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The Global Market for Aerogels to 2031

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Abstracts

Aerogels are nanostructured materials with low density, high surface area (>150 m2/g) and open porosity (typically 95–99.99 %), resulting in very low densities. The pores are very narrow (2–50 nm), which contributes to very high specific surface areas. Their high porosities and low densities make aerogels excellent light-weight insulators of heat, sound, and electricity, and their high specific surface areas make them good absorbers of both active materials for controlled release, and of pollutants. Aerogels made of materials such as silica or aluminium oxide have a strong resistance to fire and chemicals.

Special characteristics including:

low density;

low thermal conductivity;

ultralight (0.00012 to 0.9 g/cc);

high surface area (Up to 3000 m2/g);

high and open porosity (typically in the 95–99.99 % range);

superinsulating (10-80 mW/m-K);

excellent impact damping properties;

flame and moisture resistance;

low optical index of refraction;

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high air flowability;

low speed of sound;

high loading capacity;

tuneable chemical functionalities;

renewable resources;

low dielectric constant.

These properties are desirable for applications in:

Biomedical

Drug delivery carriers.

Tissue engineering (synthetic bone grafts).

Wound dressings.

Energy infrastructure

Refineries.

Petrochemical.

Oil sands.

Offshore.

Power generation.

Environmental absorbents, sensors and catalysts

Wastewater treatment.

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Air and water pollutant detection.

Sound insulation.

Food

Delivery.

Food additives.

Storage of temperature-sensitive food.

Building and construction

Non-combustible thermal insulation.

Composite panels and blankets.

Insulated spray rendering.

Acoustic insulation.

Polycarbonate wall panels.

Coatings and paints

Window insulation.

Removal of indoor air contaminants.

Energy conversion and storage

Lithium-ion batteries.

Electric vehicles.

Supercapacitors.

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Fuel cells.

Solar.

Apparel and textiles.

Thermal insulation.

Antibacterial textiles.

Medical textiles.

Flame retardant textiles.

Footwear.

Cold-chain packaging.

Insulated packaging.

Sport foods composites.

Demand for aerogels has grown in regulation friendly, high-performance, insulating materials in housing and building markets and in industries, where the minimization of weight is critical (e.g. automotive, aerospace). Despite the numerous potential market applications of aerogels, their use in industrial applications has been limited, mainly due to cost. However, the market is predicted to grow significantly over the next decade due to improvements in aerogel technology and market demand for lighter, stronger and more environmentally friendly materials, especially in building insulation.

Application as thermal insulation materials in construction and architecture is the largest market for aerogels and one with the potentially the greatest economic return. As well as loft and fa?ade insulation, aerogels are also suitable for windows due to their high transparency (more than 90% light transmission).

Aerogels can be divided into two broad categories, namely inorganic and organic, each category being further divided according to the nature of the materials used in the design of the gel structure.

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Report contents include:

Market drivers.

Market challenges.

Recent market activity.

Impact of COVID-19 crisis on the aerogels market.

Assessment of aerogels market by types.

Global revenues 2018 to 2031 by type, markets and regions.

End user market analysis.

Patent analysis.

Assessment of key industry players.

37 Company profiles. Companies profiled include Armacell, Aspen Aerogel, Blueshift Materials, Cabot Corporation, Enersens SAS, JIOS Aerogel, Guangdong Alison Hi-Tech Co., Ltd., Sunthru, Thermulon and many more.

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