Coatings and Inks Additive Selection Guide

DOWSIL™

Consumer Solutions

a little makes a big splash!
WITH SILICONE ADDITIVES FROM DOW
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®

*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&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Suitable Diluents&lt;sup&gt;3&lt;/sup&gt;</th>
<th>Reactive Groups</th>
<th>Solvent</th>
<th>Viscosity at 25ºC (77ºF), cSt</th>
<th>FDA Food Contact Compliance&lt;sup&gt;4&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Slip, Mar Resistance</strong></td>
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<td><strong>DOWSIL</strong></td>
<td><strong>11 Additive</strong></td>
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<tr>
<td>Silicone polyether copolymer; 10% active</td>
<td></td>
<td>Increases mar resistance of solventborne 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>
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<tr>
<td><strong>DOWSIL</strong></td>
<td><strong>14 Additive</strong></td>
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<tr>
<td>Silicone polyether copolymer; 10% active</td>
<td></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>
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<tr>
<td><strong>DOWSIL</strong></td>
<td><strong>18 Additive</strong></td>
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<tr>
<td>Dispersion of high molecular weight polysiloxane and silicone surfactant; 100% active</td>
<td></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>250,000-650,000</td>
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<tr>
<td><strong>DOWSIL</strong></td>
<td><strong>27 Additive</strong></td>
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<tr>
<td>Non-reactive silicone glycol copolymer; 100% active</td>
<td></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 suitable solvents</td>
<td>None</td>
<td>None</td>
<td>275, FDA 176.210, 175.105</td>
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<td><strong>DOWSIL</strong></td>
<td><strong>29 Additive</strong></td>
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<tr>
<td>Silicone polyether copolymer</td>
<td></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></td>
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<tr>
<td><strong>DOWSIL</strong></td>
<td><strong>51 Additive</strong></td>
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<tr>
<td>Dispersion of high molecular weight polysiloxane and surfactants; 80% active</td>
<td></td>
<td>Imparts mar resistance and slip to waterborne coatings; may also provide room temperature anti-blocking</td>
<td>Waterborne acrylic, alkyd, epoxy, nitrocellulose, polyester, 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, FDA 175.105, 176.210, 176.180</td>
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<tr>
<td><strong>DOWSIL</strong></td>
<td><strong>52 Additive</strong></td>
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<tr>
<td>Dispersion of high molecular weight polysiloxane and surfactants; 64% active</td>
<td></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, FDA 176.210</td>
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<td><strong>DOWSIL</strong></td>
<td><strong>54 Additive</strong></td>
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<tr>
<td>Silicone polyether copolymer</td>
<td></td>
<td>Provides mar resistance, slip and leveling in waterborne and solventborne coatings; adds defoaming in some systems</td>
<td>Solventborne acrylic, alkyd, epoxy, polyurethane, vinyl; waterborne acrylic and polyester</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>
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<tr>
<td><strong>DOWSIL</strong></td>
<td><strong>55 Additive</strong></td>
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<tr>
<td>Silicone polyether copolymer; 10% active</td>
<td></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-butoxyethanol</td>
<td>6</td>
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<tr>
<td><strong>DOWSIL</strong></td>
<td><strong>205 SL Additive</strong></td>
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<tr>
<td>Silicone polyether copolymer; 50% active</td>
<td></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, alkyd, polyester, polyurethane, vinyl</td>
<td>Let-down or post add</td>
<td>0.1-1.0%</td>
<td>Alcohols, glycol ethers and aromatic solvents</td>
<td>Carbinol</td>
<td>Ethylene glycol isopropyl ether</td>
<td>25-60</td>
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<td><strong>DOWSIL</strong></td>
<td><strong>210S Additive</strong></td>
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<tr>
<td>Silicone polyether dispersion in water</td>
<td></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 craters</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>
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<td><strong>Foam Control</strong></td>
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<tr>
<td><strong>Fluorosilicones</strong></td>
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<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, polyester, 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>FDA 177.2600</td>
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<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 acrylic, alkyd, epoxy, polyester, 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>
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<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 ethylketone and n-Propyl acetate</td>
<td>Not available</td>
<td></td>
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<tr>
<td>DOWSIL™ 8621 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 ethylketone</td>
<td>0.94</td>
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<td><strong>Emulsions</strong></td>
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<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-.05%</td>
<td>Water</td>
<td>Silanol Water</td>
<td>1,000-3,500</td>
<td>FDA 175.105, 176.210</td>
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<tr>
<td>DOWSIL™ 68 Additive</td>
<td>Silicone emulsion; 50-55% active</td>
<td>Provides immediate and sustainable foam control in waterborne inks, woodcoatings and paints</td>
<td>Acrylic, polyurethane</td>
<td>Post add</td>
<td>0.05-.05%</td>
<td>Water</td>
<td>Silanol Water</td>
<td>1,000-3,000</td>
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<tr>
<td>DOWSIL™ 108F Additive</td>
<td>Silicone emulsion; 22.5% active</td>
<td>Provides foam control in waterborne coatings including 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 Water</td>
<td>1,600</td>
<td>Swiss Ordinance</td>
<td></td>
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<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>
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</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.

EU Legislation – Visit our EH&S Portal at consumer.dow.com to obtain food contact regulatory status information, including FDA, EU, Swiss Ordinance and German BfR clearances. FDA Title 21 CFR – 175 (175.105, 175.300, 175.330) 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 (177.1390, 177.2600, 177.1520b) indirect food additives; polymers.
### Table 1: Features, Typical Use and Properties of Additives from Dow[1] (continued)

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<td><strong>Foam Control (continued)</strong></td>
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<td><strong>Self-Dispersible Compounds</strong></td>
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<tr>
<td>DOWSIL™ 71 Additive</td>
<td>Organo-modified silicone copolymer</td>
<td>Provides foam control in waterborne coatings, especially ink and clear wood coatings; balancing effective foam control and surface appearance</td>
<td>Waterborne acrylic</td>
<td>Let-down or post add</td>
<td>0.1-0.5%</td>
<td>Alcohols, glycol ethers and ester alcohol</td>
<td>None</td>
<td>None</td>
<td>350-900</td>
<td>FDA 175.105, 175.300, 175.320, 176.200, 176.210</td>
</tr>
<tr>
<td>DOWSIL™ 74 Additive</td>
<td>Organo-modified silicone copolymer</td>
<td>Provides foam control in waterborne coatings, especially wood coatings; balancing effective foam control and surface appearance</td>
<td>Waterborne acrylic</td>
<td>Let-down or post add</td>
<td>0.1-0.5%</td>
<td>Alcohols and glycol ethers</td>
<td>Carbinol</td>
<td>None</td>
<td>350-1,400</td>
<td>FDA 176.210</td>
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<tr>
<td>DOWSIL™ 163 Additive</td>
<td>Silicone antifoam compound; 100% active</td>
<td>Provides foam control in waterborne, solventborne and radiation-cured coatings and inks</td>
<td>Waterborne and solventborne acrylic, epoxy, polyester, polyurethane, vinyl; also radiation-cured</td>
<td>Let-down or post add</td>
<td>0.1-1.0%</td>
<td>Glycols</td>
<td>Silanol</td>
<td>None</td>
<td>750-1,550</td>
<td>FDA 175.105, 175.300, 176.170, 176.180, 176.200, 176.210</td>
</tr>
<tr>
<td>DOWSIL™ 8500 Additive</td>
<td>Silicone antifoam compound with silica; 100% active</td>
<td>Top choice for architecture applications; highly efficient antifoam at low dosage for waterborne coating and ink system; no impact on gloss; low viscosity for easy dispersibility</td>
<td>Waterborne acrylic styrene emulsion paint, flexographic inks, acrylic urethane emulsions</td>
<td>Grind, let-down after thickeners or post add</td>
<td>0.05-1.0%</td>
<td>Can be added directly or pre-diluted with alcohols or polyglycols</td>
<td>None</td>
<td>None</td>
<td>784</td>
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</tr>
<tr>
<td>DOWSIL™ 8503 Additive</td>
<td>Silicone antifoam compound with silica; 100% active</td>
<td>Effective foam control for waterborne coating and ink systems at low dosages; tendency toward low surface defects</td>
<td>Waterborne acrylic styrene emulsion paint, interior wall paint, flexo gravure inks, polyester acrylic, acrylic-modified alkyd</td>
<td>Grind, let-down or post add</td>
<td>0.05-1.0%</td>
<td>Can be added directly or pre-diluted with alcohols or polyglycols</td>
<td>None</td>
<td>None</td>
<td>900-3,600</td>
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<tr>
<td>DOWSIL™ 8528 Additive</td>
<td>100% organofunctional silicone</td>
<td>Effective foam control for waterborne coating systems</td>
<td>Waterborne UV-curable inks; waterborne wood stains, trims and varnishes</td>
<td>Added directly or during the let-down stage</td>
<td>0.05-1.0%</td>
<td>Glycol ether</td>
<td>None</td>
<td>None</td>
<td>4,000</td>
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<td><strong>Release Additives</strong></td>
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<tr>
<td>DOWSIL™ 1-9770 Release Additive</td>
<td>High viscosity, reactive silicone fluid</td>
<td>Provides release properties in clear or pigmented coatings; can be used in food contact applications</td>
<td>Polyester, silicones</td>
<td>Grind, let-down or post add</td>
<td>0.1-5.0%</td>
<td>Aromatic hydrocarbons, ketones, acetates and other suitable solvents</td>
<td>Silanol</td>
<td>None</td>
<td>11,000-14,000</td>
<td>FDA 175.105, 175.300, 176.170, 176.180, 176.200, 176.210, 177.226, 177.260, 178.312, 178.357, 178.391, 181.28</td>
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<tr>
<td>DOWSIL™ ST 114 Paint Additive</td>
<td>Silicone polyether copolymer</td>
<td>Provides marine antifouling; also improves wetting, slip resistance and flow in waterborne and solventborne coatings</td>
<td>Acrylic, polyester, polyurethane, vinyl and silicone</td>
<td>Grind, let-down or post add</td>
<td>0.1-5.0%</td>
<td>Alcohols, acetone, glycol ethers and aromatic solvents</td>
<td>None</td>
<td>None</td>
<td>55-85</td>
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<tr>
<td>Product</td>
<td>Description</td>
<td>Features/Benefits</td>
<td>Suitable Diamond Gemstone</td>
<td>Typical Concentration</td>
<td>Points of Addition</td>
<td>Reactive Groups</td>
<td>Solvent</td>
<td>Viscosity</td>
<td>FDA Food Compliance</td>
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<td></td>
</tr>
<tr>
<td>DOWSIL™ 3102 Silane</td>
<td>Aminoethylaminopropyltrimethoxysilane; 99% active</td>
<td>Improves adhesion of inorganic substrates in waterborne and solventborne coatings</td>
<td>Adhesive; promoter; pigment treatment in waterborne and solventborne coatings</td>
<td>0.1-0.5%</td>
<td>Grind or post add</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>FDA 175.105, 177.1390</td>
<td></td>
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</table>

**Table 1:** Features, Typical Use and Properties of Additives from Dow (continued)
<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</th>
<th>Suitable Diluents</th>
<th>Reactive Groups</th>
<th>Solvent</th>
<th>Viscosity at 25°C (77°F), cSt</th>
<th>FDA Food Compliance</th>
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<tbody>
<tr>
<td><strong>Water Resistance</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>DOWSIL™ 84 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></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></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; particularly for decorative paints</td>
<td>Acrylic, styrene-acrylics and vinyl acetate emulsions</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></td>
</tr>
<tr>
<td>DOWSIL™ 88 Additive</td>
<td>Silane/siloxane blend; 98% actives</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-acrylics</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></td>
</tr>
<tr>
<td>DOWSIL™ 90 1H 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 acrylic and VAE systems</td>
<td>Let-down or post add</td>
<td>0.5-5.0%</td>
<td>Alkoxy silanol</td>
<td>Water</td>
<td>Not available</td>
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<tr>
<td>DOWSIL™ 90 2H Additive</td>
<td>Silicone-resin-based emulsion; 50% active</td>
<td>Co-binder for high-PVC silicone paints; decreases water absorption through hydrophobization of pores; can be combined with a beading additive to additionally achieve high water-contact angle; may provide dirt pick up resistance</td>
<td>Water-based acrylic, styrene acrylic and VAE systems</td>
<td>Let-down or post add</td>
<td>8.0-10.0%</td>
<td>Alkoxy silanol</td>
<td>Water</td>
<td>300-2,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 90 3H Additive</td>
<td>Alkoxy silane and siloxane 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 acrylic and VAE systems</td>
<td>Let-down or post add</td>
<td>0.5-5.0%</td>
<td>Alkoxy silanol</td>
<td>Water</td>
<td>Not available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 90 4H Additive</td>
<td>Amino functional polydimethylsiloxane</td>
<td>Provides small trail resistance in high-VOC (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>Amino formulations</td>
<td>Amino</td>
<td>None</td>
<td>70</td>
<td>No</td>
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<tr>
<td>DOWSIL™ 90 5H Additive</td>
<td>Low VOC emulsion of silicone elastomer; 50% actives</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>Polyether; 100% active</td>
<td>Silanol</td>
<td>Water</td>
<td>550</td>
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<tr>
<td><strong>Leveling, Gloss</strong></td>
<td></td>
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<tr>
<td>DOWSIL™ 96 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 thermostability</td>
<td>Water-based acrylic, styrene acrylic 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></td>
</tr>
<tr>
<td>DOWSIL™ 97 Additive</td>
<td>Silicone polyether copolymer</td>
<td>Improves leveling, slip, mar resistance and gloss in waterborne and solventborne coatings; provides subrate 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 176.2010(1)</td>
</tr>
<tr>
<td>DOWSIL™ 40 1LS 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 acrylic 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>Carbinol</td>
<td>None</td>
<td>280-400</td>
<td>Swiss Ordinance RS 8.17.023.21 Annex 6, Part B</td>
</tr>
<tr>
<td>DOWSIL™ 40 2LS 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-blocking and applied hiding</td>
<td>(NOTE: Always check compatibility before usage)</td>
<td>Let-down</td>
<td>0.1-1.0%</td>
<td>Alcohols, glycol ethers and aromatic solvents</td>
<td>Carbinol</td>
<td>None</td>
<td>1,552</td>
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<tr>
<td>DOWSIL™ 85 26 Additive</td>
<td>Carbinol-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>
Table 1: Features, Typical Use and Properties of Additives from Dow[^1](Products are listed under their primary benefit)

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<tr>
<td>Wetting</td>
<td></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 difficult substrates, e.g., low-energy substrates such as polyethylene, polypropylene, polyester; suitable in inks, decorative and industrial coatings for plastic, metal and wood</td>
<td>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>31-51</td>
<td></td>
</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; suitable 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>
<td></td>
</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>
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<tr>
<td>DOWSIL™ 503W Additive</td>
<td>Silicone glycol copolymer</td>
<td>Designed to provide wetting, prevent pinholing and improve film surface appearance in solventborne and waterborne systems; suitable across a wide range of substrates, including wood and plastics</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</td>
<td>No</td>
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<tr>
<td>Texturing (Matting and/or Tactile Effects)</td>
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<tr>
<td>DOWSIL™ 23 N Additive</td>
<td>Powder consisting of transparent spherical silicone elastomer particles with epoxy functionality; average particle diameter of 1-3 microns</td>
<td>Imparts mar and abrasion resistance with a smooth, matte finish to waterborne and solventborne coatings</td>
<td>Waterborne and solventborne acrylate, polyurethane</td>
<td>Best added to a portion of the resin/solvent system under high shear conditions prior to blending into the final formulation</td>
<td>0.5-5.0%</td>
<td>Solvents such as glycols, glycol ethers, alcohols, water with cosolvents such as acetone</td>
<td>Epoxy</td>
<td>None</td>
<td>NA</td>
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<tr>
<td>DOWSIL™ 33 Additive</td>
<td>Waterborne suspension of spherical silicone elastomer particles with epoxy functionality; median particle diameter of 3-4 microns; 46% active</td>
<td>Imparts a silky, smooth, matte finish to waterborne coatings</td>
<td>Waterborne acrylate, polyurethane</td>
<td>Post add</td>
<td>2-10%</td>
<td>Water</td>
<td>Epoxy</td>
<td>Water</td>
<td>&lt;150</td>
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<tr>
<td>DOWSIL™ 61 Paste Additive</td>
<td>10% silicone in solvent</td>
<td>Imparts a hammer tone finish to metal surfaces</td>
<td>Primarily solventborne; some waterborne</td>
<td>Final thinning stage or prior to let-down</td>
<td>0.05-0.5%</td>
<td>Aromatic solvents such as xylene or toluene, mineral spirits, or ketones</td>
<td>None</td>
<td>Ethylbenzene, xylene</td>
<td>120</td>
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</tr>
<tr>
<td>DOWSIL™ 601T Additive</td>
<td>Free flowing silicone elastomeric powder</td>
<td>Can be easily dispersed in water and solvent; provides smooth and silky feel in water and solvent based finishing formulation</td>
<td>WB and SB (acrylic/PU)</td>
<td>Let-down</td>
<td>5-30%</td>
<td>Water, solvents, alcohol, glycol ethers</td>
<td>None</td>
<td>None</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>DOWSIL™ 603T Additive</td>
<td>Silicone elastomeric powder with methacryloxy functionality</td>
<td>Can be dispersed in solvent or water based binder and provide a smooth surface; suitable in UV curing formulations</td>
<td>WB and SB (Acrylic/PU)</td>
<td>Let-down</td>
<td>5-30%</td>
<td>Water, solvents, alcohol, glycol ethers</td>
<td>Meth-acryloxy</td>
<td>None</td>
<td>NA</td>
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</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.

EU Legislation – Visit our EH&S Portal at consumer.dow.com to obtain food contact regulatory status 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 paperboard components; 177 (177.130, 177.200, 177.120(b)) Indirect food additives: polymers.
Additive Selection Tree for Coatings Applications

**SOLVENTLESS UV-CURE/EB-CURE SYSTEM**

**START**

**FDA COMPLIANT**

- DOWSIL™ 7 Additive
- DOWSIL™ 27 Additive
- DOWSIL™ 51 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 62 Additive
- DOWSIL™ 71 Additive
- DOWSIL™ 74 Additive
- DOWSIL™ Z-6121 Silane
- XIAMETER™ OFS-6011 Silane
- XIAMETER™ OFS-6020 Silane
- XIAMETER™ OFS-6030 Silane
- XIAMETER™ OFS-6032 Silane
- XIAMETER™ OFS-6040 Silane

**SOLVENT systems**

**Leveling**

- DOWSIL™ 3 Additive
- DOWSIL™ 11 Additive
- DOWSIL™ 14 Additive
- DOWSIL™ 56 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive
- DOWSIL™ 6226 Additive
- DOWSIL™ 503W Additive

**Mar resistance/ slip**

- DOWSIL™ 11 Additive
- DOWSIL™ 14 Additive
- DOWSIL™ 29 Additive
- DOWSIL™ 54 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 205SL Additive

**Foam Control**

- DOWSIL™ 7 Additive
- DOWSIL™ 10F Additive
- DOWSIL™ 29 Additive
- DOWSIL™ 801T Additive
- DOWSIL™ 603T Additive

**Pigment Treatment**

- DOWSIL™ 3 Additive
- DOWSIL™ 700P Additive
- XIAMETER™ OFS-6050 Silane
- XIAMETER™ OFS-6030 Silane
- XIAMETER™ OFS-6040 Silane

**Gloss**

- DOWSIL™ 57 Additive

**Texturing**

- DOWSIL™ 23 N Additive
- DOWSIL™ 801T Additive
- DOWSIL™ 603T Additive

**Wetting**

- DOWSIL™ 57 Additive
- DOWSIL™ 603W Additive

**Water resistance**

- DOWSIL™ 88 Additive

**Release**

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

**WATERBORNE SYSTEM**

**Leveling**

- DOWSIL™ 18 Additive
- DOWSIL™ 23 N Additive
- DOWSIL™ 56 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive
- DOWSIL™ 402LS Additive
- DOWSIL™ 8526 Additive

**Mar resistance/ slip**

- DOWSIL™ 11 Additive
- DOWSIL™ 18 Additive
- DOWSIL™ 27 Additive
- DOWSIL™ 51 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 205SL Additive
- DOWSIL™ 2105 Additive

**Foam Control**

- DOWSIL™ 10F Additive
- DOWSIL™ 62 Additive
- DOWSIL™ 68 Additive
- DOWSIL™ 71 Additive
- DOWSIL™ 74 Additive
- DOWSIL™ 8526 Additive

**Pigment Treatment**

- XIAMETER™ OFS-6011 Silane
- XIAMETER™ OFS-6020 Silane
- XIAMETER™ OFS-6040 Silane

**Texturing**

- DOWSIL™ 23 N Additive
- DOWSIL™ 33 Additive
- DOWSIL™ 601T Additive
- DOWSIL™ 603T Additive
- DOWSIL™ 8526 Additive

**Wetting**

- DOWSIL™ 84 Additive
- DOWSIL™ 87 Additive
- DOWSIL™ 88 Additive
- DOWSIL™ 911H Additive
- DOWSIL™ 902H Additive

**Water resistance**

- DOWSIL™ 84 Additive
- DOWSIL™ 87 Additive
- DOWSIL™ 88 Additive
- DOWSIL™ 911H Additive
- DOWSIL™ 902H Additive

**Release**

- DOWSIL™ ST 114 Paint Additive

1 50% active in ethylene glycol isopropyl ether.

**Bold** = top product choices

pg 10
**Foam Control Additive Selection Tree for Coatings Applications**

**START**

**FDA COMPLIANT**

**SOLVENTLESS UV-CURE/EB-CURE SYSTEM**

**SOLVENTBORNE**

**SOLVENT SYSTEMS**

**WATERBORNE SYSTEMS**

**WATERBORNE**

**<60% PVC³ PAINTS AND INKS**

**>60% PVC³ PAINTS**

**EMULSIONS**

**SELF-DISPERSIBLE COMPOUNDS**

**EMULSIONS**

**Recommended Use Level**

<table>
<thead>
<tr>
<th></th>
<th>DOWSIL™ 71 Additive</th>
<th>DOWSIL™ 68 Additive</th>
<th>DOWSIL™ 8590 Additive</th>
<th>DOWSIL™ 8603 Additive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grind</td>
<td>0.1-0.5%</td>
<td>0.1-0.4%</td>
<td>0.05-0.2%</td>
<td>0.05-0.2%</td>
</tr>
<tr>
<td>Letdown</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
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<tr>
<td>Pigmented Coatings</td>
<td>⬤ ⬤ ⬤</td>
<td>⬤ ⬤ ⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>Clear Coatings</td>
<td>⬤ Good</td>
<td>⬤ Better</td>
<td>⬤ Best</td>
<td></td>
</tr>
</tbody>
</table>

1 50% active in ethylene glycol isopropyl ether.
2 1% active in diisobutyl ketone.
3 Pigment volume concentration.

150% active in ethylene glycol isopropyl ether.
21% active in diisobutyl ketone.
3 Pigment volume concentration.
Mar-Resistant/Slip Additive Selection Tree for Coatings Applications

TO IMPROVE WETTING, COMBINE WITH

- DOWSIL™ 57 Additive

BEST MAR RESISTANCE AND SLIP

- DOWSIL™ 18 Additive

LOW FOAM

- DOWSIL™ 54 Additive

SOLVENTBORNE

- DOWSIL™ 11 Additive
- DOWSIL™ 14 Additive
- DOWSIL™ 18 Additive
- DOWSIL™ 29 Additive
- DOWSIL™ 54 Additive
- DOWSIL™ 59 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 205SL Additive
- DOWSIL™ 401LS Additive

HAND FEEL WITH DEFOAMING

- DOWSIL™ 205SL Additive

MULTIPURPOSE; MAY ALSO IMPROVE WETTING AND LEVELING

- DOWSIL™ 27 Additive
- DOWSIL™ 51 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 57 Additive

FDA COMPLIANT

- DOWSIL™ 29 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 51 Additive
- DOWSIL™ 14 Additive

RECOATABLE

- DOWSIL™ 11 Additive

BEST LEVELING AND WETTING

- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive

MULTIPURPOSE; MAY ALSO IMPROVE WETTING AND LEVELING

- DOWSIL™ 29 Additive
- DOWSIL™ 57 Additive

BEST MAR RESISTANCE AND SLIP

- DOWSIL™ 18 Additive
- DOWSIL™ 27 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 8526 Additive

ANTI-BLOCKING

- DOWSIL™ 18 Additive
- DOWSIL™ 52 Additive

BEST WETTING

- DOWSIL™ 57 Additive
- DOWSIL™ 52 Additive

DEFOAMING

- DOWSIL™ 205SL Additive

HAND FEEL

- DOWSIL™ 52 Additive

WATERBORNE

- DOWSIL™ 14 Additive
- DOWSIL™ 27 Additive
- DOWSIL™ 29 Additive
- DOWSIL™ 51 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 205SL Additive
- DOWSIL™ 401LS Additive

MULTIPURPOSE; MAY ALSO IMPROVE WETTING AND LEVELING

- DOWSIL™ 14 Additive
- DOWSIL™ 27 Additive
- DOWSIL™ 29 Additive
- DOWSIL™ 51 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive
- DOWSIL™ 402LS Additive

ANTI-BLOCKING

- DOWSIL™ 51 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 402LS Additive
- DOWSIL™ 29 Additive

BEST LEVELING AND WETTING

- DOWSIL™ 57 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive
- DOWSIL™ 402LS Additive

TO IMPROVE WETTING, COMBINE WITH

- DOWSIL™ 67 Additive
- DOWSIL™ 500W Additive
- DOWSIL™ 501W Additive
- DOWSIL™ 502W Additive
- DOWSIL™ 503W Additive

EASY TO INCORPORATE

- DOWSIL™ 52 Additive
- DOWSIL™ 210S Additive

FDA COMPLIANT

- DOWSIL™ 29 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 51 Additive
- DOWSIL™ 14 Additive

RECOATABLE

- DOWSIL™ 11 Additive

BEST LEVELING AND WETTING

- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive

MULTIPURPOSE; MAY ALSO IMPROVE WETTING AND LEVELING

- DOWSIL™ 29 Additive
- DOWSIL™ 57 Additive

BEST MAR RESISTANCE AND SLIP

- DOWSIL™ 18 Additive
- DOWSIL™ 27 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 8526 Additive

ANTI-BLOCKING

- DOWSIL™ 18 Additive
- DOWSIL™ 52 Additive

BEST WETTING

- DOWSIL™ 57 Additive
- DOWSIL™ 52 Additive

DEFOAMING

- DOWSIL™ 205SL Additive

HAND FEEL

- DOWSIL™ 52 Additive

WATERBORNE

- DOWSIL™ 14 Additive
- DOWSIL™ 27 Additive
- DOWSIL™ 29 Additive
- DOWSIL™ 51 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 205SL Additive
- DOWSIL™ 401LS Additive

MULTIPURPOSE; MAY ALSO IMPROVE WETTING AND LEVELING

- DOWSIL™ 14 Additive
- DOWSIL™ 27 Additive
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- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive
- DOWSIL™ 402LS Additive

ANTI-BLOCKING

- DOWSIL™ 51 Additive
- DOWSIL™ 52 Additive
- DOWSIL™ 402LS Additive
- DOWSIL™ 29 Additive

BEST LEVELING AND WETTING

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TO IMPROVE WETTING, COMBINE WITH

- DOWSIL™ 67 Additive
- DOWSIL™ 500W Additive
- DOWSIL™ 501W Additive
- DOWSIL™ 502W Additive
- DOWSIL™ 503W Additive

EASY TO INCORPORATE

- DOWSIL™ 52 Additive
- DOWSIL™ 210S Additive
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™ 14 Additive
- DOWSIL™ 29 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive
- DOWSIL™ 8526 Additive

FDA COMPLIANT
- DOWSIL™ 57 Additive

LEVELING WITH NO SLIP
- DOWSIL™ 3 Additive

SOLVENTBONE
- DOWSIL™ 3 Additive
- DOWSIL™ 11 Additive
- DOWSIL™ 14 Additive
- DOWSIL™ 29 Additive
- DOWSIL™ 55 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 66 Additive
- DOWSIL™ 401LS Additive
- DOWSIL™ 8526 Additive

ELIMINATES MICROFOAM;
GOOD THERMAL STABILITY;
AIDS METALLIC PIGMENT ORIENTATION
- DOWSIL™ 56 Additive

SOLVENTLESS UV-CURE/EB-CURE SYSTEM
- DOWSIL™ 29 Additive
- DOWSIL™ 57 Additive
- DOWSIL™ 401LS Additive
- DOWSIL™ 501W Additive
- DOWSIL™ 502W Additive
- DOWSIL™ 8526 Additive

LITTLE OR NO INCREASE IN SLIP
- DOWSIL™ 57 Additive
- DOWSIL™ 8526 Additive

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

LITTLE OR NO IMPACT ON SLIP
- DOWSIL™ 67 Additive
- DOWSIL™ 500W Additive
- DOWSIL™ 501W Additive
- DOWSIL™ 502W Additive
- DOWSIL™ 503W 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
Table 2. Additive Selection Table

Use this chart to identify the additives that meet your performance requirements.

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1Availability may be limited by region
Table 2. Additive Selection Table (continued)

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