By Distribution Channel
 - 8.3.5.2.3. By End-Use Industry

9. MIDDLE EAST & AFRICA AMORPHOUS SILICON SOLAR CELL MARKET OUTLOOK

- 9.1. Market Size & Forecast
 - 9.1.1. By Value
- 9.2. Market Share & Forecast
 - 9.2.1. By Installation Type
 - 9.2.2. By Distribution Channel
 - 9.2.3. By End-Use Industry
 - 9.2.4. By Country
- 9.3. Middle East & Africa: Country Analysis
 - 9.3.1. Saudi Arabia Amorphous Silicon Solar Cell Market Outlook
 - 9.3.1.1. Market Size & Forecast
 - 9.3.1.1.1. By Value
 - 9.3.1.2. Market Share & Forecast
 - 9.3.1.2.1. By Installation Type
 - 9.3.1.2.2. By Distribution Channel
 - 9.3.1.2.3. By End-Use Industry
 - 9.3.2. UAE Amorphous Silicon Solar Cell Market Outlook
 - 9.3.2.1. Market Size & Forecast
 - 9.3.2.1.1. By Value
 - 9.3.2.2. Market Share & Forecast
 - 9.3.2.2.1. By Installation Type
 - 9.3.2.2.2. By Distribution Channel
 - 9.3.2.2.3. By End-Use Industry
 - 9.3.3. South Africa Amorphous Silicon Solar Cell Market Outlook
 - 9.3.3.1. Market Size & Forecast
 - 9.3.3.1.1. By Value

- 9.3.3.2. Market Share & Forecast
 - 9.3.3.2.1. By Installation Type
 - 9.3.3.2.2. By Distribution Channel
 - 9.3.3.2.3. By End-Use Industry

10. SOUTH AMERICA AMORPHOUS SILICON SOLAR CELL MARKET OUTLOOK

- 10.1. Market Size & Forecast
 - 10.1.1. By Value
- 10.2. Market Share & Forecast
 - 10.2.1. By Installation Type
 - 10.2.2. By Distribution Channel
 - 10.2.3. By End-Use Industry
 - 10.2.4. By Country
- 10.3. South America: Country Analysis
 - 10.3.1. Brazil Amorphous Silicon Solar Cell Market Outlook
 - 10.3.1.1. Market Size & Forecast
 - 10.3.1.1.1. By Value
 - 10.3.1.2. Market Share & Forecast
 - 10.3.1.2.1. By Installation Type
 - 10.3.1.2.2. By Distribution Channel
 - 10.3.1.2.3. By End-Use Industry
 - 10.3.2. Colombia Amorphous Silicon Solar Cell Market Outlook
 - 10.3.2.1. Market Size & Forecast
 - 10.3.2.1.1. By Value
 - 10.3.2.2. Market Share & Forecast
 - 10.3.2.2.1. By Installation Type
 - 10.3.2.2.2. By Distribution Channel
 - 10.3.2.2.3. By End-Use Industry
 - 10.3.3. Argentina Amorphous Silicon Solar Cell Market Outlook
 - 10.3.3.1. Market Size & Forecast
 - 10.3.3.1.1. By Value
 - 10.3.3.2. Market Share & Forecast
 - 10.3.3.2.1. By Installation Type
 - 10.3.3.2.2. By Distribution Channel
 - 10.3.3.2.3. By End-Use Industry

11. MARKET DYNAMICS

- 11.1. Drivers
- 11.2. Challenges

12. MARKET TRENDS AND DEVELOPMENTS

- 12.1. Merger & Acquisition (If Any)
- 12.2. Product Launches (If Any)
- 12.3. Recent Developments

13. COMPANY PROFILES

- 13.1. Sharp Corporation
 - 13.1.1. Business Overview
 - 13.1.2. Key Revenue and Financials
 - 13.1.3. Recent Developments
 - 13.1.4. Key Personnel
 - 13.1.5. Key Product/Services Offered
- 13.2. Panasonic Corporation
- 13.3. Kaneka Corporation
- 13.4. Solartek Films Ltd.
- 13.5. Xunlight Corporation
- 13.6. Hanergy Thin Film Power Group Limited
- 13.7. Trony Solar Holdings Co. Ltd.
- 13.8. MiaSol? Hi-Tech Corp.
- 13.9. Flisom AG
- 13.10. Solar Frontier K.K.

14. STRATEGIC RECOMMENDATIONS

15. ABOUT US & DISCLAIMER

I would like to order

Product name: Amorphous Silicon Solar Cell Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Installation Type (Rooftop, Ground-mounted, Portable Devices), By Distribution Channel (Direct Sales, Distributors & Dealers, Online Retail), By End-Use Industry (Residential, Commercial, Industrial, Utility), By Region & Competition, 2020-2030F

Product link: <https://marketpublishers.com/r/A75AE2BC74A0EN.html>

Price: US\$ 4,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/A75AE2BC74A0EN.html>