

EBECRYL[®] 8301-R

Aliphatic Urethane Hexaacrylate

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

Color, 65.5°C, Gardner scale, max.
Appearance at 65.5°C
Viscosity at 65.5°C, cP
% NCO, max.

SMT ⁽¹⁾	Value
001-I	2
002-G	Clear liquid
013-CC	150-550
091-H	0.08

TYPICAL PHYSICAL PROPERTIES

Density, g/ml at 25°C
Functionality, theoretical⁽²⁾

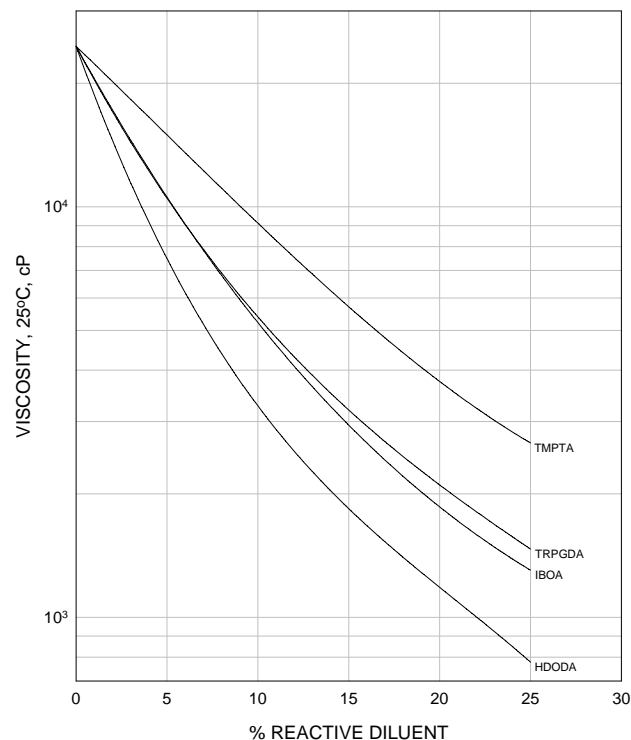
1.16
6

TYPICAL CURED PROPERTIES⁽³⁾

Tensile strength, psi
Elongation at break, %
Glass transition temperature, °C⁽⁴⁾

7750
3
63

Graph I
EBECRYL 8301-R
Viscosity Reduction of Reactive Diluents



(1) Standard Methods of Testing available upon request.

(2) Theoretical determination based on the undiluted oligomer.

(3) UV cured 125 μ thick films.

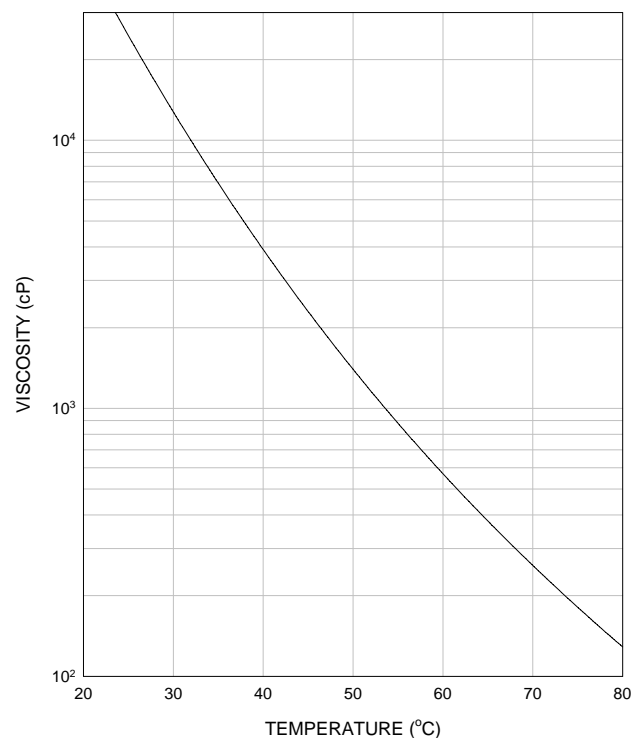
(4) Determined by Dynamic Mechanical Analysis.

VISCOSITY REDUCTION

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



(1) Product of Cytec Industries Inc.

STORAGE AND HANDLING

Before using EBECRYL 8301-R, consult the **Material Safety Data Sheet** for additional information on safety and handling procedures, and recommended personal protective equipment.

The maximum recommended storage temperature for EBECRYL 8301-R is 38°C (100°F). High temperature and fire conditions can cause uncontrolled polymerization with rapid evolution of heat and pressure rise, which may result in violent rupture of the storage tanks or containers. Never store in direct sunlight or adjacent to heated compartments. Containers should be kept closed and away from oxidizing agents, acids, alkalis, peroxides, free radical initiators, photosensitizers, rust, and x-ray or ultraviolet radiation. Procedures that displace oxygen from the material, such as sparging with nitrogen, should be avoided.

PRECAUTIONS

Avoid contact with skin and eyes and breathing vapors. Contains materials that may cause chemical burns to the eyes and skin. Sensitization may occur. Skin irritation may not occur immediately and contact may go unnoticed for up to 48 hours. Solvents should not be used to clean skin because of increased penetration potential. Contaminated clothing, shoes, belts and other leather goods should be removed immediately. Incinerate contaminated leather goods, including shoes. Wash contaminated clothing thoroughly before reuse.

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

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