

Smart Textiles Market Size, Share, Trends, Report Analysis, and Forecast, 2032

Key companies covered in smart textiles market report are Adidas AG, EXO2, Gentherm, Inc., DuPont, Nike, Inc., Ohmatex ApS, Sensing Tex SL, and Others.

NY, UNITED STATES, May 6, 2025 /EINPresswire.com/ -- The global <u>smart</u> <u>textiles market</u> is rapidly expanding, fueled by advancements in wearable technology, health monitoring systems, and military applications. Smart textiles, also known as e-textiles, are fabrics integrated with digital components and electronics to enhance functionality. These textiles are designed to sense and respond to external stimuli such as temperature,



pressure, or electrical signals. Applications span across healthcare, sports & fitness, military, fashion, and industrial sectors. The market has seen significant technological advancements, including the integration of nanotechnology, AI, and IoT, propelling its adoption.

Fortune Business Insights[™] mentioned this in a report titled "Smart Textile Market Size, Share, Growth, and Regional Forecast, 2025-2032."

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Segmentation Analysis:

By product, the market is divided into passive and active/ultra-smart textiles. Passive smart textiles can detect environmental stimuli like temperature and pressure but lack responsive behavior, making them widely used in sportswear, basic medical applications, and apparel. These are rapidly gaining traction in high-tech sectors like defense, advanced healthcare, and wearable consumer electronics, driven by the rising demand for integrated smart functionality.

By functionality, smart textiles are categorized into sensing, energy harvesting, thermoelectricity, luminescence & aesthetics, and others. Sensing textiles lead the market as they are crucial for applications in medical diagnostics, fitness tracking, and safety monitoring. Sensing textiles lead the market as they are crucial for applications in medical diagnostics, fitness tracking, and safety monitoring. Energy harvesting is an emerging trend, enabling textiles to convert body movement or sunlight into power, supporting off-grid devices especially in military and outdoor applications.

In terms of end use, the key sectors include sports & fitness, medical, defense & military, architecture, and others. Sports & fitness dominate due to growing consumer interest in performance tracking and health monitoring, while medical and defense applications are expanding with advanced technologies for real-time data collection, thermal control, and communication.

By Application-

- Healthcare: Wearable health monitors, wound healing fabrics
- Sports & Fitness: Smart wearables, biometric shirts
- Military & Defense: Camouflage fabrics, injury tracking
- Fashion & Entertainment: LED-integrated clothes, color-changing textiles
- Industrial: Safety wear, temperature-regulating uniforms
- Automotive: Sensor-enabled seats, smart upholstery

Report Coverage-

The report offers:

- Major growth drivers, restraining factors, opportunities, and potential challenges for the market.
- Comprehensive insights into regional developments.
- List of major industry players.
- Key strategies adopted by the market players.
- The latest industry developments include product launches, partnerships, mergers, and acquisitions.

 List of Key Players Present in the Smart Textiles Report:

- Adidas AG (Germany)
- AiQ Smart Clothing Inc. (Taiwan)
- Jabil Inc. (U.S.)
- EXO2 (U.K.)
- Gentherm, Inc. (U.S.)
- DuPont (U.S.)
- Nike, Inc. (U.S.)
- Ohmatex ApS (Denmark)
- Sensing Tex SL (Spain)
- Thermosoft International Corp. (U.S.)

Market Growth:

The smart textiles market is experiencing rapid growth, driven by several key factors that are propelling its adoption across various industries.

Advancements in Technology: Ongoing innovations in nano-materials, conductive polymers, and sensors have significantly improved the functionality of smart textiles. These developments enable more precise health monitoring, energy harvesting, and responsive behaviors, making smart textiles increasingly viable for commercial use in sectors such as healthcare, sports, and defense.

Rising Demand for Wearable Technology: As consumers become more health-conscious and tech-savvy, there is an increasing demand for wearable devices that track physical activity, monitor health metrics, and enhance personal comfort. Smart textiles offer seamless integration of technology into everyday clothing, offering advantages over traditional wearables like fitness trackers and smartwatches.

Growth in Healthcare Applications: The demand for remote health monitoring is escalating, particularly in the wake of the COVID-19 pandemic. Smart textiles equipped with sensors that track vital signs, monitor body temperature, and even detect early signs of disease are seeing growing adoption in medical and healthcare applications. Additionally, elderly care and chronic disease management are fueling the need for continuous, non-invasive monitoring.

Energy Harvesting Capabilities: Smart textiles that can harvest ambient energy, such as motion, solar, or thermal energy, are gaining traction. These fabrics are particularly beneficial in off-grid and remote areas, where energy generation and storage are limited. The ability to power wearable devices without relying on batteries is a major selling point for industries like military, outdoor wear, and emergency response.

Sustainability Concerns: Growing environmental awareness is pushing the demand for ecofriendly, sustainable smart textiles. Innovations in recyclable, biodegradable, and energy-efficient fabrics are meeting consumer demand for greener products. Additionally, energy-efficient wearable technology that reduces dependence on external power sources is appealing to environmentally-conscious consumers.

Defense & Military Applications: The military is increasingly adopting smart textiles for applications such as uniforms that

Market Restraints:

- High Cost of Development: R&D and production are expensive, limiting market penetration.
- Durability Issues: Longevity and washability of smart textiles remain concerns.

• Regulatory Challenges: Compliance with health and electronic standards can slow down adoption.

• Consumer Skepticism: Limited awareness in developing regions.

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Recent Major Developments in the Market

In July 2023, MIT scientists introduced AI-powered smart textiles that can continuously track health data and motion, marking a breakthrough in wearable technology for health monitoring.

March 2024, researchers at the University of Manchester unveiled nano-enhanced fabrics capable of harvesting energy from motion and solar sources.

January 2025, a Swiss textile company developed wireless, battery-free smart garments that can monitor vital health metrics, powered solely by ambient energy.

February 2025, researchers at the University of California, Berkeley, introduced self-healing smart textiles designed for military applications.

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