

Global Superconductors Market - Materials, Products and Applications

Market Report | 2024-11-05 | 274 pages | Industry Experts

AVAILABLE LICENSES:

- Single user licence (PDF) \$4500.00
- Enterprise Electronic (PDF) \$7200.00

Report description:

Global Superconductors Market Trends and Outlook

Superconductors are materials that can conduct electricity without resistance when cooled below a certain critical temperature. This means that once an electric current starts flowing through a superconductor, it can continue indefinitely without losing energy as heat. Superconductors with a critical temperature below 40K (-233.15C) are called low-temperature superconductors (LTS), those above 40K (-233.15C) are called high-temperature superconductors (HTS), and those with a critical temperature about 300K (26.85C) are called room-temperature superconductors. The superconductors market figures presented in this study refers to the annual sales generated by manufacturers of superconducting materials and products/systems. Services and maintenance revenue is not included in the market.

The global market for superconductors was valued at US\$7.8 billion in 2023. Forecast to be US\$8.5 billion in 2024, the global superconductors market size is projected to reach above US\$16 billion by 2030, growing at a CAGR of 11.2% between 2024 and 2030. This growth in superconductors market is mainly attributed to demand from new emerging applications in power & energy and absolute value growth in medical applications.

While demand for low-temperature superconductors (LTS) is continued to progress at high single digit rates driven by continued demand from established markets such as medical and scientific research & technology development, demand for high-temperature superconductors (HTS) is anticipated to advance at a faster pace during the forecast period. HTS tapes are already in demand for power grids (used in cables, transformers, and other components) and equipment like NMR spectrometers and MRI machines. If nuclear fusion reactors become a reality, they will require large amounts of HTS tape - stretching thousands of kilometers - to handle extremely high current densities. The historically limited production and high cost of high-temperature superconductors have been major barriers, but this is now changing as companies such as MetOx International and Faraday Factory Japan has now developed cost-effective methods to mass-produce HTS tapes with capacities close to 100 thousand kilometers per year.

Major companies operating in the global superconductors market include American Superconductor Corporation (AMSC), ASG Superconductors Spa, Bruker Corporation, CAN Superconductors s.r.o., Cryomagnetics Inc., Faraday Factory Japan LLC, Fujikura Ltd., Hitachi Ltd, SuperPower Inc. (Furukawa Electric), Japan Superconductor Technology Inc., Luvata Oy (Mitsubishi Materials), Shanghai Superconductor Technology Co., Ltd., Siemens AG, Sumitomo Electric Industries Ltd., SuNAM Co., Ltd., SuperOx, THEVA Dunnschichttechnik GmbH, and Western Superconducting Materials Technology Co., Ltd., among others.

Superconductors Regional Market Analysis

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

The global Superconductors market has been, for the purpose of this report, categorized into four major regions, namely North America, Europe, Asia-Pacific and Rest of World. These regional markets further analyzed for 12 independent countries across North America - The United States and Canada; Europe - France, Germany, Italy, Russia, Spain and the United Kingdom; and Asia-Pacific - China, India, Japan and South Korea.

Superconductors market is well developed in countries with advanced industrial, healthcare, and research infrastructures, where applications such as MRI systems, fusion research, and electrical equipment for power grids are in high demand. The U.S. leads in the application of superconductors, particularly in medical technologies and high-energy physics research. The U.S. accounts for a substantial share of the MRI market, where superconducting magnets are crucial, and is investing heavily in quantum computing and energy applications. Market share in the global superconductors market for North America (the U.S. and Canada) is around 35.4% in 2024, followed by Asia-Pacific and Europe.

In Europe, Germany, France, Italy, and the UK are the dominant players, while in Asia, China and Japan are at the forefront. China, in particular, has been expanding its capacity for both superconducting materials and applications in technology. South Korea is also emerging as a key player with a strong focus on advancing its electronics and energy industries using superconducting materials. Asia-Pacific, driven by robust growth in China and Japan, is anticipated to post the fastest CAGR of 13.5% between 2024 and 2030 reaching US\$6.3 billion by 2030.

Global Superconductors Market Analysis by Material Type

Based on material type, the Superconductors market is segmented into Low-Temperature Superconductors and High-Temperature Superconductors. Low-temperature superconducting materials have been in a dominant position in the global superconductors market, occupying a share of 83% in 2024, due to their excellent machining performance and cost advantages. They are widely used in medical equipment and large-scale scientific research projects. For example, in the medical field, it is mainly used in magnetic resonance imaging (MRI) machines; in scientific research, it is used in large proton colliders (such as LHC) and controlled nuclear fusion (such as ITER). In the forecast period, low-temperature superconducting materials will still be the main pillar materials of the superconducting industry and projected to occupy a share of 60.5% in 2030.

On the other hand, the demand for high-temperature superconductors is expected to record a robust CAGR of 28% between 2024 and 2030, reaching US\$6.4 billion in 2030. This growth will be largely attributed to projected high demand from electrical equipment (such as cables, current limiters, transformers, generators, motors, and superconducting magnetic energy storage (SMES) systems) used in power transmission and storage, and energy sectors.

High-temperature superconducting (HTS) tapes are increasingly used in power grids for cables, transformers, and other components, as well as in equipment like NMR spectrometers and MRI machines, with demand steadily rising. Furthermore, if nuclear fusion reactors become commercially viable, they will require vast quantities of HTS tape, spanning thousands of kilometers, to manage the exceptionally high current densities involved. According to the 2024 report by Fusion Industry Association, over 71% of fusion companies anticipate starting to deliver power to the grid before 2035. To make this happen, Fusion Industry Association projects multiple prototypes of fusion machines must be built, and the fusion industry would consume approximately 300,000 km of high-temperature superconductors, prompting scale-up of high-temperature superconductors production.

Global Superconductors Market Analysis by Product Type

The global Superconductors market is segmented based on product/device type into Superconducting Magnets, Superconducting Cables, Other Electrical Equipment (fault current limiters, transformers, generators, motors, degaussing systems and superconducting magnetic energy storage (SMES) systems etc.), Electronics & Others (superconducting quantum interference devices (SQUIDs), sensors and detectors, superconducting quantum processors, superconducting integrated circuit etc.). Superconducting magnets, mainly used in scientific research & technology development and medical applications, dominate the market for Superconductors worldwide, accounting for a share of 81% of the total market in 2024. However, with advancements in superconducting electrical equipment (such as transformers, generators, motors, current limiters, and power storage systems) and superconducting cables, the demand for these products is projected to record significant growth with CAGRs of 26.6% and 24.3% respectively during 2024-2030 period, capturing a combined share of 32.4% of the total superconductors market in 2030.

Global Superconductors Market Analysis by Application

The market for global Superconductors applications analyzed in this report include Medical Applications, Scientific Research &

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

Technology Development, Power & Energy, Transportation, Industrial Applications, and Other Applications such as quantum computing, communications, military/defense etc.

Superconductors are widely used in medical applications (such as MRI machines and NMR systems), for which the market value is estimated at US\$5.5 billion (64.4% share) in 2024 and further anticipated to post a 2024-2030 CAGR of 7.5%. However, demand for superconductors in power & energy applications is anticipated to post the fastest CAGR of 23.5% during 2024-2030 period reaching US\$3.6 billion by 2030 from US\$1 billion in 2024. In power & energy sector, superconductors are used in superconducting magnetic energy storage systems (SMES) and fault current limiters for stabilizing power grids, in superconducting cables for upgrading power grids to handle growing demand and lossless power transmission over long distances.

Superconductors Market Report Scope

This global report on Superconductors analyzes the market based on material type, product/device type and application. In addition to providing profiles of major companies operating in this space, the latest corporate and industrial developments have been covered to offer a clear panorama of how and where the market is progressing.

Key Metrics

Historical Period: 2021-2023

Base Year: 2023

Forecast Period: 2024-2030

Units: Value market in US\$

Companies Mentioned: 45+

Global Superconductors Market by Geographic Region

☐☐ North America (The United States and Canada)

☐☐ Europe (France, Germany, Italy, Russia, Spain, The United Kingdom and Rest of Europe)

☐☐ Asia-Pacific (China, India, Japan, South Korea and Rest of Asia-Pacific)

☐☐ Rest of World

Global Superconductors Market by Material Type

☐☐ Low-Temperature Superconductors (LTS) ☐ Niobium Titanium (NbTi) and Niobium Tin (Nb₃Sn)

☐☐ High-Temperature superconductors (HTS) ☐ BSCCO conductors incorporating Bismuth and cuprates (Bi₂Sr₂Ca₁Cu₂O_X or Bi₂Sr₂Ca₂Cu₃O_X), REBCO conductors (Rare-Earth₁Ba₂Cu₃O_X), MgB₂ (Magnesium Diboride)

Global Superconductors Market by Product Type

☐☐ Superconducting Magnets

☐☐ Superconducting Cables

☐☐ Other Electrical Equipment (fault current limiters, transformers, generators, motors, degaussing systems and superconducting magnetic energy storage (SMES) systems etc.)

☐☐ Electronics & Others (superconducting quantum interference devices (SQUIDs), sensors and detectors, superconducting quantum processors, superconducting integrated circuit etc.)

Global Superconductors Market by Application

☐☐ Medical Applications (Magnetic Resonance Imaging MRI, Nuclear Magnetic Resonance NMR, proton beam therapy, SQUIDs for detecting magnetic fields in the brain and heart etc.)

☐☐ Scientific Research & Technology Development (high energy physics, fusion energy development, particle accelerators)

☐☐ Power & Energy (power transmission, energy storage, wind turbines etc.)

☐☐ Transportation (levitating (maglev) trains, marine, frictionless bearings etc.)

☐☐ Industrial (magnetic separators, induction heaters, generators etc.)

☐☐ Other Applications (quantum computing, communications, military/defense etc.)

Table of Contents:

PART A: GLOBAL MARKET PERSPECTIVE

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

1. INTRODUCTION

Product Outline

- Superconductors Defined
- Superconducting Material Types
 - o□ Low-Temperature Superconductors (LTS)
 - Niobium Titanium (NbTi)
 - Niobium Tin (Nb₃Sn)
 - o□ High-Temperature superconductors (HTS)
 - BSCCO Conductors (Bi₂Sr₂Ca₁Cu₂O_x or Bi₂Sr₂Ca₂Cu₃O_x)
 - REBCO Conductors (Rare-Earth₁Ba₂Cu₃O_x)
 - MgB₂ (Magnesium Diboride)
- Superconducting Products, Devices and Systems
 - o□ Superconducting Magnets
 - o□ Electrical Equipment
 - o□ Electronics
 - o□ Other Products
- Superconductors Applications
 - o□ Medical Applications
 - o□ Scientific Research & Technology Development
 - o□ Power & Energy
 - o□ Transportation
 - o□ Industrial Applications
 - o□ Other Applications

2. KEY MARKET TRENDS

3. KEY GLOBAL PLAYERS

- American Superconductor Corporation
- ASG Superconductors Spa
- Bilfinger Nuclear & Energy Transition GmbH
- Brookhaven Technology Group
- Bruker Corporation
- CAN Superconductors s.r.o.
- Cryomagnetics Inc.
- Cutting Edge Superconductors, Inc.
- Epoch Wires, Ltd.
- Faraday Factory Japan LLC
- Fuji Electric Co.
- Fujikura Ltd.
- Furukawa Electric Co. Ltd. / SuperPower Inc.
- General Electric Co.
- High Temperature Superconductors Inc.
- Hitachi Ltd
- HTS-110 Limited Partnership
- Hyper Tech Research, Inc.
- Innova Superconductor Technology Co., Ltd. (InnoST)
- Japan Superconductor Technology Inc.
- Kawasaki Heavy Industries Ltd.
- LS Cable & System Ltd.

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- []Luvata Oy
- []MetOx International, Inc.
- []Mitsubishi Electric Corporation
- []New England Wire Technologies
- []Nexans S.A.
- []Oxford Instruments plc
- []QDM (Quantum Designed Materials) Tech Ltd.
- []Quantum Design Inc.
- []Sam Dong Co, Ltd.
- []Shanghai Creative Superconductor Technologies Co., Ltd. (SCSC)
- []Shanghai Superconductor Technology Co., Ltd.
- []Siemens AG
- []Solid Material Solutions, LLC
- []SUBRA A/S
- []Sumitomo Electric Industries Ltd.
- []Sumitomo Heavy Industries Ltd
- []SUNAM CO., LTD
- []Supercon Inc.
- []SuperOx
- []Suzhou Advanced Materials Research Institute (SAMRI) (Jiangsu Etern Co., Ltd.)
- []THEVA Dunnschichttechnik GmbH
- []Toshiba Corp.
- []Western Superconducting Materials Technology Co., Ltd.

4. KEY BUSINESS & PRODUCT TRENDS

5. GLOBAL MARKET OVERVIEW

- []Global Superconductors Market Overview by Material Type
 - o[]Superconductors Material Type Market Overview by Global Region
- []Low-Temperature Superconductors
- []High-Temperature Superconductors
- []Global Superconductors Market Overview by Product Type
 - o[]Superconductors Product Type Market Overview by Global Region
- []Superconducting Magnets
- []Superconducting Cables
- []Other Electrical Equipment
- []Electronics & Others
- []Global Superconductors Market Overview by Application
 - o[]Superconductors Application Market Overview by Global Region
- []Medical
- []Science, R & D
- []Power & Energy
- []Transportation
- []Industrial
- []Other Applications

PART B: REGIONAL MARKET PERSPECTIVE

- []Global Superconductors Market Overview by Geographic Region

REGIONAL MARKET OVERVIEW

6. NORTH AMERICA

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- North American Superconductors Market Overview by Geographic Region
- North American Superconductors Market Overview by Material Type
- North American Superconductors Market Overview by Product Type
- North American Superconductors Market Overview by Application
- Country-wise Analysis of North American Superconductors Market
 - o□The United States
 - United States Superconductors Market Overview by Material Type
 - United States Superconductors Market Overview by Product Type
 - United States Superconductors Market Overview by Application
 - o□Canada
 - Canadian Superconductors Market Overview by Material Type
 - Canadian Superconductors Market Overview by Product Type
 - Canadian Superconductors Market Overview by Application

7. EUROPE

- European Superconductors Market Overview by Geographic Region
- European Superconductors Market Overview by Material Type
- European Superconductors Market Overview by Product Type
- European Superconductors Market Overview by Application
- Country-wise Analysis of European Superconductors Market
 - o□France
 - French Superconductors Market Overview by Material Type
 - French Superconductors Market Overview by Product Type
 - French Superconductors Market Overview by Application
 - o□Germany
 - German Superconductors Market Overview by Material Type
 - German Superconductors Market Overview by Product Type
 - German Superconductors Market Overview by Application
 - o□Italy
 - Italian Superconductors Market Overview by Material Type
 - Italian Superconductors Market Overview by Product Type
 - Italian Superconductors Market Overview by Application
 - o□Russia
 - Russian Superconductors Market Overview by Material Type
 - Russian Superconductors Market Overview by Product Type
 - Russian Superconductors Market Overview by Application
 - o□Spain
 - Spanish Superconductors Market Overview by Material Type
 - Spanish Superconductors Market Overview by Product Type
 - Spanish Superconductors Market Overview by Application
 - o□The United Kingdom
 - United Kingdom Superconductors Market Overview by Material Type
 - United Kingdom Superconductors Market Overview by Product Type
 - United Kingdom Superconductors Market Overview by Application
 - o□Rest of Europe
 - Rest of Europe Superconductors Market Overview by Material Type
 - Rest of Europe Superconductors Market Overview by Product Type
 - Rest of Europe Superconductors Market Overview by Application

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

8. ASIA-PACIFIC

- Asia-Pacific Superconductors Market Overview by Geographic Region
- Asia-Pacific Superconductors Market Overview by Material Type
- Asia-Pacific Superconductors Market Overview by Product Type
- Asia-Pacific Superconductors Market Overview by Application
- Country-wise Analysis of Asia-Pacific Superconductors Market
 - o□China
 - Chinese Superconductors Market Overview by Material Type
 - Chinese Superconductors Market Overview by Product Type
 - Chinese Superconductors Market Overview by Application
 - o□India
 - Indian Superconductors Market Overview by Material Type
 - Indian Superconductors Market Overview by Product Type
 - Indian Superconductors Market Overview by Application
 - o□Japan
 - Japanese Superconductors Market Overview by Material Type
 - Japanese Superconductors Market Overview by Product Type
 - Japanese Superconductors Market Overview by Application
 - o□South Korea
 - South Korean Superconductors Market Overview by Material Type
 - South Korean Superconductors Market Overview by Product Type
 - South Korean Superconductors Market Overview by Application
 - o□Rest of Asia-Pacific
 - Rest of Asia-Pacific Superconductors Market Overview by Material Type
 - Rest of Asia-Pacific Superconductors Market Overview by Product Type
 - Rest of Asia-Pacific Superconductors Market Overview by Application

9. REST OF WORLD

- Rest of World Superconductors Market Overview
- Rest of World Superconductors Market Overview by Material Type
- Rest of World Superconductors Market Overview by Application

PART C: GUIDE TO THE INDUSTRY

PART D: ANNEXURE

1. RESEARCH METHODOLOGY

2. FEEDBACK

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

Global Superconductors Market - Materials, Products and Applications

Market Report | 2024-11-05 | 274 pages | Industry Experts

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scott's-international.com

ORDER FORM:

Select license	License	Price
	Single user licence (PDF)	\$4500.00
	Enterprise Electronic (PDF)	\$7200.00
		VAT
		Total

*Please circle the relevant license option. For any questions please contact support@scott's-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	<input type="text"/>	Phone*	<input type="text"/>
First Name*	<input type="text"/>	Last Name*	<input type="text"/>
Job title*	<input type="text"/>		
Company Name*	<input type="text"/>	EU Vat / Tax ID / NIP number*	<input type="text"/>
Address*	<input type="text"/>	City*	<input type="text"/>
Zip Code*	<input type="text"/>	Country*	<input type="text"/>
		Date	<input type="text" value="2026-02-22"/>
		Signature	<input type="text"/>

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scott's-international.com

www.scott's-international.com