TECHNICAL DATASHEET

EBECRYL® 8807

Aliphatic Urethane Diacrylate

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EBECRYL® UV/EB Energy Curable Resins

allnex
The Coating Resins Company

INTRODUCTION

EBECRYL 8807 is an aliphatic urethane diacrylate that exhibits rapid surface cure response, light color and moderate viscosity. Films of EBECRYL 8807 cured by ultraviolet light (UV) or electron beam (EB) exhibit good flexibility, toughness, abrasion resistance, and are resistant to yellowing.

PERFORMANCE HIGHLIGHTS

EBECRYL 8807 is characterized by:

- Moderate viscosity
- Light color

UV/EB cured products based on EBECRYL 8807 are characterized by the following performance properties:

- Excellent surface cure in air
- Good flexibility and toughness
- Abrasion resistance
- Non-yellowing

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

SUGGESTED APPLICATIONS

Formulated UV/EB curable products containing EBECRYL 8807 may be applied via direct or reverse roll, offset gravure, metering rod, slot die, knife over roll, air knife, curtain and immersion coating methods. EBECRYL 8807 is recommended for use in:

- Coatings for wood, cement and composite flooring
- Adhesives or sealants cured with low intensity lamps
- Flexible coatings requiring rapid cure in air

Table I compares the surface cure response of EBECRYL 8807 with three commercial acrylated aliphatic urethanes. All were formulated to equal oligomer content. EBECRYL 8807 requires a significantly lower UV dose to achieve surface cure.

TABLE I - COMPARISON OF SURFACE CURE RESPONSE

	A	B	C
EBECRYL 8807	35.0		
EBECRYL 284[1]		40.0	
Competitive aliphatic urethane acrylate			46.7
TPGDA[2]	40.0	35.0	28.3
TMPTA[2]	25.0	25.0	25.0
1-Hydroxycyclohexyl phenyl ketone[3]	4.0	4.0	4.0
Viscosity at 25°C, cP	408	412	444
UV energy[4], mJ/cm^2	495	914	565

(1) Aliphatic urethane acrylate oligomers; products of allnex.
(2) Products of allnex
(3) Photoinitiator
(4) Coatings were applied to unlacquered Leneta opacity charts (form N2C) at ~12 µ thickness and cured with one 300 watt/inch Fusion H lamp at the required UV energy to achieve a non-marring surface.
(5) Theoretical determination based on the undiluted oligomer.
(6) UV cured 125 µ thick films.
(7) Determined by Dynamic Mechanical Analysis.

SPECIFICATIONS

SPECIFICATIONS	VALUE
Appearance at elevated temperature	Clear liquid
Color, Gardner scale, max.	1
NCO, %, max.	0.2
Viscosity, 60°C, cP/mPa·s	5600-9400

TYPICAL PHYSICAL PROPERTIES

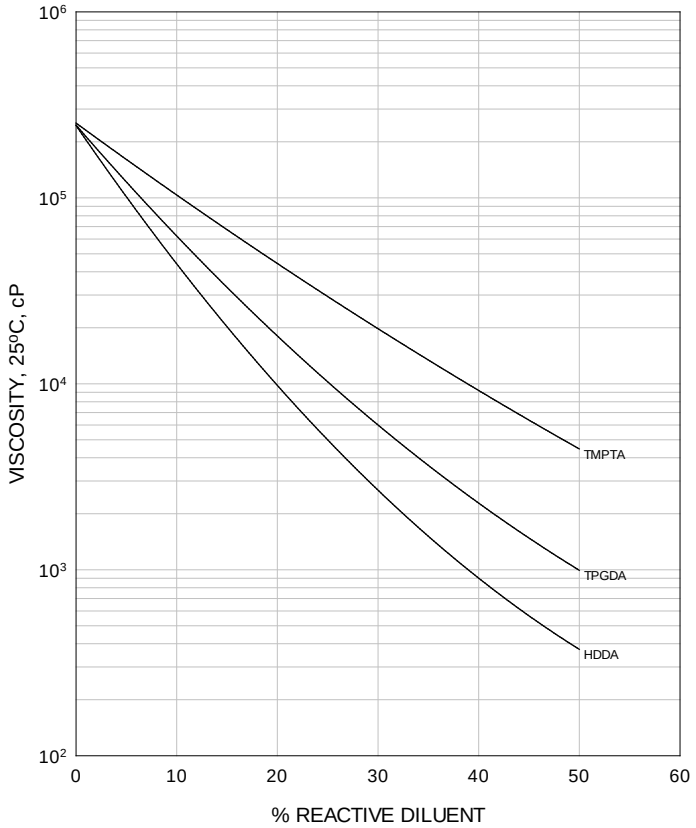
Density, g/ml at 25°C	1.05
Functionality, theoretical[5]	2
Oligomer, % by weight	100

TYPICAL CURED PROPERTIES[6]

Tensile strength, psi (MPa)	1950 (13)
Elongation at break, %	54
Young's modulus, psi (MPa)	7500 (52)
Glass transition temperature, °C[7]	32

GRAPH I

EBECRYL 8807 - VISCOSITY REDUCTION WITH REACTIVE DILUENTS



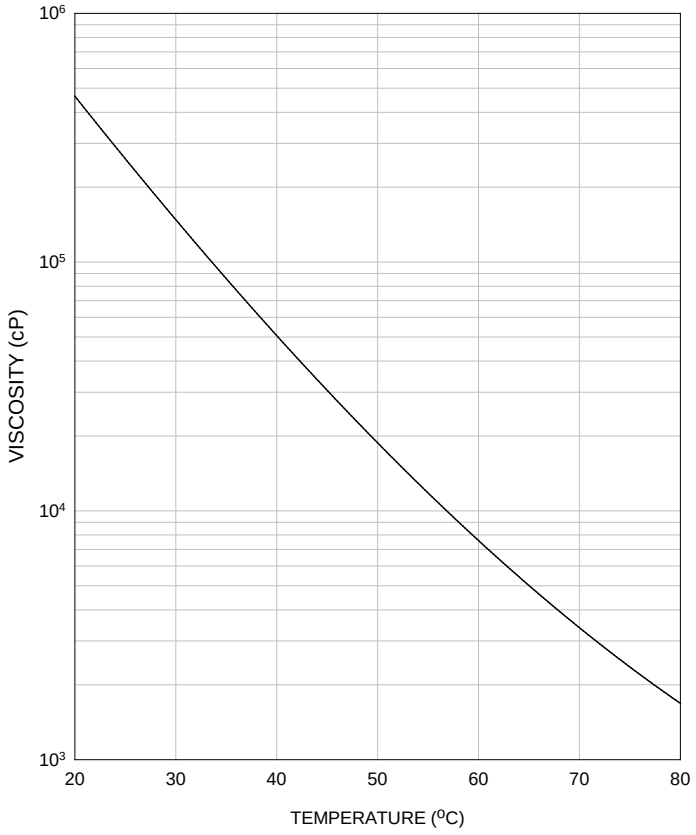
VISCOSITY REDUCTION

Graph I shows the viscosity reduction of EBECRYL 8807 with 1,6-hexanediol diacrylate (HDDA)[(1)], trimethylolpropane triacrylate (TMPTA), and tripropylene glycol diacrylate (TPGDA). 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, thus reducing solvent emissions. The specific reactive diluents used will influence performance properties such as hardness and flexibility.

Graph II illustrates the change in viscosity of EBECRYL 8807 with increasing temperature.

GRAPH II

EBECRYL 8807 - VISCOSITY VS. TEMPERATURE



PRECAUTIONS

Before using EBECRYL 8807, 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.

Upon storage, EBECRYL 8807 may show signs of crystallization. This crystallization can be removed by heating containers of EBECRYL 8807 to a uniform temperature of 60°C. Ovens or hotboxes are recommended methods of heating. Heating tapes should not be used. In typical formulations, EBECRYL 8807 does not exhibit signs of crystallization.

See the SDS for the recommended storage temperature range for EBECRYL 8807.

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

(1) Product of allnex

www.allnex.com