

June 2026

# PUreview

REPORTING THE WORLD OF POLYURETHANES FOR OUR CUSTOMERS

**HUNTSMAN**

Enriching lives through innovation

## SHOKLESS™ systems Enabling EV battery improvements

**Celebrating 50 years of KRYSTALFLEX® TPU**

**D-Max Wall Assembly: Turning traditional insulation processes inside out**

**Supporting Samsung Heavy Industries with LPG tank production**

**Making great strides in footwear innovation**



## Disciplined approach to innovation

Hello and welcome to the latest issue of our customer magazine, *PU review*, which showcases recent innovations across our business. I was appointed President of Polyurethanes one year ago and it's my pleasure to write my first editorial for the magazine. Let me start by sharing a brief background about myself.

I started my working life in the chemical industry 30 years ago at a sales office in my hometown of Copenhagen, Denmark. Since then, I have enjoyed an international career with Huntsman, which has taken me and my family across three continents – Europe, Asia and the US. Most of that time has been spent in the exciting and versatile world of polyurethanes – an industry that never stops fascinating me.

### People, performance and passion

Having held various leadership positions across Commercial, Operations and ultimately Business Management, I have always been guided by a value system built around People, Performance and Passion. In the polyurethanes industry, I witness these three elements in action every day. We are a sector driven by passion, powered by people and proven in performance – and in today's market environment this combination is more important than ever.

As in many other industries, polyurethanes manufacturers and our customers are facing extensive and complex global challenges, which have increased market uncertainty and dented consumer confidence in many countries. We're seeing higher feedstock costs – especially in Europe; dislocated supply chains; and increased competitive intensity, to name just a few of the challenges.

### Meeting change with action

Faced with these pressures, we're not resting on our laurels, waiting for conditions to improve. At Huntsman, we're taking decisive steps to improve our competitiveness and ensure we remain an industry leader. What does this mean for innovation you might ask? Well, innovation remains our lifeblood. That's never been in doubt.

However, we have become more disciplined and focused in our approach – prioritizing projects where customers are willing to pay a fair price for the innovation investment. Together with customers across different sectors, we're working on opportunities that will have clear market impact and are actively leveraging AI to strengthen our offer even further.

### Improving vehicle performance, safety and sustainability

Our work in the automotive industry showcases this approach. Electric vehicles are the sector's strongest growth driver. Global battery-powered electric vehicle production is expected to grow by about 17% in 2026, supported by APAC's high penetration and technology leadership, steady premium-driven growth in EAMEI, and long-term electrification momentum in the Americas despite near-term volatility.

"We are a sector driven by passion, powered by people and proven in performance – and in today's market environment this combination is more important than ever."

The continued shift to EVs is increasing polyurethane content per vehicle. New, battery centric applications, which did not previously exist, are now driving significant additional demand for advanced polyurethane systems. These range from battery covers and underbody protection, to potting, encapsulation and gap-filling. PU is also finding its place in the move towards all solid-state batteries (ASSB). By 2028 it is forecast that ASSB will have a 20% share of the market. China is currently leading the way in this field, with some OEMs planning to start up production as early as 2027.

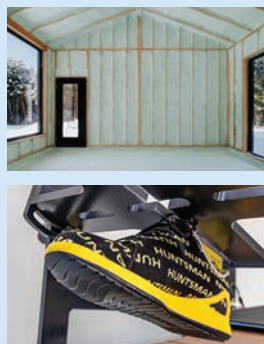
### Innovation encapsulated

As the automotive industry continues to evolve at pace, our team is adapting and innovating. In the main feature of this edition, you can read about our SHOKLESS™ systems. Developed to support the protection and performance of increasingly complex battery packs, this product platform exemplifies how advanced PU solutions can enable OEMs to deliver premium, innovation led electric vehicles now – and in the future.

The other technologies and projects featured throughout this issue of *PU review* highlight the remarkable versatility of PU across a wide range of applications. It is this versatility which enables polyurethanes to win in the 'materials battlefield' and continues to open up new growth opportunities for our industry. EV penetration is just one clear example of this.

I hope you enjoy reading this latest copy of the magazine.

**STEEN WEIEN HANSEN**  
PRESIDENT, HUNTSMAN POLYURETHANES



# Celebrating 50 years of KRYSTALFLEX® TPU safety glazing technologies



**In the manufacture of laminated glass, the performance of the final pane can depend on the interlayer selected. High-quality laminating films don't just bond substrates together, they can help define how final glass products perform in real-world conditions.**

The right interlayer can significantly increase impact resistance, enhance acoustic insulation, and maintain glass integrity by holding shards in place after breakage. For specialized applications, such as security glazing or aerospace windows, interlayers can make the difference between standard protection and advanced resistance against threats like forced entry, bullets, or bird strikes. By choosing the right interlayer film, laminators can deliver superior safety, performance, and durability in every project.

For fifty years, our KRYSTALFLEX® thermoplastic polyurethane (TPU) films have been helping to do just that – reinforcing glazing in planes, trains, cars and military vehicles; providing an additional layer of security in government buildings; and strengthening architectural glass.



Faced with more volatile weather conditions such as hurricanes, plus concerns around domestic and international security, the adoption of technologies like KRYSTALFLEX® TPU is expanding in architectural applications such as facades, windows, and interior partitions.

It's the same story in the transportation sector, where KRYSTALFLEX® TPU films can help enhance passenger protection and durability in different modes of transport. The technology can also contribute to vehicle lightweighting – providing the required adhesion needed to bond polycarbonate and acrylic layers together.

Last year, to mark the 50th anniversary of this innovative portfolio, Huntsman launched a new website, highlighting the different applications for KRYSTALFLEX® TPU films. The site shows the ways in which we're continuing to innovate to keep up with industry demands while setting some of the highest standards in interlayer film performance and safety.

Steven Wilaniskis, KRYSTALFLEX® Account Manager at Huntsman, said: "For half a century, our glazing film products have helped manufacturers deliver strong, safe, reliable glass products worldwide. We're proud to be continuing that tradition of excellence into the future, helping to shape the next generation of high-performance glass solutions." |

[simone\\_richter@huntsman.com](mailto:simone_richter@huntsman.com)

## Core KRYSTALFLEX® products currently include:

**PE399:** A mid-range modulus film suitable for ballistic applications

**PE429:** A film that can offer excellent adhesion to acrylics at low temperatures

**PE499:** Our lowest modulus film for difficult, curved, and temperature sensitive laminates

**PE501:** A high tensile, high tear strength film well suited to impact/bullet resistant glazing

**PE505:** A high modulus film with excellent impact resistance at low and high temperatures.

[www.krystalflex-huntsman.com](http://www.krystalflex-huntsman.com)



# From the inside out: A smarter way to insulate buildings

The construction industry is evolving. Driven by sustainability targets and less cost predictability, construction firms are increasingly using materials and building techniques that enable them to erect energy efficient houses, faster. D-Max Wall Assembly from Huntsman Building Solutions is one such system.



Developed to help speed up the construction of commercial buildings and improve energy performance, the technology has gained traction, quickly. With more than 250 projects now utilizing the system across North America and Canada, PU Review found out more about this innovative technology and its use in two different residential buildings.

## An insulation system with a difference

D-Max Wall Assembly is a continuous insulation system that stands apart from other solutions. Traditionally, continuous insulation systems are applied on the outside of the structural frame of a building – creating a seamless thermal layer that prevents heat from leaking through the structure and bridging core elements such as wall studs, steel frames and floor slabs.

D-Max Wall Assembly switches conventional continuous insulation processes around, applying a spray polyurethane foam from the inside of the building. This creates an unbroken insulating layer from within, which can help:

- Improve thermal bridging and airtightness
- Ensure insulation work proceeds on time, unhampered by weather conditions
- Keep build timescales and the sequencing of tasks on track.

With spray foam applied in one application, the number of interventions and materials required to complete the building envelope is also minimized. In addition, interior-applied continuous insulation is also often easier and safer to install – particularly on high-rise projects where it can minimize the need for scaffolding.

## How it works

D-Max Wall Assembly is simple to use. Instead of fixing exterior panels directly onto a building's structural frame, horizontal furring or Z-bars are added on the outside of stud work – creating a cavity between the framework and the exterior of the building. Exterior sheathing is then installed on the horizontal furring or Z-bars. Next, panel joints are sealed with membranes to seal against water infiltration. A closed-cell spray foam (e.g., Heatlok® HFO Pro or Heatlok® HFO High Lift) is then applied from inside the building into the cavity. As the foam expands, gaps are filled, cutting off any heat-loss paths to create an insulation, air and vapor barrier. The final step, once the foam has cured, is for interior wall panels to be fitted.

With continuous insulation now a requirement for compliance with many modern energy codes, D-Max Wall Assembly is growing in popularity – aided by the product's compatibility with a range of building materials. In commercial projects, D-Max Wall Assembly

As well as significantly improving building envelope performance and delivering meaningful annual savings on electricity costs, these systems can also help reduce operational carbon emissions.



can be integrated with steel and concrete structures; while in residential projects, it can easily be adapted to suit wood frame builds.

### Speeding up construction of Canadian condos

In the residential sector, D-Max Assembly was recently used to enable the rapid construction of a new rental condo project in Sainte Marie, south of Québec City. Thanks to D-Max Assembly, which was specified by project design and construction experts, Dutran, the Sentiers 59 luxury apartment complex progressed quickly – with half of all apartments ready for occupancy within nine months.

Maxime Duzyk, Global Director of Building Science and Engineering at Huntsman Building Solutions, said: “One of the standout benefits of D-Max Wall Assembly is its ability to streamline construction processes. The use of spray foam as an integral component eliminates the need for separate installation steps for air, vapor and insulation layers. This helps reduce labor time and accelerates project completion, a feature demonstrated in projects like Sentiers 59.”

As well as enabling rapid construction, D-Max Assembly can also facilitate the development of more energy-efficient buildings. Integrating spray foam insulation with high-performance materials can help create a building envelope with good thermal insulation and air barrier properties. This can help building developers achieve sustainability goals and reduce energy costs.

Continuing, Duzyk said: “D-Max Assembly can significantly cut energy consumption while ensuring consistent indoor comfort for tenants throughout the year, thanks to its reduced air leakage, which exceeds building code requirements.

### Cold climate insulation

It’s a similar story at a house in Sainte-Adèle Québec, Canada, which utilizes D-Max Wall Assembly. After looking at different options, the homeowners chose the system to insulate the whole house (roof, walls and under slab). The choice paid off. D-Max Wall Assembly provided time and cost savings during construction. It has also paid dividends longer-term – helping to reduce energy consumption alongside operational carbon emissions.

Duzyk said: “Many houses using spray foam insulation are tested just after they are built, which doesn’t demonstrate the long-term performance of the building envelope.

A typical product’s performance can degrade over time, sagging, losing adhesion, and even going moldy. That’s not the case with closed cell spray foam systems, which are mold resistant and designed to not lose their properties over time. This has been demonstrated through multiple studies and tests.”

At the Sainte-Adele house, the numbers really stacked up. Four years after the house was built, tests were conducted by an external company. Figures showed total electricity costs were very low for a house of 2,000 sq ft; at around \$175 per month. Estimates suggested the same house would typically have faced electricity bills of up to \$2,800 per year – enabling an annual saving of around \$1,000.

Concluding, Duzyk said: “Typically, the upfront investment with D-Max Assembly can be a bit higher than using traditional insulation methods. However, in addition to a payback of close to a \$1000 per year, comfort is increased. The interior temperature is steady, and there aren’t any drafts or cold spots, as the air sealing is close to perfection. These case studies highlight the wide-ranging benefits of an internal continuous insulation system. As well as significantly improving building envelope performance and delivering meaningful annual savings on electricity costs, these systems can also help reduce operational carbon emissions. Today, these benefits are more important than ever – offering homeowners greater resilience against energy price increases and providing long-term cost stability as well as added peace of mind.” |

[lamia\\_chahboune@huntsman.com](mailto:lamia_chahboune@huntsman.com)





# Bio-based I-BOND<sup>®</sup> resins for composite wood products

**Our team has developed two bio-based resin systems that can help reduce the carbon footprint of composite wood product MDI-based formulations by up to 30%\*.**

I-BOND<sup>®</sup> PB BIO 1025 resin and I-BOND<sup>®</sup> OSB BIO 1025 resin have been developed for use in the manufacture of oriented strand board (OSB) and particleboard (PB).

Incorporating up to 25% bio-based content, the binders can help support the composite wood industry's sustainability ambitions, without compromising the quality or performance that can be achieved in resulting panels.

Closely aligned with market and customer requirements, the products form part of a wider range of non-added formaldehyde, fast-curing I-BOND<sup>®</sup> resins that Huntsman offers to enable the production of high quality, durable composite wood products.

Developed to offer similar quality characteristics and performance capabilities to standard I-BOND<sup>®</sup> resins, while maximizing bio-based content, the latest resins were developed to be compatible with existing manufacturing processes and can allow manufacturers to easily switch materials, according to requirements. They can also help composite wood manufacturers meet panel specifications in terms of emission standards.

Bart Singulé, Sales Manager Composite Wood Products Europe, said: "At Huntsman we are always looking for innovative solutions that can help drive sustainability performance. Our latest bio-based resins for OSB and PB can help panel producers maximize bio-based content in their boards – supporting their environmental ambitions while maintaining the highest standards of quality and performance." |

[catherine\\_laroche@huntsman.com](mailto:catherine_laroche@huntsman.com)



## Typical properties of Huntsman's new bio-based resins include:

**A reduced carbon footprint:** Integrating bio-based content, and with attributed mass-balanced MDI options available, the resins can help contribute to a lower carbon footprint.

**High performance:** The resins can deliver the strength, durability, and moisture resistance needed for typical composite wood product applications in furniture and construction.

**Aligned with emissions standards and containing non-added formaldehyde:** The new resins can help create a safer, cleaner working environment for manufacturers and improve air quality for consumers.

**Versatile:** The new products are suitable for a wide range of composite wood applications, including furniture, cabinetry, flooring, and interior panelling.



\* Comparison with Huntsman incumbent technologies. Internal preliminary LCA study. IPCC AR6 GWP100 including biogenic CO<sub>2</sub> calculated at cradle-to-gate.

# Low-VOC foam system supports Samsung Heavy Industries' LPG tank



**Steel cargo tanks carrying liquified petroleum gas (LPG) are continually exposed to the elements and a variety of impurities that can affect their integrity. From consignment ingredients and moisture in the air, to temperature changes, the risk of corrosion is high. To help prevent degradation over time and extend the lifetime of tanks while reducing maintenance costs, specialist coatings need to be applied to act as a protective barrier.**

Addressing this challenge, Huntsman Polyurethanes, in partnership with Ti Group, has supplied Samsung Heavy Industries (SHI) with an advanced surface protection system for LPG tanks being manufactured at SHI's Rongcheng shipyard in Shandong Province, near the Yellow Sea.

Samsung Heavy Industries is one of the world's foremost shipbuilders. Known for advanced vessels and offshore energy structures, the business is currently scaling up LPG tank production. From the outset, SHI's requirements were clear: the company wanted an environmentally friendly coating solution with an ultra-low VOC spray system, aligning with its broader sustainability goals.

To meet the stringent requirements set out by the customer, Huntsman and Ti Group provided Samsung Heavy Industries with an advanced 245FA foam system, which has a superior performance and processing profile.

When it comes to performance, 245FA has ultra-low thermal conductivity of 0.023 W/(m·K) for maximum energy efficiency. It has a low-

density, meaning it can contribute to overall vessel weight savings.

Crucially, it also complies with the German flame-retardant standard DIN 4102-1, Class B2, with the capability to achieve the higher B1 class, if required, for specific applications.

When it comes to processing, 245FA offers other advantages. The spray system's properties and application compatibility can help streamline the tank insulation process, compared with insulation panel installation. This can help simplify tank construction and reduce costs through material efficiencies and reduced labor time. It can also help increase production throughput – supporting the customer's production goal of creating four vessels per year. |

[lilly\\_jin@huntsman.com](mailto:lilly_jin@huntsman.com)



**Each complete cargo tank is constructed from four prefabricated quarter sections.**



**Sections are individually insulated before being joined to form the final, fully insulated tank.**

# SHOKLESS™ encapsulation systems enable EV battery performance improvements



As a new generation of electric vehicles (EVs) comes to market – optimized to drive further and charge faster – Huntsman’s SHOKLESS™ systems for battery encapsulation are gaining attention from automotive and battery manufacturers worldwide.

**DIANE LANGER**  
TECHNOLOGY LEAD AT  
HUNTSMAN POLYURETHANES

With the technology already deployed into the batteries of a new line of EVs from a major automotive manufacturer, *PU review* spoke to Diane Langer, Technology Lead at Huntsman Polyurethanes, to learn more. Diane explained the game-changing possibilities this innovative encapsulation technology can offer and the positive impact the portfolio is set to have on the future of premium electric mobility.

***PU review (PU R): Thanks for speaking with us about SHOKLESS™ systems for automotive battery encapsulation. Can you tell us more about the technology?***

***Diane Langer (DL):*** No problem. In short, our SHOKLESS™ systems are an enabler for EV battery pack performance. Offering a compelling mix of mechanical, structural and thermal management properties, they can help aid the production of safe, lightweight, durable batteries – ultimately supporting

OEMs working to deliver vehicles that can cover more ground on a single charge, and power up faster.

***PU R: How do SHOKLESS™ systems work?***

***DL:*** SHOKLESS™ systems are utilized via potting. It’s a simple, flexible process. A two-component liquid resin SHOKLESS™ system is dispensed into battery packs to fill the gaps and voids around individual cells and components. Poured as a low-viscosity liquid, the system selected flows easily into the spaces between cells and components in a pack. Once in situ, the resin starts to expand, rising up – uniformly – to enclose battery parts.

Once fully expanded, the SHOKLESS™ system begins to cure, forming a lightweight foam that binds and insulates components, without the need for additional adhesives or assembly steps. The resulting foam ultimately

## SHOKLESS™



protects cells and components from vibration and mechanical stress while reinforcing the whole pack infrastructure. The foam also has thermal management properties that help with temperature regulation. The whole process, including curing, happens rapidly, supporting faster handling and battery production cycles, as well as just-in-time manufacturing.

**PU R: What makes SHOKLESS™ systems stand out from other encapsulation solutions?**

**DL:** Developed to adhere to a wide range of substrates, SHOKLESS™ encapsulation systems stand out by consistently delivering high-performance structural, thermal and vibration protection for battery cells, packs and modules.

Together, these traits can enable the manufacture of batteries that are better equipped to deal with physical impact and shocks and temperature changes. The systems can also support design changes, such as alternative cell configurations, to enhance efficiency – for example, in the production of cylindrical cells.

SHOKLESS™ systems are also quick and easy to process using standard polyurethane dispensing methods and have a wide processing window for greater flexibility.

**PU R: How many products are in the range?**

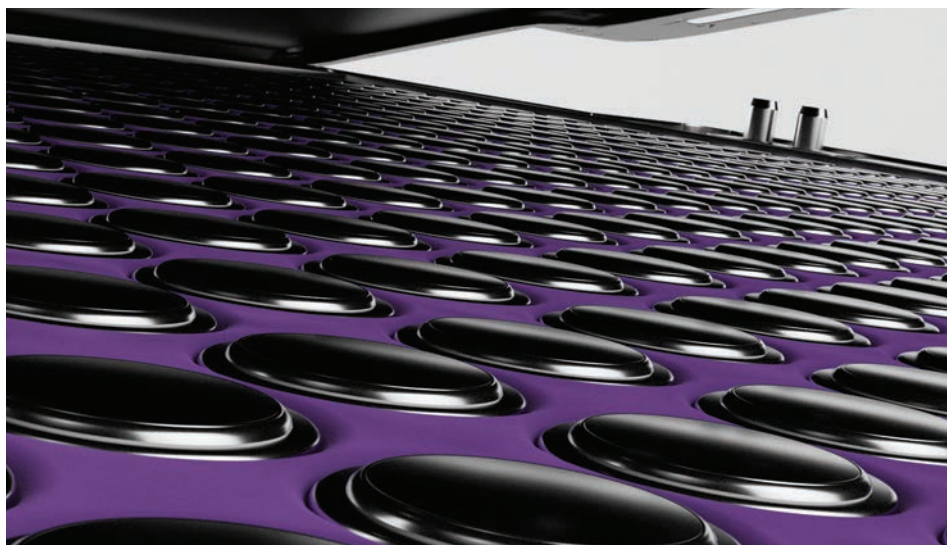
**DL:** The SHOKLESS™ system range currently includes three products that can help improve the thermal and structural



protection of battery components at a cell, module, or pack level and simplify the design of cell to pack configuration.

SHOKLESS™ FD system is a full density (FD), lightweight foam technology that can be used to help fix cells mounted in EV batteries or as a moldable encapsulant in battery modules or packs. SHOKLESS™ LD system is similar to SHOKLESS™ FD system – but has a low density (LD). And SHOKLESS™ MD system sits in between the two products, as a mid-density (MD) solution.

“Our automotive team are experts in understanding and predicting material performance in final applications, such as battery packs.”



We deliberately created a flexible, modular portfolio of products, which we have patent protected for different applications, that can evolve alongside customers' needs.



**PU R:** You mention SHOKLESS™ systems can be used with cylindrical battery cells. Did the team need to do anything to adjust the formulation of the systems to accommodate this new kind of battery design?

**DL:** Yes they did. Whether the objective is to source a solution to work at full battery pack level or with multiple individual cells, we always explore requirements thoroughly, assisting customers with the development of systems based on specific rheological, thermal and mechanical characteristics.

Our automotive team are experts in understanding and predicting material performance in final applications, such as battery packs. We also help our customers optimize the processing of our materials – looking at the flow patterns and filling rates they want to achieve plus equipment already in use.

Combining processing and material predictive analysis in this way, and utilizing our in-house simulation and modelling capabilities, we can help customers mitigate potential challenges that might come up in manufacturing, while also improving final product performance at the earliest stages of product development.

**PU R:** How will the SHOKLESS™ systems develop in the future?


**DL:** We put a huge amount of effort into future proofing our SHOKLESS™ systems during their development cycle. We deliberately created a flexible, modular portfolio of products, which we have patent protected for different applications, that can evolve alongside customers' needs. As a team, we're committed to innovation and to working side-by-side with automotive OEMs as they take the next step in energy efficiency, safety and sustainable mobility – helping them unlock new levels of battery performance for the next generation of EVs.

Continuing to evolve our SHOKLESS™ system portfolio is a natural next step in that process. The product range we've created is robust in its current form, but can also be scaled, adapted and efficiently configured for adjacent use cases. As a result, we're well positioned to support expansion into additional product lines without requiring a fundamental rework of the underlying chemistry – leveraging the strength and flexibility of what we've already created.

The results we've achieved with the development of our initial SHOKLESS™



Huntsman's automotive team has created a microsite (<https://www.shokless-huntsman.com>) for its SHOKLESS™ system range, where further information can be obtained on specific products and applications.



With our in-house simulation and modelling capabilities, we can help customers mitigate potential challenges that might come up in manufacturing.

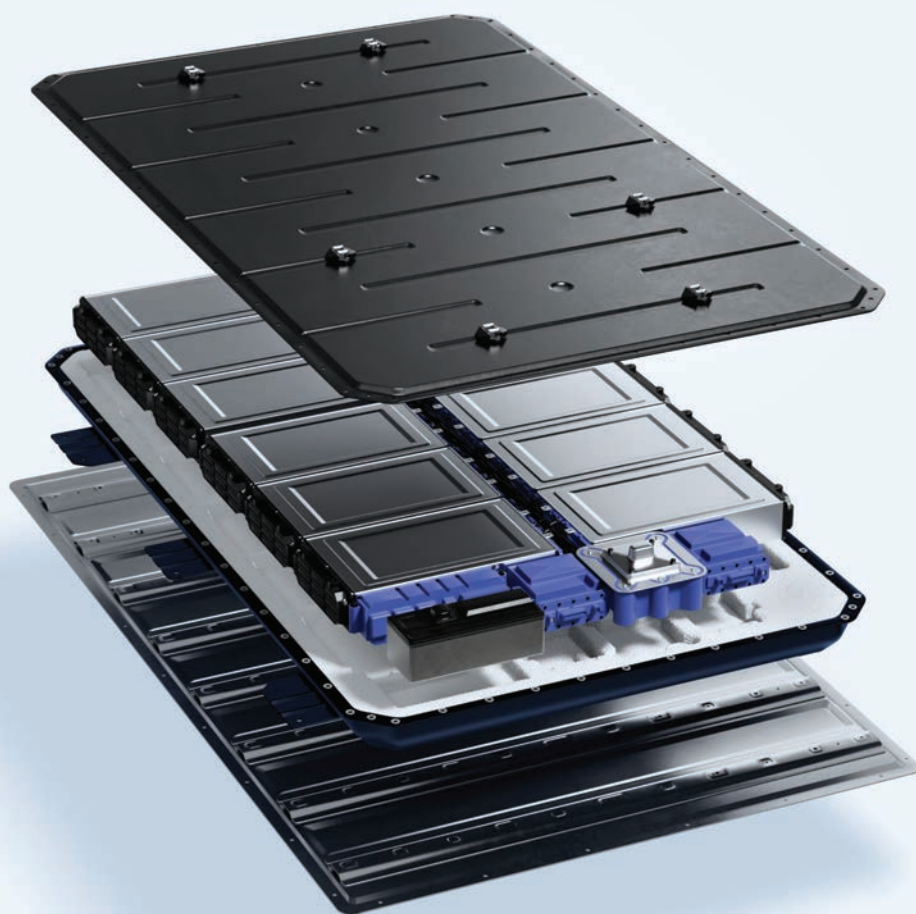
systems are excellent, satisfying existing customers' needs. However, we're continually innovating and trying to push the boundaries of what is possible. In the next phase of development, the plan will be to try to refine and further elevate the thermal properties of our SHOKLESS™ systems – attempting to integrate even more robust thermal management protection into each product. Looking to the medium- and long-term, we are also actively working on the recyclability of polyurethane foams and materials used within battery applications, to help address the circularity ambitions of the sector. |

[catherine\\_jaroche@huntsman.com](mailto:catherine_jaroche@huntsman.com)

## VITROX® RIMLINE®

### VITROX® resins and RIMLINE® systems for battery covers and enclosures

Huntsman's automotive experts provide a range of advanced polyurethane solutions for EV batteries, which are focused on improving safety, reducing weight, and enhancing structural integrity. Alongside its SHOKLESS™ encapsulation systems, the business offers a range of VITROX® resins for lightweight, fire-resistant battery covers and RIMLINE® systems for composite battery enclosures. These materials offer fast-cure, high-strength, and high-performance, enabling efficient assembly and improved thermal runaway protection.



# Supercritical foam technology added to SMARTLITE® portfolio

Gas injected TPU midsole foam developed to deliver extra softness, comfort and durability

The Huntsman Polyurethanes footwear team has developed a supercritical foam (SCF) technology that can deliver a combination of lightweight cushioning, comfort and durability for sports and lifestyle footwear – while supporting manufacturers’ automation objectives. SMARTLITE® SCF 385 TPU is the latest product in a wider portfolio of SCF midsole technologies that includes SMARTLITE® SCF 285 TPU, which launched back in 2024.



Across the footwear industry, supercritical foam is growing in popularity. Key players in the value chain are investing heavily in the technology as an alternative to ethylene-vinyl acetate (EVA) because of its ability to deliver lightweight, responsive cushioning with consistent performance.

At the same time, SCF systems – which can be used in conjunction with direct injection processes – can help support sustainability through more efficient production, less waste, and recyclable potential.

Developed for use as a midsole for lifestyle/casual sneakers and running shoes, the material can help:

- Reduce overall shoe weight without sacrificing support (density = 0.17 to 0.22)
- Support automation – the material’s consistency allows reliable, cost-effective manufacturing
- Deliver reactive cushioning with up to 64% rebound to support athletic performance
- Improve durability and hydrolysis resistance offering miles of everyday comfort
- Support circularity – the material can be mechanically recycled and reused\*.



Huntsman’s SMARTLITE® SCF midsole technologies are optimized for co-molding with AVALON® GECKO TPU, another novel footwear technology launched by Huntsman in 2024, which offers comparable slip performance to rubber in both wet and dry conditions.



## SMARTLITE® SCF TPU



### Lightweight

Lightweight foam without compromising on performance



### Automation

Developed for automated direct-injection processing allowing co-molding with AVALON® GECKO TPU outsoles



### Circular

Thermoplastic polyurethane can enable mechanical recycling\*

*\*Can be mechanically recycled, assuming end of life take back programs and a recycling ecosystem are in place.*

Peter Chiang, Senior Manager, Marketing, Elastomers at Huntsman, said: “Footwear brands are constantly searching for new ways to balance comfort, performance, and sustainability. Our SMARTLITE® SCF technologies deliver on all three fronts – offering an advanced platform aligned with design, automation and environmental needs. Supporting the shift to automated footwear manufacturing, this range provides a simple, easy to process, fast soling solution that generates less waste – without compromising performance. Put together with our AVALON® GECKO TPU, these products provide a full soling solution – giving us a strong point of differentiation in the highly competitive footwear market.” |

[simone\\_richter@huntsman.com](mailto:simone_richter@huntsman.com)

## The SMARTLITE® SCF portfolio

Three innovative grades tailored for different high-performance applications



### SMARTLITE® SCF 280

- Soft
- Extra cushioning



### SMARTLITE® SCF 285

- Versatile performance
- Proven reliability



### SMARTLITE® SCF 385

- Low density
- High performance

A construction worker is shown in profile, facing right. They are wearing a high-visibility orange safety jacket with reflective silver stripes on the sleeves, black safety pants, and black safety boots. The worker is standing on a construction site with a gravel and dirt ground. In the background, there are wooden forms for concrete, a utility pole, and some trees under a clear blue sky.

# Delivering a breakthrough in sustainable safety footwear

Innovative new approach closes the loop on scrap polyurethane (PU)

Huntsman, in collaboration with Steitz Secura, has developed a breakthrough polyurethane (PU) solution that can help improve the circularity of safety footwear. The result is a DALTOPED® polyurethane midsole system that can incorporate recycled content without compromising performance – setting a new benchmark in protective footwear production.



# STEITZ SECURA

SAFETY FOOTWEAR



Polyurethane plays a vital role in enhancing comfort and protection in safety shoes – but managing the scrap generated during production can be a challenge. Utilizing our footwear team’s extensive innovation capabilities, our latest solution transforms this challenge into an opportunity.

Together with safety shoe manufacturer Steitz Secura and an external partner, our footwear experts pioneered a way to introduce recycled PU into new shoe components using an innovative DALTOPED® PU system, which requires no changes to existing processing or chemistry workflows.

Crucially, our approach also successfully introduced recycled PU into new shoe components, while maintaining performance on a par with virgin materials.

Wolfgang Burkhard, Head of PUR at STEITZ SECURA, said: “By taking our own PU scrap and reusing it, we have been able to manufacture new midsoles containing 20% recycled content. Together with Huntsman and a technology partner, we have been working to push up this percentage and can now increase the recycled content of new midsoles up to 30%. It’s a tangible example of our commitment to innovation and sustainability, and to finding smarter, cleaner ways to make high-performance footwear.”

for circular, high-performance safety footwear with zero compromise on quality. It’s a great demonstration of what’s possible when like-minded partners come together with a clear vision and the determination to close the loop on waste.”

The DALTOPED® solution developed has undergone rigorous development, validation, and industrial-scale trials with Steitz Secura, ensuring that safety, durability, comfort and performance are never compromised – even in the production of premium safety footwear. |

[simone\\_richter@huntsman.com](mailto:simone_richter@huntsman.com)

“This project is a great example of how agility, innovation, and partnership can drive more meaningful progress in sustainable manufacturing.”

**WIM GILIS**  
EAME APPLICATION MANAGER  
PU ELASTOMERS, HUNTSMAN

Wim Gilis, EAME Application Manager PU Elastomers at Huntsman, said: “This project is a great example of how agility, innovation, and partnership can drive more meaningful progress in sustainable manufacturing. From early development through to rollout, the collaboration with Steitz Secura was built on shared values, open communication, and a clear commitment to finding practical solutions that reduce environmental impact without adding complexity.”

Continuing, he said: “By working closely together, we’ve developed a scalable way to recover and repurpose valuable polyurethane material – helping to meet growing demand



# Helping Sports Gear ramp up production in Portugal

**Sports Gear Co., Ltd. is a Taiwanese footwear and sporting goods manufacturer that specializes in the production and global sale of sports, casual and athletic footwear – including jogging, hiking, soccer, American football and leisure shoes. The business works for some of the biggest footwear brands in the world.**

Historically, Sports Gear has produced most of the shoes it manufactures at eight sites in Asia. When the business wanted to expand its operations into Europe, the Sports Gear team turned to Huntsman for help – appointing our Footwear team as the sole supplier of TPU to its new factory in Portugal.

In March 2025, Sports Gear inaugurated the factory – a €15 million plus investment that enables the business to manufacture shoes locally for key customers in Europe.

In its first year, Sports Gear's Portuguese site manufactured 200,000 pairs of shoes – a figure that is set to triple by 2027. Shoes produced using Huntsman TPU include a line of football boots for a German sports brand that feature direct injected soccer plates. Other major opportunities are in the pipeline including a line of running shoes, which are currently at the sampling stage.

Jens Schmidt, Technical Service Manager Elastomers EAIME at Huntsman, said: "We are incredibly proud to have supported Sports Gear in the successful establishment of its Portuguese manufacturing facility. From the earliest stages – including material trials, process validation and supporting the testing and commissioning of new machinery – our technical team helped ensure a smooth and efficient start-up. As production has ramped up, we have continued to provide reliable, high-performance TPU to underpin the manufacture of key new product lines for Sports Gear's major customers – and look forward to strengthening this collaboration as production volumes at the facility continue to grow." |

[simone\\_richter@huntsman.com](mailto:simone_richter@huntsman.com)



## Forthcoming events and technical presentations

### 2026

The Battery Show Europe – Stuttgart, Germany (9-11 June)

Europur and Euro-Molders Conference – Antwerp, Belgium (10-11 June)

Simac Tanning Tech – Milan, Italy (15-17 September)

CPI – Orlando, Florida (5-7 October)

The Battery Show North America – Detroit, Michigan (12-15 October)

Glasstec – Düsseldorf, Germany (20-23 October)

Big 5 Global – Dubai, UAE (23-26 November)

Find us on:

**Facebook:** [www.facebook.com/huntsmancorp](http://www.facebook.com/huntsmancorp)

**X:** [x.com/Huntsman\\_Corp](https://x.com/Huntsman_Corp)

**LinkedIn:** [www.linkedin.com/company/huntsman](http://www.linkedin.com/company/huntsman)

**YouTube:** [www.youtube.com/user/HuntsmanCorp](http://www.youtube.com/user/HuntsmanCorp)

## HUNTSMAN

Enriching lives through innovation

For more information on the subjects covered in *PU review* magazine, please contact the editor:

**Gary Chapman**  
[gary\\_chapman@huntsman.com](mailto:gary_chapman@huntsman.com)

While all the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, nothing herein is to be construed as a warranty, express or otherwise.

AVALON®, DALTOPED®, KRYSTALFLEX®, HEATLOK®, I-BOND®, RIMLINE®, SMARTLITE® and VITROX® are all registered trademarks of Huntsman or an affiliate thereof in one or more, but not all, countries. SHOKLESS™ is a trademark of Huntsman or an affiliate thereof in one or more, but not all, countries.

Copyright © 2026 Huntsman Corporation. All rights reserved.

Designed and produced by:  
Chris Pearson creative communications.