oerlikon

SafeVent®

Safety in Battery Electric Vehicles by Ensuring Zero Thermal Propagation

Heat Resistant and Electrical Insulating Solutions for Hot Gas Guidance, Busbar Protection and Module Covers

EV

High-Performance Components to Prevent Dangerous Arcing and Thermal Propagation in All Battery Cell Formats

Advanced safety components for battery electric vehicles require a combination of high-performance heat-resistant materials and smart-engineered design. Leveraging our deep materials development expertise and robust automotive design know-how, we develop customized thermal insulation systems that meet all safety requirements and are compatible with all battery types.

Our solutions lead the industry in busbar protection, module covers, and hot gas guidance components for lithium-ion batteries.

The components are designed to protect against thermal propagation, electrical arcing, and chain reactions resulting from cell vent failures. Engineered for advanced temperature resistance, the components provide protection at temperatures exceeding 1000 °C being only 0.8 mm thick.

In addition to being ultra-thin and lightweight, HS850 and HS950 also boast outstanding electrical insulation properties above 10 kV/mm. They are 3D formable and machinable, which facilitates the integration of essential hot gas guidance functions to prevent hazardous electrical arcing.

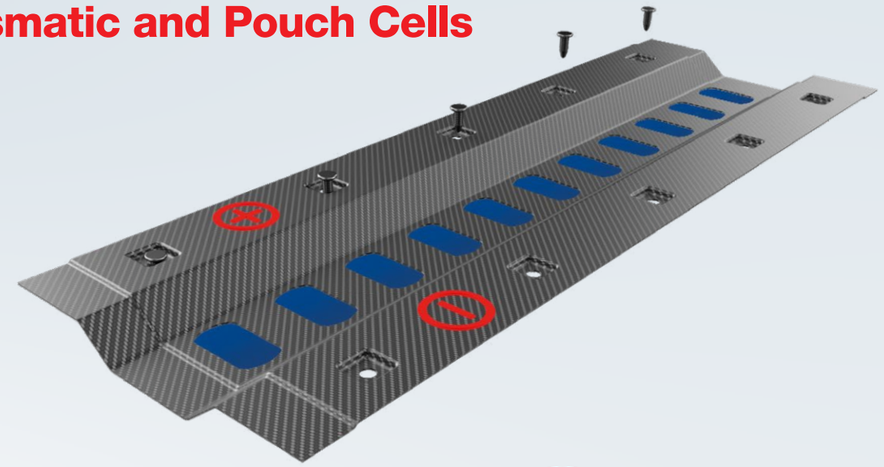
Drive with Confidence: Advanced Safety and Reliability Features

Our components can be customized to meet specific requirements, including features such as various fixing and poka-yoke options. Durability and reliability are ensured due to our component's superb vibrational resistance. We facilitate a safe and sound driving experience with superior thermal propagation resistance (Zero TP).

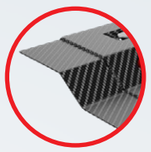
SafeVent®* Benefits

- Superior temperature resistance up to 1200 °C
- Zero thermal propagation
- Safe directional venting of hot gases and conductive particles
- Vibrational and fatigue resistance
- ESG compliant (mica-free, non-petroleum-based material)
- Meets the highest global battery safety legal requirements and standards
- Innovative true 3D design solutions for all battery types
- Excellent mechanical integration and assembly with superior adhesion behaviour
- UL94-V0 classification

Prismatic and Pouch Cells



Directional gas guidance

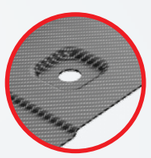


3D Bending of up to 90° Angles

Integrated fixing solutions: Rivets, clips, gluing or adhesive tape

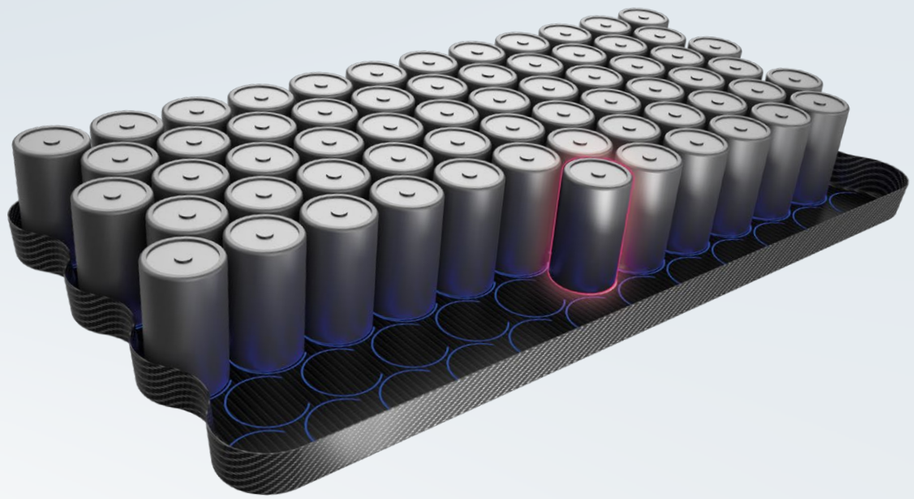
Embossed symbols for assembly poka-yoke

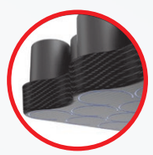
Ultra-thin and lightweight



Deep draw forms to suit module contour

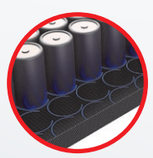
Cylindrical Cells



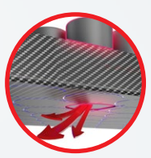


3D-formable

Ultra-thin and lightweight



Innovative design for venting of hot gases



Directional gas guidance

Material Specifications at a Glance

		HS850	HS950	Test Method
Thermal Properties				
Thermal Performance [°C]		1000	1200	ST-I-DE-014 (4.2.1)
Thermal Conductivity [W/(m.k)]	@ 25 °C @ 300 °C	0.29 0.35	0.33 0.39	LFA
UL94 Classification		V0	V0	UL94
Electrical Properties				
Breakdown voltage [kV]		7	8	ST-I-DE-015
Physical Properties				
Density [g/cm^3]		1.38	1.75	ST-I-DE-016
Thickness [mm]		0.8	0.8	DIN ISO 9073-2
Mechanical Properties				
Tensile Strength [MPa]		175	195	DIN EN ISO 527-4
Young's Modulus [N/mm^2]		15500	17300	DIN EN ISO 527-4
Flexural Strength [MPa]		33	40	DIN EN ISO 14125

*SafeVent is a registered trademark in Switzerland

Oerlikon superior heat resistant materials enable to meet all safety requirements within the UN GTR No. 20 regulation.

All international and national regulations are based upon strict safety requirements with a minimum of five minutes to allow the occupants safe evacuation from the vehicle before fire outspread due to a thermal event.

Regulations
China - GB 38031
Europe - ECE R100
India - AIS-038
Japan - Harmonized with UN R100
Republic of Korea - KMVSS 18-3
USA - UL2580

Zero TP!

BRO-0044.4

For further technical and unique requirements, contact us at:
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