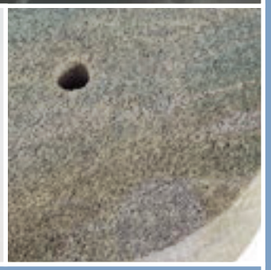

DARE
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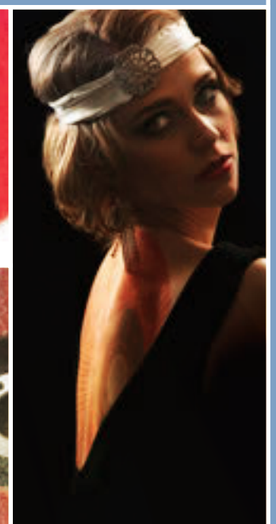

HUNTSMAN

Enriching lives through innovation

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About Huntsman:
Huntsman Corporation is a publicly traded global manufacturer and marketer of differentiated chemicals with 2015 revenues of approximately $10 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 100 manufacturing and R&D facilities in approximately 30 countries and employ approximately 15,000 associates within our 5 distinct business divisions. For more information about Huntsman, please visit the company's website at www.huntsman.com.

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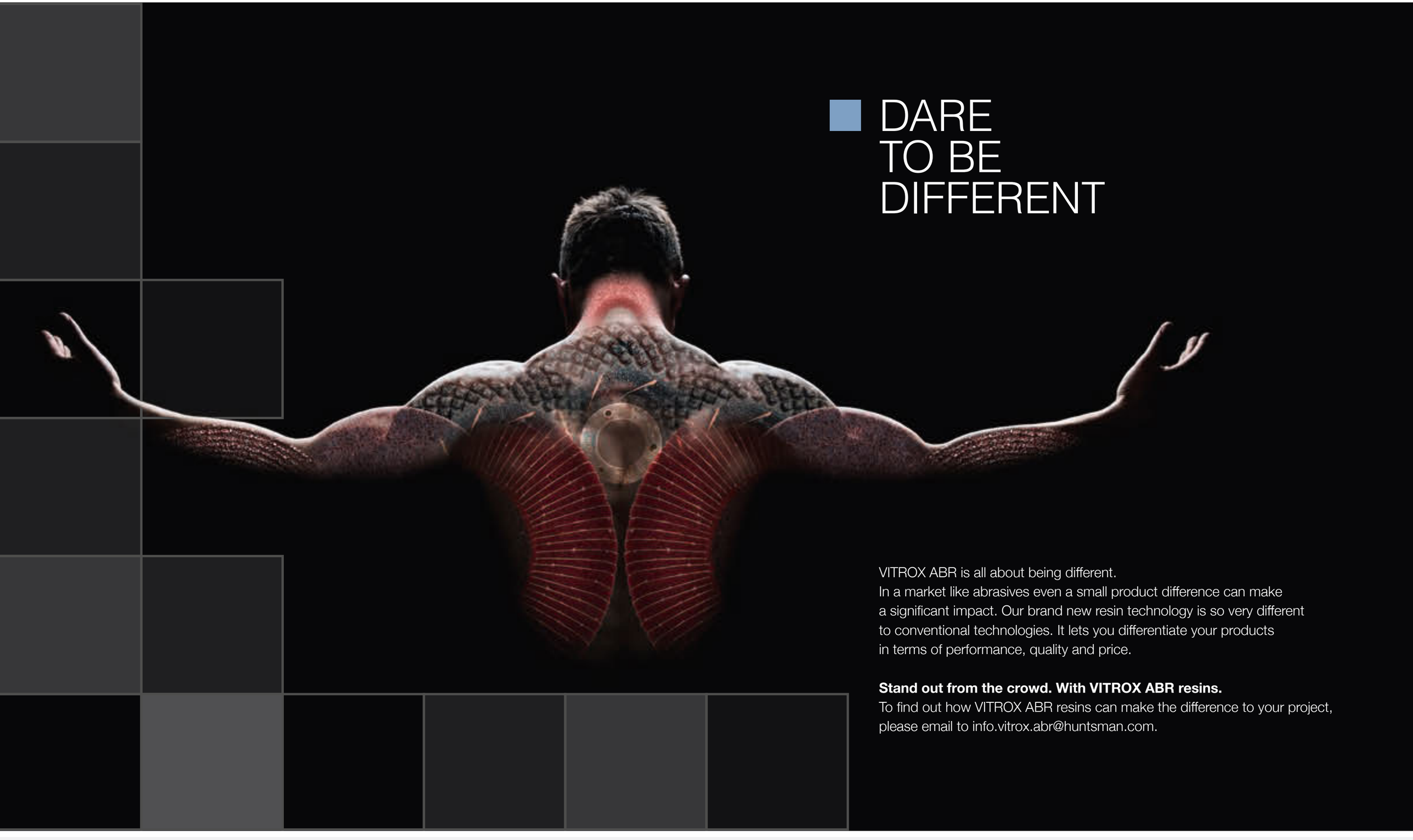
VITROX® ABR

Resins for abrasive applications



DARE TO BE DIFFERENT

VITROX ABR is all about being different.
In a market like abrasives even a small product difference can make a significant impact. Our brand new resin technology is so very different to conventional technologies. It lets you differentiate your products in terms of performance, quality and price.

Stand out from the crowd. With VITROX ABR resins.
To find out how VITROX ABR resins can make the difference to your project, please email to info.vitrox.abr@huntsman.com.

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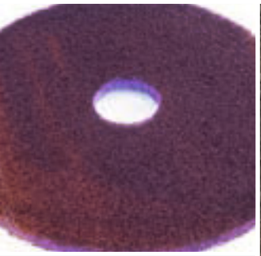

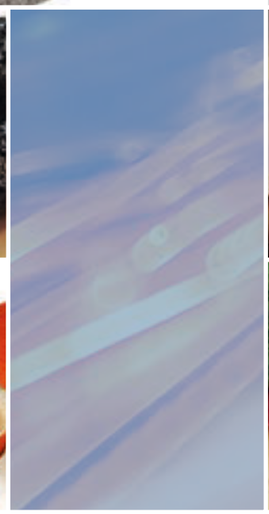

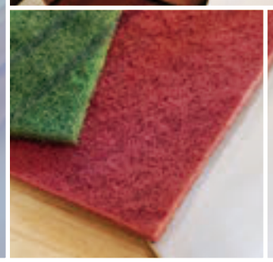

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ABOUT US

Huntsman Polyurethanes is a division of Huntsman Corporation, a global manufacturer of differentiated chemicals that are used every day, in an array of industrial and consumer applications.

Helping to solve major design, manufacturing and sustainability challenges, our polyurethane chemistries are utilized in many different markets worldwide.

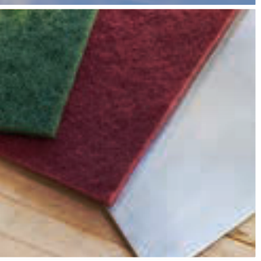
In the adhesives industry we apply our expertise in methylene diphenyl diisocyanate (MDI) chemistry to the development of polyurethane components, products and systems that can improve the production and performance of a range of bonding agents.

This know-how extends to the abrasives industry via our family of VITROX® ABR resins. Utilized as the main binding ingredient in abrasives, VITROX ABR resins can help make the manufacturing process more flexible, time efficient and cost effective – without compromising quality, performance or longevity.

VITROX® ABR

ACTIVELY ENGAGED IN THE ABRASIVES INDUSTRY

Our commitment to the abrasives industry is reflected in our membership of the Federation of European Producers of Abrasives (FEPA). As an active participant in this professional body we are dedicated to engaging with decision makers throughout the abrasives value chain to develop a cohesive approach to standardization issues as well as environment, health and safety matters.



FEPA welcomes organizations and groups of manufacturers that have as their object the encouragement of technical or scientific research in the field of the manufacture or conversion of abrasive products. These organizations and companies, whose collaboration can be beneficial to the aims of the Federation and of its members, can join as Associated Members of FEPA.

Frank Verguet, General Secretary

DARE TO BE DIFFERENT WITH VITROX ABR RESINS

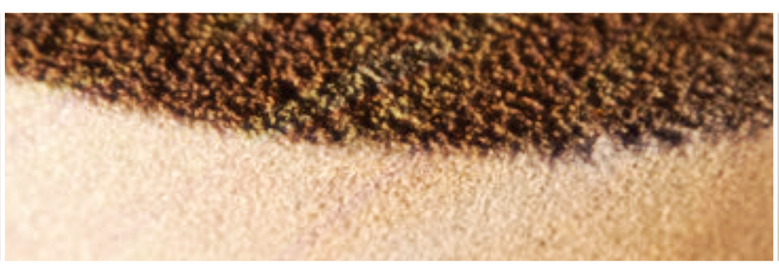
VITROX ABR resins are different to conventional ones in many ways. The performance benefits they give producers mean that end products can now be made with significant performance, quality and price advantages.

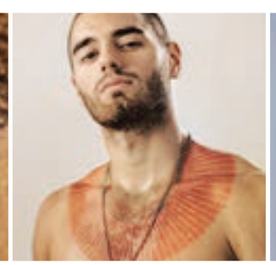
The VITROX ABR family of resins are specialty, two component systems. Free from hazardous classified solvents they can radically simplify the production of abrasive products.

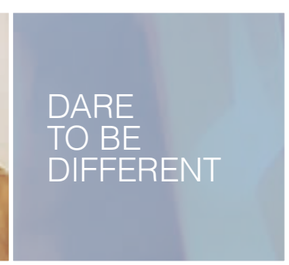
Used to firmly bind mineral and synthetic grains to backing materials and webs, VITROX ABR resins can give manufacturers greater control over resin-related steps in the abrasive production process. Characterized by different sets of mechanical properties, VITROX ABR resins can accomodate a wide range of production parameters and ensure a consistent quality finish.

Key features include:

- **Variations in viscosity and hardness:** With low to high viscosity, and rigid to flexible options available, VITROX ABR resins can be optimized to suit different materials, application techniques and processing conditions.
- **A fast fix:** VITROX ABR resins have fast cure capabilities that can save abrasive manufacturers time and money. The fast cure of VITROX ABR resins is triggered at 110°C to 130°C. This can help increase production throughput and reduce the amount of time that abrasives have to spend in energy intensive ovens – helping to cut costs further.



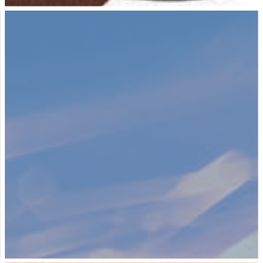


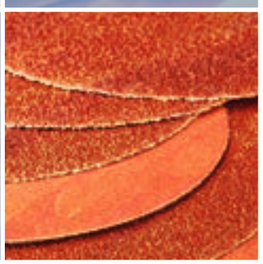


WHAT MAKES VITROX ABR DIFFERENT?

Key benefits

VITROX ABR resins are easy to work with and offer a number of processing, performance and cost benefits.





Processing

- Increased throughput
- Excellent wetting and bonding to various substrates and grits
- Fast cure
- Low, medium and high viscosities available
- Excellent tackiness
- Ease of process and production flexibility
- Robust technology
- Long shelf life of components
- Long pot life.

Performance

- Excellent durability
- High temperature stability
- Flexible or hard, always combined with toughness
- Water resistance
- Easy coloring.

Cost

- Energy savings
- Reduction in working capital and storage costs
- Waste reduction
- No solvent recycling required
- Capex minimization (cost & time).

EHS

- Free of hazardous classified solvents
- REACh compliant.

COUNTLESS DIFFERENT APPLICATIONS

Adhesives based on our VITROX ABR resin technology can be used to bind different grits and grains to assorted backing materials using a variety of standard techniques.
Compatible materials include:

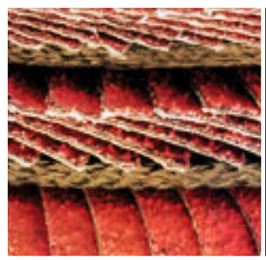
- Non-woven
- Fabric
- Film (PET, TPU)
- Paper
- ...

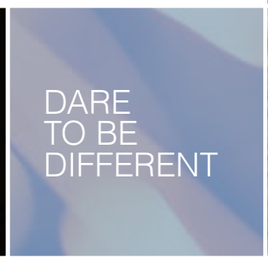
All kinds of grits and grains will adhere to VITROX ABR resins including:

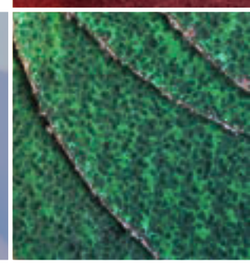
- Aluminium oxide
- Silicon carbide
- Diamond
- Cubic boron nitride (CBN)
- ...

VITROX ABR resins can be used to create abrasive products in a range of formats; from coarse materials for portable or stationary equipment for heavy-duty projects; to lightweight abrasives for polishing the surface of delicate substrates.
Examples include:

- Metal
- Wood
- Leather
- Glass
- Ceramic
- ...





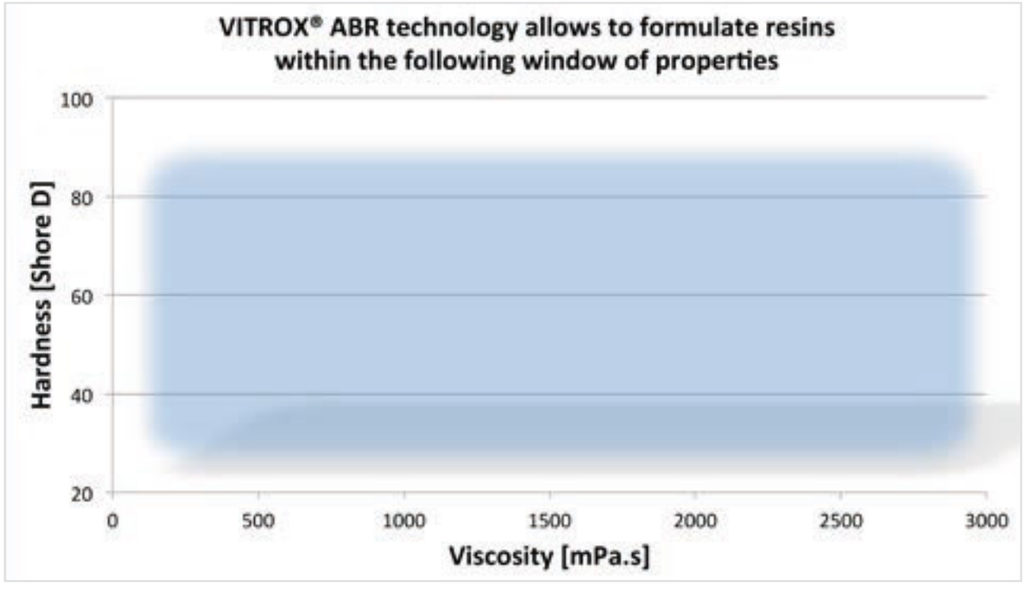


SYSTEMS

Characteristics

- Two component systems
- Mixing ratio: 1/1 up to 4/1
- From low to high viscous, rigid to flexible
- Long pot life combined with fast reactivity
- Heat curing mechanism triggered at 110°C to 130°C
- No need for post-cure cycles.

Properties

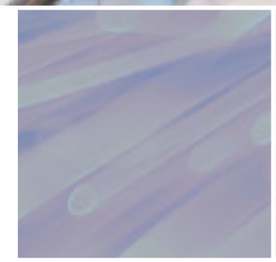


Customized grades can be developed on request.

RESEARCH & DEVELOPMENT

At Huntsman we are committed to investing in research and development, and to becoming a solution provider to the whole abrasives industry. We want to ensure that the products we develop meet the needs of our customers and can be processed extremely efficiently. At our Everberg R&D center we have commissioned a dedicated abrasives laboratory and have installed a brand new pilot line.

- **Supporting customers in tailoring their solutions**
- **Committed to long-term partnerships**
- **Offering in-house customer prototyping**
- **Supporting customers with dedicated training.**



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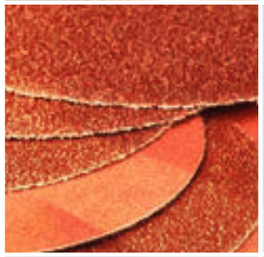
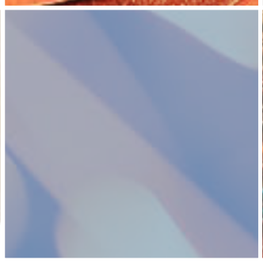
ABOUT VITROX CHEMISTRY

Our VITROX technology is an award-winning, polyurethane chemistry with fast-cure capabilities and a long pot life. Proven to deliver resins with an adaptable handling window, a fast curing time and high temperature resistance properties, VITROX products have the potential to disrupt the status quo in a variety of applications where new levels of innovation and functionality are required. As well as offering abrasive products manufacturers the chance to achieve new production, processing and cost efficiencies, different variants of our VITROX chemistry have been used to great success in various industries. For example, this novel chemistry has found application in the trenchless technology sector, where it has been used to repair cracked water and sewage pipes from the inside out – removing the need to dig up roads and pavements, which can prove both costly and disruptive in busy towns and city centers.





SUSTAINABILITY

Sustainability is a fundamental part of Huntsman's corporate and business strategies. At corporate level we have a sustainability office and a sustainability leadership council to coordinate work across our five business divisions, and develop and distribute an annual corporate sustainability report. We are also a signatory to the United Nations Global Compact and have committed to making ten principles in the areas of human rights, labor, environment and anti-corruption an integral part of our strategy, culture and day-to-day operations.

At an individual business level, our Huntsman Polyurethanes team is focused on the research and development of new products to help tackle society's sustainability challenges. Together with our customers we focus on creating MDI-based solutions that can help conserve energy, cut the consumption of precious natural resources, and improve overall comfort and well-being – contributing to a more sustainable society.

This work runs in parallel to implementing operational eco-efficiency initiatives at each of our office and manufacturing locations worldwide. We use the United Nations 2030 Sustainability Goals as an inspiring framework and apply life cycle thinking to improve the environmental performance of our products.

Integrated within our polyurethanes business we also have a group of issue management experts who monitor and analyze emerging environmental, health and safety issues. Their job is to understand the opportunities and risks in our industry and in the markets that we operate in. This helps ensure that our long-term business strategies are aligned with the legislative needs of our customers and the wider ambitions of the polyurethanes industry at large.