Science & Sensibilities
Smart Products for Hot Melt Adhesives
Starting with this broad portfolio of innovative solutions, we use our proven process technology, coupled with Dow’s patented INSITE™ Catalyst Technology, to produce high-performance, cost-effective polymers viable for many HMA applications.

Understanding change

There’s complex science behind formulating the perfect hot melt adhesive (HMA) for your specifications. And as the world’s largest producer of polyolefin elastomers, with decades of industry experience and expertise in the HMA marketplace, we’re qualified to help. Assistance that’s more important than ever.

The evolution of the global hot melt adhesives industry is driven by changing trends, including the increased need for high-performance solutions for a diverse range of applications. In packaging, brand owners and adhesives formulators are faced with end-user demands for food safety while ensuring the shelf appeal, cost efficiency, and sustainability of their solutions. In e-commerce, an explosion of varied secondary packaging substrates demands HMAs with a wider range of adhesion. In the hygiene market, an aging population adds enhanced wear and comfort to adhesive functionalities for adult products. And there is more, to be sure.

Our product expertise is complemented by in-depth market and application experience, as well as a proven track record of excellence. Our product families listed here are inherently versatile and can be tailored to our customers’ needs, production processes, designs and end-use:

- AFFINITY™ GA Polyolefin Elastomers
- INFUSE™ Olefin Block Copolymers
- ENGAGE™ Polyolefin Elastomers

Table 1: Representative Dow polymers for HMA applications

<table>
<thead>
<tr>
<th>GRADE</th>
<th>MELT INDEX</th>
<th>DENSITY</th>
<th>HIGHLIGHT</th>
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<tbody>
<tr>
<td>AFFINITY™ GA 1875</td>
<td>1250</td>
<td>0.870</td>
<td>Good low temperature adhesion</td>
</tr>
<tr>
<td>AFFINITY™ GA 1900</td>
<td>1000</td>
<td>0.870</td>
<td>Workhorse adhesive</td>
</tr>
<tr>
<td>AFFINITY™ GA 1950</td>
<td>500</td>
<td>0.874</td>
<td>Workhorse adhesive</td>
</tr>
<tr>
<td>AFFINITY™ GA 1000R</td>
<td>650</td>
<td></td>
<td>Improved adhesion for hard-to-bond substrates</td>
</tr>
<tr>
<td>INFUSE™ 9807</td>
<td>15</td>
<td>0.866</td>
<td>Temperature resistance; Cohesion</td>
</tr>
<tr>
<td>ENGAGE™ 8200</td>
<td>5.30</td>
<td>0.870</td>
<td>Cohesion</td>
</tr>
<tr>
<td>ENGAGE™ 8400</td>
<td>5.30</td>
<td>0.870</td>
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Packaging

Packaging takes many shapes — some with distinctive requirements. Meeting your unique needs for hot melt adhesive applications is our goal. Whether for primary or secondary packaging, a diverse group of product families and specialized grades are at the ready.

These include HMAs to answer the high-performance demands for hot-fill and retort packaging. Other temperature sensitive applications ranging from freezer foods to microwave meals. There are HMAs for bag-in-box applications, including adhesives for the the bag and the box! You can choose HMA offerings that protect against aggressive contents such as detergents and high-acid liquids. Or ones with excellent optics for enhanced shelf appeal.

Just a few examples of primary packages benefitting from our HMA portfolio include:

- Hot-filled or retort packaging (e.g., juice, broth, and sauce cartons)
- Pet food and detergent packaging
- Frozen food and ready-made meal packaging
- General purpose carton and paper packaging (e.g., cereal boxes, flour, and sugar)

These applications take advantage of products featuring high heat, or low heat resistance as needed, excellent adhesion to hard-to-bond surfaces, and short set times for production efficiencies, among others. Consider Figure 1 which illustrates the wide application requirements and potential Dow solutions.

![Figure 1: Packaging HMAs](image)

For secondary packaging applications such as paperboard and corrugated containers, wrap-around boxes, and other protective packaging, Dow products for HMA formulations offer good heat resistance and excellent initial tack to counter spring-back forces.

Health & Hygiene

When most people think of adhesives on diapers, they think of the tabs that keep them on. But there’s more to it than that — children’s diapers, adult incontinence underwear, and feminine hygiene products all employ highly specialized adhesives to keep all of the important layers together.

Among our other adhesive features, low-odor formulations, excellent processability, and all-important softness have contributed to our fit in the marketplace.
Bookbinding

Dow offers a variety of polymers for use in adhesive blends. Blends with appealing aesthetics. Strong bonds across many substrates. Durability in intense heat and flexibility in a cold snap.. From pocket-sized paperbacks to the next great novel, printed works are bound to succeed.

Our polymers keep your production lines moving smoothly, too. The low, stable viscosities of our products enable the reliable, high-speed processing required for HMA bookbinding applications. Because of their stability, our products offer the potential for more precise control of adhesive application, extended pot life and stability, and reduced lost production time.

Woodworking

Woodworking can get messy, but it doesn’t have to. Whether laminating wood grain flooring or paneling, assembling furniture, or customizing cabinets, our materials can be used to formulate HMAs that provide clean and convenient application. You can expect exceptional color stability and reduced degradation over time. Another perk? There’s virtually no smoke or odor during application.

We’ve got processing advantages, too. The low densities of our polymers for use in HMAs can allow production of more adhesive per pound (kg) of resin used. In turn, the resins’ aggressive bonding capabilities can help extend mileage by requiring less adhesive — that can mean increased productivity and reduced overall costs.

Sustainability

We’re building change with our HMA polymer offering, helping the value chain create adhesive solutions to support more sustainable production. This is how we’re doing it:

- Increasing sealing mileage means less materials usage
- Clean-running systems with virtually no smoke or odor during the production process
- First-rate sealing properties reduce food spoilage and product damage from package failures

We’re committed to lowering our carbon footprint without lowering our performance. Products such as AFFINITY™ RE Bio-based Polyolefin Elastomers, a more sustainable polyolefin elastomer, prove it.

AFFINITY™ RE is produced with bio-feedstocks such as Tall Oil, a by-product of the paper-milling industry. Our sources are originally sourced from sustainability managed forests with no impact on land use. The production process for AFFINITY RE™ is certified on a mass balance basis by the International Sustainability Carbon Certification (ISCC+).
Benefits

Any adhesive can claim some sort of functional benefit. But as we’ve seen, across a range of diverse end-use applications, Dow’s hot melt adhesive solutions offer a number of far-reaching and valuable 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 (Figure 2)

• 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 customer satisfaction

Sticking together

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. That means no matter where you are, we can work with you to develop high-performance, cost-effective solutions across a broad range of hot melt adhesive applications.

Let’s talk more about it

Contact your Dow sales professional or TS&D representative to learn more about the many options for HMA formulations. For more information about Dow, visit www.dow.com/about. To contact a Dow representative, visit, www.dow.com/contact.

Figure 2: Aggregate cost savings
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