

AMINE MODIFIED POLYETHER ACRYLATE

INTRODUCTION

EBECRYL® 83 is an amine modified polyether acrylate that exhibits low viscosity and fast cure via exposure to ultraviolet light (UV). Films of EBECRYL® 83 cured by UV or electron beam (EB) demonstrate high gloss, solvent resistance and low residual odor. EBECRYL® 83 is especially suited to applications requiring low viscosity and fast UV cure, including overprint varnishes and flexographic inks.

PERFORMANCE HIGHLIGHTS

EBECRYL® 83 is characterized by:

- Fast cure response
- Low viscosity
- Light color

UV/EB cured products based on EBECRYL® 83 are characterized by the following performance properties:

- High gloss
- Good solvent resistance
- Low residual odor

The actual properties of UV/EB cured products also depend on the selection of other formulation components such as reactive diluents, additives, and photo initiators.

SUGGESTED APPLICATIONS

Formulated UV/EB curable products containing EBECRYL® 83 may be applied via direct or reverse roll, offset gravure, metering rod, slot die, knife over roll, air knife, curtain, immersion, vacuum, spin and spray coating methods, as well as flexographic printing. EBECRYL 83 is recommended for use in:

- Overprint varnishes
- High gloss coatings on wood, paper, plastics
- Top coats for wood
- Wood fillers
- Flexographic inks and varnishes

Table 1 compares the cure response of EBECRYL® 83 with a polyester acrylate other amine modified polyether and demonstrates the faster reactivity of amine modified polyether acrylates. EBECRYL 83 is notable for its combination of low viscosity with good reactivity.

SPECIFICATIONS

Appearance	Clear liquid
Color, Gardner	max. 2
Viscosity, 25°C, mPa·s	450 - 550

TYPICAL PHYSICAL PROPERTIES

Density, g/cm³ at 25°C	1.08
Functionality, theoretical	3.5
Weight/amine, theoretical	1368

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	2000 (14)
Elongation at break, %	13
Young's modulus, psi (MPa)	70000 (483)
Glass transition temperature, °C	6

Table 1: UV Cure Response Comparison

	A	B	C	D
EBECRYL® 810 ⁽¹⁾	100 ⁽⁵⁾	-	-	-
EBECRYL 80 ⁽¹⁾	-	100	-	-
EBECRYL® 81 ⁽¹⁾	-	-	100	-
EBECRYL® 83	-	-	-	100
Photo initiator ⁽³⁾	3	3	3	3
Photosensitizer ⁽⁴⁾	2	2	2	2
Viscosity at 25°C, mPa·s	504	3350	139	622
UV energy ⁽⁵⁾ , mJ/cm²	640	< 90	230	110
Cure speed, fpm	30	200	110	155

⁽¹⁾ product of allnex

⁽²⁾ parts by weight

⁽³⁾ 2-hydroxy-2-methyl-1-phenyl propanone

⁽⁴⁾ benzophenone

⁽⁵⁾ Coatings were applied to aluminum test panels at ~12 µm thickness and cured with one 300 watt/inch Fusion H lamp at the minimum UV energy required to achieve a mar free surface.

PRECAUTIONS

Before using EBECRYL® 83, 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® 83.