Technical Data Sheet

DOWSIL™ 65 Additive

Water-based silicone defoamer for ink and coating applications

Features & Benefits

- Provides defoaming in ink and coating applications
- Improves leveling, wetting, mar resistance and slip

Composition

- Milk-white, creamy emulsion
- Water-based silicone antifoam

Applications

- DOWSIL™ 65 Additive can be used to provide defoaming and improve leveling, wetting, mar resistance and slip. See Table 1 for industrial applications in which DOWSIL™ 65 Additive has been successfully used.

Table 1: Industrial Applications for DOWSIL™ 65 Additive[1]

To provide defoaming:	
Ink	Water-based flexographic ink at 0.05–0.5%
	Water-based gravure ink at 0.1–0.5%
	Water-based screen printing ink at 0.05–0.1%
	Solvent-based flexographic ink at 0.05–0.1%
Paint	Water-based paint at 0.05–0.2% typical. Can be as low as < 0.05 or as high as 0.5–1.0%
To improve leveling and wetting:	
Ink	Water-based flexographic ink at 0.05–0.1%
Coating	Water-based wood coating at 0.5–1.0%
Paint	Water-based paint at 0.1–0.15%
To improve mar resistance and slip:	
Paint	Solvent-based paint at 0.05–0.1%

1. All usage levels are weight percent based on the total formulation.

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
Appearance		Milk-white liquid
Active component	percent	59
Diluent		Water
Flash point, closed cup	°C (°F)	> 101 (> 214)
Viscosity at 25°C (77°F)	cs	2000
Specific gravity at 25°C (77°F)		1.0

How to Use

DOWSIL™ 65 Additive is effective at low concentrations. The amount required depends on type of formulation, the solvent it contains, resin system and total system solids. DOWSIL™ 65 Additive is generally effective at concentrations ranging from 0.05 to 3.0 weight percent, based upon total formulation. This product can be added during the grind, let down or be post-added.

Characteristics may vary when used with different systems and formulations. DOWSIL™ 65 Additive is compatible with acrylic, alkyd, amide, epoxy, nitrocellulose, polyester, polyurethane and vinyl systems. Thorough preproduction testing is necessary to ensure expected performance.

Results of Water-based Flexographic Ink Study

This data is based on a laboratory study. The control consisted of the formulation with no additives added.

In Formulation 1, DOWSIL™ 65 Additive gave an 85 percent retention in density after shearing, which was 31.8 percent more effective than the control. This performance was achieved with a minimal change in 85° gloss and appearance. In addition to defoaming performance, DOWSIL™ 65 Additive provided a 16.9 percent improvement in mar resistance over the control. Results are shown in Figures 1 and 2.

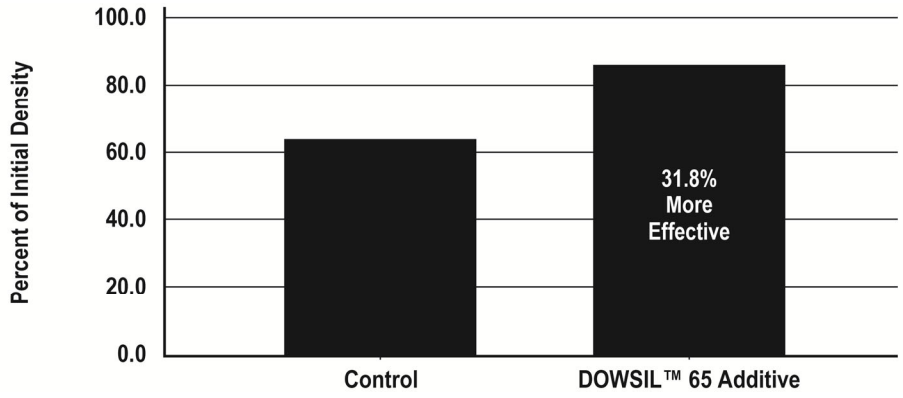

Figure 1: Defoaming Performance in Formulation 1 - Density Measured Immediately after Shaking

Results of Water-based Flexographic Ink Study (Cont.)

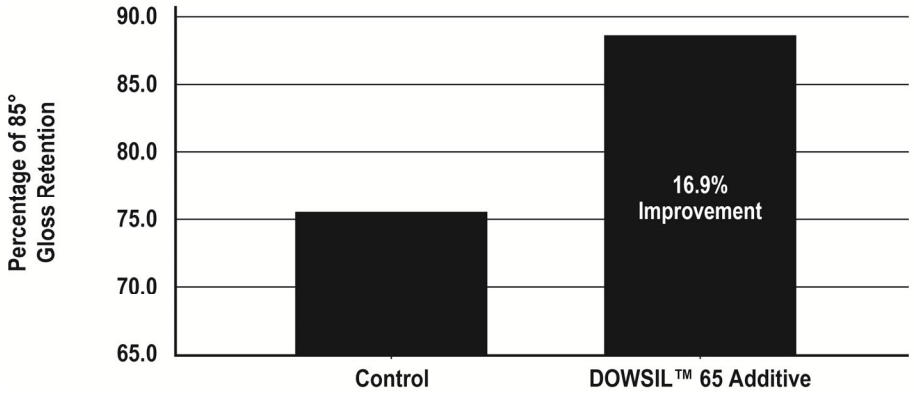

Figure 2: Mar Resistance Performance in Formulation 1

Results of Architectural Latex Paint Study

This data is based on a laboratory study. The control consisted of the formulation with no additives.

In Formulation 2, DOWSIL™ 65 Additive gave a 91.6 percent retention in density after shearing, which was 76.8 percent more effective than the control. This performance was achieved with a minimal change in 60° gloss and appearance. Results are shown in Figure 3.

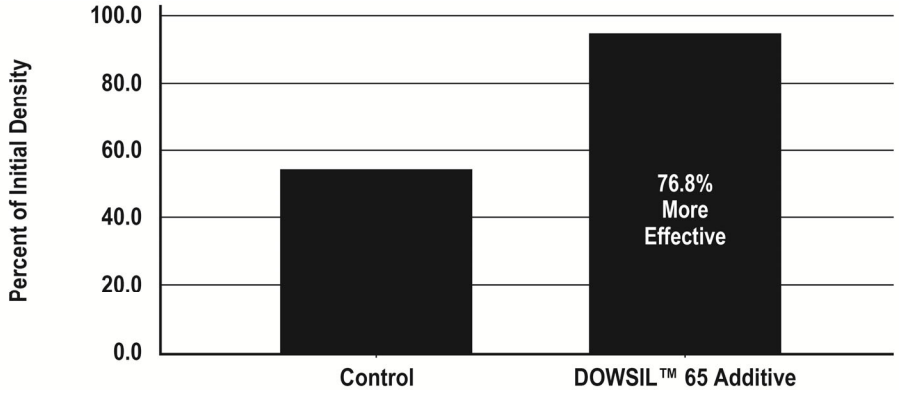

Figure 3: Defoaming Performance in Formulation 2 - Density Measured Immediately after Shaking

Test Conditions

Formulations

DOWSIL™ 65 Additive was tested in two water-based systems. Formulation 1 was a water-based, flexographic ink and Formulation 2 was an architectural, latex, semi-gloss paint.

Formulation 1 consisted of a non-film-forming, styrene-acrylic resin for paper and paperboard. DOWSIL™ 65 Additive, at 0.5 weight percent, based on actives, was post-added at 1200 rpm.

Test Conditions (Cont.)

Formulations (Cont.)

Formulation 1

Ingredient	Percent
Joncryl 87	45.5
Flexiverse Diarylide Yellow Dispersant	52.9
Water	1.6

Formulation 2 was based on Union Carbide Formulation Suggestion E-2458, Quality White Exterior Trim Paint, using an acrylic polymer. DOWSIL™ 65 Additive, at 0.05 weight percent based on actives, was post-added at 2100 rpm

Formulation 2

Ingredient	Percent
Water	9.10
UCAR Polyphobe 102 Rheology Modifier	0.99
Aqueous Ammonium Hydroxide, 28%	0.17
Propylene glycol	5.50
Nuosept 95	0.21
Tamol 1124	0.67
Triton Nonionic Surfactant N-57	0.19
Tronox CR-828	22.75
Polygloss 90	2.27
Water	0.76
UCAR Polyphobe 102 Rheology Modifier	0.79
Water	4.13
Diethylene Glycol Monobutyl Ether	1.89
UCAR™ Filmer IBT	0.94
UCAR Latex 626	45.88
Troysan Polyphase AF-1	0.66
Triton Anionic Surfactant GR-7M	0.10
Aqueous Ammonium Hydroxide, 28%	2.98

Drawdowns

Formulation 1 – On a NWH Leneta chart using a #6 wire wound rod.

Formulation 2 – On a 3B Leneta chart using a 3 mil side of an 8 path wet film applicator.

Test Conditions (Cont.)

Defoaming

Formulation 1 – Shearing the ink at 3500 rpm for 20 minutes. The density was measured immediately after shearing and compared to the initial density. The higher the percentage retention in density, the more effective a defoamer is at eliminating the air entrapped during shearing.

Formulation 2 – Shaking the paint for 5 minutes on a Red Devil Shaker, Model Number 5410-02.

Mar Resistance

Using the Sutherland Rub Tester, the sample was rubbed against the white portion of a N2C Leneta chart for 100 double rubs using the four pound test block. 85° gloss was measured before and after the marring. The higher the percent retention in gloss, the more effective an additive is in protecting the coating/ink.

Handling Precautions

Caution: Direct contact with eyes may cause moderate irritation. Mist may irritate nose and throat.

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

Usable Life and Storage

When stored between 2 and 45°C (35 and 113°F), DOWSIL™ 65 Additive has a shelf life of 24 months from date of manufacture. Refer to product packaging for “Use By” date.

Packaging Information

DOWSIL™ 65 Additive is available in 4 oz (113.4 g) samples, 40 and 441 lb (18.1 and 200 kg) containers.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Shipping Limitations

CLASS 1: Freezable Product. Do not freeze.

Health and Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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