Dow Industrial Solutions

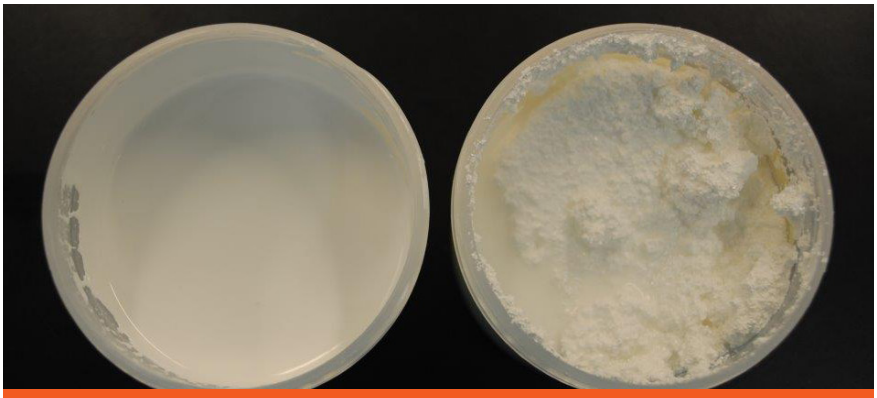
Low-VOC Freeze-Thaw Additive for Coatings Formulations

Temperature Resistance for Stable Viscosity in Water-Based Paints

DOWANOL™ EPh6 Glycol Ether

Choosing the right solvent can optimize stability and performance of water-based coatings while also allowing formulators to meet evolving environmental expectations. **DOWANOL™ EPh6 Glycol Ether** contributes improved freeze-thaw stability in high quality paints and enables the reduction of volatile organic content (VOC) as compared to propylene glycol (PG) .

Paint with DOWANOL™ EPh6 Glycol Ether passes five cycles of freeze-thaw testing at -12 °C, while paint formulated with PG fails after the first cycle (photos, right).



Paint Formulation w/ DOWANOL™ EPh6 GE **Paint Formulation w/ PG**

Key Features:

- Effective freeze-thaw additive at concentrations greater than 4wt% based on resin solids
- Listed as non-VOC and acceptable for consumer applications in the U.S. by the California Air Resource Board (CARB) and in the EU by ISO-16000-6
- Low typical VOC concentration of <5% by the U.S. EPA Method 24 and ASTM D6886
- Non-APE chemistry
- Combines solvent and surfactant properties
- Increases gloss and scrub resistance observed when used in combination with DOWANOL™ LoV 485 Glycol Ether, a low VOC coalescent

Performance Properties Observed at 5% Additive Concentration and 8% Coalescent Based on Resin Solids (RHOPLEX™ SG-10AF, 100% Acrylic Binder)

Freeze-Thaw Additive	Propylene Glycol	DOWANOL™ EPh6 Glycol Ether	Competitive Low VOC F/T Additive
Low-VOC	--	+	+
Gloss	=	+	+
Scrub Resistance	=	+	-
Hiding	=	=	=
Water Resistance	=	=	=
Adhesion	+	+	+
Hardness	=	-	-

Freeze-Thaw Stability Testing Performance at -12 °C using RHOPLEX™ SG-10AF, 100% Acrylic Binder

Freeze-Thaw Additive (wt%, based on resin solids)	Coalescent (8wt%, based on resin solids)	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
Propylene Glycol						
8	UCAR™ Filmer IBT	FAIL	FAIL	FAIL	FAIL	FAIL
DOWANOL™ EPh6						
4	UCAR™ Filmer IBT	PASS	FAIL	FAIL	FAIL	FAIL
5		PASS	PASS	PASS	PASS	PASS
6		PASS	PASS	PASS	PASS	PASS
8		PASS	PASS	PASS	PASS	PASS
DOWANOL™ EPh6						
4	DOWANOL™ LoV 485 GE	PASS	FAIL	FAIL	FAIL	FAIL
5		PASS	PASS	PASS	PASS	PASS
6		PASS	PASS	PASS	PASS	PASS
8		PASS	PASS	PASS	PASS	PASS

Pass/failure determined by sample appearance and/or viscosity.

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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