

Smart Fabrics Market Size 2024 Business Insights and Trends Forecast by 2032 | Emergen Research

The global smart fabrics market size was USD 3.90 Billion in 2022 and is expected to register revenue CAGR of 24.5% during the forecast period

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/EINPresswire.com/ -- The global [smart fabrics market](#), valued at USD 3.90 billion in 2022, is projected to grow at a compound annual growth rate (CAGR) of 24.5% over the forecast period. This significant growth is fueled by advancements in wearable electronics, miniaturization of electronic components, and technological innovations in smart fabrics.



Smart fabrics, or smart textiles, are materials that integrate electronic components to offer advanced functionalities beyond traditional textiles. These fabrics can include features such as biometric monitoring, temperature regulation, gesture recognition, conductive properties for electronics integration, energy harvesting, and wireless data transmission. They find applications in diverse industries like fashion, sports, healthcare, automotive, and military, revolutionizing how we interact with clothing and everyday objects.

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The smart fabric market is propelled by the rising adoption of smart wearables, particularly in the medical sector where wearable medical devices are projected to reach 440 million globally by 2024. Innovations like integrating contactless payment functionality into fabric wearables by companies like MasterCard and CashCuff are driving market evolution. Moreover, advancements in flexible electronics and miniaturization, exemplified by initiatives such as UMass Lowell's research on wearable antennas and carbon-based transistors, contribute to market growth. However, challenges such as high production costs, data security concerns, and the complexity

of hybrid smart textiles may hinder revenue expansion.

Key Market Drivers:

Rising Adoption of Smart Wearables: The increasing use of smart wearables is a primary driver of market growth. By 2024, it is anticipated that up to 440 million wearable medical devices will be in use globally. This surge is driven by the healthcare sector's adoption of smart watches and other devices for medical purposes.

Contactless Payment Integration: Innovations like MasterCard and Timex's collaboration on contactless payment-enabled timepieces, and CashCuff's similar advancement with cufflinks, are pushing the market forward. These developments are paving the way for more versatile uses of smart fabrics.

Advancements in Flexible Electronics: Progress in flexible electronics and miniaturization is enhancing the functionality of smart fabrics. UMass Lowell's research on wearable antennas for military use and development of carbon-based transistors highlights these advancements.

Market Challenges:

High Production Costs: The significant investment required for incorporating sensors and microprocessors into fabrics, coupled with expensive manufacturing processes, presents a challenge. Additionally, the lack of standardized regulations can hinder the market expansion for smaller producers.

Data Security and Privacy Concerns: Concerns about data security and privacy are expected to restrain market growth, as smart fabrics increasingly integrate computing and monitoring functions.

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Segment Insights:

Type Dynamics:

Active Smart Fabrics: Dominated the market in 2022, particularly in sports and fitness apparel. Partnerships, such as Adidas and Spinnova's collaboration on sustainable materials, are driving growth in this segment.

Passive Smart Fabrics: Expected to register the fastest growth due to their enhanced functions and cost-effectiveness. Innovations, like temperature-responsive fabrics from the University of Cambridge and Aalto University, are contributing to this growth.

Functionality Insights:

Sensing: Accounted for the largest market share in 2022. Smart fabrics embedded with sensors

are widely used in military, medical, and sports applications. Products like Google and Levi's smart jacket exemplify the integration of sensing capabilities.

Energy Harvesting: Anticipated to grow rapidly as the demand for sustainable solutions increases. Smart fabrics that can harvest energy from mechanical, thermal, and solar sources offer significant potential.

Application Insights:

Military and Defense: Led the market in 2022, with smart fabrics being used for body monitoring, communication, and troop protection. These fabrics offer lightweight and flexible alternatives to traditional equipment.

Sports and Fitness: Expected to experience significant growth. Smart fabrics in this segment are used in high-tech devices for real-time health monitoring and performance tracking.

Smart Fabrics Top Companies and Competitive Landscape

The global smart fabrics market is fairly fragmented with many large and medium-sized players accounting for majority of market revenue. Major players are deploying various strategies, entering into mergers & acquisitions, strategic agreements & contracts, developing, testing, and introducing more effective smart fabrics.

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Some major players included in the global smart fabrics market report are:

Adidas AG

AiQ Smart Cothing Inc.

Clothing Plus Ltd.

Dupont De Nemours Inc.

Gentherm Incorporated

Google LLC

Interactive Wear AG

Ohmatex A/S

Schoellar Textil AG

Sensoria Inc.

Texas Instruments Incorporated

Textronics

Vista Medical Ltd.

Nike, Inc

Jabil Inc.

Smart Fabrics Latest Industry News

In February 2021, DuPont purchased Tex Tech's Core Matrix Technologies. This monolithic fabric structure can improve ballistic and fragment performance for law enforcement and military personnel while also reducing back face injuries. The National Institute of Justice (NIJ) becomes able to fulfil new criteria for greater durability with the most flexible and lightweight ballistic solutions due to this acquisition, which adds to the company's already extensive portfolio of life protection solutions. The new technology not only improves protection but also makes wearing bullet-resistant body armour more comfortable.

In April 2023, scientists in the United Kingdom made a big breakthrough by creating the world's first smart fabric, capable of changing shape and colour in response to two different stimuli: electricity and heat. This innovative discovery opens up a wide range of opportunities in several fields, such as robotics and virtual reality. Stimuli-responsive materials (SRMs) used in the fabric respond to outside stimuli including light, temperature, magnetic forces, and electricity. The SRM changes in mechanical characteristics, molecular makeup, or structure in response to various inputs. This development opens the door to novel uses and improvements in responsive fabrics.

Smart Fabrics Market Segment Analysis

For the purpose of this report, Emergen Research has segmented global smart fabrics market on the basis of type, functionality, application, and region:

Type Outlook (Revenue, USD Billion; 2019-2032)

Passive Smart Fabrics

Active Fabrics

Ultra-smart Fabrics

Functionality Outlook (Revenue, USD Billion; 2019-2032)

Sensing

Energy Harvesting

Luminescence & Aesthetics

Thermoelectricity

Others

Application Outlook (Revenue, USD Billion; 2019-2032)

Military and Defense

Architecture

Healthcare

Sports and Fitness

Fashion and Entertainment

Automotive

Others

Regional Outlook (Revenue, USD Billion; 2019-2032)

North America
U.S.
Canada
Europe
Germany
France
U.K.
Italy
Spain
Benelux
Russia
Rest of Europe
Asia Pacific
China
Japan
South Korea
India
ASEAN Countries
Oceania
Rest of APAC
Latin America
Brazil
Mexico
Rest of LATAM
Middle East & Africa
GCC Countries
Israel
Turkey
South Africa
Rest of MEA

The global smart fabrics market is on the cusp of significant growth, driven by advancements in wearable technology, flexible electronics, and sustainable materials. While challenges such as high production costs and data security concerns exist, the market's potential in various applications, from healthcare to military, ensures a promising future.

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