

Performance Materials

The Performance materials business division of Trinseo, which includes the Latex, Synthetic Rubber and Performance Plastics businesses, provides a broad offering of technologies and services supporting customers across the world.

Trinseo is a leading supplier of synthetic rubber with a world-class manufacturing platform in Europe, as well as a technology leader in solution-styrene butadiene rubber (S-SBR). Trinseo is the global leader in styrene butadiene latex, with 25% market share, and is the only supplier with world-class pilot coating facilities in both the U.S. and Europe. And Trinseo Performance Plastics has strong relationships with the brand leaders in industries such as lighting, consumer electronics, and medical devices.

Table 1:

	Latex	Synthetic Rubber	Performance Plastics
Key Products	<ul style="list-style-type: none"> Starch-containing Emulsion Technology Styrene-Butadiene Latex (SB Latex) Styrene-Acrylate Latex (SA Latex) 	<ul style="list-style-type: none"> Emulsion-Styrene Butadiene Rubber (E-SBR) Lithium-Butadiene Rubber (Li-PBR) Nickel-Butadiene Rubber (Ni-BR) Solution-Styrene Butadiene Rubber (S-SBR) 	<ul style="list-style-type: none"> Automotive Plastics Consumer Essential Markets (Electrical, Lighting, Medical Devices, Consumer Electronics)
Top Brands	Carpet: <ul style="list-style-type: none"> ENVERSATM Foam Latex EVERESTTM Latex Technology FOUNDATIONSTM Latex HPLTM Latex Latex Modifier ATM / NA LOMAXTM Technology MaxForteTM MaxCoatTM Two-in-One Technology (Note: paper technologies are not branded)	<ul style="list-style-type: none"> BUNATM Rubber SPRINTANTM Rubber 	<ul style="list-style-type: none"> CALIBRETM CALIBRETM MEGARADTM CELEXTM EMERGETM ENLITETM INSPIRETM MAGNUMTM PULSETM VELVEXTM
End Use	<ul style="list-style-type: none"> Building and Construction Materials Carpet and Artificial Turf Backings Concrete Reinforcements Paper and Paperboard Coatings 	<ul style="list-style-type: none"> Polymer Modification Standard and Performance Tires Technical rubber goods 	<ul style="list-style-type: none"> Automotive Consumer Electronics Electrical Lighting Medical Devices

Global Leader in Performance Materials

Synthetic Rubber

- Leading supplier of Styrene Butadiene Rubber (SBR) and Butadiene Rubber (BR) with world-class manufacturing platform in Europe.
- Technology leader in functionalized Solution-Styrene Butadiene Rubber (S-SBR).
- Deep and long-standing relationships with all global leading tire producers.

Latex

- We are the global leader in Styrene-Butadiene SB Latex, with 25% market share.
- Trinseo is the only supplier with world-class pilot coating facilities in both the U.S. and Europe.

Performance Plastics

- Performance Plastics is focused on strategic markets where Trinseo sees significant growth opportunities.
- Performance Plastics develops tailored solutions that address challenges in the areas of cost-efficiency, sustainability, energy efficiency, lightweighting and improved performance.
- Trinseo has global compounds & blends positions with blue-chip customers.

Table 2: Major Plants and Locations

Manufacturing Plants	Latex	Synthetic Rubber	Performance Plastics
Dalton, GA, U.S.	●		
Midland, MI, U.S.	●		●
Guaruja, Brazil	●		
Zhangjiagang, China	●		
Merak, Indonesia	●		
Ulsan, Korea	●		
Hamina, Finland	●		
Rheinmuenster, Germany	●		
Schkopau, Germany		●	
Livorno, Italy	●		
Terneuzen, Netherlands	●		●
Norrkoping, Sweden	●		
Hsinchu, Taiwan			●
Limao, Brazil			●

Technology

Trinseo was founded on a unique combination of strong capabilities including technology leadership, world-class production assets and a global team of technical experts. Building on more than seven decades of manufacturing, commercial and technological expertise, we are passionately focused on delivering high-performance products and innovative thinking to our customers.

Our Research & Development (R&D) and Marketing people work closely together with our customers to ensure that research and innovation are driven by what is needed in the marketplace. Our technical experts are highly experienced in their fields, and in our customers' industries and applications, with many of them holding over 20 years of expertise. Trinseo's extensive Research and Development facilities span across Europe, North America, Latin America and Asia-Pacific.

The Latex business has five paper testing laboratories (Midland, Michigan, U.S.; Sao Paulo, Brazil; Samstagern, Switzerland; Rheinmuenster, Germany; Shanghai, China) and two pilot coating facilities. Trinseo is the only supplier with world-class pilot coating facilities in both the U.S. and Europe. Product R&D for latex also occurs in Midland, Michigan, and Rheinmuenster, Germany.

R&D for the Synthetic Rubber business is based in Schkopau, Germany. Our Performance Plastics R&D is located in Midland, Michigan and Terneuzen, the Netherlands. Terneuzen is home to our Application Engineering Development Center, which provides Computer Aided Engineering (CAE) tools to support customers worldwide with the development process – from prototypes to series production.

Trinseo has highly efficient manufacturing sites with a proven record of operating excellence. Our manufacturing assets boast a 99% asset mechanical reliability, 5% above the industry average. Trinseo people are strongly committed to safety and environmental performance, and are proud to have an industry-leading safety record.

Products & Applications

Adhesive, Functional Nonwoven and Building & Construction

Trinseo's experienced technical development and production teams create latex binders that address evolving needs in Adhesive and Construction applications—needs for higher performance, sustainability and cost efficiency. To meet the newly expanded regulatory and safety requirements that affect both customer products and manufacturing practices, we have developed non-formaldehyde and low VOC-releasing solutions.

Applications

- Wood assembly
- Lamination
- Pressure-sensitive
- Caulks & sealants
- Cementitious (mortar modification, tile adhesives, grouts)
- Primers
- Surfaces
- Composites
- Liquid applies membranes
- Mastics
- Oil & gas
- Glass fiber reinforcements
- Footwear
- Abrasives & pads
- Roofing
- Filtration
- Performance coatings

Products

- Styrene-Butadiene Latex (SB Latex)
- Modified Styrene-Butadiene Latex
- Styrene Acrylic Latex (SA Latex)
- Acrylic Latex
- Vinylidene Chloride (VDC)
- Plastic Pigments
- Bio-hybrids
- Foam Technology

Paper & Paperboard

Trinseo offers a wide range of custom-engineered solutions that improve end-use properties of paper and paperboard to help manufacturers compete in the global marketplace. Not only does Trinseo have the right latex formulations to help improve gloss, durability, performance and glueability, the company also helps customers to seamlessly convert to new latex on their mills around the world.

Applications

- Fine paper/coated wood-free paper
- Light weight coated paper
- Specialty paper
- Recycled paperboard
- Solid bleached sulfate paperboard
- Coated unbleached kraft

Products

- Styrene-Butadiene Latex (SB Latex)
- Modified Styrene-Butadiene Latex
- Plastic Pigments

- Styrene-Acrylate Latex (SA Latex)
- Terpolymers
- Thickeners
- Synthetic Pigments

Textiles & Carpet

Trinseo offers a wide variety of materials to meet the specific needs of the flooring industry. Trinseo latex is used to impart specific physical properties to the finished carpet, including dimensional stability and stiffness. It can also be used to enhance performance properties of the carpet, including ignition resistance and moisture barrier. In artificial turf, Trinseo's range of performance resins helps create surfaces that allow players and athletes to excel, offers excellent protection from motion-related injuries and demonstrates great durability and resilience.

Durability and sustainability are key drivers across carpet and turf applications as customers respond to the global demands for products with a lower environmental impact and reduced carbon footprint. Trinseo provides high-quality sustainable solutions for those who want to make a difference to the environment at the same time as maximizing the performance of their products. LOMAX™ Technology from Trinseo uses renewable energy (landfill methane gas), resulting in lower greenhouse gas emissions. The technology is winning increasing support as more producers of carpet and carpet backing recognize its environmental advantages.

Applications

- Artificial turf backings
- Commercial carpet backings for commercial broadloom, modular tile, needle punch, tufted carpet, underlay and woven applications
- Residential carpet

Products and technologies

- Styrene-Butadiene Latex (SB Latex)
- Modified Styrene-Butadiene Latex
- Acrylic Latex
- Vinyl Acrylic Latex
- ENVERSA™ Foam Latex
- Two-in-One® Technology
- HPL™ Latex
- FOUNDATIONS™ Latex
- EVEREST™ Technology
- LOMAX™ Technology

Synthetic Rubber: Tire & Rubber Goods

Producers of tires, footwear, conveyor belts, hoses, flooring and adhesives are looking for materials that provide a good balance of wear resistance and wet grip in combination with excellent processability. Trinseo's solutions meet these requirements. For example, the company's functionalized S-SBR family addresses all the needs of the new-generation ultra high-performance tires: lower rolling resistance resulting in better fuel economy and reduced emissions, combined with confident wet grip performance at high speeds, to increase car safety.

Applications

- Standard tires
- Performance tires
- Technical rubber goods
- Polymer modification

Products and Brands

- Solution-Styrene Butadiene (S-SBR)

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- Lithium-Butadiene Rubber (Li-BR)
- Emulsion-Styrene Butadiene Rubber (E-SBR)
- Nickel-Butadiene Rubber (Ni-BR)
- BUNA™ Rubber
- SPRINTAN™ Rubber

Performance Plastics: Automotive

Trinseo Automotive is one of the leading suppliers of plastic material solutions for interior and exterior automotive applications. The company develops industry-leading products and systems to address a wide range of critical industry needs such as energy efficiency, improved safety, reduced exhaust emissions and enhanced vehicle quality and appeal. The technology-based solutions by Trinseo Automotive thus meet customer demands for vehicles that are safer, stronger, quieter, lighter, and more comfortable.

Applications

- Interior automotive applications, e.g. instrument panels, mid consoles, door pockets, pillars, overhead consoles, trunk and interior trim as well as our patented blow-molded seatback technology
- Exterior automotive applications, e.g. spoilers, mirror housings, grills, and other plating applications
- Semi-Structural applications, e.g. lift gates, door modules, front end carrier and air gates.

Products

- PULSE™ PC/ABS Engineering Resins
- PULSE™ GX Engineering Resins
- MAGNUM™ ABS
- VELVEX™ Reinforced Elastomers
- INSPIRE™ Performance Polymers

Performance Plastics: Consumer Electronics

Trinseo collaborates with Original Equipment Manufacturers (OEMs) on a wide range of consumer electronics applications to develop resins with well-balanced key performance attributes that give customers optimal design freedom. Thanks to Trinseo's speedy, custom material solutions and well known standard grades, the company has become a widely recognized partner to the consumer electronics industry.

Applications

- Device Parts
- Enclosures
- Accessories
- Ignition Resistant PC Films
- Information Technology Equipment (ITE)

Products

- EMERGE™ Advanced Resins
- CALIBRE™ Polycarbonate Resins

Performance Plastics: Medical Devices

An increase in minimally invasive surgeries and a shift toward home healthcare monitoring have increased the need for light, yet durable, medical devices. CALIBRE™ and CALIBRE™ MEGARAD™ Polycarbonate Resins, EMERGE™ Advanced Resins and MAGNUM™ ABS Resins from Trinseo offer medical device manufacturers additional options to meet stringent requirements while ensuring patient safety and keeping costs low.

Applications

- Single- and Multiple-Use Devices
- Equipment Housings

Products

- EMERGE™ Advanced Resins
- CALIBRE™ Polycarbonate Resins
- CALIBRE™ MEGARAD™ Polycarbonate Resins
- MAGNUM™ ABS Resins

Performance Plastics: Lighting

For commercial and consumer applications, Light Emitting Diodes (LEDs) are an environmentally conscious, energy efficient choice; Trinseo provides plastics for a variety of application areas that offer an excellent balance between transparency and diffusion as well as other critical performance properties.

Applications

- Lenses
- Enclosures
- Reflective Components

Products

- CALIBRE™ Polycarbonate Resins
- EMERGE™ Advanced Resins

Performance Plastics: Electrical

Electrical equipment and components require materials that provide high performance to accommodate special needs of voltage, moisture, heat and weather. Trinseo supports this industry with resins that offer excellent insulation and meet other critical requirements such as ignition resistance, dimensional stability, heat distortion and temperature resistance.

Applications

- Electrical Equipment, e.g. switches, plugs and meters
- Utility Smart Meters

Products

- CALIBRE™ Polycarbonate Resins
- EMERGE™ Advanced Resins

For more information about Performance Materials, visit www.trinseo.com.