

BETATECH™ Thermal Interface Material Helps Renault Control Battery Heat



Photo courtesy of Renault

Project

In electric vehicles, thermal management for higher-energy-density battery modules is essential to safety and long service life. As a pioneer in automotive electrification, Renault understands the importance of battery technology to support its growing range of hybrid and electric vehicles. Thanks to a long-standing relationship, Renault has collaborated with DuPont, a market leader in adhesive and sealing technology, to apply materials science know-how to solving battery pack thermal management challenges.

Developed as a result of DuPont’s applications expertise and materials capabilities, BETATECH™ thermal interface material is a game-changing solution for use in battery pack assembly between the battery cells and the cooling plate.

Challenge

Renault is a pioneer in automotive electrification. Committed to the development of large-scale electric mobility, they understand the challenges associated with EV battery technology. Batteries perform best operationally and from a safety standpoint when their temperature is maintained through materials that enhance heat dissipation and avoid thermal runaway – both during charging and operation. These materials must have the properties to meet these requirements, plus 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 can be hand applied or automatically dispensed for high-volume manufacturing.

BETATECH™ thermal interface material – Physical Properties

	BETATECH™ 1020 (1K)	BETATECH™ 2028 or 2029
Technology	1K PU (Silicone free)	2K PU (Silicone free)
Thermal conductivity (W/mK)	2	3
Density	2.0	2.1
Working time (min)	60	60
Viscosity	Low	Very low

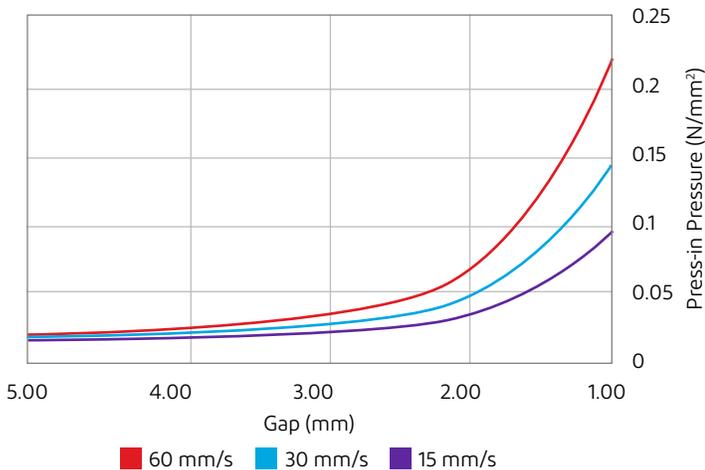
Solution

DuPont utilized in-house application development, technical, and manufacturing expertise to work closely with Renault and dispensing equipment suppliers to develop a viable solution that could be reproduced in a high-volume 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. 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™ exhibits excellent press-in force

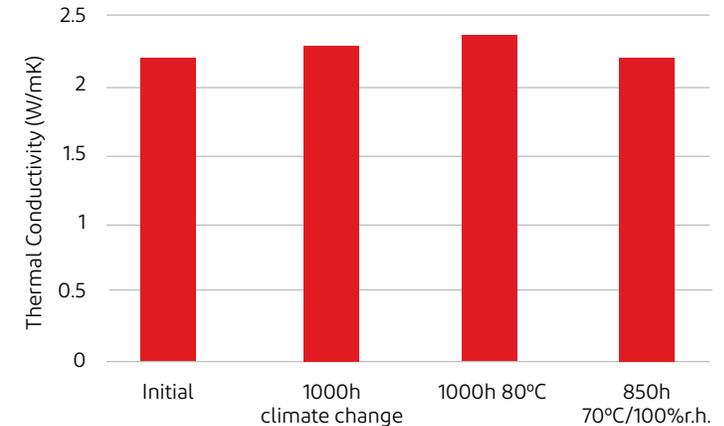


Source: DuPont

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, the 1K formulation of BETATECH™ thermal interface material has qualified for supply to Groupe Renault's production facilities in Maubeuge and Douai, both located in France.

BETATECH™ demonstrates consistent thermal conductivity even after aging



Source: DuPont

dupont.com/mobility



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