Case Study

Control Battery Heat with BETATECH™ Thermal Interface Material

Challenge

Batteries perform best operationally and from a safety stand-point when their temperature is maintained through materials that enhance heat dissipation and avoid thermal runaway. These materials must have the properties to meet these requirements, be easy to apply in high-volume manufacturing environments, and enable the ability for repair or replacement of battery cells as needed through the life of the battery pack assembly.

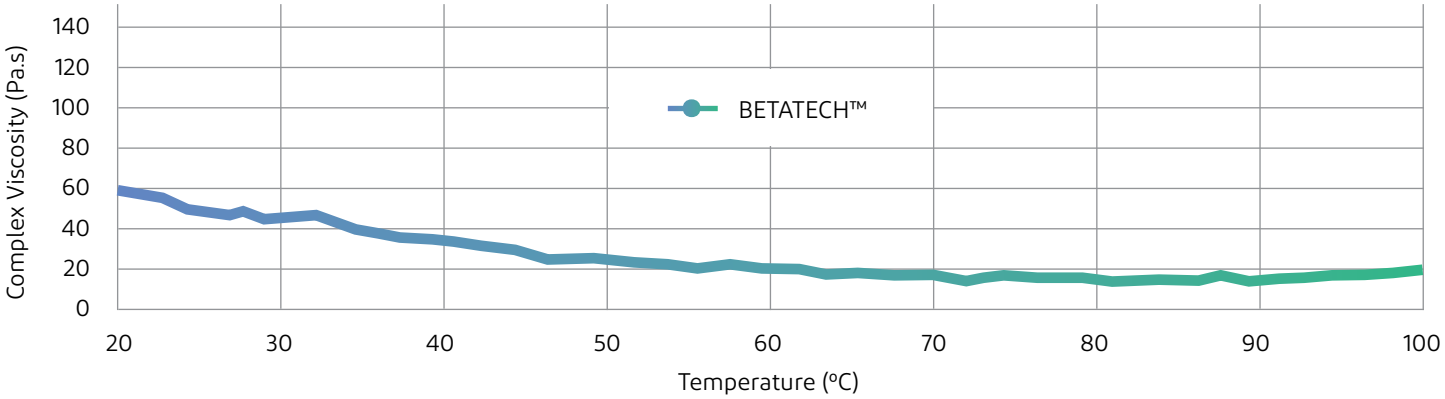
BETATECH™ thermal interface material – Physical Properties	
Technology	2K PU (Silicone free)
Thermal Conductance (ASTM 5470)	3.0 W/mK
Working Time	60 min
Density (g/ml. GEX 176)	2.1 g/ml
2w PV1200 Vertical Aging	Ok
Press-in Force at 0.5 mm (N/mm²)	0.2

Source: DuPont

Project

Thermal management for battery modules is essential to safety and long service life. As a market leader in adhesive and sealing technology, DuPont has applied its materials science know-how to solving battery pack thermal management issues. The result is a game-changing solution, BETATECH™ thermal interface material, for use in battery pack assembly between the battery cells and the cooling plate.

Developed and offered through DuPont's AHEAD™ (Accelerating Hybrid Electric Autonomous Driving) initiative, BETATECH™ is gaining notice among HEV/EV manufacturers.



BETATECH™ thermal interface material holds its viscosity over a wide operating temperature range. This is important to maintain the integrity of the material over a long period of time.

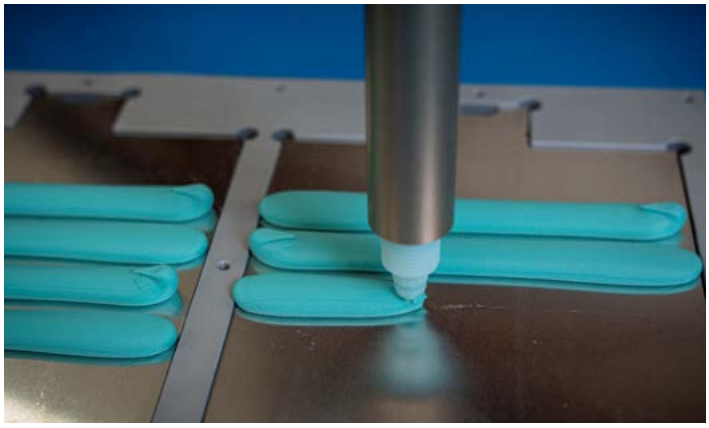
Source: DuPont

Solution

DuPont utilizes in-house application development expertise to work closely with customers to develop viable solutions that can be reproduced in an assembly environment.

BETATECH™ thermal interface material is available as a 1K or 2K dispensable thermal-conductive polyurethane product applied between the battery module and heatsink. Its ease of use leads to production efficiencies that allow for a repeatable process for high-volume assembly environments. It demonstrates other benefits including:

- **Non-abrasive formulation** – no equipment wear
- **Fast dispensing** – compression or injection process compatible
- **Fast joining** – low press-in force
- **Retention of thermal conductivity** – due to good contact between battery cells and cooling plate with no gaps
- **No sagging** in vertical aging test
- **Long working time** – 30 minutes
- **No physical change** over aging
- **Repairability** – low pullout force



BETATECH™ thermal interface material can be hand applied or automatically dispensed for high-volume manufacturing.

Result

BETATECH™ thermal interface material is a novel solution to help control heat by maintaining thermal conductivity over a wide operating temperature range. With the added benefits of ease of dispensing and fast joining, BETATECH™ is currently being trialed for mass volume production of several OEM electric vehicle models.

AHEAD

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Form No. 001-20380-HMC0720