

Data Center Materials



Article Overview

Data centers rely on a combination of metals, plastics, coatings, adhesives, and energy storage materials to ensure durability, efficiency, and reliable operation.

Structural Materials

Steel and concrete form the backbone of data center buildings, providing strength and stability for heavy equipment and raised flooring systems. Aluminum is often used in server enclosures, cable trays, and cooling ducts due to its lightweight nature and high thermal conductivity, which aids in heat dissipation. These metals are chosen for their durability, corrosion resistance, and recyclability, supporting long-term infrastructure resilience.

Electrical and Networking Materials

Copper is critical for electrical wiring, bus bars, and power distribution systems because of its excellent conductivity, ensuring efficient energy delivery to servers and cooling systems. Silicon and other semiconductors are used in server hardware, storage devices, and networking equipment, forming the core of computing and data processing capabilities. Lithium is increasingly used in modern lithium-ion batteries for backup power, replacing traditional lead-acid batteries.

Plastics and Insulation

Polyvinyl chloride (PVC) and other plastics are used for cable insulation, conduits, and protective components. These materials provide flame retardancy, electrical insulat...

Article Content

Data Center Solutions | US

3M Science enables innovative technologies for mission-critical data center deployments with a range of data center products. From

Specialty Metals for Data Centers | McNICHOLS®

In the data center industry, Specialty Metals play a crucial role beyond mere construction—they are integral to the very foundation of

Data Center Materials Design Guide

Designed to meet your unique application requirements, Rogers' high-performance engineered materials deliver long-term solutions

Datacenter Cable Materials

Cable materials play an important role in enhancing data center efficiency and uptime by addressing key performance and reliability

AI data center materials | Covestro

We provide advanced material solutions that help support safe operation and effective thermal management, enabling low-carbon,

What type of materials are used in data centers?

Below, we explore the key materials used in data center infrastructure, equipment, and systems, with a focus on their applications

Data center infrastructure: 5 key components and best practices

Data center infrastructure: 5 key components and best practices Data center infrastructure refers to the collection of physical and

Best Plastic Materials for Data Center Systems | Piedmont Plastics

From there, choose materials that complement your data center's physical structure and aesthetic features. For instance, twinwall

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Find right material for use from early concept design, manufacturing simulation, to final validation. Simcenter™ Material Data Center

Nucor | Data Centers | Design to Installation

Nucor: a partner for sustainable data center construction from design to installation with high-quality, low-embodied carbon steel.

Key Minerals in Data Centers Infographic | U.S. Geological Survey

Demand for data centers is rising, especially to support new AI technologies that are computationally intense. Data centers require

Contact Us

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