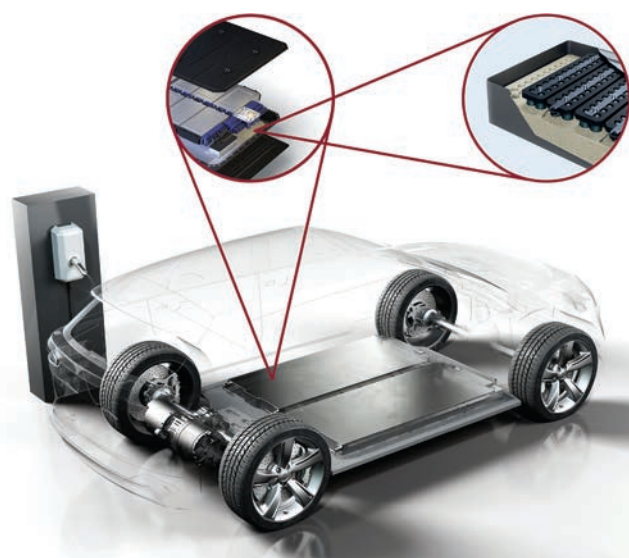


Polyurethanes**SHOKLESS™** polyurethane systems**Innovative encapsulation foams developed to protect vehicle batteries****PRODUCT DESCRIPTION**

Developed to encapsulate battery cells in electric vehicles (EV), our SHOKLESS™ polyurethane systems are lightweight, durable foam technologies that can provide thermal as well as structural protection at a cell, module, and pack level.

Delivering robust mechanical properties at different operating temperatures, SHOKLESS™ polyurethane systems can be tailored to different processing and flow requirements – making them a flexible choice for helping to safeguard the structural integrity of EV batteries in case of impact or a thermal event.

FEATURES AND POTENTIAL BENEFITS

- Very good compression and tensile performance with high elongation to failure
- Help to secure fixation of battery cells
- Low viscosity
- Fast curing at low temperatures
- Weight-saving opportunities
- Broad processing options: dispensing or pre-molding, does not require lengthy cure time
- Tailored elastic properties – stable across a broad operational temperature range (-35°C to 80°C).

TYPICAL APPLICATIONS

Developed for the protection of electric vehicle battery cells, this innovative portfolio of polyurethane systems can be used for the potting and fixation of cells mounted in batteries or as moldable encapsulants in battery modules or packs.

TYPICAL SYSTEM PROPERTIES

SHOKLESS™ systems can be formulated to meet different customer needs. The following table provides an overview of typical properties:


Typical Properties	Unit	Values
Density	kg/m³	200 - 1200
Elongation	%	10 - 70
E-modulus @ 25°C	MPa	10 - 3000
Thermal conductivity	mW/(m.K)	60 - 70
Cure time	min	< 20
Dielectric strength	V/mm	> 600
Fire retardance		> UL 94 HB (V0)
Adhesion to cell surface		System with or without adhesion to battery cell surface

These properties are intended only to exemplify the potential capabilities of SHOKLESS™ polyurethane systems and should not be considered specifications thereof. Such values may vary due to several factors, including processing and ambient conditions.

DRIVING FOR SUSTAINABILITY


Our SHOKLESS™ systems can also be provided with recycled content and made according to mass balance principles to support customers’ carbon footprint reduction efforts. This work is also aligned with several United Nations Sustainable Development Goals (SDGs).

3 GOOD HEALTH AND WELL-BEING




Improve comfort and well-being by reducing noise and vibration.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Optimal use of resources for improved productivity and lightweight designs.

13 CLIMATE ACTION



Support the transition to electrification and reduce reliance on fossil fuels.

CONTACT US

For more information about the battery solutions available within our full suite of automotive products, please go to www.huntsman.com/batterymaterials or complete the Polyurethanes Contact Us form. Use the QR code to find the form.



Scan to contact

HUNTSMAN AUTOMOTIVE SOLUTIONS

Huntsman is a global provider and one of the leaders in MDI-based polyurethanes, serving automotive customers along the value chain. Huntsman delivers innovative, value-added solutions to the world’s best-known car brands. Specialisms include lightweight, enhanced comfort and working towards sustainability ambitions in seating, interior trim, acoustic insulation, EV batteries and composite panel applications.

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Products may be toxic and require special precautions in handling. The user should obtain Safety Data Sheets from Huntsman Polyurethanes containing detailed information on toxicity, together with proper shipping, handling and storage procedures, and should comply with all applicable safety and environmental standards. Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent on the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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