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Global Low Temperature Superconducting Material Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Low Temperature Superconducting Material market size is expected to reach $ 18593 million by 2032, rising at a market growth of 12.9% CAGR during the forecast period (2026-2032).

Low temperature superconducting materials are special functional materials that exhibit zero electrical resistance and complete diamagnetism at critical temperatures below 25K in the liquid helium temperature range, mainly including niobium-titanium, niobium-tin, niobium-aluminum and high-purity niobium and other intermetallic compounds and alloy systems. The industry covers the entire manufacturing process from ultra-high-purity raw material smelting, alloy melting, wire drawing, cable stranding to magnet winding, involving key process technologies such as vacuum electron beam melting, large composite cladding assembly, multi-filament fine wire drawing, and aging heat treatment. As the core functional material of superconducting magnets, low temperature superconducting materials are irreplaceable strategic basic materials for high-end equipment such as magnetic resonance imaging, nuclear fusion energy, particle accelerators, and scientific instruments. With the global development of nuclear fusion energy entering the engineering stage, high-field MRI developing toward ultra-high fields above 9.4T, and the acceleration of large scientific facility construction, low temperature superconducting materials are facing a magnitude leap from 'ITER scale' to 'commercial fusion scale', with technical barriers reflected in multi-dimensional extreme manufacturing capabilities such as ultra-high-purity raw material control, ten-thousand-core-level fine wire processing, kilometer-level long wire performance uniformity, and low AC loss design.

Market Development Opportunities and Key Driving Factors

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ITER completed the installation of the world's largest pulsed magnet system in April 2025, with Western Superconducting Technologies, as the only Chinese supplier for ITER, having cumulatively supplied 208 tons of superconducting wires. The United States plans to build a fusion demonstration reactor by 2040, and the European Union plans to achieve commercial power generation by 2050. Siemens, GE and others are promoting the commercialization of 9.4T ultra-high-field MRI, and Western Superconducting Technologies' NbTi superconducting wires for 9.4T high-field magnets have been supplied in batches. Western Superconducting Technologies has broken through the technology of helium-free high-field superconducting magnets, promoting the development of materials toward 'helium-free' operation.

Market Challenges and Risks

The ITER Director-General pointed out that COVID-19 and technical issues have caused project delays. Western Superconducting Technologies is the only enterprise in the world to achieve full-process production of NbTi, and this highly concentrated supply pattern brings potential capacity bottlenecks. ITER NbTi superconducting wires must meet stringent requirements of maximum length of 90,000 meters and Jc fluctuation of less than 5%. As a 35-nation cooperative project, ITER faces uncertainty in technology transfer and capacity coordination under current international circumstances.

Downstream Demand Trends

Chinese projects such as CRAFT, BEST, and CFETR are accelerating, with Western Superconducting Technologies selling 2,344 tons of superconducting products in 2024, in short supply. The second phase of CFETR's 1.2 billion yuan magnet order has been secured, with localization rate exceeding 90%. Global annual MRI equipment shipments are about 6,000 units, each requiring 1-3 tons of NbTi superconducting wires. Western Superconducting Technologies has broken through the technology of helium-free MRI NbTi superconducting wires, reducing hospital operating costs.

Regional Trends

Western Superconducting Technologies has completed the delivery of 208 tons of ITER wires, occupying the core share of domestic projects such as CRAFT, BEST, and CFETR. China Nuclear Engineering & Construction Corporation became the sole contractor for ITER host installation in February 2024. The US market relies on enterprises such as Bruker and Hyper Tech Research to maintain technological leadership. In the European market, Luvata supplies 86% of the TF magnet coil

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superconducting wires for ITER's US share.

This report studies the global Low Temperature Superconducting Material production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Low Temperature Superconducting Material and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Low Temperature Superconducting Material that contribute to its increasing demand across many markets.

Highlights and key features of the study
Global Low Temperature Superconducting Material total production and demand, 2021-2032, (Tons)
Global Low Temperature Superconducting Material total production value, 2021-2032, (USD Million)
Global Low Temperature Superconducting Material production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Tons), (based on production site)
Global Low Temperature Superconducting Material consumption by region & country, CAGR, 2021-2032 & (Tons)
U.S. VS China: Low Temperature Superconducting Material domestic production, consumption, key domestic manufacturers and share
Global Low Temperature Superconducting Material production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Tons)
Global Low Temperature Superconducting Material production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Tons)
Global Low Temperature Superconducting Material production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Tons)

This report profiles key players in the global Low Temperature Superconducting Material market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include SuperNode, Hyper Tech, SuNAM, ASG Superconductors, Luvata, Kiswire, Bruker, Furukawa Electric, Western Superconducting, Ningbo Jianxin, etc.

This report also provides key insights about market drivers, restraints, opportunities,

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new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Low Temperature Superconducting Material market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (Tons) and average price (US$/Ton) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Low Temperature Superconducting Material Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Low Temperature Superconducting Material Market, Segmentation by Type:

Wire Superconducting Material

Bulk Superconducting Material

Thin Film Superconducting Material

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Global Low Temperature Superconducting Material Market, Segmentation by Performance:

- High Critical Current Density Materials
- High Critical Magnetic Field Materials
- High Mechanical Strength Materials

Global Low Temperature Superconducting Material Market, Segmentation by Magnetic Response:

- Type I Superconducting Material
- Type II Superconducting Material

Global Low Temperature Superconducting Material Market, Segmentation by Material Composition:

- Pure Metal Superconducting Material
- Alloy Superconducting Material
- Compound Superconducting Material

Global Low Temperature Superconducting Material Market, Segmentation by Application:

- Traffic Area
- Medical Field
- Power Field

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Industrial Manufacturing

Companies Profiled:

SuperNode

Hyper Tech

SuNAM

ASG Superconductors

Luvata

Kiswire

Bruker

Furukawa Electric

Western Superconducting

Ningbo Jianxin

Key Questions Answered:
1. How big is the global Low Temperature Superconducting Material market?
2. What is the demand of the global Low Temperature Superconducting Material market?
3. What is the year over year growth of the global Low Temperature Superconducting Material market?
4. What is the production and production value of the global Low Temperature Superconducting Material market?
5. Who are the key producers in the global Low Temperature Superconducting Material market?
6. What are the growth factors driving the market demand?

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Contents

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3 WORLD MANUFACTURERS COMPETITIVE ANALYSIS

4 UNITED STATES VS CHINA VS REST OF THE WORLD

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8 MARKET ANALYSIS BY MATERIAL COMPOSITION

9 MARKET ANALYSIS BY APPLICATION

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10 COMPANY PROFILES

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List Of Tables

LIST OF TABLES

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List Of Figures

LIST OF FIGURES

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