

Materials. Powering Ideas.



MAGNUMTM ABS Resins Proven to enhance productivity and efficiency

Contents

About Trinseo	1	2
What Makes MAGNUM™ ABS Resins Different?	5	6
MAGNUM™ ABS Resins vs. Market ABS Resins	7	8
What Do These Mean for Our Customers?	9	14
MAGNUM™ ABS Resins Product Grades	15	16
Injection Molding Applications	17	18
Sheet & Profile Extrusion Applications	19	20
Voice of Our Customers	21	_ 22

Turning Ideas into Reality

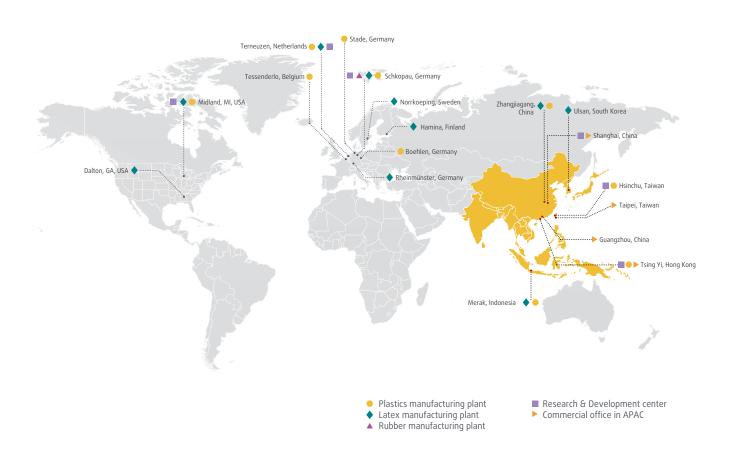
About Trinseo

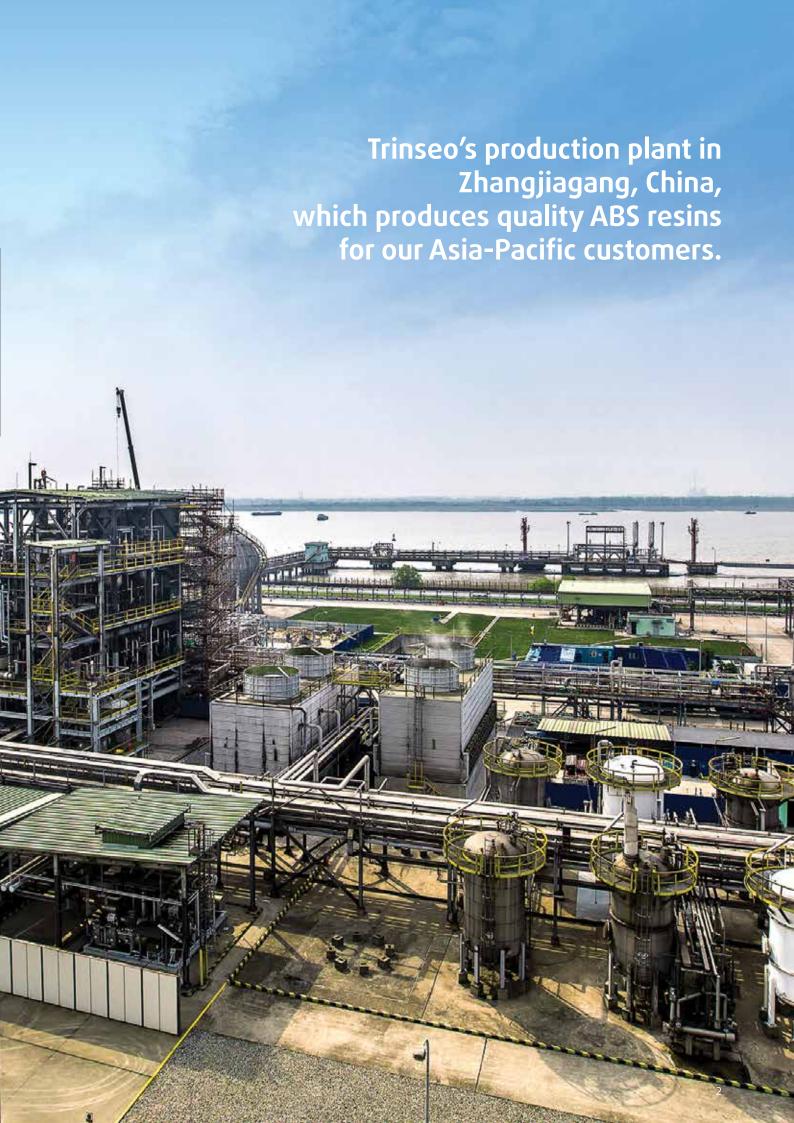
Trinseo (NYSE: TSE) is a global materials solutions provider and manufacturer of plastics, latex binders, and synthetic rubber. We are focused on delivering innovative and sustainable solution to help our customers create products that touch lives every day — products that are intrinsic to how we live our lives — across a wide range of end-markets, including automotive, consumer electronics, appliances, medical devices, lighting, electrical, carpet, paper and board, building and construction, and tires.

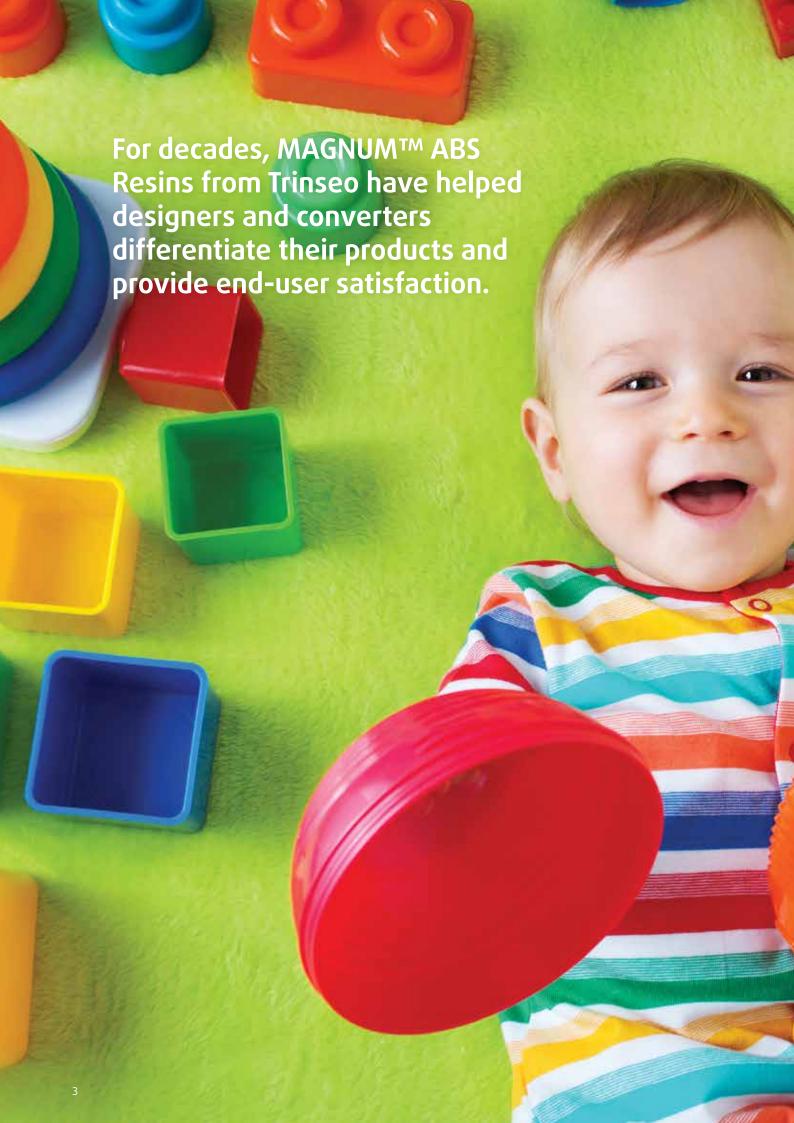
Trinseo Fast Facts

- More than 70 years of technology and marketplace leadership
- More than 2200 employees in 27 countries
- 67 manufacturing units in 15 production sites across the world
- 2 major business divisions: Performance Materials, and Basic Plastics & Feedstocks

Across the **Globe**









What Makes MAGNUM™ ABS Resins Different?

MAGNUM[™] ABS Resins are manufactured with continuous polymerization technology, which makes the resins more advanced and able to bring significant benefits to both injection molding and profile and sheet extrusion applications.

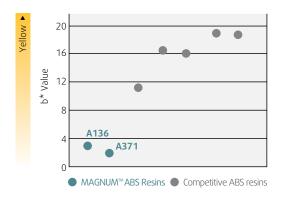
The advantages of MAGNUMTM ABS Resins include:

- Excellent color stability
- · White base color
- Purer and cleaner
- Excellent lot-to-lot consistency
- Excellent thermal stability
- Less time to pre-dry
- Wider processing window
- Excellent impact resistance
- Low gel level
- · Low VOC



MAGNUM™ ABS Resins are purer, cleaner and superior. Their proprietary continuous process results in a more consistent, stable and reliable product.

White base color



Super consistent lot-to-lot

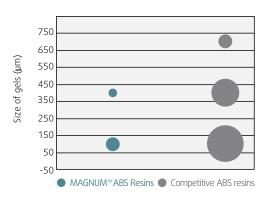


- These are typical properties only and are not to be regarded as sales specifications
- Natural resins colored with a single lot of color concentrate (five colors ranging from white to black).

Low VOC



Low gel level



• Size of bubble represents number of gel count





What Do These Mean for Our Customers?

Cost saving on coloring
Widen processing window
Improve machine utilization
Create high-end aesthetics









What Do These Mean for Our Customers?



MAGNUMTM ABS Resins are ideal for coloring via color masterbatch, because they are by default available in their natural form. Their consistent white base color is especially critical to enable successful coloring. The advanced properties and features of MAGNUMTM ABS Resins bring significant cost savings to our customers, both through coloring and in other areas.

However, cost savings does not mean any compromise on quality. MAGNUM™ ABS Resins allow our customers to save on costs, while enjoying products with excellent aesthetics and quality.

1 Reduced Pigment Cost

One of the benefits of the consistent natural white base color of MAGNUM™ ABS Resins – which is much lighter than most competitive resins – is that less pigment is required to produce white or light colors.

Reduced Inventory/ Warehouse Space

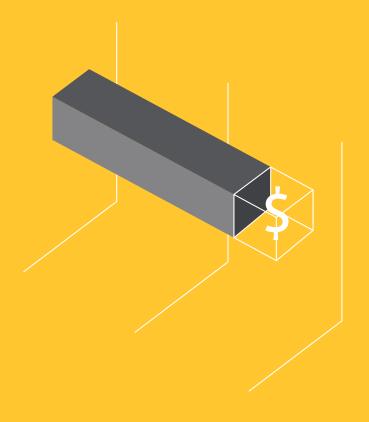
Warehouse rental fees can be substantial. When it is not necessary to store a wide range of pre-color resins as safety stock, inventory and warehouse space costs can be significantly reduced.

2 Improved Raw Material Cost

Easy and cost-efficient coloring via color masterbatch can help customers avoid MOQ requirements for small lots of different colors. It also leads to fewer remaining scraps, which reduces raw material costs.

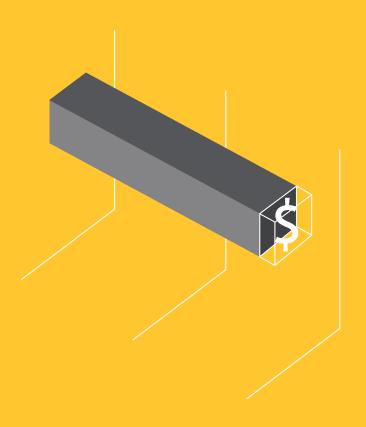
Increased Flexibility with Shorter Lead Time

Adopting self-coloring allows customers to avoid keeping and managing many different lots of colors. Customer requests can also be responded to with greater ease and efficiency.



-19%

Coloring cost saved by coloring MAGNUM™ ABS Resins into Super White vs. other resins.



-7%

Cost saved
by coloring
MAGNUMTM ABS
Resins into
Appliance White
vs. pre-color
resins.

Source: Actual case study in Asia Pacific





MAGNUM™ ABS Resins have excellent thermal stability. Unlike typical competitive ABS resins, MAGNUM™ ABS Resins have been processed successfully at temperatures above 250°C.

Compared with regular ABS resins, the moisture uptake of MAGNUMTM ABS Resins is lower, which shortens pre-drying time. To converters, reduced pre-drying time means machine utilization can be improved, lowering the overall production cost.

Benefits to Converters

Less Color Shift

Excellent thermal stability lessens color shift. It also opens up the possibility of running a single molding job on different machines, without creating a color change.

Lower Odor

MAGNUM™ ABS Resins have extremely low VOC levels, this means less odor during the manufacturing process, as well as for the end products. Low VOC also helps meet government regulations.

Benefits to Brand Owners

Consistency

By using MAGNUM™ ABS Resins, color differences between different (sized) parts for the same end product are minimized. This increases flexibility in sourcing its parts from different converters.



As they are manufactured using continuous polymerization technology, Trinseo's MAGNUMTM ABS Resins can easily achieve desired gloss levels through processing parameters, such as mold temperature, polymer temperature, and injection molding speed.

Low gel level is another feature of MAGNUM™ ABS Resins, and is essential in producing smooth surfaces for an excellent product appearance.



-13%

Total cost saved by using MAGNUMTM ABS Resins (2,000MT/year, 38 colors)

Source: Actual case study from MAGNUM™ ABS Resins customer in Europe

MAGNUM™ ABS Resins Product Grades

Trinseo offers four grades of MAGNUM™ ABS Resins to cater for the different needs of our customers. Our products cover both injection molding and sheet & profile extrusion applications, providing various flow and impact resistance levels.

MAGNUMTM A136

Injection molding grade

MFR:	28g/10min
Vicat Soften Temperature:	89°C @ 50°C/hr, 5kg
Notched Izod:	200J/m

- Excellent gloss
- · Very good flow
- · Medium impact resistance

MAGNUMTM A440

Extrusion grade

MFR:	6.6g/10min
Vicat Soften Temperature:	97°C @ 50°C/hr, 5kg
Notched Izod:	230J/m

- General purpose
- · Medium impact resistance

MAGNUMTM A371

Injection molding/Extrusion grade

MFR:	8.5g/10min
Vicat Soften Temperature:	95°C @ 50°C/hr, 5kg
Notched Izod:	320J/m

· A balance of good flow & high impact resistance

MAGNUMTM A290

Extrusion grade

MFR:	4.5g/10min
Vicat Soften Temperature:	91°C @ 50°C/hr, 5kg
Notched Izod:	540J/m

Ultra high impact resistance





Injection MoldingApplications

For injection molding applications, the following advanced features of MAGNUM™ ABS Resins provide distinctive advantages:

- Excellent color stability
- White base color
- Purer and cleaner
- Excellent lot-to-lot consistency

- Excellent thermal stability
- Less time to pre-dry
- Wider processing window
- Low VOC

MAGNUM™ ABS Resins' injection molding grades include:

Grade	Process	MFR (g/10min)	Vicat Soften Temp (°C, @ 50°C/hr, 5kg)	Notched Izod (J/m)	Features
MAGNUM™ A371	Injection molding/ Extrusion	8.5	95	320	A balance of good flow and high impact resistance
MAGNUM TM A136	Injection molding	28	89	200	Excellent gloss Very good flow Medium impact resistance



RecommendedApplications

Trinseo's MAGNUM™ ABS Resins are available in both medium and high impact resistance grades to suit a multitude of application needs:

- Home appliances: Air conditioners
- Consumer goods: Tool boxes, toys, musical instruments, etc.
- Consumer electronics: Office automation/ printers, telephone sets, remote controls, etc.
- General injection molding applications



Sheet & Profile Extrusion Applications

For sheet & profile extrusion applications, the following advantages of MAGNUM™ ABS Resins are essential for a successful product:

- Excellent color stability
- White base color
- Purer and cleaner
- Excellent lot-to-lot consistency

- Excellent impact resistance
- Low gel levels
- Low VOC

MAGNUMTM ABS Resins' sheet & profile extrusion grades include:

Grade	Process	MFR (g/10min)	Vicat Soften Temp (°C, @ 50°C/hr, 5kg)	Notched Izod (J/m)	Features
MAGNUM™ A371	Injection molding/ Extrusion	8.5	95	320	• A balance of good flow and high impact resistance
MAGNUM™ A440	Extrusion	6.6	97	230	General purpose Medium impact resistance
MAGNUM™ A290	Extrusion	4.5	91	540	Ultra high impact resistance

RecommendedApplications

Trinseo's MAGNUMTM ABS Resins are recognized in the market for making quality extrusion sheets, and have been recommended by many high-end extruders internationally. We provide three MAGNUMTM ABS grades with different impact resistance performance to suit numerous application requirements. In fact, the impact resistance level of our MAGNUMTM A290 is considered to be one of the highest on the market.

The following are some recommended applications for our sheet & profile extrusion grades:

- Bathtubs and shower trays
- Mass transportation interiors
- Caravan/digger/tractor/golf cart roofs
- Carrier tape
- Edge-bands





Voices of Our Customers



"Trinseo's MAGNUM™ ABS resins are unique in the marketplace because of their excellent processing characteristics with great product performance. As a result

of the mass polymerization process of Trinseo, they are very stable on the line, have very low gel content and are ideal for self-colouring..... we use $MAGNUM^{TM}$ ABS extensively and consider it one of the best materials in the marketplace for the classic finish of body panels, rears, interior trims and protective covers of vehicles."

Mauro Bonaventura

Technical Engineering Manager VitasheetGroup



"MAGNUM™ ABS is our preferred matt ABS resin because it has more to offer than its outstanding matt surface performance. Thanks to its beneficial properties during

production, it helps us succeed in a demanding marketplace and service our customers in the best possible way. On top of the excellent properties of its products, Trinseo offers us consistency of supply, which is a critical success factor in our line of business."

James Murtagh

Product Development Manager Athlone Extrusions Ltd.

"We have inconsistent color on molded parts between our different molders and from batch to batch"

"Lead-times for certain colors is too long"



"I am penalized on price on small color lots"





"MAGNUM™ ABS resins from Trinseo are generally recognized as some of the best resins for thermoforming. To live up to the high standards of our customers in

the furniture industry, we rely fully on MAGNUM™ ABS for its high purity in combination with high toughness. The consistent quality of the sheets produced with MAGNUM™ ABS also allows us to avoid visual panel control during production. This not only improves our cost efficiency, but also our service level and on time delivery to our customers."

Willi Klepsch CEO, Senoplast

"We have all those small color inventories that our supplier does not want to take back"







The lighter the background, the brighter the color



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