

# **Thin Film and Printed Battery Market by Type (Thin Film, Printed), Voltage (Below 1.5 V, 1.5 to 3 V, Above 3 V), Capacity (Below 10 mAh, 10 to 100 mAh, Above 100 mAh), Battery Type (Primary, Secondary), Application, Region - Global Forecast to 2028**

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## **Abstracts**

The global thin film and printed battery market size is expected to grow from USD 187 million in 2023 to USD 650 million by 2028, at a CAGR of 28.2% from 2023 to 2028.

The increasing demand for thin film and printed batteries can be attributed to the growing innovations in foldable electronics and smart wearables and the rising demand for thin and flexible batteries in medical and electronic devices.

'1.5 to 3 V voltage segment is projected to grow at significant CAGR during the forecast period'

Thin film and printed batteries ranging from 1.5 to 3 V are extremely thin, lightweight, flexible, and durable. They are available in different shapes and sizes. These batteries have no heavy metal components such as mercury, lead, and cadmium. Thin film and printed batteries with this voltage range have sealed cell construction, allowing them to function effectively in severe environments. They are also entirely and safely disposable. These batteries have a thin, flexible form factor and are used in RFID tags, medical devices, and smart-powered cards. These batteries have an exterior casing made of polymer laminates. They are highly customizable in voltage, size, shape, capacity, and polarity.

'Smart Packaging is expected to hold a considerable share during the forecast period'

Thin film and printed batteries are thin, flexible, and lightweight. They can be rolled

without any loss of energy and are easy to dispose of. Thus, smart packaging manufacturers prefer thin film and printed batteries over conventional batteries, which are bulky and rigid. The increasing adoption of thin film batteries by packaging manufacturers is expected to fuel the growth of the smart packaging segment during the forecast period. Smart cards, also known as power cards, also require a self-contained power source. Thin film and printed batteries integrated with smart cards are usually disposed of, along with the smart cards, at the end of their lifespan. This leads to increased deployment of single-use batteries in smart cards.

'The market in Europe is expected to grow at a significant CAGR during the forecast period'

Europe is projected to grow at a significant CAGR during the forecast period. The European market is growing due to the increasing demand for IoT devices, the booming wearables sector, increasing R&D activities for thin film and printed batteries, and the rising support of governments of different countries for the region's thin film and printed battery production. The European packaging industry is witnessing an increased adoption of smart packaging as manufacturers opt for this packaging to ensure improved hygiene and convenience for end consumers. This drives packaging manufacturers to use displays, RFID tags, and smart labels in their packages. Moreover, the governments of different European countries are promoting the adoption of IoT and cloud computing in wireless applications, thereby leading to the demand for thin power sources. All these factors are expected to drive the demand for thin film and printed batteries in Europe.

Breakdown of the profiles of primary participants:

By Company Type: Tier 1 - 25%, Tier 2 - 30%, and Tier 3 - 45%

By Designation: C-level Executives - 50%, Directors - 27%, and Others - 23%

By Region: North America - 38%, Europe - 25%, Asia Pacific - 30%, and RoW – 7%

Major players profiled in this report are as follows: Samsung SDI Co., Ltd. (South Korea), Enfucell (Finland), Ultralife Corporation (US), Molex, LLC (US), NGK Insulators, Ltd. (Japan), Cymbet Corporation (US), Ilika plc (UK), Jenax Inc. (South Korea), ProLogium Technology Co., Ltd. (Taiwan), Renata SA (Switzerland), and VARTA AG

(Germany), and others.

## Research Coverage

This report has segmented the thin film and printed battery market based on component, material, type, voltage, capacity, battery type, application, and region. The thin film and printed battery market based on component has been segmented into electrodes, substrates, and electrolytes. The market has been segmented based on material: lithium-Ion, lithium polymer, and zinc. The market has been segmented based on type into thin film and printed batteries. The market has been segmented based on voltage into below 1.5 V, 1.5 to 3 V, and above 3 V. Based on capacity, the market has been segmented into below 10 mAh, 10 to 100 mAh, and above 100 mAh. The market has been segmented into primary and secondary batteries based on battery type. Based on application, the market has been segmented into consumer electronics, medical devices, smart packaging, smart cards, wireless sensors, and others. The study also forecasts the market size in four key regions—North America, Europe, Asia Pacific, and RoW.

## Key Benefits of Buying the Report:

The report provides insights on the following pointers:

Analysis of key drivers (Growing emphasis on foldable electronics and wearables; Proliferation of thin, flexible, and printed batteries in medical and electronic devices; Rising trend of miniaturized electronic devices, Rising demand for printed flexible batteries in IoT sector), restraints (High initial investments, Lack of standardization), opportunities (Advancements in next-generation thin film and printed lithium-air batteries, Increasing adoption of wireless sensors globally), and challenges (Fabrication complexity of thin film lithium-ion batteries, Selection of raw materials and their costs, Low energy density challenges) influencing the growth of the thin film and printed battery market

**Product Development/Innovation:** Detailed insights on upcoming products, technologies, research & development activities, funding activities, industry partnerships, and new product launches in the thin film and printed battery market

**Market Development:** Comprehensive information about lucrative markets – the report analyses the thin film and printed battery market across regions such as

North America, Europe, Asia Pacific, Middle East & Africa, and South America.

**Market Diversification:** Exhaustive information about new products & technologies, untapped geographies, recent developments, and investments in the thin film and printed battery market

**Competitive Assessment:** In-depth assessment of market ranks, growth strategies, and product offerings of leading players like Samsung SDI Co., Ltd. (South Korea), Enfucell (Finland), Ultralife Corporation (US), and Molex, LLC (US), among others in the thin film and printed battery market

**Strategies:** The report also helps stakeholders understand the pulse of the thin film and printed battery market and provides information on key market drivers, restraints, challenges, and opportunities.

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\*Details on Business Overview, Products Offered, Recent Developments, and MnM View (Key strengths/Right to Win, Strategic Choices Made, and Weaknesses and Competitive Threats) might not be captured in case of unlisted companies.

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