



**TRINSEO**<sup>TM</sup>  
Automotive



**Material Solutions**  
**for Automotive**

Materials. Powering Ideas.

# Partnering with you

# to innovate for tomorrow

As one of the leading providers for innovative materials, Trinseo Automotive has developed breakthrough solutions for premium quality interior and exterior automotive components. ABS resins, PC/ABS, LGF PP<sup>1</sup> and Polypropylene compounds from Trinseo Automotive are helping to advance applications such as mid and upper consoles, instrument panels, door panels, tail-gates, spoilers and exterior trim. These materials provide weight reduction, robustness, and durability – and, above all, comfort, safety, and a pleasant ride for drivers and their passengers.

## OUR MATERIAL SCIENCE AND ENGINEERING CAPABILITIES

Trinseo Automotive has an extensive range of material solutions. Our company also offers comprehensive development and engineering services, including forecast models for automotive development, and all the necessary CAE<sup>2</sup> capabilities for the accompanying support of the development process – from prototypes to series production. Our Application Engineering & Development Center is located in Terneuzen, Netherlands, and supports customers worldwide.

## GLOBAL DESIGN, LOCALLY BUILT

Having a global product offering at a locally competitive price, is critical to the success of our customers. We are therefore committed to having global products that are locally produced and available in all major regions by the end of 2014.

## FUEL EFFICIENCY THROUGH LIGHTWEIGHTING

We address the lightweight trend by optimizing the material selection of existing plastic parts, often through virtual simulations that allow further thin-walling while ensuring dimensional stability.

In addition, we have experience in the development of innovative applications, which enable steel replacement such as the blowmolded seatback and recently the first mono-material, thermoplastic tailgate. To meet our customers' needs, to achieve weight optimization in structural parts, we have developed a comprehensive

portfolio of long glass fiber reinforced polypropylene products and reinforced PC/ABS. We also offer low density resins that further reduce weight, versus conventional materials, such as our new PULSE™ GX PC/ABS product family.

## EMISSION REDUCTION

Our MAGNUM™ ABS Resins are manufactured with continuous mass polymerization technology, which results in a very stable process allowing for ultra low emissions and ensures superior lot-to-lot consistency of properties. Our ABS mass technology also positively benefits our PULSE™ PC/ABS products, which offer similar best-in-class low emissions.

## IMPROVED QUALITY & APPEAL IN YOUR INTERIOR DESIGNS

In the last few years, drivers have increasingly allocated a greater importance to interior comfort and aesthetics. Therefore, we continue to increase development in these key strategic automotive areas. Recently we have seen the first commercial adoption of the VELVEX™ family of moulded in colour reinforced elastomers that offer premium quality for unpainted indoor components. VELVEX™ resins have excellent mould reproduction ensuring consistently low gloss level. In addition, these products exhibit acoustic (sound dampening) and aesthetic advantages, for example low knit line appearance. There is a realisation that a car interior also needs to look good after years of use, these resins therefore have the best mar and scratch performance in its class.

Combining cost effectiveness with ensuring good aesthetics is another characteristic favored by our customers. Our MAGNUM™ SLG ABS portfolio provides an exceptional combination of low gloss, high scratch resistance and stiffness to automotive interiors and can therefore be used without paint on many occasions. Our PULSE™ GX PC/ABS resins have enhanced flow properties allowing good mould reproduction, which also enables the applications to not be painted. In addition, these resins address the industry's demand for lightweighting with their lower density compared to PC/ABS resins.



## KEY APPLICATIONS

**Instrument Panels** – The instrument panel and trim components of a vehicle are subject to a wide range of performance requirements. Trinseo has in-depth experience to help manufacturers fulfill these requirements with tailor-made product offerings and engineering services. The introduction of PULSE™ GX50 and GX70 PC/ABS materials, which can be used without paint for lower instrument panel applications, will deliver specific improvements. INSPIRE™ TF1311 has a reputation for hard IP's of having excellent scratch resistance properties, whereas the VELVEX™ 5250 mould reproduction capabilities provides for low gloss and extreme scratch resistance. For both these products we recommend our customers to work with us during their MOLDFLOW® analysis to ensure the best gloss and appearance for the final part. Our PULSE™ 630 GF glass fiber filled PC/ABS is an industry choice for the radio cage, as it still exhibits ductility despite the glass fiber loading of the material, which takes care of the needed stiffness and heat resistance for the application.

**Door Panels** – For every car segment, Trinseo materials provide cost-effective solutions for high-quality door panels. Our VELVEX™ and INSPIRE™ PP compounds are designed to meet the highest aesthetic and durability requirements whilst offering cost-effective solutions that fulfill customers' quality and appeal expectations. Another critical productivity benefit is that INSPIRE™ and VELVEX™ resins can also be offered as self-coloring systems. Our MAGNUM™ market leading resins enable the production of door panels that have excellent heat resistance and dimensional stability. Increasingly important is also the low odor and emission performance of these mass ABS products.

Increasingly, INSPIRE™ LGF PP products are being used to manufacture door modules that enable OEMs to lower the weight of these applications significantly whilst still being able to add new functionalities to the door modules, which would not have been possible with a stamped steel solution. Our INSPIRE™ LGF PP products are globally available, ideal for lowering cost on global car platforms.

**Mid Consoles** – Mid consoles have become the central storage areas for most vehicles, holding everything from music CDs and beverages to maps. For top-of-the-line mid consoles, Trinseo offers several ABS resins, from the MAGNUM™ ABS family, which feature very high- heat resistance in combination with excellent impact performance, and in many cases the back of the mid-console is a head-impact area. In addition, these products have excellent processing characteristics and allow for easy painting and good skin adhesion.

The lower sides of the mid-console are usually in areas which can get damaged during the life of the vehicle, mostly coming from kicking and scuffing when people assume their seating position. Both MAGNUM™ ABS and VELVEX™ 5250 allow our customers to lessen the permanent damage to these parts.

Also for mid console structural parts, the benefits of PULSE™ 630 GF stand out, as this application usually sees even more impact risk, and the ductility of PULSE™ 630 GF is then highly beneficial for the integrity and crash performance of these parts.

## Interior and exterior structural applications

Our INSPIRE™ polypropylene grades reinforced with long glass fibers provide high stiffness, strength and impact-resistance to interior and exterior structural parts such as front-end carriers (FEC), mid-console carriers, IP carriers, door carriers and tail-gates. The addition of glass fibers to the material proves crucial in order to meet the performance requirements.

<sup>1</sup> 1 LGF PP refers to "Long Glass Fiber Reinforced Polypropylene"

<sup>2</sup> CAE refers to "Computer-aided engineering"

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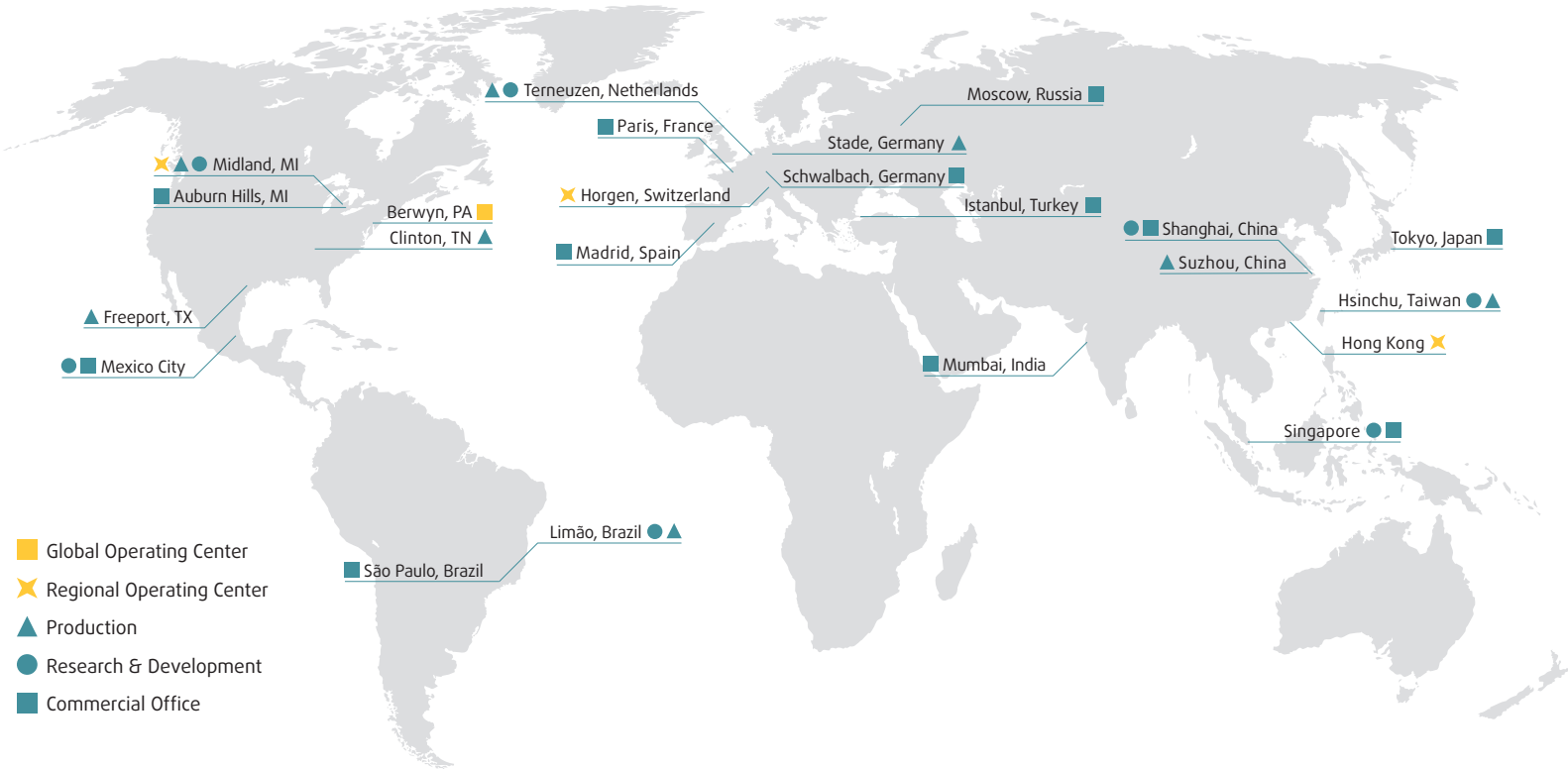
# About Trinseo

**Trinseo** is a leading global materials company dedicated to innovate and deliver for its customers. Trinseo's unique product portfolio brings together plastics, latex and rubber businesses that share feed stocks, operations, customers and end users. The company benefits from global scale, a long-standing tradition of unrivaled customer relationships and a robust innovation pipeline.

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.

**Trinseo Automotive**, a business unit of Trinseo, has an extensive product line of engineering resins ranging from polypropylene compounds and LGF PP to ABS and PC/ABS resins for automotive interior, exterior and structural applications. From best-in-class scratch resistance and light weight to high heat resistance and low VOC levels, Trinseo Automotive resins offer exceptional durability and high-end aesthetics. Whilst our innovative products help in developing automotive parts in a cost-efficient way, it is our material science and characterization knowledge, combined with design engineering and processing knowledge that set us apart. Our outstanding combination of capabilities helps car makers, tool makers and processors to be truly competitive in an ever-evolving global market, particularly with the upcoming fuel efficiency and emissions legislations.

## MAJOR TRINSEO AUTOMOTIVE LOCATIONS



# Overview of

# Global Products

For more information on our globally available materials, as well as our regional product offerings, please check [www.trinseoautomotive.com](http://www.trinseoautomotive.com)

## AUTOMOTIVE APPLICATION

PRODUCT	GENERIC	MAJOR CHARACTERISTICS	Center Consoles	Mid Consoles	IP Retainer	Dashboard Components	Door modules	Door panels	Blow Moulded Seatback	Exterior Trim	Pillar covers	Spoilers	Interior Trim	Trunk Trim	Front-end Carriers	Others
MAGNUM™ 3325 MT	ABS	Low gloss, medium heat resistance Excellent processability. Stable light base colour, low odor & VOC.	●	●		●		●		●	●	●	●	●		Also suitable for unpainted interior parts
MAGNUM™ 3416	ABS	High heat resistance with good impact. Excellent processability. Stable light base colour, low odor & VOC.	●	●		●		●		●	●	●	●	●		Taillight housing
PULSE™ GX50	PC/ABS	High impact at low temperature. Tailormade heat resistance. Excellent processability. Low odor & VOC values. Excellent colouring. Low gloss.	●	●		●		●		●	●	●	●	●		Also suitable for unpainted interior parts
PULSE™ GX70	PC/ABS	High impact at low temperature. Good heat resistance. Excellent processability. Low odor & VOC values. Excellent colouring. Low gloss.	●	●	●	●				●	●		●			Also suitable for unpainted interior parts
PULSE™ A35-105*	PC/ABS	High impact with low temperature ductility. High heat resistance. Low odor & VOC values. Excellent colouring.	●	●	●	●				●	●	●	●			
PULSE™ 2000 EZ*	PC/ABS	High impact with low temperature ductility. Very high heat resistance. Very high flow. Low odor & VOC values. Excellent colouring.	●	●	●	●				●	●	●	●			
PULSE™ 6000 BG	PC/ABS	Good heat resistance. Good impact at low temperature. High melt strength.							●							
VELVEX™ 5250	reinforced elastomer	For unpainted interior trim applications and premium surfaces. Best scratch-and-mar resistance. Uniform low gloss.	●	●		●		●		●	●		●	●		
INSPIRE™ LGF 9621	LGF PP	60% Glass concentrate. Very high stiffness and good impact for interior structural components.			●		●								●	Tail gates Air gates
INSPIRE™ LGF 9631	LGF PP	60% Glass concentrate. Very high stiffness and good impact for structural components requiring high-heat performance.													●	

\*PULSE™ A35-105 is produced in Europe and Pacific. PULSE™ 2000 EZ is produced in The Americas and Pacific. PULSE™ A35-105 and PULSE™ 2000 EZ generally meet the same OEM specifications.



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