

EBECRYL[®] 893

Modified Polyester Acrylate

INTRODUCTION

EBECRYL 893 is a modified polyester acrylate specifically developed for UV curable field applied concrete and vinyl composition tile (VCT) floor coatings. EBECRYL 893 provides resistance to yellowing upon cure and over its lifetime. The low viscosity of EBECRYL 893 also provides latitude to achieve low viscosity formulations, which are required for field applied applications. Concrete and VCT coatings based on EBECRYL 893 provide a good balance of properties such as cure speed, adhesion, hardness, and scratch resistance. Good chemical and solvent resistance and high gloss are also obtained with concrete and VCT coatings based on EBECRYL 893.

PERFORMANCE HIGHLIGHTS

- Resistance to yellowing upon cure and over time
- Low viscosity
- Good cure response
- Good chemical and solvent resistance

The actual performance of UV/EB cured products also depends on the selection of other formulation components such as reactive diluents, additives and photoinitiators.

SUGGESTED APPLICATIONS

EBECRYL 893 is recommended for use in UV curable field applied concrete and VCT coatings.

STARTING POINT FORMULATION FOR VCT

VCT	%	PROPERTY/VALUE
EBECRYL 893	50.00	Coating Performance
NPG(PO) ₂ DA ⁽¹⁾ or EBECRYL 145	14.96	Viscosity Reduction
DPGDA ⁽¹⁾	30.00	Viscosity Reduction
DAROCUR [®] MBF ⁽²⁾	5.00	Photoinitiator
BYK [®] A-500 ⁽³⁾	0.04	Defoamer
	100.00	
VISCOSITY		75 cP
COAT WEIGHT		1-3 mils (25-75 μm)
CURE EXPOSURE		410 mJ/cm ²

(1) Product of Cytec Industries Inc.

(2) Product of BASF Corporation

(3) Product of BYK Additives & Instruments

(4) Theoretical determination based on the undiluted oligomer

(5) UV cured 160 μ thick films

(6) Product of Ineos Silicas

(7) Product of Evonik Tego Chemie GmbH

TYPICAL PROPERTIES	VALUE
Color, Gardner scale (max)	3
Appearance	Clear liquid
Viscosity at 25°C, cP	600
Density, g/ml at 25°C	1.11
Functionality, theoretical ⁽⁴⁾	3.5
Oligomer, % by weight	100
TYPICAL CURED PROPERTIES ⁽⁵⁾	
Tensile strength, psi	1422
Elongation at break, %	2.7
Young's modulus, psi	69355

PROPERTIES OF STARTING POINT FORMULATIONS

The starting point formulation is applied over sealed concrete or sealed VCT to provide improvements in aesthetics and/or adhesion. The sealer composition and the properties of the starting point formulations are shown in the following FEATURED PRODUCT SHEETS.

- “UCECOAT Resins for UV Curable Sealers for Concrete and Vinyl Composition Tile (VCT)”
- “EBECRYL 893 Resin for Field Applied UV Curable Concrete Floor Coatings”
- “EBECRYL 893 Resin for Field Applied UV Curable VCT Floor Coatings”

RHEOLOGY MODIFICATIONS

In some applications, a more thixotropic coating is required. This can be achieved by adding typical rheology modifiers, such as BYK[®] 410⁽³⁾ at 0.5-3.0 %, in combination with untreated silica, such as GASIL[®] EBN⁽⁶⁾, AEROSIL[®] 380⁽⁷⁾, or ACEMATT[®] TS-100⁽⁷⁾ at 2-3%.

STARTING POINT FORMULATION FOR CONCRETE CLEAR COATINGS

CONCRETE	%	PROPERTY/VALUE
EBECRYL 893	75.5	Coating Performance
EBECRYL 160 or TMPEOTA ⁽¹⁾	20.0	Viscosity Reduction
DAROCUR [®] MBF ⁽²⁾	3.8	Photoinitiator
TEGO [®] AIREX 920 ⁽⁷⁾	0.2	Defoamer
MODAFLOW [®] 9200 ⁽¹⁾	0.5	Wetting Agent
	100.0	
VISCOSITY		385 cP
COAT WEIGHT (1-2 coats)		6-7 mils (150-175 μm)
CURE EXPOSURE		
Partial/gel cure		390 mJ/cm ²
Full cure		580 mJ/cm ²

STARTING POINT FORMULATION FOR CONCRETE PIGMENTED COATINGS

CONCRETE	%	PROPERTY/VALUE
EBECRYL 893	67.34	Coating Performance
EBECRYL 160 or TMPEOTA ⁽¹⁾	17.90	Viscosity Reduction
DAROCUR [®] MBF ⁽²⁾	1.70	Photoinitiator
IRGACURE [®] 819 ⁽²⁾	0.85	Photoinitiator
LUCIRIN [®] TPO-L ⁽²⁾	1.70	Photoinitiator
TEGO [®] AIREX 900 ⁽⁴⁾	0.43	Defoamer
TEGO [®] FOAMEX N ⁽⁴⁾	0.43	Defoamer
BASANTOL [®] BLACK X82 ⁽²⁾	0.26	Pigment
White Pigment Paste*	8.53	Pigment
MODAFLOW [®] 9200 ⁽¹⁾	0.43	Flow & Leveling
BYK [®] 410 ⁽³⁾	0.43	Rheology Modifier
	100.00	
VISCOSITY		400 cP
COAT WEIGHT (2 coats)		4-6 mils (100-150 µm)
CURE EXPOSURE		
Partial/gel cure		580 mJ/cm ²
Full cure		830 mJ/cm ²

*White Pigment Paste: 29.5% DPGDA/ 3% EBECRYL 330/ 67.5% TiO₂ (Sachtleben[®] R210⁽⁵⁾)

STORAGE AND HANDLING

Before using EBECRYL 893, consult the **Material Safety Data Sheet** for additional information on safety and handling procedures, and recommended personal protective equipment.

The recommended storage temperature for EBECRYL 893 is 4°C to 40°C (39°F to 104°F). Care should be taken not to expose the product to high temperature conditions, direct sunlight, ignition sources, oxidizing agents, alkalis or acids. This might cause uncontrollable polymerization of the product with the generation of heat. Storage and handling should be in stainless steel, amber glass, amber polyethylene or baked phenolic lined containers. Procedures that remove or displace oxygen from the material should be avoided. Do not store this material under an oxygen free atmosphere. Dry air is recommended to displace material removed from the container.

PRECAUTIONS

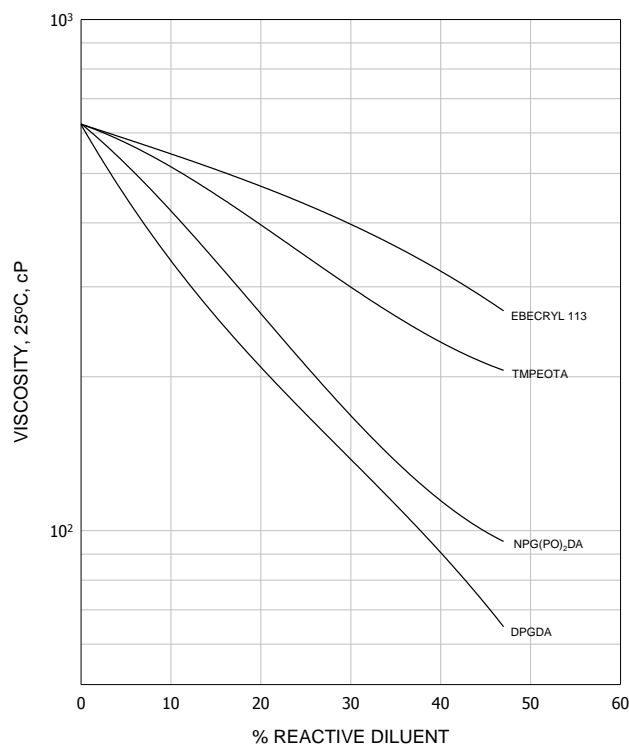
Avoid contact with eyes, skin and clothing. Direct contact with this material may cause moderate eye and skin irritation. Repeated or prolonged dermal contact may cause allergic skin reactions. Wash thoroughly after handling. Use with adequate ventilation. Keep container closed.

Please refer to the Cytec **Guide to Safety, Health and Handling of Acrylate Oligomers and Monomers** for additional information on the safe handling of acrylates.

VISCOSITY REDUCTION

Graph I shows the viscosity reduction of EBECRYL 893 with several of the recommended diluents for concrete and VCT coatings: dipropylene glycol diacrylate (DPGDA), propoxylated neopentyl glycol diacrylate (NPG(PO)₂DA), ethoxylated trimethylolpropane triacrylate (TMPEOTA)⁽¹⁾, and EBECRYL 113⁽¹⁾. Although viscosity reduction can be achieved with non-reactive solvents, reactive diluents are preferred because they are essentially 100 percent converted during UV/EB exposure to form a part of the coating or ink, thus reducing solvent emissions. The specific reactive diluents used will influence performance properties such as hardness and flexibility.

Graph I
EBECRYL 893
Viscosity Reduction with Reactive Diluents



- (1) Product of Cytec Industries Inc.
- (2) Product of BASF Corporation
- (3) Product of Byk Additives & Instruments
- (4) Product of Evonik Tego Chemie GmbH
- (5) Product of Sachtleben Chemie GmbH

• Email: custinfo@cytec.com Worldwide Contact Info: www.cytec.com US Toll Free: 800-652-6013 Tel: 973-357-3193 •

Cytec Industries Inc. in its own name and on behalf of its affiliated companies (collectively, "Cytec") decline any liability with respect to the use made by anyone of the information contained herein. The information contained herein represents Cytec's best knowledge thereon without constituting any express or implied guarantee or warranty of any kind (including, but not limited to, regarding the accuracy, the completeness or relevance of the data set out herein). Cytec is the sole owner or authorized user of the intellectual property rights relating to the information communicated. The information relating to the use of the products is given for information purposes only. No guarantee or warranty is provided that the product is adapted for any specific use. The user or purchaser should perform its own tests to determine the suitability for a particular purpose. The final choice of use of a product remains the sole responsibility of the user.

© 2010 Cytec Industries Inc. All rights reserved.

TRADEMARK NOTICE: The ® indicates a Registered Trademark in the United States and the ™ or * indicates a Trademark in the United States. The mark may also be registered, the subject of an application for registration or a trademark in other countries.

EBECRYL 893 - TDS 10/26/2010