

PRESS RELEASE

Orlando, Florida, May 7, 2018

SABIC DEVELOPING NEW THERMOPLASTIC SOLUTIONS FOR ELECTRIC, CONNECTED AND AUTONOMOUS VEHICLES

SABIC, a global leader in the chemical industry and leading thermoplastics supplier to the automotive industry, is sharing insights this week at NPE 2018, in booth S19001, on material solutions to support the development of electric, connected and autonomous vehicles.

“With electric vehicles and new technologies on the brink of significant growth, automakers and the automotive industry at large need material solutions that can help meet new requirements and overcome design challenges,” said Scott Fallon, global Automotive leader for SABIC. “Our global team has identified various needs and gaps, and we have come up with some novel approaches that can deliver multiple benefits.”

Lightweight, Strong Armor for Battery Packs

One example is a thermoplastic-based solution for the protection of batteries in side-crash scenarios, a critical need for automakers. This is especially the case as manufacturers move to larger batteries that require mounting onto the vehicle floor panel. Today, the conventional countermeasure employed is multi-piece stamping reinforcements to strengthen the rocker panel for battery protection. However, these metal solutions add weight to the vehicle, which can affect both efficiency and range.

SABIC is drawing upon its expertise in crash and chassis solutions to design a structural hybrid solution, using both plastic and metal, to produce a lighter reinforcement part and one that can actually improve crash performance. SABIC’s current design can offer up to 40 to 60 percent in weight reduction compared to an all-metal version, while also offering up to 10 percent greater energy absorption. This reinforcement adds to a wide range of thermoplastic hybrid solutions developed by SABIC that can potentially remove up to 20 kg of weight from a vehicle’s body-in-white.

Key Materials to Enable New Features & Requirements

SABIC is also developing solutions in which both polycarbonate (PC) and polypropylene (PP) grades from its portfolio show promising applicability.

This can potentially include, for example, modular front panels with inspiring styling opportunities and allowing for the integration of sensors, lighting functions, brand-identifying elements, pedestrian protection and crash-energy management solutions.

One additional opportunity for automakers is making use of LEXAN™ PC resin as they move towards large, clear surfaces, as is the design trend for vehicles with electric, connected and autonomous technologies.

LEXAN resin can remove weight and provide energy savings and increased driving range. In one study, SABIC and its industry partners determined that use of LEXAN resin with its insulating properties, compared to conventional glass for all glazing surfaces, could significantly reduce demands on a car's heating and air conditioning (HVAC) system and make possible up to 15 additional kilometers for a single battery charge. SABIC used for this study computational fluid dynamics (CFD) analysis to validate the extended range data.

High Heat, High Energy Density Dielectric Film for Lightweight Capacitors

SABIC is also offering a high heat, high energy density dielectric material, ULTEM™ UTF120 polyetherimide (PEI) film, ranging in thickness from 5 to 10 microns, to produce lightweight auxiliary capacitors that can help offset the heavy weight of battery packs in electric vehicles.

The capacitors benefit from the high dielectric constant and low dissipation factor of the film and can maintain a high breakdown strength up to 200°C. In addition, the high-temperature capability of capacitors based on ULTEM UTF120 film enables design and package flexibility, as well as integration with electronics.

Radar Absorbing and EMI Shielding Materials for Automotive Sensors

SABIC has recently developed a new line of STAT-KON™ compounds to address the need for sensing technologies in autonomous vehicles. These compounds provide a unique balance of mechanical strength, processing capability, electrical conductivity, and radar absorption, which can prevent interference across neighboring electronic devices.

In addition, SABIC has expanded its FARADDEX™ compound product line to address the trend towards more electronic devices in vehicles, requiring better electromagnetic interference (EMI) shielding to prevent malfunctioning or failures. Improvements in chemical resistance and EMI shielding performance enable FARADDEX compounds to replace traditional shielding solutions such as metals and conductive coatings. Automotive sensor makers can now replace the metal portion of their parts with plastics to achieve lighter weight, lower overall system costs, and improve part design flexibility.

Next-Generation NORYL™ Resin Grade for Higher Flame Retardant Performance

Another example of SABIC's rapidly evolving material technologies for electrified vehicles is a new resin grade for enhanced flame retardance: NORYL™ NHP5054 resin. Automakers already use grades of unfilled NORYL™ resin, polyphenylene ether (PPE) blends from the company for non-structural battery applications like battery spacers, holders and bus bar plates.

Now, SABIC has developed a next-generation flame retardant NORYL resin – one that is glass-filled for added strength. This material can make possible a UL94 V-0 rating at 0.75 mm for structural components like the battery pack housing assemblies. The availability of this material is timely for automakers as they strive to meet evolving flame retardancy requirements for batteries in China, for example.

In addition to its excellent flame retardancy, NORYL resin can provide significant weight savings, proven chemical resistance to electrolytes, heat resistance to 120°C, low warpage, low moisture absorption, dimensional stability and mechanical strength to ensure consistent performance. Use of NORYL resin can also help automakers avoid the use of chlorinated and brominated FR materials, providing a potential environmental benefit.

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ABOUT SABIC

SABIC is a global leader in diversified chemicals headquartered in Riyadh, Saudi Arabia. We manufacture on a global scale in the Americas, Europe, Middle East and Asia Pacific, making distinctly different kinds of products: chemicals, commodity and high performance plastics, agri-nutrients and metals.

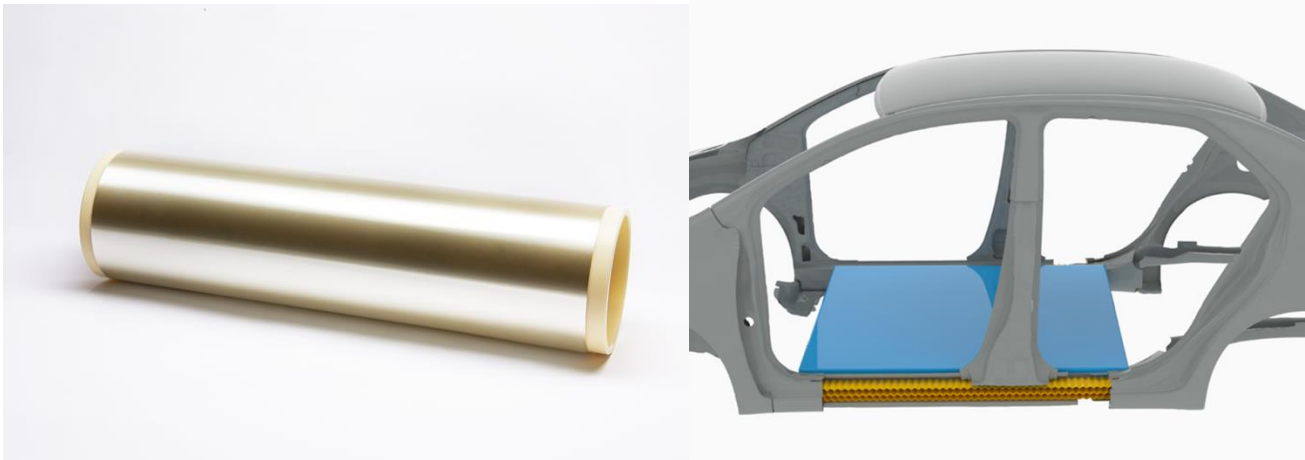
We support our customers by identifying and developing opportunities in key end markets such as construction, medical devices, packaging, agri-nutrients, electrical and electronics, transportation and clean energy.

SABIC recorded a net profit of SR 18.4 billion (US\$ 4.9 billion) in 2017. Sales revenues for 2017 totaled SR 149.8 billion (US\$ 39.9 billion). Total assets stood at SR 322.5 billion (US\$ 86 billion) at the end of 2017. Production in 2017 stood at 71.2 million metric tons.

SABIC has more than 34,000 employees worldwide and operates in more than 50 countries. Fostering innovation and a spirit of ingenuity, we have 11,534 global patent filings, and have significant research resources with innovation hubs in five key geographies – USA, Europe, Middle East, South Asia and North Asia.

The Saudi Arabian government owns 70 percent of SABIC shares with the remaining 30 percent publicly traded on the Saudi stock exchange.

PHOTOS AND CAPTIONS



LEFT: SABIC is offering a high heat, high energy density dielectric material, ULTEM™ UTF120 polyetherimide (PEI) film, ranging in thickness from 5 to 10 microns, to produce lightweight auxiliary capacitors that can help offset the heavy weight of battery packs in electric vehicles. The capacitors benefit from the high dielectric constant and low dissipation factor of the film and can maintain a high breakdown strength up to 200°C. In addition, the high temperature capability of capacitors based on ULTEM UTF120 film enables design and package flexibility, as well as integration with electronics. This capacitor film offering is the first of several SABIC plans to introduce.

RIGHT: SABIC is developing a structural hybrid solution, using both plastic and metal, to provide for the protection of batteries in side-crash scenarios. This is a critical OEM need as manufacturers move to larger batteries that require mounting onto the vehicle floor panel. SABIC's reinforcement design can offer up to 40 to 60 percent in weight reduction compared to an all-metal version, while also offering up to 10 percent greater energy absorption. This reinforcement adds to a wide range of thermoplastic hybrid solutions developed by SABIC that can potentially remove up to 20 kg of weight from a vehicle's body-in-white.

SABIC Media Contacts

David Cameron

E: david.cameron@sabic.com

T: +1 248 425 5971

AH&M, Inc.

Amy Godfrey

E: agodfrey@ahminc.com

T: +1 413 448 2260, x370

For high-resolution photos please contact: Amy Godfrey (agodfrey@ahminc.com, +1 413 448 2260, x370).