

HUNTSMAN

Enriching lives through innovation

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About Huntsman:

Huntsman Corporation is a publicly traded global manufacturer and marketer of differentiated and specialty chemicals with 2018 revenues more than \$9 billion. 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 75 manufacturing, R&D and operations facilities in approximately 30 countries and employ approximately 10,000 associates within our four distinct business divisions. For more information about Huntsman, please visit the company's website at www.huntsman.com.

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Always one step ahead
Polyurethanes and
thermoplastic polyurethanes
for the footwear industry

HUNTSMAN

Enriching lives through innovation

Keeping ahead in a **fast moving** industry

At a time of unprecedented change in the footwear industry, innovation is more than ever the key to success. That's why, at Huntsman, we focus on making it possible for our customers to innovate successfully – and profitably.



New challenges need new solutions

New trends are driving the footwear industry today:

- More collections and faster supply chain cycles to reduce design-to-market timelines, driven by e-commerce;
- High performance;
- Customization;
- Growing sustainability awareness.

Footwear businesses must respond with creative solutions to meet the higher demands and changes in the footwear market. Innovation in footwear will be in finding new production techniques as well as bringing new concepts and new functionalities into the market.

We help customers seize new opportunities

Huntsman can help footwear companies thrive in this exciting environment. Our wide and varied range of polyurethanes- and thermoplastic polyurethanes-based solutions help them get to market faster with products for casual, sport or safety and military segments. In addition, thanks to years of experience in the footwear industry, we know the market inside out. It means we have the in-depth industry knowledge to solve complex problems and come up with the innovative solutions our customers need. By sharing our knowledge with theirs, we make an unbeatable team.



Huntsman offers their clients customized sample production.

Ready for now and the future

At Huntsman, we help our customers tackle their everyday challenges. From improving product performance and durability to enhancing safety and comfort features. We aim to reduce costs with highly-efficient technologies that are also suitable for automated production lines. And we challenge market demands for higher quality, bringing customizable features to the individual wearer.



Huntsman's intensive testing methods ensure high quality products and low product return rates.

The right system for every application

Few other companies can match Huntsman's range of polyurethane products which are available in fully formulated grades and tailor-made systems:

- Polyester-based systems;
- Polyether-based systems;
- Hybrid-based systems;
- Thermoplastic polyurethanes.

A technical partner with business savvy

Huntsman is more than a technical partner. It is a true business partner. That's why many leading global brands choose to work with us.

Market insights and production know-how

Huntsman has a unique reputation for excellent technical service which enables us to turn insights into top performing product concepts.

Using industry standard machines to create and test new products or samples, we generate "production-ready" solutions which dramatically speed up time to market. We also work closely with our customers, collaborating on R&D projects.

Even when a new product is ready for production, we can give practical advice to customers on getting production up and running in the most cost-efficient way.

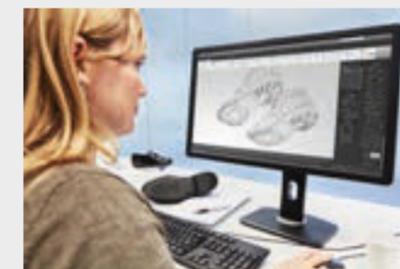
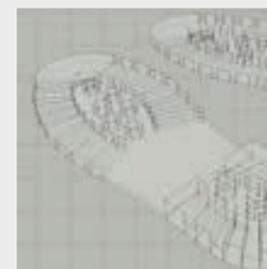
A proven track record of innovative solutions

Huntsman has a long and proud history of helping customers develop innovative new products to create unique designs. Our AVALON®, DALTOPED® and SMARTLITE® ranges of PU, TPU and expanded TPU products have helped manufacturers redefine what's possible in footwear performance and aesthetics. Today, we continue to develop new PU and TPU technologies which raise standards, meet higher expectations and keep footwear manufacturers ahead of the game.



We see the wider picture

Alongside our customers, we work closely with industry associations, universities and research centers to stay ahead of the latest innovations and market developments. In addition, we establish partnerships with machine and equipment manufacturers in order to provide solutions for the future. It helps us keep on top of industry issues in the widest sense so we are able to provide solutions that are both sustainable and that meet the necessary regulatory standards in different parts of the world.



Present day problems require modern solutions. Huntsman knows that chemistry is an important aspect of the solution and offers customers assistance at every stage of the process.

Our market: the world

As a major, global supplier to the footwear industry, we'll be there when you need us – wherever your production base, wherever your markets.

Global network, world-class capabilities

Our international supply chain and research & development capabilities are world-class. And, with a team of experts located in all regions, we serve customers in more than 70 countries.

Our global network includes strategically located system houses and key manufacturing hubs worldwide with dedicated local associates. In addition, we have well-equipped technical centers in Europe, Asia and the United States of America where we can perform testing using the same equipment as our customers.

We make regular investments in these technical centers to keep pace with the newest formulating and manufacturing techniques.

Global reach. Local knowledge.

At Huntsman we build partnerships with our customers based on knowledge, trust and experience. This commitment means that comprehensive levels of technical support are always assured. With locations around the world, our international network of footwear specialists combine global reach with local knowledge – a powerful offering that can help solve complex challenges and ensure the very best levels of customer service.

Global Presence

Worldscale production facilities in the US, the Netherlands and China and highly capable downstream facilities, located close to our customers worldwide.

- MDI manufacturing plant
- Technology/Development Center
- Systems house/Downstream Facility



Taking the lead

Sports footwear

The world of sports footwear is changing. As more and more people take up healthy lifestyles, manufacturers need to find ways to increase productivity in a sustainable way. Automation is playing an increasingly important role and production points are moving closer to the consumers.

Huntsman's PU and TPU technologies are the ideal solution to many of these challenges. Many of our systems have been specifically designed to be suitable for automation and customization. In addition, they enable manufacturers to build-in properties such as cushioning, extra support, flexibility and high rebound to their sports footwear. In turn, these properties help maximize performance for athletes, keep-fit enthusiasts and athleisure customers alike.

Always in first place

Huntsman has introduced many innovations in the world of sports footwear. One example is super lightweight, high energy return SMARTLITE® expanded thermoplastic polyurethane beads.

It can transform the comfort and performance of sports footwear, particularly running shoes. It gives footwear manufacturers extra flexibility in the design and performance of shoes worn for running, general fitness or casual everyday wear.



AVALON® CRYSTAL polyurethane shows a high degree of transparency up to 6mm in thickness and are stabilized against premature color degradation from sunlight. Our AVALON® ABR range provides improved abrasion grades for integral studs in sports shoes.



Huntsman's SMARTLITE® thermoplastic polyurethane is a durable, soft, lightweight, injection moldable material suitable for unit soles, direct molding production processes and components.



Standing out from the crowd

Casual footwear

Fashion, elegance, comfort and quality: these are just some of the outcomes makers of casual footwear require. Huntsman's PU technologies tick all the boxes. We help customers make stylish shoes that are lightweight and flexible, soft to the touch but giving ample support to the wearer.

Many trends come from sports shoes and our expertise in this field makes us the perfect partner to create cross-over products. As well as durability and superb finishes we can give shoes high rebound for optimal comfort or open up infinite possibilities for individualization. Footwear designers and manufacturers need materials that allow their creativity to flow when it comes to form, style, function, color and details. Huntsman offers plasticizer-free TPUs which increase the design possibilities and color effects.

Looking good. Feeling good.

Casual shoes need to look sharp and elegant but must also balance more practical requirements like abrasion and slip resistance. Our world famous AVALON® and SMARTLITE® TPU products and DALTOPED® PU products are suitable for a wide range of shoe components delivering comfort and performance with smooth or leather-like finishes and good paintability.



The technology inherent in Huntsman's innovative DALTOPED®-X-LITE polyether material for polyurethane soles allows it to function as an ultralightweight, cost effective and highly versatile alternative for ethyl vinyl acetate (EVA).



Focusing on the relationship between design and functionality within polyurethane soling materials, we have worked intensively to understand and improve slip performance.



Making **performance** paramount

Safety and military footwear

Adequate safety is the number one concern for work shoes. At Huntsman, we recognize this need and provide additional solutions in appearance, comfort and durability which are also important considerations for footwear designers. Our polyurethane products can contribute towards your safety shoe meeting the highest safety standard guidelines as well as precise and detailed production performance criteria.

Resistant to hydrolysis, abrasion, oil and solvents while providing excellent anti-slip and anti-static properties. Importantly, polyurethanes also mean safety shoes can be comfortable – after all, the user is likely to be wearing them for long periods at a time and the right shoes can help reduce fatigue. And, with the emergence of athleisure safety shoes, polyurethanes can help add a flourish of style too.



Wellington boots

Our hybrid polyurethanes technology offers abrasion-, oil-, solvent- and water-resistance as well as good insulation and lightweight for this growing part of the footwear industry.



High standards for safety and style

AVALON® TPU outsoles can be combined with the full range of Huntsman microcellular DALTOPED® midsole systems in a direct process. The construction combines the outstanding wear and flex performance of a soft TPU for the outsole with the comfort and lightness of polyurethane for the midsole.



Huntsman's safety footwear focuses on comfort, performance and durability.



Huntsman can help customers create customized safety shoes models.

Take the next step

We provide customers with a broad portfolio of footwear solutions based on many different polyurethane chemistries. From fully formulated grade and tailor-made polyesters to polyether-based systems and TPU grades, we give footwear companies the freedom to design innovative shoes and boots in step with the latest trends, manufacturing techniques and environmental concerns.

To find out more about how we could work with you to create the innovative footwear of tomorrow, visit us at www.huntsman.com

