



TECHNOLOGY SOLUTION

Materials and Coatings



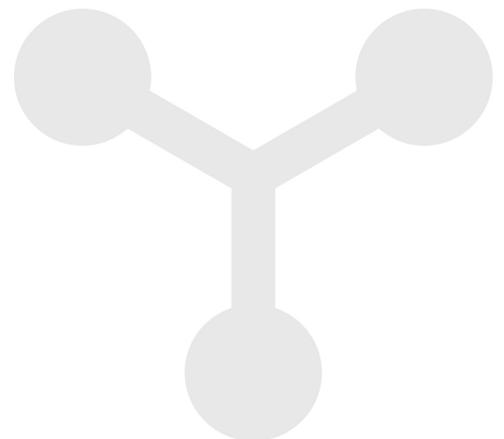
Aerofoam

New Inorganic/Organic Materials for Thermal and Acoustic Insulation

NASA Kennedy Space Center seeks partners interested in the commercial application of Aerofoam. Aerofoam is a unique foam composite insulation with improved thermal and acoustic insulation properties. The novelty of this invention comes from combining a polymer foam with a unique inorganic filler in a way that maximizes thermal performance while maintaining mechanical performance, chemical resistance, fire resistance, and acoustic insulation capabilities. The development of new manufacturing processes has also allowed for the development of these unique composite materials.

BENEFITS

- Improved thermal performance
- Excellent low- and high-temperature performance, with outstanding flame resistance
- Excellent structural and mechanical properties
- Versatility - the foam composites can be optimized for different material properties
- Improved acoustic attenuation



THE TECHNOLOGY

The Aerofoam composites have superior thermal and acoustic insulation properties when compared to conventional polyimide foams. In addition, they provide greater structural integrity than the fragile aerogel materials can provide independently. In general, polymer foams can provide excellent thermal insulation, and polyimide foams have the additional advantage of excellent high-temperature behavior and flame resistance compared to other polymer systems (they do not burn or release noxious chemicals). Incorporating aerogel material into the polyimide foam as described by this technology creates a composite that has been demonstrated to provide additional performance gains, including 25% lower thermal conductivity with no compromise of the structural integrity and high-temperature behavior of the base polyimide foam. The structural properties of Aerofoam are variable based on its formulation, and it can be used in numerous rigid and flexible foams of varying densities.

Aerofoam has a number of potential commercial applications, including construction, consumer appliances, transportation, electronics, healthcare, and industrial equipment. In addition, these high-performance materials may prove useful in applications that require insulation that can withstand harsh environments, including process piping, tanks for transporting and storing hot or cold fluids, ship and boat building, and aerospace applications.

APPLICATIONS

The technology has several potential applications:

- Construction materials for industrial, commercial, and residential applications
- Thermal Insulation Materials
- Storage and transportation systems for food, medical products, and chemicals
- Ships, boats, and submarines
- Aerospace vehicles

PUBLICATIONS

Patent No: 7,781,492; 7,977,411

Patent Pending

National Aeronautics and Space Administration

Agency Licensing Concierge

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