

ALIPHATIC URETHANE TETRAACRYLATE

INTRODUCTION

EBECRYL® 8604 is an aliphatic urethane tetraacrylate. As the main resin, EBECRYL® 8604 offers excellent reactivity combined with good hardness and toughness. As a co-resin, EBECRYL® 8604 blended with higher functional (penta or greater) oligomer(s) improves reactivity and weatherability while increasing the ductility with minimum impact surface hardness. Films of EBECRYL® 8604 cured by ultraviolet light (UV) or electron beam (EB) combine abrasion resistance, hardness, and excellent exterior durability.

PERFORMANCE HIGHLIGHTS

EBECRYL® 8604 is characterized by:

- Light color
- Low odor

UV/EB cured products containing EBECRYL® 8604 are characterized by the following performance properties:

- Excellent reactivity
- Excellent exterior durability
- Good surface hardness
- Excellent abrasion resistance
- Toughness
- 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 photo initiators.

SUGGESTED APPLICATIONS

Formulated UV/EB curable products containing EBECRYL® 8604 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® 8604 is recommended for use in:

- Automotive OEM or Re-finish
- Exterior durable coatings
- Coatings for wood and plastic requiring excellent exterior durability
- Metal coatings
- Optical coatings
- Non-yellowing topcoats for wood
- Screen inks

SPECIFICATIONS

Appearance

Clear liquid

TYPICAL PHYSICAL PROPERTIES

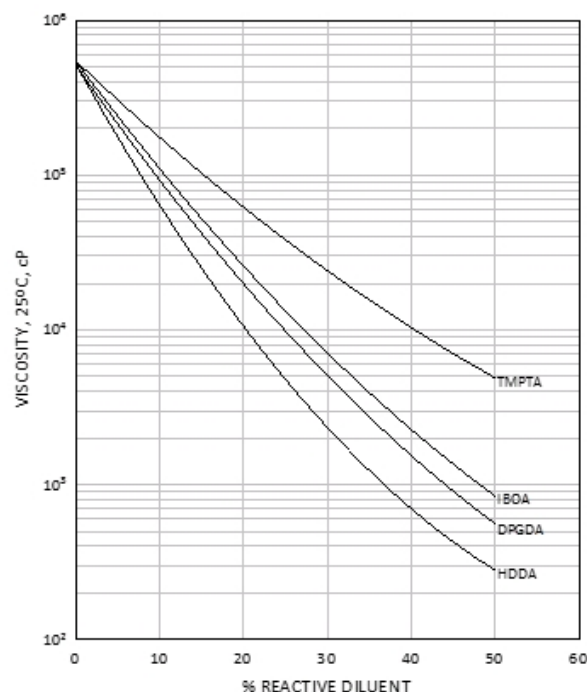
Color, Gardner	max. 2
Density, g/cm ³ at 25°C	1.13
Functionality, theoretical	4
NCO, %	max. 0.2
Viscosity, 60°C, mPa.s	5000 – 8000

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	10000 (69)
Elongation at break, %	4.5
Young's modulus, psi (MPa)	350000 (2400)
Glass transition temperature, °C	79
Refractive index, liquid, nD at 20°C	1.5108

GRAPH I

EBECRYL® 8604 - VISCOSITY REDUCTION WITH REACTIVE DILUENTS



VISCOSITY REDUCTION

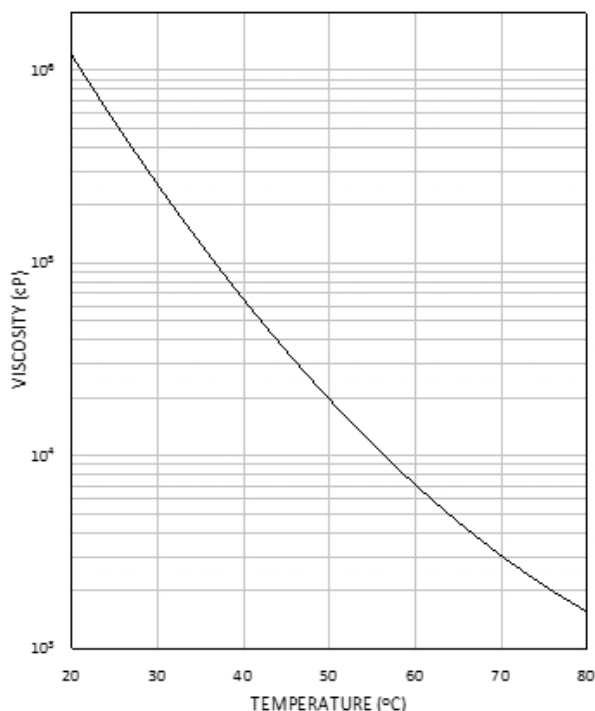
Graph I shows the viscosity reduction of EBECRYL® 8604 with 1,6-hexanediol diacrylate (HDDA)⁽¹⁾, isobornyl acrylate (IBOA)⁽¹⁾, neopentyl glycol propoxylate diacrylate (NPG(PO)2DA)⁽¹⁾, trimethylolpropane triacrylate (TMPTA)⁽¹⁾ and tripropylene glycol diacrylate (TPGDA)⁽¹⁾. Although viscosity reduction 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.

⁽¹⁾ product of allnex

Graph II illustrates the change in viscosity of EBECRYL® 8604 with increasing temperature.

GRAPH II

EBECRYL® 8604 - VISCOSITY VS. TEMPERATURE



PRECAUTIONS

Before using EBECRYL® 8604, 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® 8604.