

SUPHIP® 灼克™ Nanocomposite Insulation Material

As an innovative thermal barrier material, SUPHIP series nanocomposite thermal insulation material is composed of ultra-fine porous nanoparticle thermal insulation powder. SUPHIP performs heat isolation in three aspects: heat conduction, radiation and convection, and its thermal conductivity is especially excellent at high temperatures.

When the cell thermal runaway occurs, SUPHIP can greatly block the thermal diffusion, providing a cost-effective solution for the whole life cycle of thermal runaway materials for power and energy storage batteries.

Features and advantages

- Excellent thermal insulation performance
- Excellent fire performance: 1000°C flame burning time > 10min
- Comply with RoHS, REACH, ELV directives
- Feasible for mass production & Cost-saving

Applications



- Heat spread protection between power battery cells of new EVs
- Thermal protection and thermal isolation between energy storage battery cells and modules
- Thermal protection of space shuttle power system

Technical support and service

- Packaging products according to customer drawings
- Different temperature scenarios application test services

Instructions for use

- Do not bend the product during installation to prevent air leakage and bulge
- As Boorer cannot guarantee that products will be suitable for all potential applications, it is recommended that tests be conducted in a simulated product operating environment before mass production to confirm that the application requirements are met.

Disclaimer: The data in this article is for reference only and is subject to actual application (due to the process and the reality of the substrate), and we are not responsible for the results obtained by anyone using methods beyond our control. Boorer expressly disclaims liability for any accidental or necessary loss, including loss of profit. It is recommended that users should do experiments according to the data provided in this article before formal use.

ZK01

Material property parameter

Property	Unit	Typical value	Remark (Test method)
Physical characteristics			
Thickness	mm	0.8~3.0	Tolerance: $\pm 0.10\text{mm}$ (0.5~1.0) $\pm 0.15\text{mm}$ (1.0~1.5) $\pm 0.20\text{mm}$ (1.5~3.0)
Density	kg/m ³	200~380	GB/T 17911-2018
Compression performance	MPa	5~25% @0.1MPa	
		11~40% @0.5MPa	
		16~55% @1.0MPa	
Flammability			
Flammability	--	V0	UL94
Electrical and thermal properties			
Dielectric strength	kV/mm	≥ 5	IEC 60243-1: 2013
Insulation resistance	G Ω	≥ 10	ASTM D257(1000V DC, 60s)
Fire resistance	min	Burn-out time > 10	1000°C Butane flame
Thermal conductivity	W/(m·K)	≤ 0.04	ASTM C518 (25°C)
		<0.07	ASTM C177 (200°C)
		<0.09	ASTM C177 (400°C)
		<0.12	ASTM C177 (600°C)
Long-term weather resistance (packed)			
85°C × 85%RH	--	Pass	85°C × 85%RH × 1000Hours
Alternating high and low temperature	--	Pass	The temperature shock ranges from -40°C to 85°C. Hold for 30 minutes after each extreme temperature point is reached. The temperature transition time is based on the device's fastest time. Test equipment 500 cycles.
Prohibited substances			
ELV	--	Pass	Directive 2000/53/EC
RoHS	--	Pass	RoHS Directive 2011/65/EU & (EU)2015/863 Annex II

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Thermal Insulation Performance (packed)

❑ Test Condition

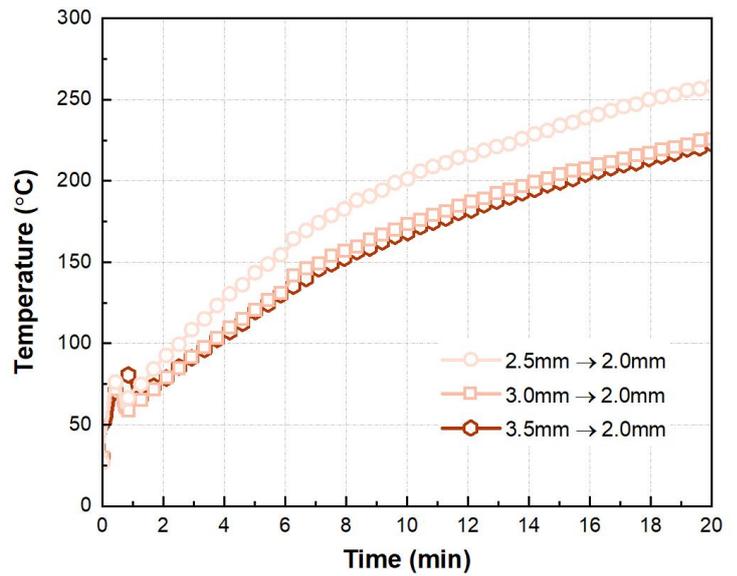
600°C of the temperature on hot surface, applying a stress of 0.9 MPa until 3 minutes and then applying a stress of 0.03 MPa until 17 minutes

❑ DUT size

100×100×t=2.0mm



The photo of samples



The temperature curve of the cold surface on the heater with a stress gauge

Notes:

1. More technical parameters can be provided;
2. The typical value is the average value of the overall performance data. For more technical specification value, please contact us.

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