Coatings and inks additive

Selection guide

Seek Together™
A little makes a big splash!

It takes only a little of an additive from Dow to make the significant performance difference your customers demand from your paint, ink and coating formulations. DOWSIL™ and XIAMETER™ brand additives provide problem-solving performance.

- Use in waterborne or solventborne formulations
- Compatible with most binder systems
- High efficiency at low concentration levels to help lower raw materials costs
- Suitable for use in low-VOC, sustainably formulated products
- Formulated for versatility and ease of use

Problem-solving performance

For more than half a century, Dow has led the way in silicon-based technology and is a global leader in the development of problem-solving, silicon-based technologies used in paints, inks and coatings. Many of our additives impart a combination of benefits, giving you a high benefit-to-cost ratio. Whether you need foam control; improved pigment dispersion, surface wetting, leveling or adhesion; water resistance, mar resistance, slip, gloss or texturization; or any combination of benefits, silicon-based technology from Dow can help you achieve it.

Global resources, local expertise and support

With global manufacturing facilities, sales offices, research and development laboratories, and Technical Information Centers all linked to a worldwide network of expert local distributors, Dow is able to provide you with an exceptional level of service, support and value. Dow is known for outstanding technical support. Our team of experts will work hand-in-hand with yours to ensure your success with the amazingly versatile materials.
**How to use this guide**

This guide will help you explore the properties and performance capabilities of our global line of additives for paints, inks and coatings. Table 1 groups the additives by their primary benefit and describes their physical makeup, features, secondary benefits and properties. Table 2 highlights products available in sample size via our Additive Sample Program.

**About concentrations and blending**

The amount of additive required to achieve a particular benefit depends on the type of formulation, the solvent it contains, the resin system and total system solids. Generally, our additives are effective at the concentrations noted in Table 1. Since advantages do not increase proportionally, avoid using excess amounts. Additives from Dow are usually added during grind or let-down, or they are post-added. However, some may be added during any processing stage. See Table 1 for additional information.
Table 1: Features, typical use and properties of additives from Dow[^1] (Products are listed under their primary benefit)

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Features/benefits</th>
<th>Compatible binder systems</th>
<th>Point of addition</th>
<th>Typical concentration[^d]</th>
<th>Suitable diluents[^d]</th>
<th>Reactive groups</th>
<th>Solvent</th>
<th>Viscosity at 25°C (°F), cSt</th>
<th>Food contact compliance[^d]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOWSIL™ 11 Additive</td>
<td>Silicone polyether copolymer; 10% active</td>
<td>Increases mar resistance of solvoborne coatings; also improves leveling and gloss and prevents pigment separation</td>
<td>Solventborne acrylic, alkyd, amide, epoxy, nitrocellulose, polyester, polyurethane, vinyl</td>
<td>Grind, let-down or post add</td>
<td>0.1-0.5%</td>
<td>Aromatics such as xylene or toluene; mineral spirits or ketones</td>
<td>Carbinol</td>
<td>Toluene</td>
<td>1.0-2.0</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 14 Additive</td>
<td>Silicone polyether copolymer; 10% active</td>
<td>Improves slip and mar resistance; provides leveling in waterborne and solventborne coatings</td>
<td>Acrylic, alkyd, epoxy, polyester, polyurethane</td>
<td>Grind, let-down or post add</td>
<td>0.1-0.5%</td>
<td>Water or alcohols</td>
<td>Carbinol</td>
<td>Isopropanol</td>
<td>&lt; 10</td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 18 Additive</td>
<td>Dispersion of high molecular weight polydimethylsiloxane and silicone surfactant; 100% active</td>
<td>Provides slip and mar resistance in waterborne and solventborne coatings; anti-blocking in waterborne coatings</td>
<td>Acrylic, polyester, polyurethane (waterborne and solventborne)</td>
<td>Let-down or post add</td>
<td>0.1-1.0%</td>
<td>Water</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 27 Additive</td>
<td>Non-reactive silicone glycol copolymer; 100% active</td>
<td>Effective at mar resistance and slip while maintaining gloss; reduced coefficient of friction</td>
<td>Water-based acrylic flexographic ink and UV overprint varnish</td>
<td>Let-down or post add</td>
<td>0.1-1.0%</td>
<td>Water and soluble solvents</td>
<td>None</td>
<td>None</td>
<td>275</td>
<td>FDA 176.210</td>
</tr>
<tr>
<td>DOWSIL™ 29 Additive</td>
<td>Silicone polyether copolymer</td>
<td>Imparts mar resistance to waterborne and solventborne coatings; also improves leveling and substrate wetting; provides anti-blocking</td>
<td>Acrylic, epoxy, polyurethane</td>
<td>Grind, let-down or post add</td>
<td>0.1-1.0%</td>
<td>Water or alcohols</td>
<td>Carbinol</td>
<td>None</td>
<td>200-500</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 51 Additive</td>
<td>Dispersion of high molecular weight polysiloxane and surfactants; 80% active</td>
<td>Imparts mar resistance and slip to waterborne coatings; may also provide room temperature anti-blocking</td>
<td>Waterborne acrylic, alkyd, epoxy, nitrocellulose, polyurethane, vinyl</td>
<td>Grind, let-down or post add</td>
<td>0.05-3.0%</td>
<td>Water</td>
<td>Silanol</td>
<td>Water</td>
<td>200,000-750,000</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
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<tr>
<td>DOWSIL™ 52 Additive</td>
<td>Dispersion of high molecular weight polysiloxane and surfactants; 64% active</td>
<td>Imparts mar resistance and slip to waterborne coatings; may also provide room temperature anti-blocking</td>
<td>Waterborne acrylic, polyurethane</td>
<td>Let-down or post add</td>
<td>0.01-3.5%</td>
<td>Water</td>
<td>Silanol</td>
<td>Water</td>
<td>3,000-5,000</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 54 Additive</td>
<td>Silicone polyether copolymer</td>
<td>Provides mar resistance, slip and leveling in waterborne and solventborne coatings; aids defoaming in some systems</td>
<td>Solventborne acrylic, alkyd, amide, epoxy, nitrocellulose, polyester, polyurethane, vinyl</td>
<td>Let-down or post add</td>
<td>0.05-1.0%</td>
<td>Aromatics such as xylene or toluene; mineral spirits</td>
<td>Carbinol</td>
<td>None</td>
<td>149-185</td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 55 Additive</td>
<td>Silicone polyether copolymer; 10% active</td>
<td>Increases slip and mar resistance in waterborne and solventborne coatings; improves leveling in solventborne coatings</td>
<td>Waterborne acrylic, alkyd, solventborne polyurethane</td>
<td>Post add</td>
<td>0.1-0.5%</td>
<td>Water or alcohols</td>
<td>Carbinol</td>
<td>2-butoxy-ethanol</td>
<td>6</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 205SL Additive</td>
<td>Silicone polyether copolymer; 50% active</td>
<td>Superior hand feel modifier for multiple delivery coating systems; lowers coefficient of friction (CoF); foam control; also effective in solventborne coatings</td>
<td>Waterborne acrylic, polyurethane, alkyl, polyurethane, vinyl; solventborne polyurethane, polymer; UV acrylate</td>
<td>Let-down or post add</td>
<td>0.1-1.0%</td>
<td>Alcohol, glycol ethers and aromatic solvents</td>
<td>Carbinol</td>
<td>Ethylene glycol isopropyl ether</td>
<td>25-60</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part B</td>
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<tr>
<td>DOWSIL™ 210S Additive</td>
<td>Ultra-high molecular weight silicone dispersion in water</td>
<td>Strong reduction in coefficient of friction, cost effective slip additive; very good mar and abrasion resistance; may also provide room temperature anti-blocking; good compatibility and low tendency to cause scratches</td>
<td>Waterborne acrylic, polyurethane dispersion</td>
<td>Let-down or post add</td>
<td>0.1-0.3%</td>
<td>Water</td>
<td>Silanol</td>
<td>Water</td>
<td>200-1000</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 211S Additive</td>
<td>Ultra-high molecular weight silicone dispersion in water; 65% active</td>
<td>High compatibility; Low tendency to cause craters even with high dosage; Slip enhancement; Mar resistance; Anti-blocking improvement</td>
<td>Water acrylic, polyurethane dispersion, waterborne epoxy</td>
<td>Let-down or post add</td>
<td>0.1-1%</td>
<td>Water ethanol; dipropylene glycol methyl ether</td>
<td>Silanol</td>
<td>Water</td>
<td>1000-3000</td>
<td>Not evaluated</td>
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</tbody>
</table>
Table 1: Features, typical use and properties of additives from Dow[1] (continued)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Foam control</strong></td>
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<tr>
<td><strong>Fluorosilicones</strong></td>
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</tr>
<tr>
<td>DOWSIL™ 7 Additive</td>
<td>Fluorosilicone; 5% active</td>
<td>Provides foam prevention and defoaming in solventborne coatings</td>
<td>Solventborne acrylic, alkyd, amide, epoxy, polyurethane, vinyl</td>
<td>Grind, let-down or post add</td>
<td>0.05-1.0%</td>
<td>Ketones</td>
<td>None</td>
<td>Methyl isobutyl ketone</td>
<td>0.74-0.84</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 100F Additive</td>
<td>Fluorosilicone; 1% active</td>
<td>Foam control agent in solventborne and radiation-curable coatings; good for high-solids formulations</td>
<td>Solventborne acrylate, alkyd, epoxy, polyurethane, radiation-curable acrylate</td>
<td>Let-down or post add</td>
<td>0.1-1.0%</td>
<td>Ketones</td>
<td>None</td>
<td>Diisobutyl ketone</td>
<td>&lt; 5</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 102F Additive</td>
<td>Fluorosilicone; 1% active</td>
<td>Provides foam control with good balance between effectiveness and compatibility</td>
<td>Solventborne alkyd, 2K polyurethane and epoxy paints</td>
<td>Grind, let-down or post add</td>
<td>0.5-0.7%</td>
<td>MEK and n-Propyl acetate</td>
<td>None</td>
<td>Methyl ethyl ketone and n-Propyl acetate</td>
<td>Not available</td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 8021 Additive</td>
<td>Fluorosilicone; 5% active</td>
<td>Foam control agent in solvent-based and radiation-curable/UV-curable coatings</td>
<td>Solventborne 1K silicone acrylic paint, acrylic dispersion paint, alkyd and radiation-curable paint</td>
<td>Grind, let-down or post add</td>
<td>0.1-1.0%</td>
<td>MEK and n-Propyl acetate</td>
<td>None</td>
<td>Methyl ethyl ketone</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td><strong>Emulsions</strong></td>
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</tr>
<tr>
<td>DOWSIL™ 62 Additive</td>
<td>Silicone emulsion; 57% active</td>
<td>Provides foam control in waterborne inks and coatings; good compatibility and low tendency to cause defects</td>
<td>Waterborne acrylic, polyurethane</td>
<td>Grind, let-down or post add</td>
<td>0.05-0.05%</td>
<td>Water</td>
<td>Silanol</td>
<td>Water</td>
<td>1,000-3,500</td>
<td>176.210[5], Swiss Ordinance RS 817.023.21 Annex 10 Part A or B, bfr 14-0002</td>
</tr>
<tr>
<td>DOWSIL™ 68 Additive</td>
<td>Silicone emulsion; 50-55% active</td>
<td>Provides immediate and sustainable foam control in waterborne inks, wood coatings and paints</td>
<td>Acrylic, polyurethane</td>
<td>Post add</td>
<td>0.05-0.05%</td>
<td>Water</td>
<td>Silanol</td>
<td>Water</td>
<td>1,000-3,000</td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 106F Additive</td>
<td>Silicone emulsion type of anti-foam containing silica 42% activity content</td>
<td>Effective foam control for waterborne coating system at 0.1-0.5 wt%, Good compatibility, low tendency to cause craters, Anti-foam with long term effectiveness Micro-bubble defoaming ability Used for both grinding and let down stage.</td>
<td>Water acrylic, polyurethane dispersion, waterborne epoxy</td>
<td>Let-down or post add</td>
<td>0.1-0.5%</td>
<td>Water</td>
<td>NA</td>
<td>Water</td>
<td>2,700 MPa</td>
<td>Not evaluated</td>
</tr>
<tr>
<td>DOWSIL™ 108F Additive</td>
<td>Silicone emulsion; 22.5% active</td>
<td>Provides foam control in waterborne coatings including wood coatings, architectural and inks; good compatibility and low tendency to cause defects</td>
<td>Water-based systems</td>
<td>Let-down</td>
<td>0.1-1.0%</td>
<td>Water</td>
<td>None</td>
<td>Water</td>
<td>1,600</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>XIAMETER™ AFE-0700 Antifoam Emulsion</td>
<td>Silicone antifoam emulsion; 10% active</td>
<td>Good foam control and high persistence over a wide pH and temperature range</td>
<td>Water-based systems</td>
<td>Added directly or during the let-down stage</td>
<td>0.05-1.0%</td>
<td>Water</td>
<td>None</td>
<td>None</td>
<td>1,750</td>
<td></td>
</tr>
</tbody>
</table>

[1] These values are not intended for use in preparing specifications.
[2] The typical concentrations are usage levels where the materials have performed successfully. Usage levels can vary depending on application and performance requirements. Please evaluate for optimum performance in each specific application.
[3] Review the Safety Data Sheet for each solvent prior to use. Safety Data Sheets can be obtained from your solvent supplier.
[4] Compliant at effective date of publication of this selection guide. Visit dow.com/customersupport to obtain food contact regulatory information, including FDA, EU, Swiss Ordinance and German BfR clearance. FDA Title 21 CFR - 175 (175.105, 175.300, 175.320) indirect food additives: adhesives and components of coatings; 176 (176.130, 176.170, 176.180, 176.200, 176.210) indirect food additives: paper and paper board components; 177 (177.1360, 177.2600, 177.1820(b)).
[6] Use level not to exceed 0.015%.
### Table 1: Features, typical use and properties of additives from Dow<sup>[1]</sup> (continued)

<table>
<thead>
<tr>
<th>Foam control (continued)</th>
<th>Self-dispersible compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOWSIL™ 71 Additive</strong></td>
<td><strong>Organosilicone copolymer</strong></td>
</tr>
<tr>
<td><strong>DOWSIL™ 74 Additive</strong></td>
<td>Provides foam control in waterborne coatings, especially ink and clear wood coatings, balancing effective foam control and surface appearance.</td>
</tr>
<tr>
<td><strong>DOWSIL™ 163 Additive</strong></td>
<td><strong>Silicone anti-foam compound; 100% active</strong></td>
</tr>
<tr>
<td><strong>DOWSIL™ 690 Additive</strong></td>
<td>Easily dispersible modified polysiloxane compound. Contains silica.</td>
</tr>
<tr>
<td><strong>DOWSIL™ 8603 Additive</strong></td>
<td>Silicone anti-foam compound with silica; 100% active</td>
</tr>
<tr>
<td><strong>DOWSIL™ 8610 Additive</strong></td>
<td>Silicone anti-foam compound with silica; 100% active</td>
</tr>
<tr>
<td><strong>DOWSIL™ 8628 Additive</strong></td>
<td><strong>Release additives</strong></td>
</tr>
</tbody>
</table>

### Features/benefits

- **Compatible binder systems:**
  - Waterborne
  - Waterborne acrylic
  - Waterborne UV-curable

- **Point of addition:**
  - Let-down or post add
  - Grinding stage
  - Added directly or during the let-down stage

- **Typical concentration:**
  - 0.1-0.5%
  - 1-0.5%
  - 0.05-1.0%

- **Suitable diluents:**
  - Water
  - Alcohols, glycol ethers, ester alcohols
  - Glycol ethers

- **Reactive groups:**
  - None
  - Silanol

- **Solvent:**
  - N/A
  - Water
  - Water N/A Water

- **Viscosity at 25ºC (77ºF), cSt:**
  - 350-900
  - 350-1,400
  - 750-1,550

- **Food contact compliance:**
  - FDA 176.170, Swiss Ordinance RS 817.023.21 Annex 10 Part A or B, bfr 15-0002, bfr 36-0002
  - FDA 176.150, Swiss Ordinance RS 817.023.21 Annex 10 Part B, bfr 15-0002, bfr 36-0002
  - FDA 176.210, Swiss Ordinance RS 817.023.21 Annex 10 Part A or B, CN 9685.2016
  - FDA 176.130, 176.150, 176.180, 176.200, 176.210, Swiss Ordinance RS 817.023.21 Annex 10 Part A or B
  - FDA: not approved.

**Notes:**

- These values are not intended for use in preparing specifications.
- The typical concentrations are usage levels where the materials have performed successfully. Usage levels can vary depending on application and performance requirements. Please evaluate for optimum performance in each specific application.
- Compliant at effective date of publication of this selection guide. Visit dow.com/CustomerSupport to obtain food and regulatory information, including FDA, EU, Swiss Ordinance and German BfR clearance. FDA Title 21 CFR - 175 (175.105, 175.300, 175.320) Indirect food additives: adhesives and components of coatings; 176 (176.130, 176.150, 176.180, 176.200, 176.210) Indirect food additives: paper and paperboard components; 177 (177.1390, 177.2600, 177.2800, 177.1520(b)) Indirect food additives: polymers.
- Chemically equivalent to DOWSIL™ Z-6032 Silane.
- Use level not to exceed 0.025%.

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<sup>[1]</sup> Use level not to exceed 0.025%.
<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Features/benefits</th>
<th>Compatible binder systems</th>
<th>Point of addition</th>
<th>Typical concentration(s)</th>
<th>Suitable diluents</th>
<th>Reactive groups</th>
<th>Solvent</th>
<th>Viscosity at 25°C (cSt)</th>
<th>Food contact compliance(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOWSIL™</strong> 3 Additive</td>
<td>Silanol-functional (Si–OH) additive; 10% active</td>
<td>Improves pigment dispersion and reduces separation and flight in solventborne coatings; also provides leveling, flow-out and gloss</td>
<td>Solventborne acrylic, alkyd, polyester, epoxy, polyurethane</td>
<td>Grind, let-down or post add</td>
<td>0.1-0.5%</td>
<td>Aromatics such as xylene or toluene; mineral spirits or ketones</td>
<td>Silanol</td>
<td>Toluene</td>
<td>0.7-1.4</td>
<td></td>
</tr>
<tr>
<td><strong>DOWSIL™</strong> 700P Additive</td>
<td>Alkoxy siloxane with organic group; 90% active</td>
<td>Titanium dioxide dispersant both for high-grade and low-grade TiO₂; provides stabilization of pigment dispersion and prevents pigment flooding and floating</td>
<td>Solventborne inorganic filler dispersant</td>
<td>Combine with resins before adding pigment for grinding</td>
<td>0.02-4.0%</td>
<td>Xylene and butyl acetate</td>
<td>Alkoxy</td>
<td>Methanol</td>
<td>5.5</td>
<td></td>
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<tr>
<td><strong>DOWSIL™</strong> Z-6121 Silane</td>
<td>Aminoethylaminoptylalkoxysilane; 50% active</td>
<td>Improves adhesion of waterborne and solventborne coatings when bonded to glass or metal substrates; can be used as an additive or primer</td>
<td>Waterborne and solventborne acrylic, alkyd, epoxy, polyurethane</td>
<td>Grind for waterborne; let-down or post add for solventborne</td>
<td>Primer: dilute to 10% active Additive: 0.1-5.0%</td>
<td>Alcohols and water</td>
<td>Amino; alkoxy-silyl</td>
<td>N-Butanol</td>
<td>&lt; 10</td>
<td>FDA 175.105</td>
</tr>
<tr>
<td><strong>DOWSIL™</strong> Z-6137 Silane</td>
<td>Aqueous solution of amino-functional silicone polymers; 22.5% active</td>
<td>Promotes adhesion of waterborne coatings to inorganic substrates</td>
<td>Waterborne polyurethane</td>
<td>Post add</td>
<td>0.1-5.0%</td>
<td>Water</td>
<td>Amino; silanol</td>
<td>Water</td>
<td>3-7</td>
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</tr>
<tr>
<td><strong>XIAMETER™</strong> OFS-6011 Silane</td>
<td>Aminopropytriethoxysilane; 99% active</td>
<td>Adhesion promoter in waterborne and solventborne coatings and pigment treatment in waterborne coatings</td>
<td>Waterborne and solventborne acrylic; solventborne polyurethane; 2K acrylic epoxy for concrete and industrial maintenance</td>
<td>Grind or let-down</td>
<td>0.05-2.0%</td>
<td>Alcohols and water</td>
<td>Amino; ethoxy-silyl</td>
<td>None</td>
<td>&lt; 10</td>
<td>FDA 175.105, Switzerland Ordinance RS 817.023.21 Annex 10 Part A, CN 9885, 2016</td>
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<td><strong>XIAMETER™</strong> OFS-6020 Silane</td>
<td>Aminoethylaminoptyltrimethoxysilane; 99% active</td>
<td>Adhesion promoter and pigment treatment in waterborne and solventborne coatings</td>
<td>Waterborne and solventborne acrylic, alkyd, epoxy, polyurethane</td>
<td>Grind, let-down or post add</td>
<td>Primer: dilute to 10% active in isopropanol; Additive: 0.5-2.0%</td>
<td>Alcohols and water</td>
<td>Amino; methoxy-silyl</td>
<td>None</td>
<td>&lt; 10</td>
<td>FDA 175.105, 175.300</td>
</tr>
<tr>
<td><strong>XIAMETER™</strong> OFS-6030 Silane</td>
<td>3-methacryloxypropyltrimethoxysilane; 98% active</td>
<td>Improves adhesion of waterborne, solventborne and radiation-cured coatings to inorganic substrates when used as a primer or additive</td>
<td>Waterborne and solventborne acrylic, alkyd, epoxy, polyurethane</td>
<td>Let-down or post add</td>
<td>Primer: dilute to 0.1-0.5% active in acidic (pH &lt; 4.0) water Additive: 0.1-3.0%</td>
<td>Alcohols and water</td>
<td>Methacrylate; methoxy-silyl</td>
<td>None</td>
<td>2.3-2.7</td>
<td>FDA 177.2465[2]</td>
</tr>
<tr>
<td><strong>XIAMETER™</strong> OFS-6032 Silane</td>
<td>Cationic vinylbenzyl and amino-functional methoxy-silane; 40% active</td>
<td>Adhesion promoter in waterborne and solventborne coatings; can be used as an additive or primer</td>
<td>Waterborne and solventborne acrylic, epoxy</td>
<td>Grind, let-down or post add</td>
<td>Primer: dilute with methanol or ethanol mixed with water 10:1 Additive: 0.05-3.0 wt%</td>
<td>Alcohols and water</td>
<td>Amino; vinylbenzyl; methoxy-silyl</td>
<td>Methanol</td>
<td>1-3</td>
<td></td>
</tr>
<tr>
<td><strong>XIAMETER™</strong> OFS-6040 Silane</td>
<td>Glycidoxypropyltrimethoxysilane; 99% active</td>
<td>Adhesion promoter and pigment treatment in waterborne and solventborne coatings; can be used as an additive or primer</td>
<td>Waterborne and solventborne acrylic, alkyd, amine, epoxy, polyurethane, vinyl</td>
<td>Grind, let-down or post add</td>
<td>Primer: dilute to 10% active in isopropanol Additive: 0.05-3.0%</td>
<td>Alcohols and water</td>
<td>Epoxy; methoxy-silyl</td>
<td>None</td>
<td>2.95-3.20</td>
<td>FDA 177.1390, Switzerland Ordinance RS 817.023.21 Annex 10 Part B[3]</td>
</tr>
<tr>
<td><strong>XIAMETER™</strong> OFS-6300 Silane</td>
<td>Vinyltrimethoxysilane; 99% active</td>
<td>Bonds with inorganic surfaces through alkoxysilane; forms siloxane crosslink via moisture cure</td>
<td>Solventborne acrylic, alkyd, epoxy, polyurethane; UV-curable epoxy</td>
<td>Can be added during solventborne paint formulation at the pigment grind step</td>
<td>Additive: 0.05-1.0%</td>
<td>Alcohols and water</td>
<td>Vinyl; methoxy-silyl</td>
<td>None</td>
<td>0.56</td>
<td>Switzerland Ordinance RS 817.023.21 Annex 10 Part A or B[4]</td>
</tr>
</tbody>
</table>

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[1] These values are not intended for use in preparing specifications.
[2] The typical concentrations are usage levels where the materials have performed successfully. Usage levels can vary depending on application and performance requirements. Please evaluate for optimum performance in each specific application.
[3] Complaintant at effective date of publication of this selection guide. Visit dow.com/customersupport to obtain food contact regulatory information, including FDA, EU, Swiss Ordinance and German BfR clearance. FDA Title 21 CFR - 175 (175.105, 175.300, 175.320) Indirect food additives: adhesives and components of coatings; 177 (177.1390, 177.1391, 177.1840, 177.2000, 177.2790) Indirect food additives: paper and paperboard components; 177 (177.1390, 177.2000, 177.1590) Indirect food additives: polymers.
[4] Compliant at date of publication of this selection guide. Visit dow.com/customersupport to obtain food contact regulatory information, including FDA, EU, Swiss Ordinance and German BfR clearance. FDA Title 21 CFR - 175 (175.105, 175.300, 175.320) Indirect food additives: adhesives and components of coatings; 177 (177.1390, 177.1391, 177.1840, 177.2000, 177.2790) Indirect food additives: paper and paperboard components; 177 (177.1390, 177.2000, 177.1590) Indirect food additives: polymers.
[6] This product is an unreacted monomer. May be copolymerized as stipulated in 177.2465(a).
[7] May be used as an optional trimethoxysilane coupling agents in accordance with 177.1390(c)(2)(iv)(a).
<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Features/benefits</th>
<th>Compatible binder systems</th>
<th>Point of addition</th>
<th>Typical concentration[1]</th>
<th>Suitable diluents[1]</th>
<th>Reactive groups</th>
<th>Solvent</th>
<th>Viscosity at 25ºC (°F), cSt</th>
<th>Food contact compliance[4]</th>
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<tbody>
<tr>
<td><strong>Water resistance</strong></td>
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<tr>
<td>DOWSIL™ 64 Additive</td>
<td>Low-viscosity emulsion of silicone elastomer precursors; 60% active</td>
<td>Provides water resistance for waterborne systems, particularly inks</td>
<td>Mainly acrylics</td>
<td>Let-down or post add</td>
<td>1.0-5.0%</td>
<td>Water</td>
<td>Silanol</td>
<td>Water</td>
<td>250-650</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 85 Additive</td>
<td>Medium-viscosity emulsion of silicone elastomer precursors; 60% active</td>
<td>Provides water resistance for waterborne systems, particularly inks</td>
<td>Mainly acrylics</td>
<td>Let-down or post add</td>
<td>1.0-5.0%</td>
<td>Water</td>
<td>Silanol</td>
<td>Water</td>
<td>34,000-46,000</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 87 Additive</td>
<td>Emulsion; 38-44% active</td>
<td>Provides water repellency and water beading for waterborne systems with minimal effect on water vapor permeability; for decorative paints</td>
<td>Acrylic, styrene-acrylates and vinyl acetate emulsions</td>
<td>Let-down or post add</td>
<td>1.0-5.0%</td>
<td>Water</td>
<td>Ethoxy-silanol</td>
<td>Water</td>
<td>6</td>
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<tr>
<td>DOWSIL™ 88 Additive</td>
<td>Silane/siloxane blend; 98% active</td>
<td>Provides water repellency with minimal effect on water vapor permeability; can be used in waterborne systems containing polar solvents and solventborne systems; particularly for decorative paints</td>
<td>Acrylic, styrene-acrylates</td>
<td>Let-down or post add</td>
<td>1.0-5.0%</td>
<td>Aliphatic and aromatic hydrocarbons and polar solvents</td>
<td>Alkoxy-silanol</td>
<td>None</td>
<td>35</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
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<tr>
<td>DOWSIL™ 901H Additive</td>
<td>Silicone emulsion; 60% active</td>
<td>General-purpose low-VOC hydrophobe to improve water resistance and water contact angle; may provide corrosion resistance for waterborne industrial metal coating</td>
<td>Water-based acrylic, styrene acrylate and VAE systems</td>
<td>Let-down or post add</td>
<td>0.5-5.0%</td>
<td>Water</td>
<td>Alkoxy-silanol</td>
<td>Water</td>
<td>Not available</td>
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<tr>
<td>DOWSIL™ 902H Additive</td>
<td>Silicone-resin-based emulsion; 50% active</td>
<td>Co-binder for high-PVC siloxane paints; decreases water absorption through hydrophobicization of pores; can be combined with a beading additive to additionally achieve high water-content angle; may provide dirt pick up resistance</td>
<td>Water-based acrylic, styrene acrylate and VAE systems</td>
<td>Let-down or post add</td>
<td>8.0-10.0%</td>
<td>Water</td>
<td>Akoxy</td>
<td>Water</td>
<td>300-2000</td>
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<tr>
<td>DOWSIL™ 903H Additive</td>
<td>Alkoxy-silane and silicone resin emulsion; 52.5% active</td>
<td>Provides hot-water resistance in waterborne wood coatings; improves water resistance in various waterborne coatings</td>
<td>Water-based acrylic, styrene acrylate and VAE systems</td>
<td>Let-down or post add</td>
<td>0.5-5.0%</td>
<td>Water</td>
<td>Alkoxy</td>
<td>Water</td>
<td>Not available</td>
<td></td>
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<tr>
<td>DOWSIL™ 904H Additive</td>
<td>Amino functional polydimethylsiloxane</td>
<td>Provides small trail resistance in high PVC (dark) colored paints and provides improved surface hydrophobicity and water repellency</td>
<td>Acrylic and styrene acrylic high pigmented paint</td>
<td>Grind or let-down</td>
<td>1-5%</td>
<td>Typical coalescent used in architectural formulations</td>
<td>Amino</td>
<td>None</td>
<td>70</td>
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<tr>
<td>DOWSIL™ 906H Additive</td>
<td>Low VOC emulsion of silicone elastomer; 50% active</td>
<td>Provides water resistance for waterborne systems with little effect on water vapor permeability; can be used as a co-binder</td>
<td>Acrylic</td>
<td>Let-down or post add</td>
<td>1.0-10.0%</td>
<td>Water</td>
<td>Silanol</td>
<td>Water</td>
<td>550</td>
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<td><strong>Leveling, gloss</strong></td>
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<tr>
<td>DOWSIL™ 56 Additive</td>
<td>Arylalkyl-modified silicone; 100% active</td>
<td>Aids deaeration without destabilizing the curtain in solventborne curtain coatings; improves leveling and gloss; aids pigment orientation; good thermastability</td>
<td>Water-based acrylic, styrene acrylate and VAE systems</td>
<td>Grind, let-down or post add</td>
<td>0.05-0.5%</td>
<td>Aromatics such as xylene, toluene, mineral spirits and esters such as butyl acetate</td>
<td>None</td>
<td>None</td>
<td>1,125-1,645</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 57 Additive</td>
<td>Silicone polyether copolymer</td>
<td>Improves leveling, slip, mar resistance and gloss in waterborne and solventborne coatings; provides substrate wetting</td>
<td>(NOTE: Always check compatibility before usage)</td>
<td>Grind, let-down or post add</td>
<td>0.1-1.0%</td>
<td>Acetone, toluene, mineral spirits and isopropyl alcohol; dispersible in water</td>
<td>None</td>
<td>None</td>
<td>175-390</td>
<td>FDA 176.170, 175.3001; Swiss Ordinance RS 817.023.21 Annex 10 Part B, bfr.15-0002, CN 9685.2016</td>
</tr>
<tr>
<td>DOWSIL™ 401LS Additive</td>
<td>Silicone polyether copolymer</td>
<td>Flow and leveling additive for solventborne and waterborne coatings; also lowers coefficient of friction to improve slip and hand feel; compatible with clear coats</td>
<td>Water-based acrylic, styrene acrylate and VAE systems</td>
<td>Grind, let-down or post add</td>
<td>0.05-1.0%</td>
<td>Alcohols, glycol ethers and aromatic solvents</td>
<td>None</td>
<td>None</td>
<td>100-250</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part B, bfr.15-0002, bfr.36-0002</td>
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<tr>
<td>DOWSIL™ 402LS Additive</td>
<td>Silicone polyether copolymer</td>
<td>Effective flow and leveling additive for waterborne and radiation curable systems; also lowers coefficient of friction, giving good slip; suitable in pigmented and clear coat formulations; also provides anti-dripping and applied hiding</td>
<td>Water-based acrylic, styrene acrylate and VAE systems</td>
<td>Grind, let-down or post add</td>
<td>0.1-1.0%</td>
<td>Alcohols, glycol ethers and aromatic solvents</td>
<td>Carbinol</td>
<td>None</td>
<td>280-400</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
</tr>
<tr>
<td>DOWSIL™ 8526 Additive</td>
<td>Carboxyl-functional silicone polyether; 100% active</td>
<td>Provides leveling and slip with good compatibility in solventborne, waterborne and UV-curable coatings, inks and overprint varnishes</td>
<td>Solvent-based acrylic, epoxy, polyester and urethane systems; waterborne acrylic, polyester, epoxy and urethane systems, UV systems</td>
<td>Grind, let-down or post add</td>
<td>0.2-1.0%</td>
<td>Water, alcohols, toluene, xylene</td>
<td>Carbinol</td>
<td>None</td>
<td>1,552</td>
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</tbody>
</table>

[1] Limitations may apply. Please contact www.dow.com/contactus for more information.
Table 1: Features, typical use and properties of additives from Dow[^1] (Products are listed under their primary benefit)

<table>
<thead>
<tr>
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<td>Wetting</td>
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<tr>
<td>DOWSIL™ 67 Additive</td>
<td>Silicone polyether copolymer</td>
<td>Imparts spreading and wetting in waterborne and radiation-curable coatings on    Waterborne acrylate, alkyd, polyester, polyurethane</td>
<td>Let-down or post add</td>
<td>0.1-0.4%</td>
<td>Isopropyl alcohol, acetone; dispersible in water</td>
<td>Carbinol</td>
<td>None</td>
<td>Swiss Ordinance RS 817.023.21 Annex 10 Part A or B</td>
<td></td>
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</tr>
<tr>
<td>DOWSIL™ 500W Additive</td>
<td>Silicone polyether copolymer</td>
<td>Imparts enhanced substrate wetting in waterborne and radiation-curable systems; suitable across a wide range of substrates, including wood and plastics; stable at high pH</td>
<td>Waterborne acrylate and polyurethane; radiation-curable acrylate</td>
<td>Let-down</td>
<td>0.1-0.4%</td>
<td>Isopropyl alcohol, acetone and toluene; dispersible in water</td>
<td>None</td>
<td>None</td>
<td>25.5-29.5</td>
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</tr>
<tr>
<td>DOWSIL™ 501W Additive</td>
<td>Silicone polyether copolymer</td>
<td>Imparts enhanced substrate wetting in waterborne and radiation-curable systems; suitable across a wide range of substrates, including wood and plastics</td>
<td>Waterborne acrylate and polyurethane; radiation-curable acrylate</td>
<td>Let-down</td>
<td>0.1-0.4%</td>
<td>Isopropyl alcohol, acetone and toluene; dispersible in water</td>
<td>None</td>
<td>None</td>
<td>10-30</td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 502W Additive</td>
<td>Silicone polyether copolymer</td>
<td>Imparts enhanced substrate wetting in waterborne and radiation-curable systems; suitable across a wide range of substrates, including wood and plastics</td>
<td>Waterborne acrylate and polyurethane; radiation-curable acrylate</td>
<td>Let-down</td>
<td>0.1-0.4%</td>
<td>Isopropyl alcohol, acetone and toluene; dispersible in water</td>
<td>Carbinol</td>
<td>None</td>
<td>49-75</td>
<td></td>
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<tr>
<td>DOWSIL™ 505W Additive</td>
<td>Silicone glycol copolymer</td>
<td>Designed to provide wetting, prevent pinholing and improve film surface appearance in solventborne and waterborne inks, paints and coatings applications; reduced foam generation</td>
<td>Acrylic latexes, polyurethane dispersions</td>
<td>Let-down or post add</td>
<td>0.1-1%</td>
<td>Water and alcohols</td>
<td>None</td>
<td>None</td>
<td>1500-2000 cP bfr 15-0002, bfr 36-0002</td>
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</tbody>
</table>

Texturing (matting and/or tactile effects)

|------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------|------------------|--------------------------|                      |                 |                |                             |                               |
| DOWSIL™ 23 N Additive | Powder consisting of transparent spherical silicone elastomer particles with epoxy functionality; average particle diameter of 1-3 microns | Imparts mar and abrasion resistance with a smooth, matte finish to waterborne and solventborne coatings | Waterborne and solventborne acrylic, polyurethane | Best added to a portion of the resin/solvent system under high shear conditions prior to blending into the final formulation | 0.5-5.0% | Solvents such as glycols, glycol ethers, alcohols, water with cosolvents such as acetone | Epoxy | None | Swiss Ordinance RS 817.023.21 Annex 10 Part A or B |
| DOWSIL™ 33 Additive Waterborne suspension of spherical silicone elastomer particles with epoxy functionality; median particle diameter of 3-4 microns; 46% active | Imparts a silky, smooth, matte finish to waterborne coatings | Waterborne acrylate, polyurethane | Post add | 2-10% | Water | Epoxy | Water | <150 |
| DOWSIL™ 61 Paint Additive 10% silicone in solvent | Imparts a hammertone finish to metal surfaces | Primarily solventborne; some waterborne | Final thinning stage or prior to post addition | 0.05-5.0% | Aromatic solvents such as xylene or toluene, mineral spirits, or ketones | None | Ethylbenzene, xylene | 120 |

[^1]: These values are not intended for use in preparing specifications.
[^2]: The typical concentrations are usage levels where the materials have performed successfully. Usage levels can vary depending on application and performance requirements. Please evaluate for optimum performance in each specific application.
[^3]: Review the Safety Data Sheet for each solvent prior to use. Safety Data Sheets can be obtained from your solvent supplier.
[^4]: Compliant at effective date of publication of this selection guide. Visit dow.com/customersupport to obtain food contact regulatory information, including FDA EU, Swiss Ordinance and German BfR clearance. FDA Title 21 CFR - 175 (175.105, 175.200, 175.320) Indirect food additives: adhesives and components of coatings; 176 (176.130, 176.170, 176.180, 176.200, 176.210) Indirect food additives: paper and paperboard components; 177 (177.1390, 177.2600, 177.1520(a)) Indirect food additives: polymers.
[^5]: NA = Not Applicable
Additive selection tree for coatings applications

Start

Solventless UV-cure/EB-cure system

FDA compliant

Solvent Systems

Leveling

Mar resistance/slip

Foam control

Hammertone

Pigment treatment

Gloss

Texturing

Wetting

Water resistance

Release

DOWSIL™ 3 Additive
DOWSIL™ 11 Additive
DOWSIL™ 14 Additive
DOWSIL™ 29 Additive
DOWSIL™ 56 Additive
DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive
DOWSIL™ 8526 Additive
DOWSIL™ 8505 Additive

DOWSIL™ 7 Additive
DOWSIL™ 10 Additive
DOWSIL™ 20 Additive
DOWSIL™ 29 Additive
DOWSIL™ 54 Additive
DOWSIL™ 57 Additive
DOWSIL™ 205SL Additive

DOWSIL™ 61 Paint Additive

DOWSIL™ 3 Additive
DOWSIL™ 700F Additive
XIAMETER™ OFS-6020 Silane
XIAMETER™ OFS-6030 Silane
XIAMETER™ OFS-6040 Silane

DOWSIL™ 57 Additive

DOWSIL™ 23 N Additive
DOWSIL™ 33 Additive

DOWSIL™ 7 Additive
DOWSIL™ 100F Additive
DOWSIL™ 57 Additive
DOWSIL™ 503W Additive

DOWSIL™ 1-9770 Release Additive
DOWSIL™ ST 114 Paint Additive

Leveling

Mar resistance/slip

Foam control

Hammertone

Pigment treatment

Gloss

Texturing

Wetting

Water resistance

Release

DOWSIL™ 14 Additive
DOWSIL™ 29 Additive

DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive
DOWSIL™ 8505 Additive

DOWSIL™ 14 Additive
DOWSIL™ 18 Additive
DOWSIL™ 27 Additive
DOWSIL™ 51 Additive
DOWSIL™ 52 Additive
DOWSIL™ 57 Additive
DOWSIL™ 205SL Additive
DOWSIL™ 210S Additive
DOWSIL™ 211S Additive

DOWSIL™ 14 Additive
DOWSIL™ 29 Additive
DOWSIL™ 56 Additive
DOWSIL™ 57 Additive
DOWSIL™ 503W Additive

DOWSIL™ 61 Paint Additive

DOWSIL™ 10 Additive
DOWSIL™ 20 Additive
DOWSIL™ 29 Additive
DOWSIL™ 54 Additive
DOWSIL™ 57 Additive
DOWSIL™ 205SL Additive
DOWSIL™ 210S Additive
DOWSIL™ 211S Additive

DOWSIL™ 61 Paint Additive

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DOWSIL™ 54 Additive
DOWSIL™ 57 Additive
DOWSIL™ 205SL Additive
DOWSIL™ 210S Additive
DOWSIL™ 211S Additive

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DOWSIL™ 57 Additive
DOWSIL™ 503W Additive

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DOWSIL™ 54 Additive
DOWSIL™ 57 Additive
DOWSIL™ 205SL Additive
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DOWSIL™ 211S Additive

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DOWSIL™ 57 Additive
DOWSIL™ 503W Additive

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DOWSIL™ 54 Additive
DOWSIL™ 57 Additive
DOWSIL™ 205SL Additive
DOWSIL™ 210S Additive
DOWSIL™ 211S Additive

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DOWSIL™ 211S Additive

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DOWSIL™ 54 Additive
DOWSIL™ 57 Additive
DOWSIL™ 205SL Additive
DOWSIL™ 210S Additive
DOWSIL™ 211S Additive

DOWSIL™ 61 Paint Additive

50% active in ethylene glycol isopropyl ether. Bold = Top product choices

pg 10
Foam control additive selection tree for coatings applications

**Industrial antifoam selection**

<table>
<thead>
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<td><strong>Recommended use level</strong></td>
<td>0.1-0.5%</td>
<td>0.1-0.4%</td>
<td>0.05-0.2%</td>
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<td><strong>Grind</strong></td>
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<td><strong>Pigmented coatings</strong></td>
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<td><strong>Clear coatings</strong></td>
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<td>Best performance</td>
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* Good  ** Better  *** Best

1 50% active in ethylene glycol isopropyl ether.
2 1% active in diisobutyl ketone.
3 Pigment volume concentration.
Leveling and wetting additive selection tree for coatings and ink applications

Start

Recoatable
DOWSIL™ 11 Additive

Best slip and wetting
DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive

Multipurpose;
Also gives mar
Resistance and slip
DOWSIL™ 11 Additive
DOWSIL™ 14 Additive
DOWSIL™ 29 Additive
DOWSIL™ 55 Additive
DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive
DOWSIL™ 8526 Additive

FDA compliant
DOWSIL™ 57 Additive

Solventborne
DOWSIL™ 3 Additive
DOWSIL™ 11 Additive
DOWSIL™ 14 Additive
DOWSIL™ 29 Additive
DOWSIL™ 55 Additive
DOWSIL™ 56 Additive
DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive
DOWSIL™ 8526 Additive

Eliminates microfoam;
Good thermal stability;
Aids metallic pigment
Orientation
DOWSIL™ 56 Additive

Leveling with no slip
DOWSIL™ 3 Additive

Waterborne
DOWSIL™ 14 Additive
DOWSIL™ 29 Additive
DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive
DOWSIL™ 8526 Additive

Solventless uv-cure/eb-cure system
DOWSIL™ 29 Additive
DOWSIL™ 57 Additive
DOWSIL™ 67 Additive
DOWSIL™ 402LS Additive

Superior wetting on
Low-energy substrates
DOWSIL™ 67 Additive
DOWSIL™ 500W Additive
DOWSIL™ 501W Additive
DOWSIL™ 502W Additive
DOWSIL™ 503W Additive

If foaming is a problem,
Combine with
DOWSIL™ 62 Additive

Little or no increase in slip
DOWSIL™ 67 Additive
DOWSIL™ 500W Additive
DOWSIL™ 501W Additive
DOWSIL™ 502W Additive
DOWSIL™ 503W Additive

DOWSIL™ 7 Additive
DOWSIL™ 500W Additive
DOWSIL™ 501W Additive
DOWSIL™ 502W Additive

DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive
DOWSIL™ 8526 Additive

DOWSIL™ 14 Additive
DOWSIL™ 29 Additive
DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive
DOWSIL™ 8526 Additive

Multipurpose;
Also gives mar
Resistance and slip
DOWSIL™ 29 Additive
DOWSIL™ 57 Additive
DOWSIL™ 501W Additive
DOWSIL™ 502W Additive
DOWSIL™ 503W Additive

Best slip and wetting
DOWSIL™ 57 Additive

DOWSIL™ 57 Additive
DOWSIL™ 401LS Additive
Table 2. Additive selection table
Use this chart to identify the additives that meet your performance requirements.

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<th>Systems</th>
<th>Properties</th>
<th>Markets</th>
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1Availability may be limited by region
Table 2. Additive selection table (continued)

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Your global connection

At home or abroad – wherever your business takes you – you will find the product supply, customer service and technical support you need to succeed available locally from Dow.

Whether you are facing a challenge that could benefit from Dow’s international business and market experience or you need a reliable, local source of supply for innovative paints, inks and coatings solutions, contact your Dow representative. Product samples, technical information and assistance also are available online at dow.com/coatings.