

ALIPHATIC URETHANE DIACRYLATE

INTRODUCTION

EBECRYL® 8411 is an aliphatic urethane diacrylate diluted 20% by weight with the reactive diluent isobornyl acrylate (IBOA). Films of EBECRYL® 8411 cured by ultraviolet light (UV) or electron beam (EB) exhibit exceptional extensibility and flexibility, in addition to excellent abrasion resistance, good adhesion, exterior durability and resistance to yellowing.

PERFORMANCE HIGHLIGHTS

EBECRYL® 8411 is characterized by:

- Outstanding extensibility and flexibility
- Excellent abrasion resistance
- Good exterior durability
- Good adhesion
- 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® 8411 may be applied via screen printing as well as direct or reverse roll, offset gravure, metering rod, slot die, knife over roll, air knife, curtain, immersion and spin coating methods. EBECRYL® 8411 is recommended for use in:

- Screen inks for plastics
- Screen inks for lamination
- Thermoformable screen inks
- Coatings for metal, wood, paper and plastics
- Coatings requiring exterior durability

SPECIFICATIONS

Appearance	Clear to clouded liquid
Color, Gardner	max. 1
NCO, %	max. 0.2
Viscosity, 65.5°C, mPa.s	3400 - 9500

TYPICAL PHYSICAL PROPERTIES

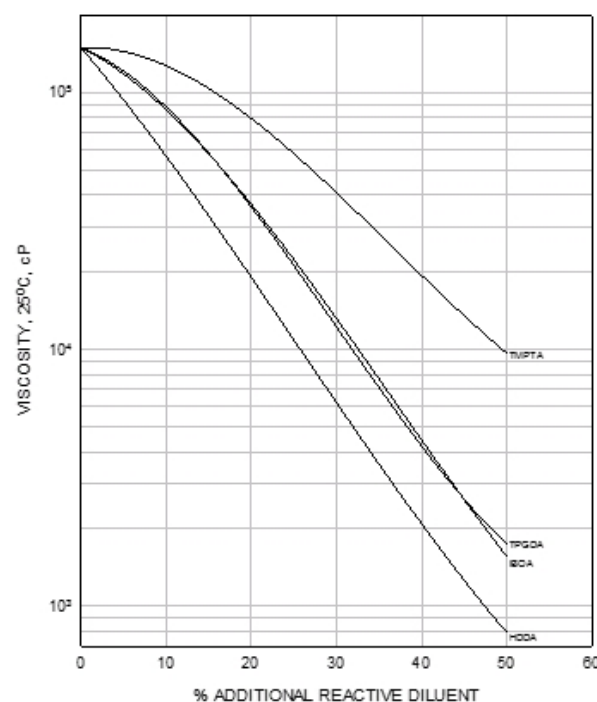
Density, g/cm ³ at 25°C	1.07
Functionality, theoretical	2
Oligomer, % by weight	80
IBOA, % by weight	20

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	1170 (8.1)
Elongation at break, %	320
Young's modulus, psi (MPa)	1280 (8.8)
Glass transition temperature, °C	-18

GRAPH I

EBECRYL® 8411 - VISCOSITY REDUCTION WITH REACTIVE DILUENTS



VISCOSITY REDUCTIONS

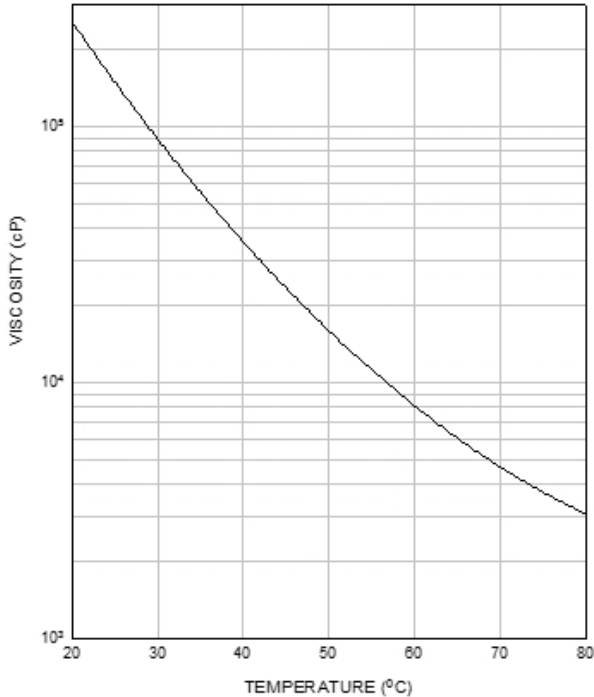
Graph I shows the viscosity reduction of EBECRYL® 8411 with 1,6-hexanediol diacrylate (HDDA)⁽¹⁾, isobornyl acrylate (IBOA)⁽¹⁾, trimethylolpropane triacrylate (TMPTA)⁽¹⁾ and tripropylene glycol diacrylate (TPGDA)⁽¹⁾. Although viscosity reduction can be achieved with non-reactive solvents, reactive diluents 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.

⁽¹⁾ product of alnex

Graph II illustrates the change in viscosity of EBECRYL® 8411 with increasing temperature.

GRAPH II

EBECRYL® 8411 - VISCOSITY VS. TEMPERATURE



PRECAUTIONS

Before using EBECRYL® 8411, 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® 8411.