



Dow Elastomers

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## **Innovating to Raise the Bar:** Global Capabilities for Hot Melt Adhesives

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# Innovating to Raise the Bar:

## Global Capabilities for Hot Melt Adhesives

### Growing Complexity of Adhesives Applications Drives Innovation

The evolution of the global hot melt adhesives industry is being driven by a number of changing trends, including the relentlessly increasing need for high-performance solutions for a diverse range of applications. Brand owners and adhesives formulators are faced with the complex challenge of meeting end-user demands for food safety while ensuring the shelf appeal, cost efficiency and sustainability of their solutions. And changes in consumer demographics, notably as the population ages, are adding factors such as enhanced wear and comfort to the growing list of demands in the hygiene market.

### About Dow Elastomers

As the world's largest producer of polyolefin elastomers, with more than 40 years of industry experience and expertise, Dow Elastomers has global capabilities, a broad product portfolio along with extensive market expertise and is the only producer with world-scale trains on three continents. We work closely with our customers to help them develop high-performance, cost-effective solutions across a broad range of hot melt adhesive applications including: packaging and hygiene products, labels, bookbinding and woodwork.

At Dow Elastomers, we aspire to be your “go-to” innovation partner: our goal is to serve the global hot melt adhesives market and create a sustainable difference across the value chain. We leverage the R&D strength of The Dow Chemical Company to bring more industry-leading solutions for years to come, and continually invest in, and optimize our state-of-the-art manufacturing facilities across the globe to deliver world-class on the ground support to customers worldwide. These investments bolster our ability to react quickly to market dynamics and, along with our centres of excellence around the world, enable us to meet the growing and evolving needs of the industry.



### Working with Us

At Dow Elastomers, we believe in working closely with our customers to help them deliver excellence. As a global solutions provider, we work with adhesives formulators and machine manufacturers around the world and actively engage with brand owners and OEMs to bring value to the adhesives industry.

With a broad portfolio of innovative solutions, we use our unique process technology - coupled with Dow's proven INSITE™ catalyst technology – to produce high-performance polymers which function as the ideal basis for a wide variety of hot melt adhesive applications. Our product expertise is complemented by in-depth market and application experience, as well as a proven track record of excellence.

Our product families are inherently versatile and can be tailored to our customers' needs, production processes, designs and end-use:

- AFFINITY™ GA Polyolefin Elastomers
- ENGAGE™ Polyolefin Elastomers
- INFUSE™ Olefin Block Copolymers
- VERSIFY™ Plastomers and Elastomers.

### A Variety of End-Use Applications

Across a range of diverse end-use applications, Dow's hot melt adhesive solutions offer customers a number of benefits including:



**Ease of manufacturing:** easy mixing, broad application temperature range, fast set-up, easy to process with less clogging and virtually char-and odor-free



**Cost efficiencies:** high adhesive mileage, excellent processability for reduced maintenance and downtime to enable lower overall costs



**Compliance with global regulations:** enabling technologies are complementary and can help meet stringent food safety and protection regulations



**Increased sustainability:** increased sealing mileage means less materials usage - which may enhance customer sustainability profiles



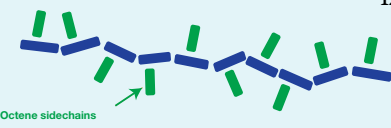
**Increased customer satisfaction:** powerful bonds for durability, excellent color stability, enhanced sustainability, water-white aesthetics and consistently reliable high-performance products that help safeguard brand owners' reputation and brand, customer satisfaction

## Overview of Dow Solutions

**Affinity<sup>GA</sup>**  
POLYOLEFIN ELASTOMER

**AFFINITY™ GA: RANDOM ETHYLENE OCTENE COPOLYMERS**

- Low molecular weight
- Elastomeric
- 1250, 1000 & 500 MI

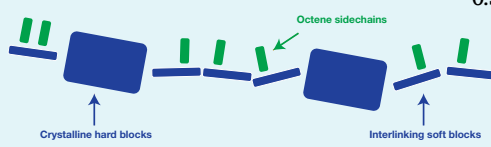


Octene sidechains

**INFUSE™**  
OLEFIN BLOCK COPOLYMERS

**INFUSE™: BLOCK ETHYLENE OCTENE COPOLYMERS**

- High molecular weight
- Elastomeric
- 0.5 to 40 MI



Crystalline hard blocks

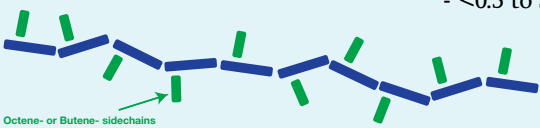
Interlinking soft blocks

Octene sidechains

**ENGAGE™**  
POLYOLEFIN ELASTOMERS

**ENGAGE™: RANDOM ETHYLENE & ETHYLENE BUTENE COPOLYMERS**

- High molecular weight
- Elastomeric
- <0.5 to 30 MI

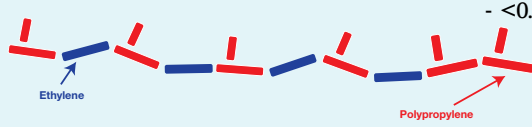


Octene- or Butene- sidechains

**VERSIFY™**  
PLASTOMERS AND ELASTOMERS

**VERSIFY™: RANDOM PROPYLENE ETHYLENE COPOLYMERS**

- High molecular weight
- Enhanced stiffness
- Elastomeric
- <0.5 to 12 MI



Ethylene

Polypropylene

End-Use Applications	Key Benefits
 <p>Hot-Filled or Retort Packaging (e.g. Milk, Juice and Tomato Sauce Cartons)</p>	<ul style="list-style-type: none"> <li>• High heat resistance (+60°C)</li> <li>• High adhesion on hard-to-bond surfaces</li> </ul>
 <p>Pet Food and Detergent Packaging</p>	<ul style="list-style-type: none"> <li>• Aroma and sift tightness</li> <li>• High initial tack to counter package spring-back forces</li> </ul>
 <p>Frozen Food and Ready-Made Meal Packaging</p>	<ul style="list-style-type: none"> <li>• Low temperature resistance (-18°C)</li> <li>• High adhesion on hard-to-bond surfaces</li> </ul>
 <p>General Purpose Carton and Paper Packaging (e.g. Cereal Boxes, Flour and Sugar)</p>	<ul style="list-style-type: none"> <li>• Able to bond a variety of substrates</li> <li>• Short set time for high line speed</li> </ul>
 <p>Corrugated Boxes, Wrap-around Boxes and Agricultural Trays</p>	<ul style="list-style-type: none"> <li>• Good heat resistance</li> <li>• High initial tack to counter package spring-back forces</li> </ul>
   <p>Hygiene Absorbant Products (e.g. Diapers, Feminine Hygiene and Adult Incontinence)</p>	<ul style="list-style-type: none"> <li>• Low odor</li> <li>• High softness and drape</li> <li>• Excellent low color and thermal stability</li> <li>• No bleed-through</li> <li>• Excellent processability (stable spray application patterns and slot-die coating)</li> <li>• Excellent initial and aged adhesion</li> </ul>

## Creating Innovative Solutions Together

We are dedicated to working with our customers to help them deliver innovative adhesive solutions and have a proven track record of success, including:

Customers in South Africa were experiencing adhesion problems with hot melt adhesives on some coated substrates, such as maize meal, wheat and sugar bags, where bonding of dense, highly calendared papers is required. Working with a leading industrial adhesives and chemical applications company, a solution using AFFINITY™ GA 1000R was developed that brought about remarkable improvement in the adhesion of these difficult substrates.



As part of a country-wide program to provide milk to schools on a daily basis, Dow Elastomers partnered with a leading European-based adhesives formulator to create a high-performance robust adhesives solution based on AFFINITY™ GA 1900 and 1950 POEs to ensure that plastic-wrapped straws firmly adhered to milk cartons.



Increased consumer demand for brightly-colored, shiny, and smooth packaging is presenting new challenges for hot melt adhesive formulators, packaging manufacturers, and brand owners. These materials increase shelf appeal and value, but their low surface roughness makes it difficult to develop secure bonds. Dow Elastomers worked with a large Chinese adhesives formulator to create an adhesives solution using AFFINITY™ GA 1000R POE that was easy to process and facilitated strong bonds and cost efficiencies for packaging applications such as juice cartons.



Contact a Dow representative today to learn more.

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