



KB4100H Series–Nano Insulation Boards

KB4100H is a high-performance thermal insulation material developed based on the nanoscale microporous insulation principle. Its core substrate is nano-sized silica, with an original particle size ranging from only 10 to 40 nm—significantly smaller than the average free path of air molecules (70–100 nm)—which effectively blocks gas convection heat transfer within the material from the very source. Additionally, it is formulated with highly efficient infrared-reflective and light-shielding components that comprehensively suppress the three major heat transfer mechanisms—conduction, convection, and radiation—achieving exceptional thermal insulation performance.

Main features:

1. Low thermal conductivity and excellent thermal insulation;
2. Easy to install and process, with strong adaptability;
3. Non-flammability;
4. Long lifespan and stability; the inorganic substrate exhibits excellent resistance to aging and creep.
5. Environmentally friendly and VOC-free.

Basic use:

1. Used in iron and steel metallurgy, such as ladles, tundishes, heat treatment furnaces, melting furnaces, holding furnaces, pouring ladles, and flow channels;
2. Used in the chemical industry, such as cracking furnaces, reaction vessels, high-temperature pipelines, and more;
3. Used in the new energy sector, such as energy storage battery PACKs, thermal management systems for new-energy vehicles, charging stations, fuel cells, and more;
4. Used in high-end equipment and aerospace applications, such as aircraft engines, spacecraft, flight recorders (black boxes), precision instruments, and lifeboats;
5. Used in the home appliance industry, such as thermal-storage electric heaters, electric ceramic cooktops, and ovens;
6. Other fields include ceramic cement, special equipment (elevators), thermal instruments (temperature recorders, thermocouples), cold-chain logistics, and core materials for building vacuum-insulated panels (VIPs), among others.

Customized service:

1. Customized dimensions: Product thickness ranges from 0.8 to 4 mm, and custom sizes are available.
2. Special processing customization: Can be cut into specified rectangular dimensions.

Packing:

1. The product is packaged using moisture-proof plastic film plus a sturdy cardboard box to prevent dampness, compression, and damage during transportation.
2. Each box is accompanied by a certificate of product conformity, batch number, specifications and model, and date of manufacture.
3. The outer packaging has clear markings indicating warnings such as "moisture-proof," "sun-resistant," "handle with care," and "do not stack."

Storage:

1. It should be stored in a dry, well-ventilated, and cool indoor environment, avoiding exposure to rain, soaking in water, and prolonged direct sunlight.
2. Storage environment temperature: -20°C to 60°C; relative humidity ≤ 85% RH; Lifespan: not less than 12 months.

Safety Instructions:

1. This product is an inorganic nano-insulation material that is non-toxic, asbestos-free, and does not release toxic gases at high temperatures.
2. If the product comes into contact with your eyes, immediately rinse thoroughly with plenty of water and seek medical attention. If swallowed accidentally, do not induce vomiting—seek medical attention promptly.

The information contained in this document is intended to assist you in designing with Kangbei high-performance insulation materials. It does not constitute, nor is it intended to constitute, any express or implied warranties, including any warranties regarding the merchantability of the product or its suitability for a particular purpose. Furthermore, no guarantee is provided that users will achieve the results indicated in this material selection guide when using these materials for specific applications. Users are responsible for determining the suitability of Kangbei high-performance foam materials for each individual application.

Testing items	Testing method	Typical Values for the Nano-Insulation Board Series	
		KB4100H Series	
Color	Visually	Gray plate-shaped material	
Thickness mm	Thickness gauge	0.8~4.0	
Density kg/m ³	GB/T 533-2008	260~450	
Compressive strength MPa	ASTM D412	Compress by 10%	≥0.2
		Compress by 20%	≥0.5
		Compress by 30%	≥1.3
Flame retardancy	UL94-2013	UL94 V-0	
Insulation resistance MΩ	GB/T 1410 (DC 1000V)	≥500	
Water absorption rate %	ASTM D 570 (85% RH, 1000 h)	≤5	
Specific heat capacity J/(g·°C)	ASTM E1269-2011	≥0.3	
Thermal conductivity W/(m·K)	ASTM C 518	20°C	≤0.020
		100°C	≤0.025
		500°C	≤0.030
		800°C	≤0.040
Thermal insulation performance	/	≥500°C (@675°C/2mm)	
Temperature resistance limit	Flame Impact	Under direct impact from a high-temperature flame at 1200°C, No burn-through; integrity remains well-preserved.	
Environmental testing REACH/ROHS/ELV		Compliant	

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