

# International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

Balapur P.O., Hyderabad – 500005, Telangana, India



## Silica Aerogel Flexible Sheets for Thermal Insulation Application

### Overview

ARCI has embarked on world class product development, “Silica aerogel flexible sheets” for thermal insulation application with the objectives of indigenization under the ‘Make in India’ initiative. Silica aerogel is an ultra-low density nanoporous material known for its best thermal insulation property in wide temperatures range from -50 to 800°C. In spite of all the potential benefits of aerogels, its commercial use was restricted due to its fragile nature. ARCI’s product made up of fiber-aerogel composite overcomes this limitation by making it mechanically stronger and flexible. The silica aerogel in this product has a special property of infra-red radiation reflection which helps to minimize the heat loss by radiation at high temperature. The product possesses all the properties ideally required as the best thermal insulation material such as low thermal conductivity, corrosion resistance, chemical resistance, good compressive strength, light weight, moisture resistance, fire resistance etc.

### Key Features

- Thickness : 5 – 25 mm
- Thermal stability : - 50to 800 °C
- Thermal conductivity : 0.04W/mK at RT (Transient plane method)
- Density : 0.2 g/cc
- Good Mechanical strength
- Neutral in pH (water vapours passing through show pH 7) and non-corrosive
- Hydrophobic; if immersed in water for 5 hours, < 1% water is retained in the sheet
- Breathable

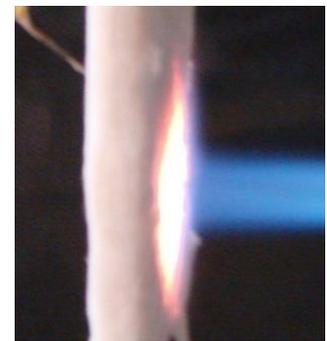


Photo of Aerogel Flexible Sheet Roll

### Potential Applications

Thermal insulation in sectors like

- Power plants, oil & gas industries
- Architectural
- Automotive
- Defence and Aerospace
- Heat / cold storages



Fire Protection Property of aerogel sheet

### Intellectual Property Development Indices (IPDI)

- Aerogel sheet production up-scaled to 300 x 3000 mm size
- Tailored to achieve all the characteristics for ideal insulation material
- Technology transferred to an Indian Industry for commercialization

Status	1	2	3	4	5	6	7	8	9	10
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### Major Patents / Publications

1. Patent : An improved process for producing silica aerogel thermal insulation product with increased efficiency, Neha Hebalkar, Application number: 2141/DEL/2015

#### Centre for Nanomaterials (CNAM)

ARCI, Balapur PO., Hyderabad 500005, Telangana, India  
Tel : +91 40 24452447 / 24452334; Fax : +91 40 24442699

Email: neha [at] arci [dot] res [dot] in / vijay [at] arci [dot] res [dot] in / tata [at] arci [dot] res [dot] in