Silicones:
Bringing
Benefits Home
Experience the Momentive Difference

Worldwide Reach, Local Touch
Our global manufacturing and sales networks, backed by outstanding technical support, enable us to address your particular challenges and requirements almost anywhere in the world—from North and South America to Africa, Europe, the Middle East, and all through Asia. Our customer-focused culture ensures world-class service with a local, personal touch.

Deep Applications Expertise
How can Momentive specialty silicones improve your product line? We have developed key technology enablers in the following categories:
- Spreading and Wetting
- Foam Control
- Surface Modification
- Softening and Conditioning

When incorporated into home care, laundry care or automotive care products, our silicones can provide benefits that your customers value.

Silicone technologies from Momentive can improve the performance of a wide variety of consumer products—whether it be enhanced foam control for high efficiency laundry detergents, better stain removal for hard and soft surface cleaners or improved gloss and shine for auto finishes and tires.

Save Time, Save Money
Momentive specialty silicones can facilitate home care products with enhanced performance, adding benefits such as convenience and energy savings for your customers while potentially lowering your own costs for content, packaging and shipping. Our technology enablers can help make your products more:
- Effective
- Easy to use/tme saving
- Economical
- Sustainable

Collaboration to Advance Innovation
Momentive places a premium on our customer relationships—we listen. Our aim is to understand your goals and processes so that we can provide ongoing, intelligent technical support, helping you to meet your sales and marketing targets.

Silvet Hydrostable superspreaders are an even better way to add value to your products. The benefits include:
- Effective: These superspreaders enable improved spreading and lower surface tension in water-based formulations, over a wide pH range. They can enhance penetration of other actives and reduce fluorosurfactants by up to 50% in many applications.
- Convenient: Tests have demonstrated that Silvet Hydrostable superspreaders enhance spreading, and lower surface tension in water-based formulations, over a wide pH range. They can enhance penetration of other actives and replace fluorosurfactants in many applications.

Spreading and Wetting

Silvet Hydrostable superspreaders represent a totally new technology. These organo-siliconed silanes have been shown to enable improved spreading and lower surface tension in water-based formulations, over a wide pH range. They can enhance penetration of other actives and replace fluorosurfactants in many applications.

Useful on household and automotive hard and soft surfaces, this technology is:
- Effective
- Silvet Hydrostable superspreaders used at low addition levels can improve cleaning performance and enhance surface properties of fabric and hard surfaces.

When used on these substrates, Silvet Hydrostable superspreaders may lead to the following product claims and benefits:

- Improved wetting and spreading
- Enhanced penetration of actives
- Reduced surfactant use
- Improved cleaning performance

Silvet Hydrostable superspreaders are excellent candidates for use in a multitude of aqueous systems such as kitchen cleaners, bath and shower cleaners, and toilet cleaners, as well as laundry, carpet/upholstery, and floor care products.

Product Line
Silvet Hydrostable 121 superspread
Silvet Hydrostable 122 superspread
Silvet Hydrostable 611 superspread

Sustainable
The enhanced spreading, wetting and penetration effects of Silvet Hydrostable superspreaders can help support the development of products with better sustainability profiles by boosting the performance of cleaning actives in your formulation.

This can result in home care products with lower active ingredient levels, simplified formula with fewer ingredients and concentrated products requiring less packaging. In addition, Silvet Hydrostable superspreaders also have the potential to enable new home care products with functionalities that could reduce water utilization and/or energy consumption during the cleaning process.

Silvet Hydrostable superspreaders are excellent candidates for use in a multitude of aqueous systems such as kitchen cleaners, bath and shower cleaners, and toilet cleaners, as well as laundry, carpet/upholstery, and floor care products.
**Foam Control**

Momentive’s SAG® foam control agents can effectively manage foam to improve the functionality of a product and/or improve efficiency during the manufacturing process. Cost-effective and simple to use, SAG foam control agents are highly compatible in a multitude of home care product formulations and generally provide rapid, durable foam control. SAG foam control agents are also technology enablers for home care products that require low foaming properties for optimum performance, such as high efficiency (HE) liquid laundry detergents.

SAG foam control agents are typically:

- **Economical**
  Consider that SAG foam control agents may lower costs in two main ways. They are effective at lower dosages than other, similar products, thus reducing overall product cost; and they enable more concentrated formulas, so packaging costs may also be reduced.

- **Sustainable**
  This technology may enable better performing, high efficiency, concentrated laundry detergents that require lower water and energy consumption and reduced packaging requirements.

Momentive’s SAG foam control agents are excellent candidates to consider for use in formulations where the effective management of foam is critical for optimum performance, such as liquid laundry detergents, carpet cleaners and upholstery care products.

**Product Line**

SAG 489S foam control agent
SAG 478S foam control agent
SAG 47 foam control agent
SAG 638 foam control agent

SAG foam control agents typically deliver the following features and potential benefits:

<table>
<thead>
<tr>
<th>Features</th>
<th>Potential Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy-to-use product form</td>
<td>Economical to use</td>
</tr>
<tr>
<td>Effective at low dosage levels</td>
<td>Excellent compatibility in home care formulations</td>
</tr>
<tr>
<td>Rapid foam knock down</td>
<td>Technology enabling for today’s high efficiency, low water usage soap detergent</td>
</tr>
<tr>
<td>Durable foam control</td>
<td>Stability</td>
</tr>
</tbody>
</table>

**SAG Foam Control Agents Knock Down Foam Faster**

<table>
<thead>
<tr>
<th>Duration</th>
<th>Knockdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 sec.</td>
<td>10</td>
</tr>
<tr>
<td>30 sec.</td>
<td>15</td>
</tr>
<tr>
<td>3 min.</td>
<td>15</td>
</tr>
<tr>
<td>38 min.</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: Test data. Actual results may vary.

**Surface Modification**

Momentive’s Formasil® silicone additives for aqueous, solvent or oil-based systems generally deliver the surface effects that consumers desire in household and automotive care products. Effective at low incorporation levels, these additives have been shown to provide stain release properties, high gloss and a smooth finish to hard surfaces. They generally impart hydrophobicity to substrates such as glass, ceramic and metal. The Formasil line has been proven to provide additional benefits such as enhanced spreading, penetration, leveling and compatibility of organic oils, for polymers and waxes.

Momentive’s surface modification products are generally:

- **Economical**
  Because of their higher efficiency, less active content is required, which potentially translates into lower packaging and transportation costs.

- **Effective**
  These specialty silicones provide unique surface modification effects at low use levels, for a wide range of water-based and oil-based surface care products.

- **Convenient**
  This technology has been tested with multifunctional surface care products that provide cleaning, stain and streak resistance, and protection—all in one.

Formasil surface modifiers may be considered for use in kitchen cleaners, bath and shower cleaners, toilet cleaners, glass cleaners, polishes and waxes, and floor care and car care products.

**Product Line**

- Formasil 433 surface modifier
- Formasil 596 surface modifier

**Formasil Surface Modifiers**

- **Economical**
  Because of their higher efficiency, less active content is required, which potentially translates into lower packaging and transportation costs.

- **Effective**
  These specialty silicones provide unique surface modification effects at low use levels, for a wide range of water-based and oil-based surface care products.

- **Convenient**
  This technology has been tested with multifunctional surface care products that provide cleaning, stain and streak resistance, and protection—all in one.

**Formasil Surface Modifiers**

- **Staining resistance, mild knicker, water repellant**
- **SAG 489S (72 ppm)**
- **SAG 4885 (56 ppm)**

**Formasil surface modifiers**

- **Shine, depth of glass, sheen, beading, anti-fog, anti-release**
- **Auto, brake, tire and wheels, glass**
- **Winds, depth of glass, beading, anti-fog, anti-release**
Softening and Conditioning

Laundry care product manufacturers can look to Momentive’s Formasil® B silicone fabric softener for its unique structure, which has demonstrated unique benefits. This substance evenly penetrates the fibers to impart outstanding hydrophilic properties. The key is Momentive’s patented linear ABn-block copolymer technology, equipped with a patented hydrophilic functional group. This ABn agent exerts better and lasts longer than traditional softening agents. The result is a remarkably durable, voluminously smooth, soft conditioning effect.

- **Effective**
  Testing shows that Formasil® B fabric softener delivers, at low dosage levels, a hydrophilic, tenaciously soft and flexible conditioning effect to a variety of fabrics. Its excellent affinity for many fiber types translates into a durable softness and “like new” feel that has been demonstrated to last after multiple home laundry cycles.

- **Convenient**
  This agent is typically easy to incorporate into liquid laundry detergent formulations. It can be added directly into the water phase of a liquid laundry detergent formulation prior to blending, or it can be post-added directly into the formulated detergent liquid.

- **Economical**
  The efficiency of ABn technology generally allows Formasil® B fabric softener to deliver desirable fabric care effects at low dosage levels. This makes Formasil® B fabric softener economical to incorporate into detergent formulations and an excellent candidate for use in both premium brand and value brand laundry care products.

- **Sustainable**
  Formasil® B does not contain alkyl phenol based compounds—it is produced without the use of APEOs, which have been identified by the United States Environmental Protection Agency as presenting potential environmental concerns.

  Formasil fabric softener may be considered for use on cotton and cotton-blend, light or heavyweight fabric, weavers and knits, synthetic fabrics, wool and wool-blend fabrics.

  When used in laundry care products, Formasil® B silicone fabric softener may potentially provide the following to formulators and manufacturers:

<table>
<thead>
<tr>
<th>Potential Benefits for Formulator</th>
<th>Potential Product Claims for Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to use liquid form</td>
<td>Enhanced softness that lasts after multiple laundry cycles</td>
</tr>
<tr>
<td>Low viscosity</td>
<td>Silky fabric feel</td>
</tr>
<tr>
<td>Easily dispersible in water</td>
<td>Anti-static</td>
</tr>
<tr>
<td>Can be directly blended with liquid detergent</td>
<td>Extremely low foaming</td>
</tr>
<tr>
<td>Good stability in 2-in-1 liquid laundry detergent systems</td>
<td>Improved fiber flexibility and shape retention</td>
</tr>
<tr>
<td>Lower dosage required</td>
<td>Excellent affinity for many different fiber types</td>
</tr>
<tr>
<td>Does not hinder absorbency of fabrics as traditional softening agents do</td>
<td>Enables multifunctional one-product solutions for cleaning/softening laundry</td>
</tr>
<tr>
<td></td>
<td>Formulated without APEO</td>
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Formasil B silicone fabric softener
<table>
<thead>
<tr>
<th>Product Name</th>
<th>5% Active Carotenoid Extract</th>
<th>Artisan Emulsion 20</th>
<th>Artisan Emulsion 40</th>
<th>Artisan Emulsion 60</th>
<th>Artisan Emulsion 80</th>
<th>Artisan Emulsion 100</th>
<th>Silvane HYDROSTABLE 48</th>
<th>Silvane HYDROSTABLE 212</th>
<th>Silvane HYDROSTABLE 611</th>
<th>Surfactant</th>
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<td>x</td>
<td>x</td>
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- **Surface Care**

- **Laundry Care**
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Product Description</th>
<th>% Active</th>
<th>Surface</th>
<th>Potential Humidity</th>
<th>Potential Slickness</th>
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<tbody>
<tr>
<td>Formasil® 433</td>
<td>Silicone Fluid</td>
<td>100</td>
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<td>Formasil 593</td>
<td>Silicone Fluid</td>
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<td>Silwet® L-7606</td>
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<td>SF1706</td>
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<td>Silwet HYDROSTABLE® 212</td>
<td>Superspreader/ Wetting Agent</td>
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<td>X</td>
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<td>X</td>
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<td>Silwet HYDROSTABLE 611</td>
<td>Superspreader/ Wetting Agent</td>
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<td>Silwet HYDROSTABLE 68</td>
<td>Superspreader/ Wetting Agent</td>
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