

North America Scandium Market Forecast to 2031 - Regional Analysis - by Derivative (Oxide, Iodide, Alloy, Zirconia, and Others) and Application (Aerospace and Defense, Solid Oxide Fuel Cells, Electronics, Ceramics, Lighting, Nuclear Applications, 3D Printing, and Others)

<https://marketpublishers.com/r/NF85945C32C4EN.html>

Date: October 2024

Pages: 96

Price: US\$ 3,550.00 (Single User License)

ID: NF85945C32C4EN

Abstracts

The North America scandium market was valued at US\$ 89.02 million in 2023 and is expected to reach US\$ 686.46 million by 2031; it is estimated to record a CAGR of 29.1% from 2023 to 2031.

Increasing Adoption of Solid Oxide Fuel Cells Drives North America Scandium Market

Solid oxide fuel cells (SOFCs), known for their high efficiency and low emissions, are gaining traction as a promising alternative to conventional power generation technologies in various sectors, including stationary power generation, transportation, and portable electronics. Scandium plays a pivotal role in SOFC technology, particularly in the form of scandium-stabilized zirconia (ScSZ). Used as an electrolyte in these cells, ScSZ improves ionic conductivity at elevated temperatures, enabling efficient ion transport across the cell and enhancing overall performance. This results in higher energy conversion efficiencies and enhanced durability, making SOFCs more attractive for widespread commercial and industrial applications.

The surging demand for clean energy owing to environmental concerns and regulatory pressure to reduce greenhouse gas emissions is fueling the adoption of SOFCs worldwide. SOFCs, when operated with a hydrocarbon fuel source, generate CO₂, but they carry out much cleaner processing of fuels than combustion-based systems,

positioning themselves in low-emission devices. In 2000, the US Department of Energy initiated the SOFC Program to develop low-cost, highly efficient, environmentally friendly SOFC technology for smaller, modular-scale, large-scale power generation from natural gas or coal-derived synthesis. In addition, in September 2020, the US Department of Energy (DOE) announced the funding of approximately US\$ 34 million for 12 Small-Scale Solid Oxide Fuel Cell Systems and Hybrid Electrolyzer Technology Development projects under the funding opportunity announcement (FOA). Industries seeking to decarbonize their operations are increasingly opting for SOFCs as a reliable and sustainable power generation option. Thus, an upsurge in SOFC deployment is directly driving the demand for scandium, as ScSZ remains a critical component in the fabrication of high-performance SOFCs.

North America Scandium Market Overview

Scandium is one of the rare earth metals with unique properties. The scandium market in North America is characterized by the increasing demand for this metal in various industrial sectors and ongoing efforts to develop its domestic sources to reinforce the supply chain. Scandium has garnered significant attention in North America due to its potential applications in the aerospace, automotive, electronics, clean energy, and defense industries. Moreover, the burgeoning emphasis on technological innovation, sustainability, and economic development in the region has increased interest in this metal. Governments, industry stakeholders, and research institutions in North America are actively exploring opportunities to develop domestic scandium resources, enhance extraction technologies, and promote scandium-based industries with an aim to lower dependency on foreign sources. In May 2022, Rio Tinto completed the commissioning of the first module of the commercial-scale demonstration plant at its Rio Tinto Fer et Titane (RTFT) metallurgical complex in Sorel-Tracy, Quebec, Canada. The plant has produced the first batch of high-purity scandium oxide, positioning itself as the first North American producer of scandium to be used in aluminum alloys and solid oxide fuel cells.

The aerospace & defense sectors in North American countries generate a significant demand for scandium, wherein scandium-containing alloys are procured significantly for their lightweight and high-strength properties. These alloys are used in manufacturing aircraft components, missile systems, and military equipment, as they aid in enhanced performance, fuel efficiency, and durability. Additionally, the automotive sector in North America is increasingly adopting scandium-aluminum alloys to produce lightweight and fuel-efficient vehicles.

North America Scandium Market Revenue and Forecast to 2031 (US\$ Million)

North America Scandium Market Segmentation

The North America scandium market is categorized into type, application, and country.

Based on type, the North America scandium market is segmented into oxide, iodide, alloy, zirconia, and others. The oxide segment held the largest market share in 2023.

By application, the North America scandium market is segmented into aerospace and defense, solid oxide fuel cells, electronics, ceramics, lighting, nuclear applications, 3D printing, and others. The others segment held the largest market share in 2023.

By country, the North America scandium market is segmented into the US, Canada, and Mexico. The US dominated the North America scandium market share in 2023.

American Elements Inc; Niocorp Development Ltd; Strategic Metal Investments Ltd; Rio Tinto Ltd; Scandium International Mining Corporation; Stanford Advanced Materials; US Research Nanomaterials, Inc; Heeger Materials Inc; and Hunan Oriental Scandium Co Ltd. are some of the leading companies operating in the North America scandium market.

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