

AUFRAX[®] Microporous insulation material

Aufrax[®] microporous insulation products are based on advanced micro-nano insulation technology. It is made by nano-SiO₂, micro-nano alumina or silica as the main components, with nano-SiC or TiO₂ serving as infrared radiation shielding agents, and is produced through a specialized forming process.

Aufrax[®] microporous fire insulation board is a super insulation material with a thermal conductivity lower than that of static air at room temperature and the ability to maintain extremely low values even at high temperatures. This performance is determined by the selected raw materials, structure, density and porosity of the product.

Due to its unique structure and material composition, the microporous insulation board provides resistance to all three heat transfer mechanisms: conduction, convection and radiation.

Conduction: Due to the low density of the product and its porous structure at the microscopic level, heat transfer caused by conduction is reduced. The main components also include porous micro-nano refractory materials, and this microporous structure minimizes the contact points between molecules, thereby reducing energy transfer from one molecule to another.

Convection: The nanopore size of the microporous insulation material is designed to be smaller than the mean free path of air molecules, trapping air in small spaces. As a result, convective heat transfer in the microporous insulation board is nearly zero.

Radiation: The exceptional microporous insulation material incorporates a combination of radiation-shielding agents and porous micro-nano materials, specifically designed to minimize radiative heat transfer. This enables the product to surpass both aerogel materials and conventional nano-insulation boards in thermal performance.



Key Features:

- High thermal stability
- Non-combustibility
- Easy installation
- Good machinability
- Free of respirable fibers
- Environmentally friendly, no organic binders
- Resistant to most chemicals

Typical Applications:

Lining insulation (Industrial furnaces in the steel, ceramics, glass, and petrochemical industries)
Aluminum industry (Launders, molten aluminum ladles, holding furnaces, melting furnaces, etc.)
Fuel cells (SOFC - Solid Oxide Fuel Cells)
Thermal batteries
Data recorders (Protection of electronic components)
Black boxes and VDRs (Voyage Data Recorders) for aerospace, rail, and marine applications

Easy to Use

Can be shaped manually or using fixed woodworking machinery.
Can be cut, sawn, drilled, and stamped.
Can be secured using adhesives or mechanical fasteners such as bands, pins, and clips.

When significant temperature reduction is required in **confined spaces** or when **strict heat loss/surface temperature control** is needed, microporous insulation materials are the optimal choice.

The Aufrax[®] microporous insulation product includes both microporous boards and flexible materials.

Model	Super K950	SuperK1000	SuperK1050	SuperFK1000
Classify temperature °C	1100	1200	1200	1200
Long term working temperature °C	950	1000	1050	1000
Color	Grey	Grey	Off-white	Silver/white
Specific heat capacity J/Kg.k	800			
Density kg/m3	230-280	230-280	230-280	340-370
Compression ratio at 0.1Mpa	2.9%	2.9%	2.9%	3.8%
LOI (%) one side /12hr	≤1			
Breaking strength (N/mm2)	1.1			
Surface cover	Aluminum Foil Covering, fiberglass covering, PE, PI and customized			
Ratio of shrinkage (six sides/ 12hr)	<800°C / 0.7% ; 1000°C / 1.5%			
Average temperature (°C)	Average heat conductivity coefficient W/m-k			
20°C	0.019	0.019	0.019	0.021
200°C	0.021	0.021	0.021	0.023
400°C	0.025	0.025	0.025	0.028
600°C	0.030	0.030	0.030	0.034
800°C	0.038	0.038	0.038	0.042
Chemical component	SiO2 50~80%, A2O3 0-10% SiC 10~35% ZrSiO4 0~40% Others 5~10%			
Standard dimension (thickness)	5,6,7,10,20,25,50mm			
Standard dimension (Length*width)	400*500, 400*600,500*600, 600*1000, 1200*1000			
The above data represents average test results obtained under the company's internal standard procedures and may deviate from actual values. For more information, please contact us.				

Additional Product Features

Thermal Shock Resistance: Aufrax[®] microporous boards can withstand severe thermal shocks caused by rapid heating and cooling.

Susceptibility to Liquids: Liquid substances such as water, detergents, crude oil, petroleum, and alcohol can severely damage Aufrax[®] microporous boards, as these liquids can disrupt the microporous structure.

Storage: Aufrax[®] microporous boards can be stored for long periods in dry environments. They should be installed and stored in liquid-free conditions. Moist air or steam does not affect the stability of Aufrax[®] microporous boards.