

3M™ Glass Bubbles for EV Batteries

# Lightweight performance built in.

Lighter weight. Improved thermal insulation.  
3M™ Glass Bubbles – an easily-incorporated additive  
– enhance these critical capabilities in a range of  
battery components in cylindrical, pouch, or prismatic  
EV battery designs.

3M™ Glass Bubbles iM16K  
3M™ Glass Bubbles K20HS  
3M™ Glass Bubbles K25  
3M™ Glass Bubbles S28HS  
3M™ Glass Bubbles S32HS

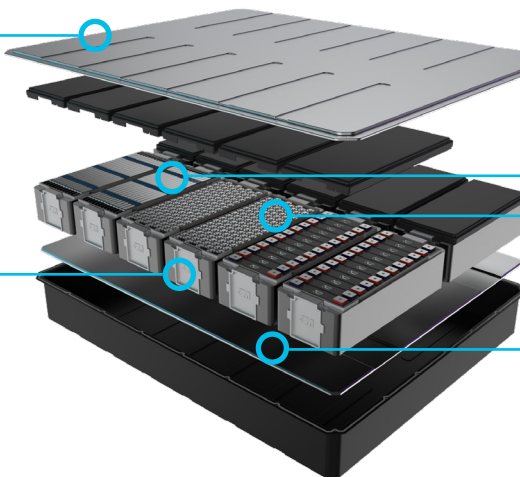
3M™ Glass Bubbles are tiny, hollow glass microspheres that can allow for lighter weight and improved thermal performance in EV batteries. They are excellent for:

### SMC Battery Enclosures

- Compared to steel and aluminum, SMC parts are significantly lower in weight. Use of glass bubbles in the formulation can make them even lighter
- Offer sufficient crush strength for use in SMC processing

### Injection Molded Plastic Parts

- Reduce part weight up to 15%
- Low dielectric properties help improve performance and lower weight of signal transfer devices
- Provides dimensional stability for small thin wall parts (e.g., electrical connectors), like glass beads, but with significant part weight reduction



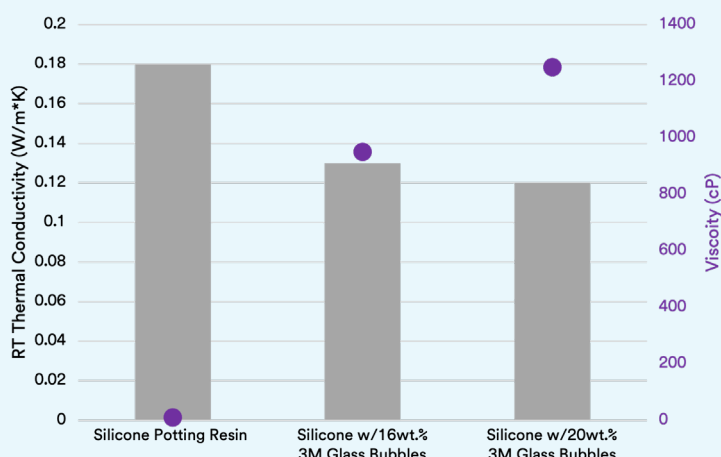
### Thermal Insulative Filler For Potting Resins, Cushioning Pads, Adhesives, and Gap Fillers

- Lightweight, thermally insulative filler with true density of 0.20 – 0.46 g/cc for lower weight, insulative parts
- Replaces organic content, helping to reduce the flammable content
- Enables syntactic foam with controlled density
- Low viscosity build to enable flowability in small crevices

## 3M™ Glass Bubbles add real power to potting resin.

Elkem, a global silicone supplier, has developed a thermal insulative solution using glass bubbles dispersed into a silicone matrix. In this proprietary solution (US 10,501,597 B2) the glass bubbles filled silicone gel is used to position the cells and provide thermal insulation in order to help provide thermal management.

3M™ Glass Bubbles were shown to significantly reduce the thermal conductivity and maintain low viscosity of the potting resin, maintaining its flowability around the cells.



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