

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 photo initiators.

SUGGESTED APPLICATIONS

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

SPF FOR VCT

VCT	%	PROPERTY/VALUE
EBECRYL® 893	40-60	Coating Performance
NPG(PO) ₂ DA or EBECRYL® 145	10-20	Viscosity Reduction
DPGDA	25-35	Viscosity Reduction
Photo initiator(s)	4-6	General Purpose PI
Defoamer(s) & Deaerator(s)	0.5-2	Micro and Macro Foam
Flow & Leveling Agents	0.5-2	Flow & Leveling
Rheology Modifier	0-1	Adjust Rheology
- VISCOSITY		~75 mPa.s@ 25°C
- COAT WEIGHT		1-3 mils (25-75 µm)
- CURE EXPOSURE		410 mJ/cm ²

TYPICAL PROPERTIES

Appearance	Clear liquid
Color, Gardner	max. 3
Density, g/cm ³ at 25°C	1.11
Functionality, theoretical	3.5
Oligomer, % by weight	100
Viscosity, 25°C, mPa.s	600

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	1422 (9.8)
Elongation at break, %	2.7
Young's modulus, psi (MPa)	69355 (478)

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 VCT (Vinyl Composition Tile)"
- "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⁽¹⁾ at 0.5 - 3.0 %, in combination with untreated silica, such as GASIL® EBN⁽²⁾, AEROSIL® 380⁽³⁾ or ACEMATT® TS-100⁽³⁾ at 2 - 3%. Other rheology modifiers may also be used.

- ⁽¹⁾ product of BYK Additives & Instruments
- ⁽²⁾ product of Ineos Silicas
- ⁽³⁾ product of Evonik Tego Chemie GmbH

SPF FOR CONCRETE CLEAR COATINGS

CONCRETE	%	PROPERTY/VALUE
EBECRYL® 893	70-80	Coating Performance
EBECRYL® 160 or TMPEOTA	20-30	Viscosity Reduction
Photo initiator(s)	3-8	General Purpose PI
Defoamer(s) & Deaerator(s)	0.2	Micro & Macro Foam
Flow & Wetting Agent(s)	0.5	Flow & Wetting
Rheology Modifier	0-1	Adjust Rheology
- VISCOSITY		~400 mPa.s @ 25°C
- 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

SPF FOR CONCRETE PIGMENTED COATINGS

CONCRETE	%	PROPERTY/VALUE
EBECRYL® 893	65-70	Coating Performance
EBECRYL® 160 (TMPEOTA)	15-20	Viscosity Reduction
Photo initiator(s)	3-8	Surface & Through Cure
Amine Synergist(s)	0-4	Photoinitiator
Defoamer(s) & Deaerator(s)	0.4-2	Micro & Macro Foam
Black Pigment	0.25-5	Defoamer
White Pigment Paste*	5-10	Pigment
Flow & Leveling Agent(s)	0.5-1	Flow & Leveling
Rheology Modifier	0-1	Adjust Rheology
- VISCOSITY		~400 mPa.s @ 25°C
- 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

PRECAUTIONS

Before using EBECRYL® 893, see the Safety Data Sheet (SDS) for information on the identified hazards of the material and the recommended personal protective equipment and procedures.

STORAGE AND HANDLING

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. Wash thoroughly after handling. Keep container tightly closed. Use with adequate ventilation.

See the SDS for the recommended storage temperature range for EBECRYL® 893.

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)⁽⁴⁾, propoxylated neopentyl glycol diacrylate (NPG(PO)₂DA)⁽⁴⁾, ethoxylated trimethylolpropane triacrylate (TMPEOTA)⁽⁴⁾ and EBECRYL® 113⁽⁴⁾. 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.

⁽⁴⁾ product of allnex

GRAPH I

EBECRYL® 893 - VISCOSITY REDUCTION WITH REACTIVE DILUENTS

