

EBECRYL® 3603

Epoxy Novolac Acrylate

January 2018



INTRODUCTION

EBECRYL 3603 is an epoxy novolac acrylate diluted 20% by weight with the reactive diluent tripropylene glycol diacrylate (TPGDA)⁽¹⁾. EBECRYL 3603 exhibits rapid cure upon exposure to ultraviolet light (UV) or electron beam (EB) and superior chemical and thermal resistance.

PERFORMANCE HIGHLIGHTS

EBECRYL 3603 is characterized by:

- Excellent UV/EB cure response
- High functionality

UV/EB cured products based on EBECRYL 3603 are characterized by the following performance properties:

- High surface hardness
- High gloss
- Good chemical resistance
- Good thermal resistance

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

SUGGESTED APPLICATIONS

Formulated UV/EB curable products containing EBECRYL 3603 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 screen printing. EBECRYL 3603 is recommended for use in:

- Solder mask
- Screen inks
- Abrasion resistant coatings for rigid plastics
- Electronic marking inks

SPECIFICATIONS

	VALUE
Acid value, mg KOH/g, max.	3
Color, Gardner scale, max.	5
Epoxy content, %, max.	0.27
Viscosity at 65.5°C, cP/mPa-s	900-1900

TYPICAL PHYSICAL PROPERTIES

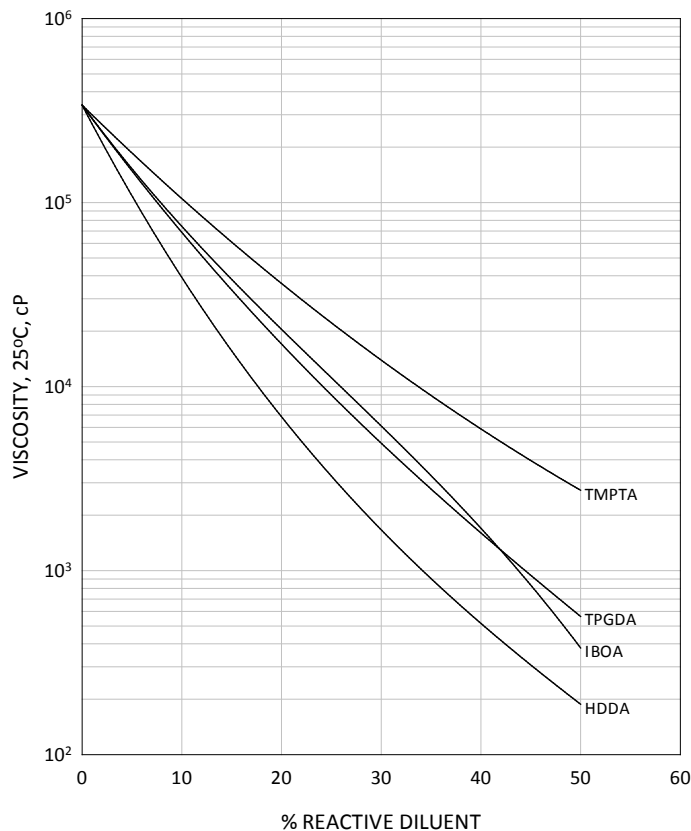
Density, g/ml at 25°C	1.19
Functionality, theoretical ⁽²⁾	~3.6
Oligomer, % by weight	80
TPGDA % by weight	20

TYPICAL CURED PROPERTIES⁽³⁾

Tensile strength, psi (MPa)	9300 (64)
Elongation at break, %	8
Glass transition temperature, °C ⁽⁴⁾	54

GRAPH I

EBECRYL 3603 - VISCOSITY REDUCTION WITH REACTIVE DILUENTS



(1) Product of allnex

(2) Theoretical determination based on the undiluted oligomer.

(3) UV cured 125 μ thick films.

(4) Determined by Dynamic Mechanical Analysis.

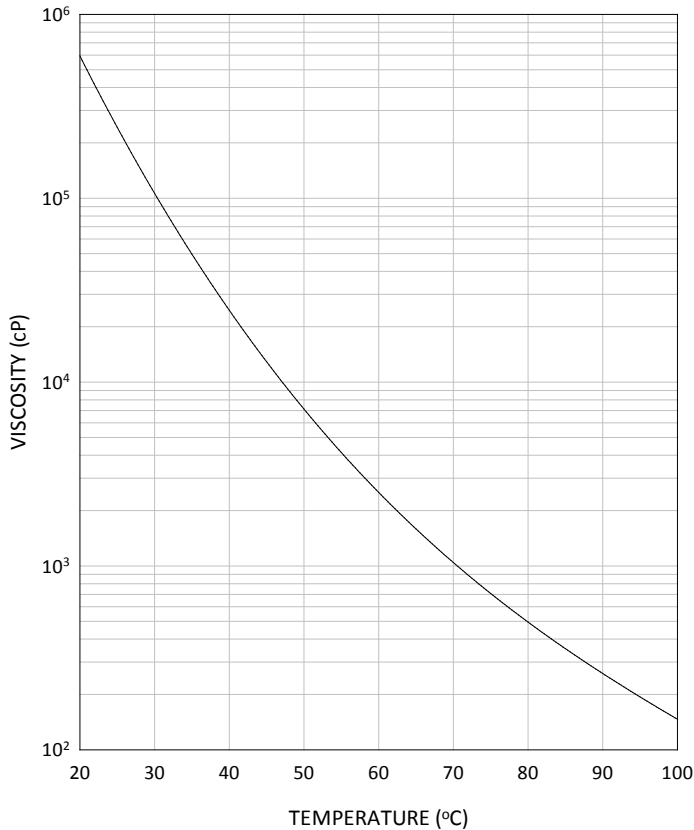
VISCOSITY REDUCTION

Graph 1 shows the viscosity reduction of EBECRYL 3603 with 1,6-hexanediol diacrylate (HDDA)⁽¹⁾, isobornyl acrylate (IBOA)⁽¹⁾, trimethylolpropane triacrylate (TMPTA)⁽¹⁾, 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 or ink, 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 3603 with increasing temperature.

GRAPH II

EBECRYL 3603 - VISCOSITY VS. TEMPERATURE



(1) Product of allnex

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PRECAUTIONS

Before using EBECRYL 3603, 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 3603.

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