

EBECRYL® 8301-R

Aliphatic Urethane Hexaacrylate

March 2017



INTRODUCTION

EBECRYL 8301-R is a hexafunctional aliphatic urethane acrylate that provides extremely fast cure response when exposed to ultraviolet light (UV) or electron beam (EB). Cured films of EBECRYL 8301-R exhibit high hardness, scratch and chemical resistance, and are resistant to yellowing.

PERFORMANCE HIGHLIGHTS

EBECRYL 8301-R is characterized by:

- Light color
- Excellent cure speed
- Moderate viscosity

UV/EB cured products containing EBECRYL 8301-R are characterized by the following performance properties:

- High hardness
- Excellent scratch resistance
- Good solvent resistance
- High gloss
- 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 8301-R 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. EBECRYL 8301-R is recommended for:

- Scratch resistant coatings on plastic
- Wood coatings and fillers
- A modifying oligomer to improve cure speed, solvent resistance, and gloss of a wide variety of coatings and inks

SPECIFICATIONS

	VALUE
Appearance at elevated temperature	Clear liquid
Color at elevated temperature, Gardner scale, max.	2
Inhibitor (MEHQ) content, ppm	125-400
Isocyanate content, %, max.	0.08
Viscosity, 65.5°C, cP/mPa·s	150-550

TYPICAL PHYSICAL PROPERTIES

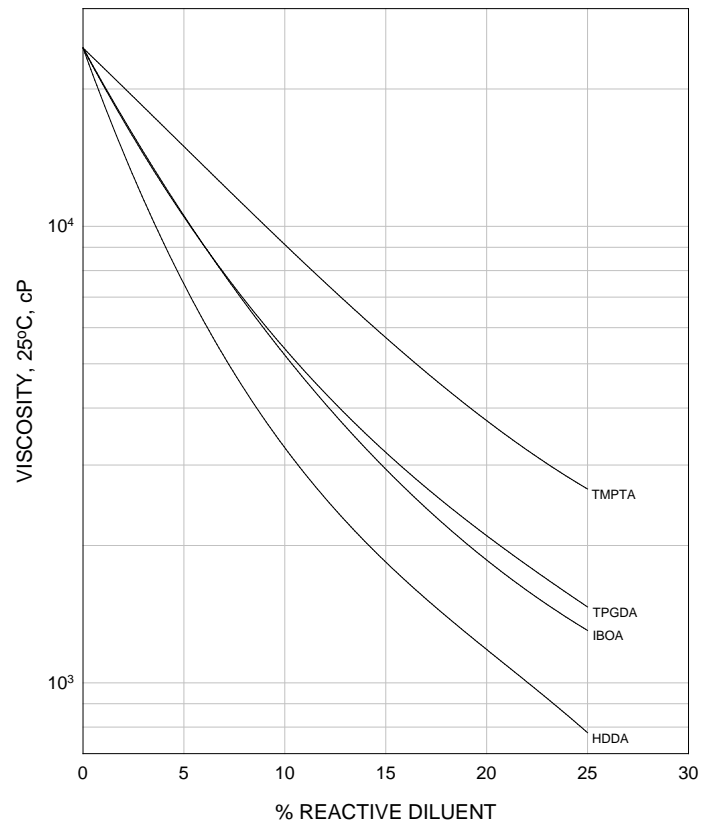
Density, g/ml at 25°C	1.16
Functionality, theoretical ⁽¹⁾	6

TYPICAL CURED PROPERTIES⁽²⁾

Tensile strength, psi (MPa)	7750 (53)
Elongation at break, %	3
Glass transition temperature, °C ⁽³⁾	63

GRAPH I

EBECRYL 8301-R - VISCOSITY REDUCTION OF REACTIVE DILUENTS



(1) Theoretical determination based on the undiluted oligomer.

(2) UV cured 125 μ thick films.

(3) Determined by Dynamic Mechanical Analysis.

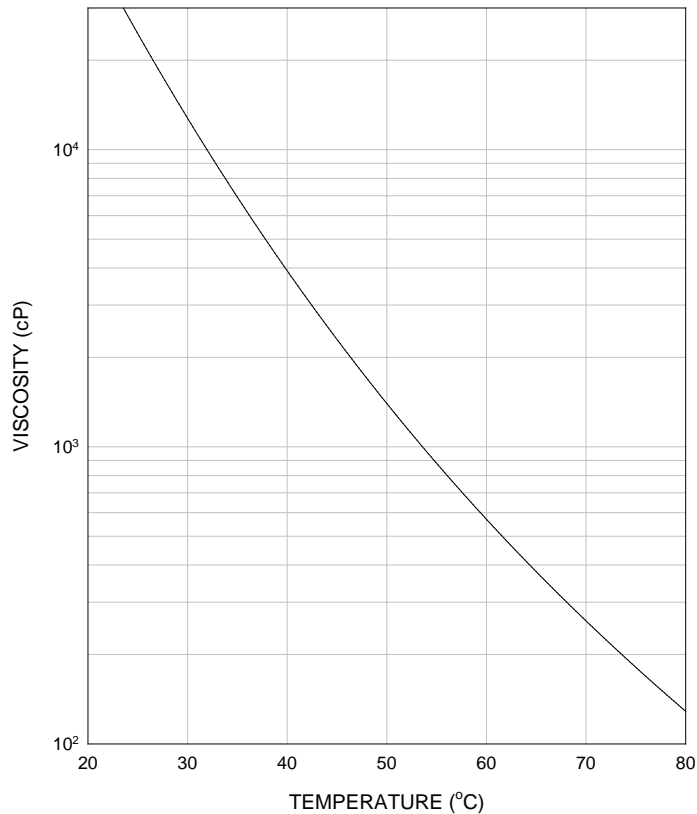
VISCOSITY REDUCTION

Graph I shows the viscosity reduction of EBECRYL 8301-R with 1,6-hexanediol diacrylate (HDDA)⁽¹⁾, isobornyl acrylate (IBOA)⁽¹⁾, trimethylolpropane triacrylate (TMPTA)⁽¹⁾, and tripropylene glycol diacrylate (TPGDA)⁽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 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 8301-R with increasing temperature.

GRAPH II

EBECRYL 8301-R - VISCOSITY VS. TEMPERATURE



PRECAUTIONS

Before using EBECRYL 8301-R, 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 8301-R.

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

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