Film-formers for next-generation skin care and color cosmetics

Within each of us is an infinite capacity for beauty. Help consumers maximize and protect their beauty at every age with film-forming technologies from Dow … and set your creative spirit free.

Film-formers are polymers capable of forming a cohesive and continuous film on keratinous surfaces with optimal adhesion and flexibility properties. They give you a different and complementary approach to meeting evolving consumer needs through the formation of a potentially long-lasting "second layer" over the skin.

This approach can be tailored:

- To your application
- To the consumer’s need
- To deliver a positive skin-care experience
Film formers from Dow – differentiation overview

- Permeable to semi-occlusive
- Uniform and continuous
- Long-lasting and removable
- Comfort and sensory attributes

**Formulator Advantages**

<table>
<thead>
<tr>
<th>Formulator Advantages</th>
<th>Consumer Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple film-forming technologies available for greater versatility</td>
<td>Use of non-occlusive materials to preserve skin health and breathability</td>
</tr>
<tr>
<td>Multiple carriers available for greater formulation and manufacturing-process flexibility</td>
<td>Variable film flexibility for wearing comfort and enjoyment</td>
</tr>
<tr>
<td>Good compatibility with common cosmetic ingredients, allowing incorporation in common product types, such as face care, sun care and color cosmetics</td>
<td>High sebum and water repellency as well as high rub-off resistance properties to provide outstanding long-lasting benefits and a rewarding daily skin-care experience</td>
</tr>
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</table>

**Organic**

- EPITEX™ 66 Polymer
  - Excellent wash-off resistance

**Silicone resins**

- DOWSIL™ MQ-1600 Solid Resin
- DOWSIL™ MQ-1640 Flake Resin
  - Improved durability vs. silicone gums (but form brittle films)

- DOWSIL™ FC-5002 IDD Resin Gum
- DOWSIL™ FC-5004 DM Resin Gum
  - Improved sebum repellency vs. silicone resins; friction resistance improved vs. silicone resins with excellent film flexibility

**Silicone resin gums**

- DOWSIL™ FA 4012 ID Silicone Acrylate
  - Excellent friction resistance

- DOWSIL™ FA 4003 DM Silicone Acrylate
- DOWSIL™ FA 4004 ID Silicone Acrylate
  - Excellent friction resistance and improved film flexibility vs. DOWSIL™ FA 4012 ID Silicone Acrylate

- DOWSIL™ FA PEPS Silicone Acrylate
  - Superior performance with improved naturality index

- DOWSIL™ FA 4103 Silicone Acrylate Emulsion
  - Excellent friction resistance, improved film flexibility, superior water/sebum repellency

**Acrylates**

- DOWSIL™ MQ-1600 Solid Resin
- DOWSIL™ MQ-1640 Flake Resin
  - Improved durability vs. silicone gums (but form brittle films)

- DOWSIL™ FC-5002 IDD Resin Gum
- DOWSIL™ FC-5004 DM Resin Gum
  - Improved sebum repellency vs. silicone resins; friction resistance improved vs. silicone resins with excellent film flexibility

**Offering ideal properties for personal care innovation**
Explore our extensive film-former portfolio
TESTED WITH PURE FILM-FORMER AT 20% ACTIVE IN APPROPRIATE SOLVENT.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Product Trade Name</th>
<th>INCI Name</th>
<th>Visual Properties</th>
<th>Tactile Properties</th>
<th>Water Repellency</th>
<th>Sebum Repellency</th>
<th>Film Flexibility</th>
<th>Film Integrity</th>
<th>Rub-Off Resistance</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicone Resins</td>
<td>DOWSIL™ MQ-1600 Solid Resin</td>
<td>Trimethylsiloxy silicone</td>
<td>Clear and shiny film with resin aggregates appearing if volatile organic solvent is used</td>
<td>Hard, brittle</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Silicone benchmark technology for color cosmetics</td>
</tr>
<tr>
<td>Silicone Acrylates</td>
<td>DOWSIL™ MQ-1600 Flake Resin</td>
<td>Trimethylsiloxy silicate (and) Polypropylsiloxanesiloxane</td>
<td>Clear and shiny film with resin aggregates appearing if volatile organic solvent is used</td>
<td>Medium hard, slightly brittle</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Superior performance for skin care formulations, including tightening claims</td>
</tr>
<tr>
<td>Silicone Resin Gums</td>
<td>DOWSIL™ FC-5001 CM Resin Gum</td>
<td>Cyclopentasiloxane (and) Trimethylsiloxy silicate/Dimethiconol Crosspolymer</td>
<td>Clear and shiny film with no cracks appearing upon solvent evaporation</td>
<td>Soft, not brittle</td>
<td>High</td>
<td>Very high</td>
<td>High</td>
<td>Low to very high, depending on solvent</td>
<td>High</td>
<td>Ideal for foundation and eye shadow where sebum repellency and comfort are critical</td>
</tr>
<tr>
<td>Silicone Acrylates</td>
<td>DOWSIL™ FA 4001 ID Silicone Acrylate</td>
<td>Acrylates/Polytrimethylsiloxymethacrylate Copolymer</td>
<td>Clear and shiny film with few cracks appearing upon solvent evaporation</td>
<td>Slightly brittle</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Very high</td>
<td>Superior performance in foundation and lipstick</td>
</tr>
<tr>
<td>Silicone Acrylates</td>
<td>DOWSIL™ FA 4003 ID Silicone Acrylate</td>
<td>Acrylates/Polytrimethylsiloxymethacrylate Copolymer</td>
<td>Clear and shiny film with no cracks appearing upon solvent evaporation</td>
<td>Soft, not brittle</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Low to medium, depending on solvent</td>
<td>Very high</td>
<td>Excellent choice for foundation and lipstick where comfort and long wear are critical</td>
</tr>
<tr>
<td>Silicone Acrylates</td>
<td>DOWSIL™ FA 4103 Silicone Acrylate Emulsion</td>
<td>Acrylates/Polytrimethylsiloxymethacrylate Copolymer (and) Laureth-1 Phosphate</td>
<td>Clear and shiny film with no cracks appearing upon solvent evaporation</td>
<td>Soft, not brittle</td>
<td>High</td>
<td>Very high</td>
<td>High</td>
<td>Very high</td>
<td>Very high</td>
<td>Ideal choice for water-based formulations for foundation and mascara</td>
</tr>
<tr>
<td>Silicone Acrylates</td>
<td>DOWSIL™ FA PEPS</td>
<td>Undecane (and) Tridecane (and) Acrylates/Polytrimethylsiloxymethacrylate Copolymer</td>
<td>Clear and shiny film with no cracks appearing upon solvent evaporation</td>
<td>Soft, not brittle</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Low to medium, depending on solvent</td>
<td>Very high</td>
<td>Excellent choice for foundation and lipstick where comfort and long wear are critical, allows formulations with a higher naturality content</td>
</tr>
</tbody>
</table>

1 Based on contact angle measurement (2 minutes after droplet deposition).
2 Based on film integrity test (amount of diffused dye after 6 hours).
3 Tested by colorimeter at 5% active with 10% pigment (ΔE of transferred pigment on felt after 50 abrasion cycles).
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