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HUNTSMAN
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Huntsman Announces Development of New Materials Designed to Boost Battery Performance and Protection

New technologies will be introduced at The Battery Show, Messe Stuttgart, Germany
Visit Huntsman May 23-25, 2023 at Booth 8-A40

Everberg, BELGIUM – Huntsman will announce the development of innovative polyurethane, carbon nanotube and epoxy materials at The Battery Show this week, which are all designed to help improve the integration of batteries into electric vehicles and enhance their protection and performance.

In a move that helps to deliver high-performance composite battery structures, alongside design and production flexibility, Huntsman has assembled a portfolio of customizable, quick-cure, high-strength polyurethane and epoxy resins that can be used to create underbody and top cover battery protection components up to 30% quicker than some existing technologies. Crucially, the products can also lower overall part weight and increase strength and structural performance. A range of products is currently available covering various battery performance and protection needs:

- Targeting **underbody battery protection**, Huntsman offers **RIMLINE® WCM system** – a low viscosity liquid resin that enables the moulding of high fiber volume fraction composites under low pressure. Balancing a long working life and short cure time with easy mould release, this system can help reduce overall cycle times and is formulated for use on high pressure-mix machines**.**

- **For battery enclosures, ARALDITE® FST resins** allow the design of flame retardant composite These OEM- qualified systems have proven performance and reliability, meeting battery safety requirements.

- Targeting **battery underfloor protection**, Huntsman has developed three products:

  - **RIMLINE FC (foam core) system** can offer a cost-effective solution for manufacturing sandwich composites. This lightweight system has great flow properties, which can help with the creation of complex 3D shapes. This system can typically also adhere well to different overmoulding materials and cure quickly for fast cycle times.

  - **RIMLINE® LFI (long fiber injection) resin system** can be moulded into strong stiff parts with a density of – for example – 1100 kg/m3 including 30% glass fiber reinforcement. The resulting parts can help to provide lower total sandwich thickness and improved damage tolerance.

- **ARALDITE® 3031 / 3032 WCM system** has proven in operation to combine fastest processing cure time and outstanding mechanical properties and stiffness.

- Targeting **top cover applications**, our **VITROX® WCM system** enables the development of composite lid structures that can help achieve thermal resistance while reducing weight compared to metallic cover **ARALDITE® SMC solutions** enable part design freedom for semi-structural applications and requirements.

- In the electric vehicle battery cell, Huntsman has also developed a range of materials that help with lightweighting and improved conductivity, as well as thermal, vibration, and structural protection.

  - **SHOKLESS™ encapsulation foam and elastomer systems** help to create potting foams and encapsulants that are mechanically strong and have the thermal insulation and vibration dampening properties needed to protect batteries at a cell, module, and pack level.

  - **ARATHANE® thermally conductive adhesives and encapsulants** provide excellent mechanical fixation and thermal connection, enabling effective heat management from the cells and enabling new battery pack designs and higher performance batteries.

  - For battery cell producers looking to increase the capacity of their cells or interested in reduction of the weight of their cells, Huntsman has introduced **MIRALON® NMP Dispersions** and **MIRALON® Current Collectors**. The **MIRALON® NMP Dispersions** for LFP and high-nickel cathodes offer high conductivity with much lower concentration than carbon black and are rate performance-compatible with fast charging protocols. **MIRALON® Current Collectors** for ultra-lightweight applications can replace heavier metallic current

Irina Bolshakova, Global Strategic Marketing Lead for Automotive Polyurethanes at Huntsman, said: “As demand for electric vehicles grows, we’re continually innovating, making it easier than ever for battery manufacturers, automotive OEMs and their suppliers to make new gains in powertrain performance. We’re excited to share details of our new systems at The Battery Show and discuss the latest challenges with customers face-to-face.”

Huntsman serves customers along the automotive value chain, delivering innovative, value-added solutions to the world’s best-known car brands to support their comfort and sustainability ambitions. Huntsman’s portfolio of battery materials includes our ULTRAPURE® carbonates, high-purity solvents for electrolytes that are critical to the reliable operation of lithium-ion batteries and long working life for electric vehicles. Additional key areas of expertise include lightweighting, encapsulation and insulation of electric and electronic parts, high-performance polyurethane systems for seating, interior trim, acoustic insulation, and composite panel applications. To find out more, please visit https://www.huntsman.com/markets/automotive-and-transportation/automotive/battery-materials

About Huntsman: *Huntsman Corporation is a publicly traded global manufacturer and marketer of differentiated and specialty chemicals with 2022 revenues of approximately $8 billion from our continuing operations. Our chemical products number in the thousands and are sold worldwide to manufacturers serving a broad and diverse range of consumer and industrial end markets. We operate more than 60 manufacturing, R&D and operations facilities in approximately 30 countries and employ approximately 7,000 associates within our continuing operations. For more information about Huntsman, please visit the company's website at www.huntsman.com.*

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