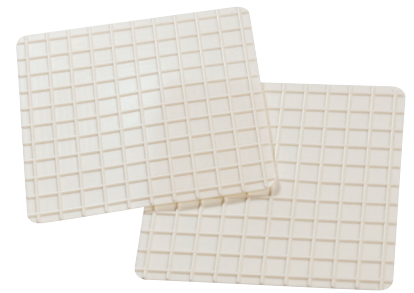


LITHIUM BATTERY HEAT SHIELDS



Freudenberg Sealing Technologies heat shields are addressed to Lithium battery systems.

Current battery system development trends—increased energy density on cell and system level, ultra-fast charging, protection against traffic accidents—require new approaches improving systems safety.

Due to this, the United Nations will react with new standards for “improved safety in EVs” from 2021 on.

Facing this, we see a strong market pull for heat shields placed between the individual cells and/or around modules of a Lithium battery.

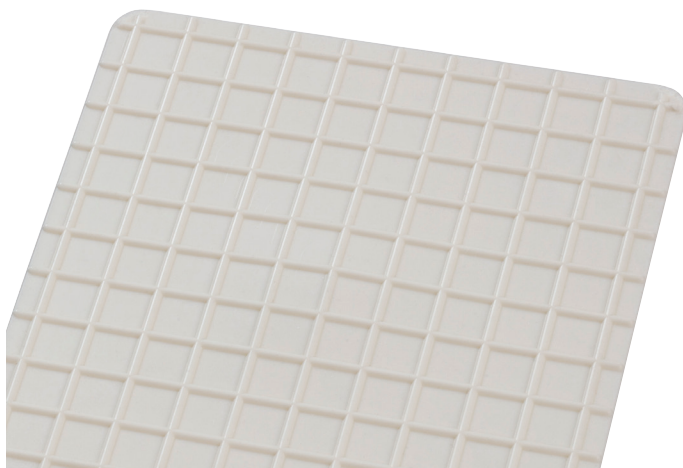
These sheets shall avoid the thermal propagation in case of a severe cell malfunction—the “thermal runaway.”

This thermal insulation of a broken cell protects the neighbored cells and thus avoids a fatal battery explosion.

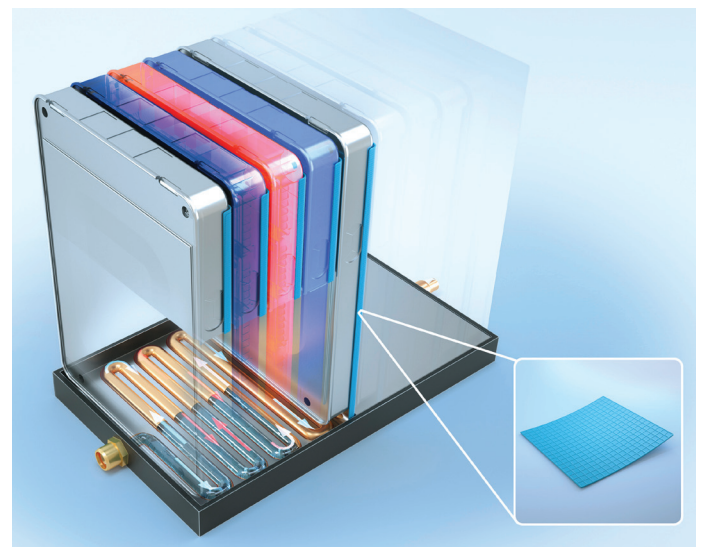
VALUES FOR THE CUSTOMER

- Freudenberg Sealing Technologies heat shields are an easy-to-implement solution for improving battery safety
- Our heat shields effectively block heat transfer for a limited time
- These heat shields are compressible (supporting dimensional changes of the cell)
- They maintain their shape without distortion when exposed to high temperatures
- Our heat shields will not contribute to a decomposition reaction (e.g., they fulfill UL94 V0 compliance)
- Very little volume and weight added to the system
- Heat shield material is an ultra-thermally stable silicon rubber with innovative fillers

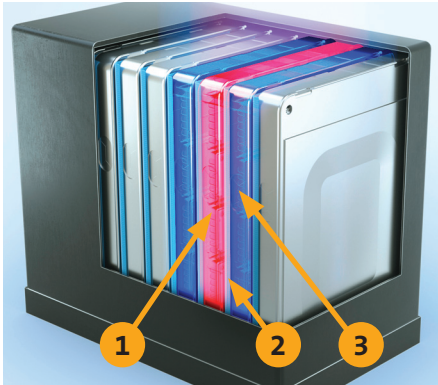
The heat shield is placed between the cells in a lithium battery.



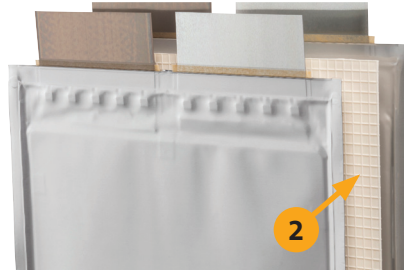
The heat shield design is a waffle-like structure (air pockets) for high thermal insulation.



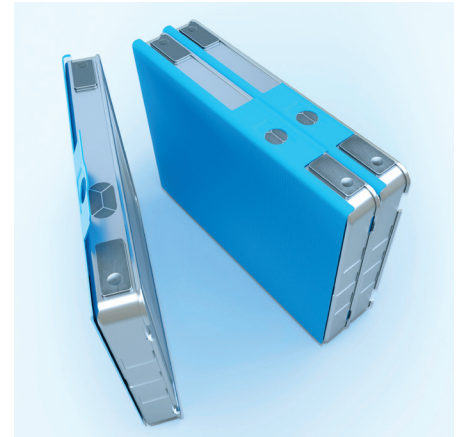
FEATURES AND BENEFITS



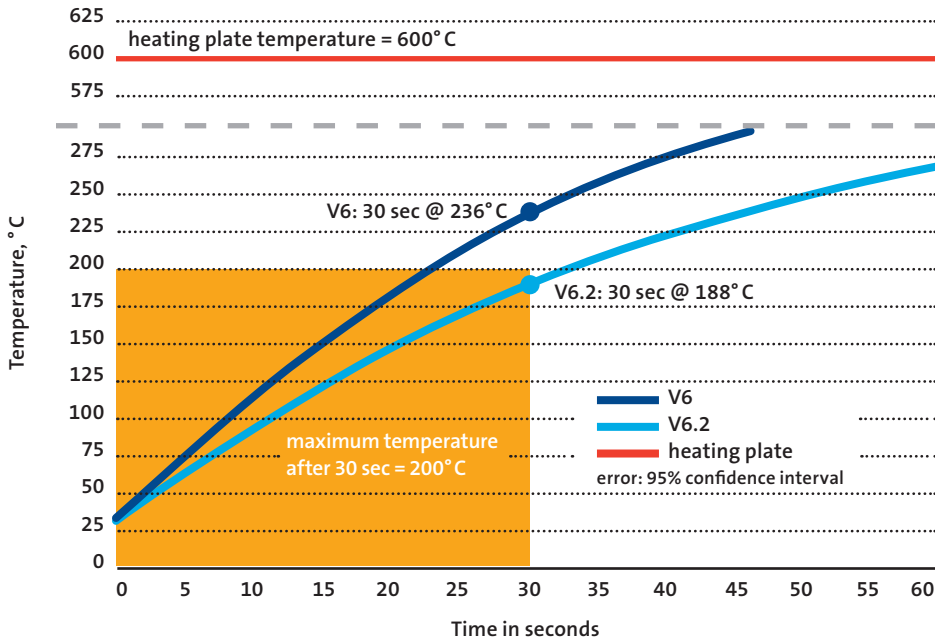
In the event of a “thermal runaway” cell malfunction (1) a 1mm thick heat shield (2) ensures that the neighboring cell (3) will not be overheated in turn.



Integration concept for prismatic cells—the heat shield can also be used as sealing for the cell burst disk.



Shielding effect: Heat transfer through a heat shield*
By adding innovative fillers (V6.2), heat transfer can be reduced on the back side to below 200° C.



*Data for reference use only. Actual values will vary depending upon conditions.

The information contained herein is believed to be reliable, but no representation, guarantees or warranties of any kind are made to its accuracy or suitability for any purpose. The information presented herein is based on laboratory testing and does not necessarily indicate end product performance. Full scale testing and end product performance are the responsibility of the user.