TECHNICAL DATASHEET

EBECRYL® UV/EB Energy Curable Resins

EBECRYL® 3418

Modified Bisphenol A Epoxy Diacrylate

March 2017

INTRODUCTION

EBECRYL 3418 is a modified bisphenol A epoxy diacrylate that exhibits excellent reactivity and reduced viscosity. Films of EBECRYL 3418 cured by ultraviolet light (UV) or electron beam (EB) demonstrate high flexibility, gloss, toughness, adhesion and superior chemical and scratch resistance.

PERFORMANCE HIGHLIGHTS

EBECRYL 3418 is characterized by:

- Reduced viscosity
- Excellent UV/EB cure response

UV/EB cured products based on EBECRYL 3418 are characterized by the following performance properties:

- High flexibility
- Good chemical resistance
- High gloss
- Toughness
- Excellent adhesion to most types of wood and many plastics

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 3418 may be applied via direct or reverse roll, offset gravure, metering rod, slot die, knife over roll, air knife, curtain, immersion and spin coating methods as well as lithographic and screen printing. EBECRYL 3418 is recommended for use in:

- Wood topcoats and sealers
- Clear coatings for paper, and flexible and rigid plastics
- Resilient floor coatings

VISCOSITY REDUCTION

EBECRYL 3418 can be combined with reactive diluents such as dipropylene glycol diacrylate (DPGDA)[(1)], 1,6-hexanediol diacrylate (HDDA)[(1)], isobornyl acrylate (IBOA)[(1)], and trimethylolpropane triacrylate (TMPTA)[(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 avoiding solvent emissions. The specific reactive diluents used will influence performance properties such as hardness and flexibility.

SPECIFICATIONS	VALUE
Appearance	Clear liquid
Color, Gardner scale, max.	3
Viscosity, 25°C, cP/mPa·s	10000-25000

TYPICAL PHYSICAL PROPERTIES

Density, g/ml at 25°C	1.12
Functionality, theoretical[(2)]	2
Oligomer, % by weight	~65
DPGDA, % by weight	~35

TYPICAL CURED PROPERTIES[(3)]

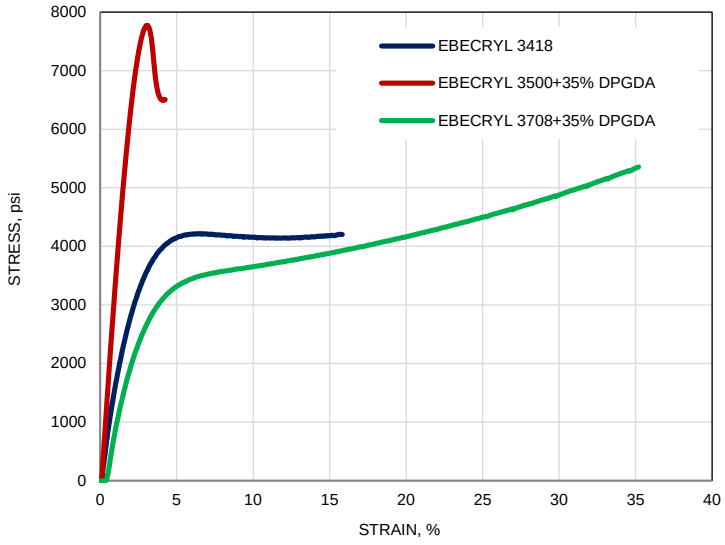
Tensile strength, psi (MPa)	4067 (28)
Elongation at break, %	15
Young's modulus, psi (MPa)	184000 (1269)

STRESS-STRAIN PROPERTIES

Graph I compares the stress-strain curves of UV cured free films of EBECRYL 3418 with the modified bisphenol A epoxy epoxy acylate oligomers, EBECRYL 3500[(1)] and EBECRYL 3708[(1)]. For proper comparison, the EBECRYL 3500 and EBECRYL 3708 were combined with 35% by weight DPGDA.

GRAPH I

STRESS-STRAIN CURVES OF MODIFIED BISPHENOL A EPOXY ACRYLATES

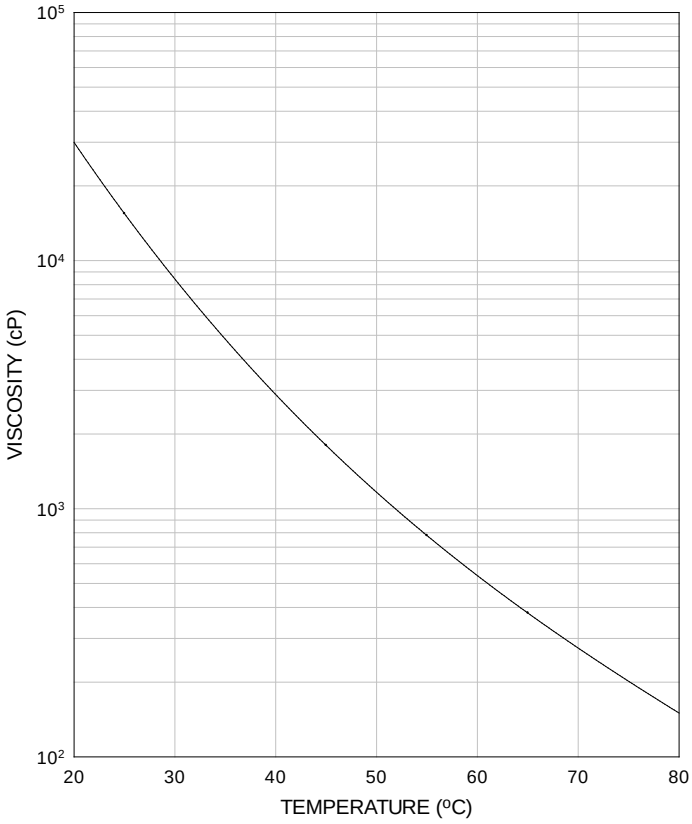


(1) Product of allnex
(2) Theoretical determination based on the undiluted oligomer.
(3) UV cured 125 µ thick films.

Graph II illustrates the change in viscosity of EBECRYL 3418 with increasing temperature.

GRAPH II

EBECRYL 3418 - VISCOSITY VS. TEMPERATURE



PRECAUTIONS

Before using EBECRYL 3418, 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 3418.

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