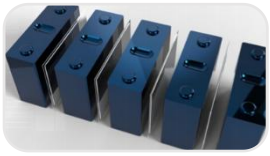
SUPHIP® 灼克™
Nanocomposite Insulation Material

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

- Low thermal conductivity, especially at high temperature
- Excellent fire performance：1000℃ 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 Booer 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.

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ZK01-Material property parameter

Property	Unit	Typical value	Remark（Test method）
Physical characteristics			
Thickness	mm	1.0~3.0	Tolerance:±0.2mm
Density	kg/m³	250~380	GB/T 17911-2018
Compression ratio	%	15~30% @0.5MPa	The inlet force is 0.008 MPa，the compression rate is 2mm/min
		20~40% @1.0MPa	
		25~50% @2.0MPa	
Moisture content	%	≤5%	85℃@30min
Flammability			
Flammability	--	V0	UL94
Electrical and thermal properties			
Insulation resistance	GΩ	≥1	ASTM D257(1000V DC，60s)
Withstand voltage	mA	≤0.1	2700V DC，60s
Fire resistance	min	Burn-out time＞10	1000℃ Butane flame
Specific heat capacity	J/(g·℃)	>0.20	ASTM E1269-2011
Thermal conductivity	W/(m·K)	≤ 0.038	GB/T10295-2008（25℃）
Insulation temperature@20min	℃	≥330℃@1.0mm	(0.9±0.04MPa，600±30℃)
		≥400℃@1.5mm	(0.9±0.04MPa，675±15℃)
		≥440℃@2.0mm	(0.9±0.04MPa，675±15℃)
		≥460℃@2.5mm	(0.9±0.04MPa，675±15℃)
		≥480℃@3.0mm	(0.9±0.04MPa，675±15℃)
Long-term weather resistance			
85℃×85%RH	--	Pass	85℃×85%RH×1000Hours
Alternating high and low temperature	--	Pass	The temperature shock ranges from -40℃ to 85℃. 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			
RoHS	--	Pass	RoHS Directive 2011/65/EU & (EU)2015/863 Annex II

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