



Dow Corning® brand Slip and Leveling Family

Dow Corning® 205SL Additive, Dow Corning® 204SL Additive, Dow Corning® 401LS Additive and Dow Corning® 402LS Additive

Providing Leveling and Slip with Good Recoatability in Multiple Resin Systems, Resulting in a Distinguishing Hand Feel

While the appearance and protective ability of wood, furniture and plastic coatings or overprint varnishes are primary performance differentiators, end customers also appreciate a surface that has a pleasing hand feel. Formulating such coatings can be a challenge, though, as unwanted foam stabilization and decreased recoatability often accompany excellent slip and hand feel performance. This new family of slip and leveling agents provides an effective and customer-tailored solution to this difficult problem.

New Multifunctional Additives for Multiple Applications

Because hand feel is an important characteristic of all types of wood, furniture and plastic coatings, additives have been designed to work effectively in solventborne, radiation cured and waterborne coatings applied to these various surfaces. Depending on the requirements of the formulator, the selected additive is soluble in organic solvents, easy to dilute in radiation curable monomers or readily dispersed in water. As a result, formulators can reduce the number of additives required in their raw material portfolios.

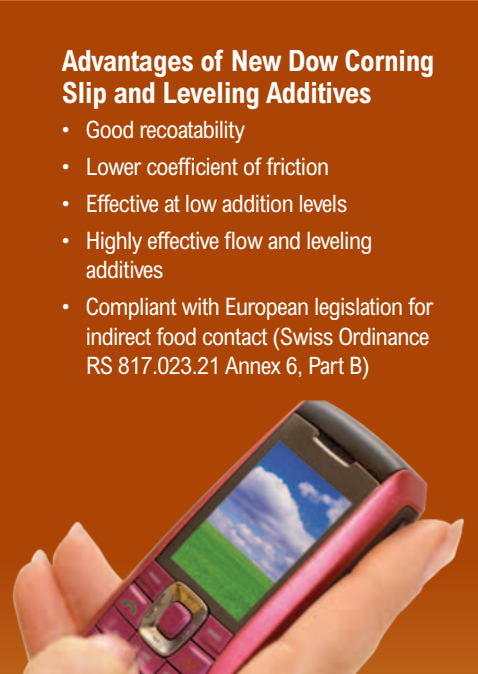
Different end applications require different products with differentiated performances, not only during processing, but also in the end result on the final object. A formulator therefore requires a range of materials to choose from to optimize the performance of the product to match the required end properties.

This family of additives allows the paint and ink maker to fine-tune formulations and tweak them for desired performance. Each individual product has primary benefits that deliver the key performance in a formulation. However, the final choice also will depend on its secondary attributes to reflect the exact combination of properties that is required.

Primary Benefit: Slip

Dow Corning® 205SL Additive is a high-performance product that gives excellent hand feel in multiple coating formulations at low addition levels. This additive also functions as an antifoam, bringing both enabling and problem-solving benefits to the formulator and reducing the amount of additives required in the formulation.

Dow Corning® 204SL Additive is an additive offering the formulator best-in-class slip performance in radiation curable coatings of the product family and versus leading competitor additives, with good leveling properties and without compromise on recoatability. A 100% silicone polyether copolymer, this allows for low VOC, low addition levels and formulation flexibility.



Power Up
YOUR COATINGS

Advantages of New Dow Corning Slip and Leveling Additives

- Good recoatability
- Lower coefficient of friction
- Effective at low addition levels
- Highly effective flow and leveling additives
- Compliant with European legislation for indirect food contact (Swiss Ordinance RS 817.023.21 Annex 6, Part B)

Primary Benefit: Leveling

Dow Corning[®] 401LS Additive brings excellent wetting and leveling properties, which can positively impact film appearance. And it achieves these results at use levels as low as 0.075% based on total formulation, further increasing its cost-effectiveness. Where some additives impact coating clarity (due to incompatibility) and recoatability, *Dow Corning* 401LS Additive has no impact on these properties.

Lower Coefficient of Friction for Better Slip and Hand Feel

Dow Corning 205SL Additive and *Dow Corning* 204SL Additive provide improved slip at the coating surface by effectively reducing the coefficient of friction (CoF) when compared to other competitor materials and to *Dow Corning*[®] 57 Additive.

The resulting slippery surface translates into improved hand feel, which can be directly appreciated by the end customer.

Improved Leveling and Wetting for Noticeable Results

Dow Corning 401LS Additive acts effectively to promote film leveling, giving performance comparable to or better than other products currently on the market. In UV cured coatings, for example, the wetting ability of *Dow Corning* 401LS Additive also can eliminate cratering.

Dow Corning 57 Additive and *Dow Corning*[®] 402LS Additive complete the family of additives. Both are standard *Dow Corning*[®] products for leveling.



Table 1: Properties of *Dow Corning*[®] 205SL Additive, *Dow Corning*[®] 204SL Additive, *Dow Corning*[®] 401LS Additive and *Dow Corning*[®] 402LS Additive.

Property	Appearance	Viscosity at 25°C (77°F), mm ² /s
<i>Dow Corning</i> [®] 205SL Additive	Colorless to pale tan, transparent liquid	25-60
<i>Dow Corning</i> [®] 204SL Additive	Clear to slightly hazy, colorless to light amber liquid	100-150
<i>Dow Corning</i> [®] 401LS Additive	Clear to hazy liquid	100-250
<i>Dow Corning</i> [®] 402LS Additive	Clear to hazy liquid	280-400

Table 2: Primary and secondary benefits of *Dow Corning*[®] slip and leveling additives.

	Solventless UV					Solventborne				
	Leveling	Slip	Hand Feel	Defoaming	Recoatability	Leveling	Slip	Hand Feel	Defoaming	Recoatability
<i>Dow Corning</i> [®] 205SL Additive	Secondary	Primary	Secondary	Secondary	Secondary	Secondary	Primary	Secondary	Secondary	Secondary
<i>Dow Corning</i> [®] 204SL Additive	Secondary	Primary	Secondary	Secondary	Secondary	Secondary	Primary	Secondary	Secondary	Secondary
<i>Dow Corning</i> [®] 401LS Additive	Secondary	Secondary	Secondary	Secondary	Secondary	Primary	Secondary	Secondary	Secondary	Primary
<i>Dow Corning</i> [®] 57 Additive	Primary	Secondary	Secondary	Secondary	Secondary	Primary	Secondary	Secondary	Secondary	Primary
<i>Dow Corning</i> [®] 402LS Additive	Secondary	Secondary	Secondary	Secondary	Secondary	Primary	Secondary	Secondary	Secondary	Secondary

■ Primary benefit ■ Secondary benefit

Maintaining Recoatability for High Performance

Recoatability often is a problem when slip additives are included in a coating formulation. *Dow Corning* 205SL Additive, *Dow Corning* 204SL Additive and *Dow Corning* 401LS Additive overcome this problem. Laboratory studies have shown that at recommended use level, these additives reduce the coefficient of friction without negatively affecting recoatability, regardless of formulation type.

Figure 1: Dynamic coefficient of friction, leveling and recoatability of a UV cure, solventless, acrylate-based varnish containing various *Dow Corning*[®] additives versus competitor additives. Additives were added at 0.2% by weight in the total formulation.

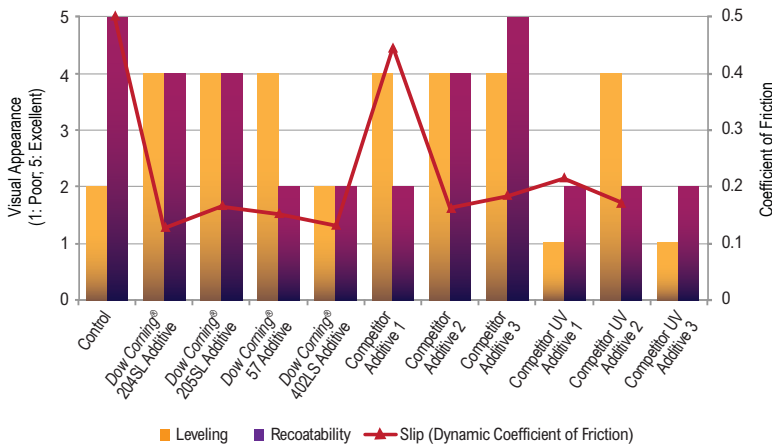
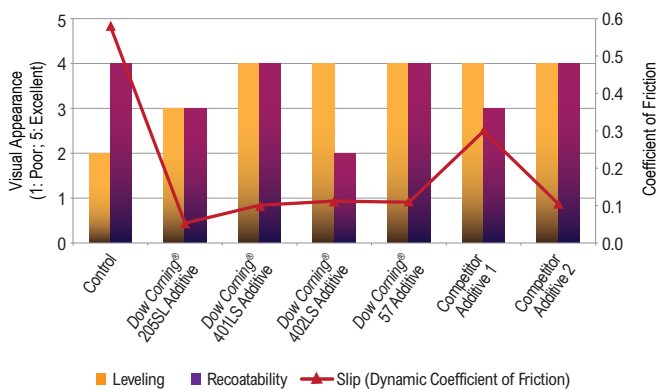


Figure 3: Dynamic coefficient of friction, leveling and recoatability of a solventborne, 2K PU wood coating containing various *Dow Corning*[®] additives versus competitor additives. Additives were added at 0.2% by weight in the total formulation.



Less Foam for Improved Appearance

Typically, silicone polyether copolymers act as surfactants in coating systems, stabilizing foam during processing and application. *Dow Corning* 205SL Additive and *Dow Corning* 401LS Additive, however, minimize foam stabilization. *Dow Corning* 205SL Additive even functions as an antifoam, bringing both enabling and problem-solving benefits to the formulator and reducing the amount of additives required in the formulation. By adding *Dow Corning* 401LS Additive, the coating will generate less foam during manufacturing and also will cause fewer defects during application.

Figure 2: Hand feel and defoaming properties of various *Dow Corning*[®] additives versus competitor additives in a UV cure, solventless, acrylate-based varnish. Additives were added at 0.2% by weight in the total formulation.

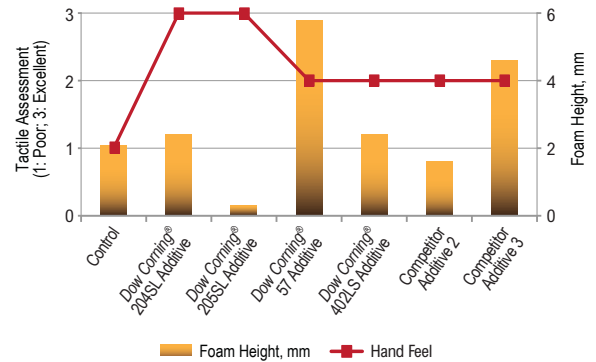
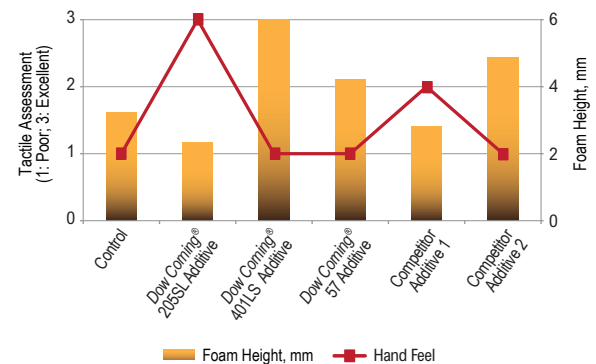


Figure 4: Hand feel and defoaming properties of various *Dow Corning*[®] additives versus competitor additives in a solventborne, 2K PU wood coating. Additives were added at 0.2% by weight in the total formulation.



More Than Additives

Our innovative, silicon-based enabling technologies can help you infuse your products with high-value performance attributes that will give you a competitive advantage in the marketplace. As a leader and innovator with a long history of success in the industry, Dow Corning's performance-enhancing coating technology platforms are well-aligned to the needs of the increasingly competitive global coatings market. Consider what adding the following enabling technologies could do to improve your products' performance and support your business goals:

- Gloss enhancement
- Mar resistance and slip
- Impact deadening
- UV resistance
- Feel and touch
- Heat and temperature resistance
- Water resistance
- Antifouling

For More Information

Visit dowcorning.com/powerup or email us at coatings@dowcorning.com to learn how Dow Corning's innovative coatings technology platforms can help you power up your product line.

Dow Corning® 205SL Additive, Dow Corning® 204SL Additive and Dow Corning® 401LS Additive

- Compliant with European legislation for indirect food contact (Swiss Ordinance RS 817.023.21 Annex 6, Part B)
- Good recoatability
- Lowers coefficient of friction
- Effective at low addition levels
- Highly effective flow and leveling additives

Dow Corning® 205SL Additive

- Superior hand feel modifier for multiple delivery coating systems
- Foam control
- BTX-free
- Very low freeze point for easy storage

Dow Corning® 204SL Additive

- Superior hand feel modifier
- BTX- and VOC-free
- Low freeze point for easy storage

Dow Corning® 401LS Additive

- Also improves wetting
- Superior compatibility for clear coats
- BTX- and VOC-free

Photos: Page 1: AV16985, AV11681; Page 2: AV17007

HANDLING PRECAUTIONS

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE DOW CORNING WEBSITE AT DOWCORNING.COM, OR FROM YOUR DOW CORNING SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CORNING CUSTOMER SERVICE.

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