

# DuPont™ Vespel® For EV Battery Cell Thermal Management Applications

## Application

DuPont™ Vespel® parts are used in battery cells in the form of terminal seals, isolation rings and spacers. These components must be made of materials that can perform under a wide range of temperature and pressures. It is critical that regardless of any changes within the cell these parts must maintain their ability to electrically insulate and seal.

## Challenges

- Building battery packs, models, and cells with the safety, reliability, and energy density customers expect
- Operating temperature window. Materials in these applications typically need to operate at temperatures from -40 °C to 100 °C
- Thermal resistance up to 500 °C for short excursions
- Materials must always electrically insulate regardless of operating conditions
- Design flexibility to meet evolving safety requirements

## Vespel® benefits

### Thermal Resistance

- Has the highest maximum service temperature of any plastic

### Electrically Insulative

- At high temperatures

### Fire Protection

- Vespel® grades are UL94 V-0, 5VA rated

### Compatibility with Lithium Based Electrolytes

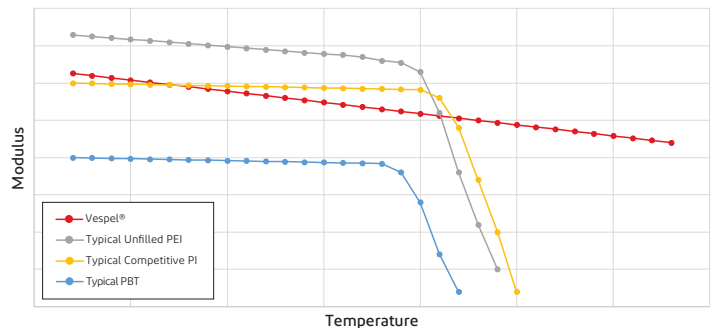
- Direct or Indirect contact

### Creep Resistance

- For improved safety and design



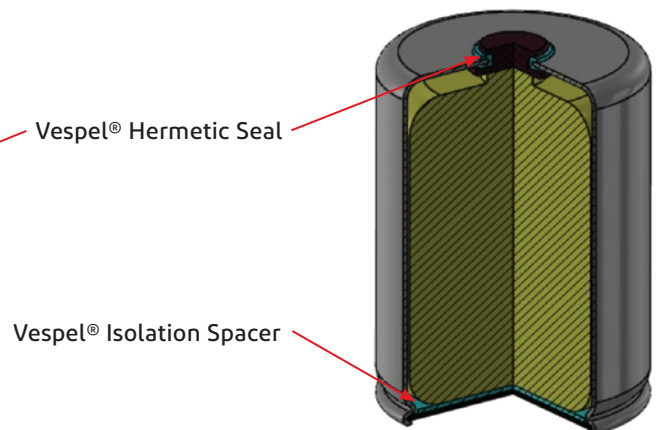
EV battery module with cylindrical style cells



Modulus vs Temp of Vespel® vs other performance plastics



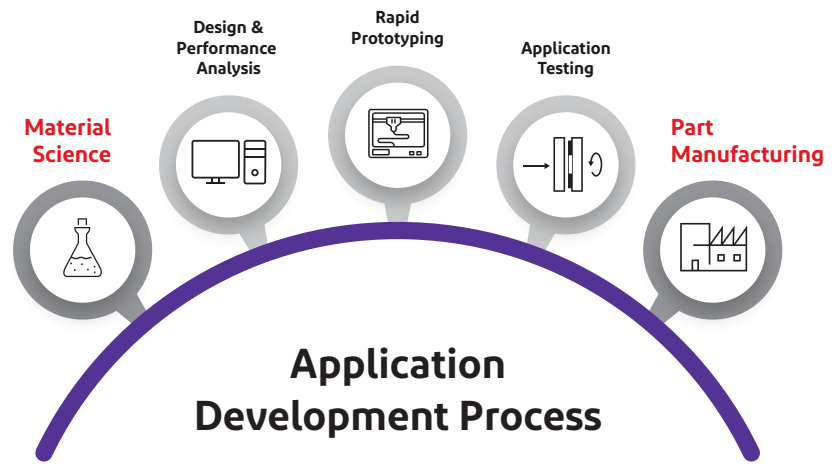
EV battery module with cylindrical style cells



Typical cylindrical style battery cells

## DuPont Application Development: From Material Science to High Performance Parts

DuPont has a long history of collaborative innovation in material science and part manufacturing to help customers develop solutions for the industry's most stringent challenges. The DuPont™ Vespel® portfolio offers a range of high performance polyimide parts and application testing capabilities that can enable customers to meet the most stringent industry regulations in terms of emissions, reliability and efficiency for these critical applications.



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