Wedge

"Delivering High Performance at Lower Cost"

EV Battery Thermal Pads

Features & Benefits

- Higher Insulation Performance
- Thin & Light Weight Ready to Use Designs
- Fire Resistant & Flame Retardant
- Wide Application Range - 50 to 700 °C
- Lower Installation Cost
- Zero Maintenance Cost
- Excellent After Sales Service

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Get Price

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WedGel | Wedge Thermal Insulation & Fire Barriers

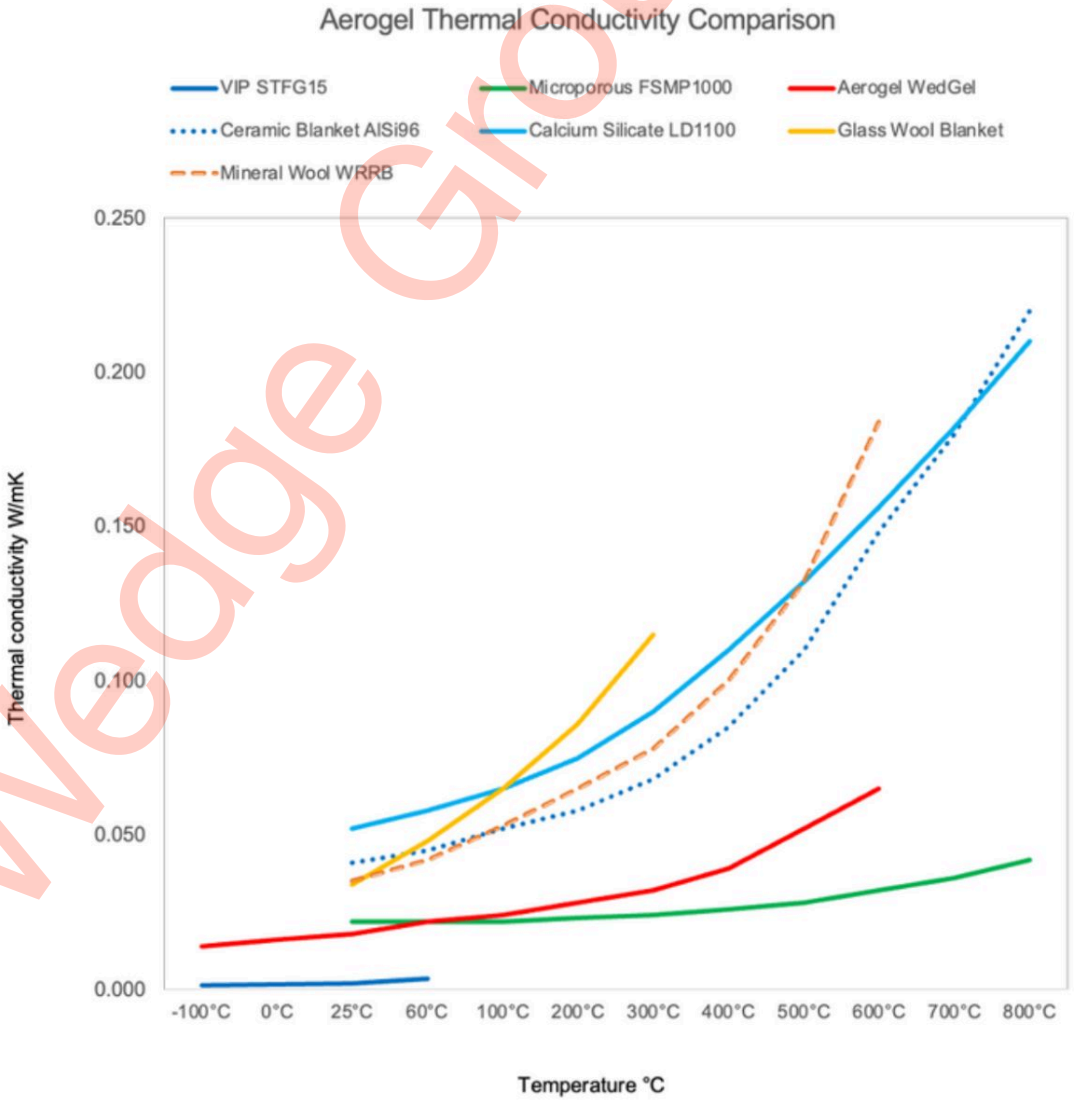
Thermal insulation of batteries is a critical aspect in the design and operation of battery systems, especially for applications such as electric vehicles (EVs), energy storage systems, and portable electronics. Effective thermal management ensures battery performance, safety, longevity, and efficiency.

Battery Thermal Management

- Thermal Barriers: Materials with low thermal conductivity are used to create barriers that slow down heat transfer.
- Heat Sinks: Components that absorb and dissipate heat away from the battery cells.
- Phase Change Materials (PCMs): Substances that absorb or release large amounts of heat during phase transitions (e.g., solid to liquid) to stabilize temperature.

Importance of Battery Thermal Insulation

- Temperature Regulation: Batteries operate efficiently within a specific temperature range. Thermal insulation helps maintain this optimal temperature, preventing overheating or excessive cooling.
- Fire Safety: Overheating can lead to thermal runaway, which can cause fires or explosions. Proper insulation mitigates this risk by dissipating excess heat.
- Battery Efficiency Performance: Battery performance can degrade at extreme temperatures. Insulation helps maintain consistent performance by stabilizing the temperature.
- Battery Life Enhancement: Repeated exposure to high temperatures can reduce battery life. Thermal insulation prolongs the lifespan by protecting against thermal stress.



WedGel | Thermal Insulation Pads

WedGel Aerogel insulation are most suitable thermal barrier in electric vehicle (EV) batteries to improve thermal management and performance. EV batteries generate heat during operation, especially during charging and discharging cycles. Effective thermal management is crucial for maintaining battery performance, extending battery life, and ensuring safety. WedGel Aerogel insulation can contribute to enhanced thermal management, improved energy efficiency, and increased safety in EV batteries, ultimately helping to optimize battery performance and prolong battery life.

Quality ASTM C1728	WedGel 650EV	Wedge AlSi250EV	FSMP 1000EV	WedGel OXF90
Aerogel Fumed Silica Gel SiO2 %	≥ 90	>50	>75	≥ 90
Thickness, mm	0.24 to 10	0.8 to 10	2 to 10	0.3 to 10
Service Temperature ºC ASTM C411, 177	-50 to 700	-10 to 1300	6 to 1000	-50 to 700
Short Term Temperature °C	1400	≥ 1500	≥ 1400	1400
Density, Kg/M3	210± 42	240 to 300	260 to 320	210± 42
Flexibility	Medium	High	Low	Very High
Thermal Conductivity, ASTM C177				
W/m.K at 25 °C	0.018	0.04	0.021	0.023
W/m.K at 100 °C	0.023	0.05	0.022	0.028
W/m.K at 200 °C	0.028	0.06	0.023	0.031
W/m.K at 300 °C	0.032	NA	NA	0.036
W/m.K at 400 °C	0.047	0.08	0.024	0.047
W/m.K at 600 °C	0.068	0.11	0.028	0.068
Hydrophobicity GB/T 10299-2011, %	99	NA	NA	99
Compression Strength, ASTM C165; Kpa	85 (10%)	35 (10%)	330	38 (10%)
Compression Rebound rate, 100kPa, %	≥ 90	≥ 60	NA	≥ 98
Tensile Strength, GB/T17911-2006, Mpa	≥ 1.0	1	≥ 1.0	≥ 1.0
Complies with ROHS regulation	Complies	NA	Complies	Complies
Volume Resistivity, Ω-cm	≥ 1 x 10^13	NA	NA	≥ 1 x 10^13
Self-Adhesive	The Peel strength of the adhesive is ≥ 50 N/100mm			
Short term Temperature Range (5Min)	≥ 1200 °C; No melting, decomposition, or sintering			

Wedge TSP1300 | Thermal Cooling Gap Pads

Quality	Wedge TSP1300
Colour	White / Blue
Thickness, mm	0.3 to 15
Hardness, Shore OO ASTM D2240	60±10
Specific Gravity, g/cm3 ASTM D792	3.05 to 3.09
Tensile Strength, MPa ASTM D412	0.16
Elongation at Break, % ASTM D412	90
Breakdown Voltage KV/mm ASTM D149	≥10
Volume Resistivity Ω·cm ASTM D257	≥1x1013
Temp Resistance °C	- 40 to 200
Flame UL 94	V 0
Weight Loss %	% ≤0.3 @150°C240H
Permittivity ASTM D150	@1MHz 6.09
Thermal Conductivity W/mk ASTM D5470	3.0 ± 0.3
Thermal Impedance ASTM D5470	°C·in2/W 0.586
Thermal Impedance ASTM D5470	°C·cm2/W 3.779
Specific Heat Capacity J/g/k ASTM E1269	0.952

Wedge TSP1120 | Thermal Cooling Gap Pads

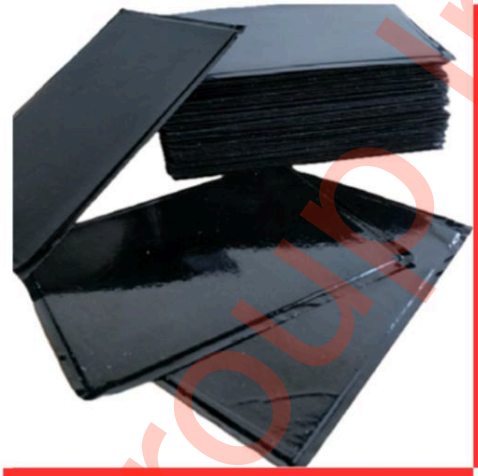
Quality	Wedge TSP1120
Colour	White / Grey / Black
Thickness, mm	0.3 to 20
Hardness, Shore OO ASTM D2240	60±10
Specific Gravity, g/cm3 ASTM D792	2.05 to 2.10
Tensile Strength, MPa ASTM D412	0.22
Elongation at Break, % ASTM D412	220
Breakdown Voltage KV/mm ASTM D149	≥10
Volume Resistivity Ω·cm ASTM D257	≥1x1013
Temp Resistance °C	- 40 to 150
Flame UL 94	V 0
Weight Loss %	% ≤0.5 @150°C240H
Permittivity ASTM D150	@1MHz 4.09
Thermal Conductivity W/mk ASTM D5470	1.2 to 1.3
Thermal Impedance ASTM D5470	°C·in2/W 1.441
Thermal Impedance ASTM D5470	°C·cm2/W 9.297
Specific Heat Capacity J/g/k ASTM E1269	1.039

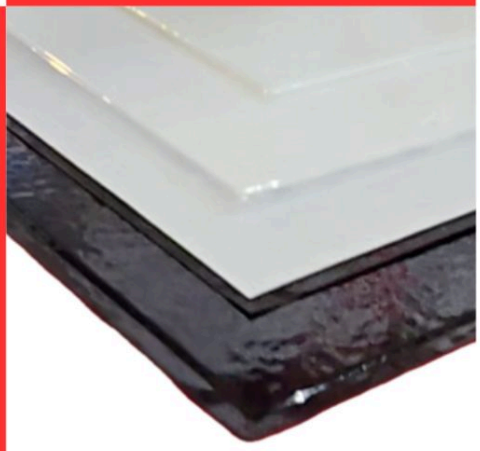
WedGel | Encapsulation & Coverings Options

At Wedge we produce Thermal Insualtion pads with wide range of Encapsulation & Coverings Options including HT Glass Cloth, Silica Cloth, PET, PE, Ceramic Cloth, Mica, Etc.

Installation of Thermal Barriers

- Encapsulation & Coverings Options: HT Glass Cloth, Silica Cloth, PET, PE, Ceramic Cloth, Mica, Etc.
- Cutting and Shaping: Aerogel pads can be easily cut and shaped to fit specific battery pack designs.
- Layering: Multiple layers can be used to enhance thermal protection.
- High-Temperature Adhesives: To ensure the aerogel pads remain securely in place.
- Proper Fitting: Ensuring a proper fit is crucial for maximizing the effectiveness of the thermal barrier.





Wedge Group

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