

ALIPHATIC URETHANE ACRYLATE

INTRODUCTION

EBECRYL® 8602 is a nine functional aliphatic urethane acrylate. After polymerization, films of EBECRYL® 8602 exhibit significant improvement in weatherability compared to hexafunctional aliphatic urethane acrylate without compromising scratch and abrasion resistance. In addition, EBECRYL® 8602 does not contain intentionally added organic tin compounds, heavy metals* or quinones.

*As defined by C.O.N.E.G's Toxic in Packaging Legislation, the ASTM Standard Consumer Safety Specification on Toy Safety F 963 (ASTM F 963-08), or the European Standard on Safety of Toys EN 71 Part 3 : 1994 + A1:2000 + A1/AC:2000 + AC:2002

PERFORMANCE HIGHLIGHTS

EBECRYL® 8602 is characterized by:

- Fast cure response
- Regulation friendly for tin, heavy metals*, and quinones (Please note that quinones are present in many raw materials, so the overall quinone content is reduced, but not zero in EBECRYL® 8602)

UV/EB cured products containing EBECRYL® 8602 are characterized by the following performance properties:

- Regulation friendly for tin, heavy metals*, and quinones
- Excellent surface hardness and chemical resistance
- Excellent weatherability compared to traditional hardcoats
- High gloss
- Low haze after abrasion resistance

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® 8602 may be applied via brush, roller, 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® 8602 is recommended for use:

- In applications that must meet regulations for tin, heavy metal*, and quinone content.
- As an additive to improve cure speed, solvent resistance, and abrasion resistance.
- In scratch and abrasion resistant coatings (hardcoats).
- In clear and pigmented coatings for paper, paperboard, wood, rigid plastics, filmic substrates..

SPECIFICATIONS

Appearance at elevated temp.

Clear

TYPICAL PHYSICAL PROPERTIES

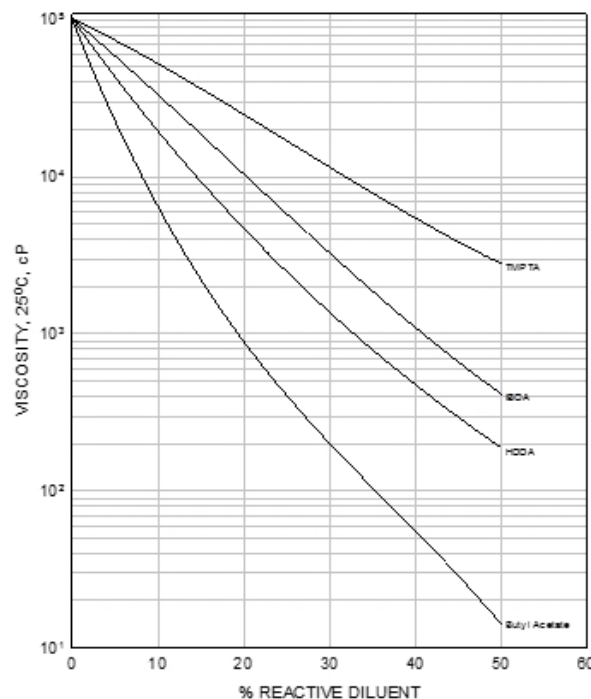
Color, Apha	max. 100
Density, g/cm ³ at 25°C	1.16
Functionality, theoretical	9
NCO, %	max. 0.2
Viscosity, 60°C, mPa;s	3000

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	5000 (34)
Elongation at break, %	1
Young's Modulus, psi (MPa)	500000 (3400)
Glass transition temperature, °C	≈ 138

GRAPH I

EBECRYL® 8602 - VISCOSITY REDUCTION WITH DILUENTS



VISCOSITY REDUCTION

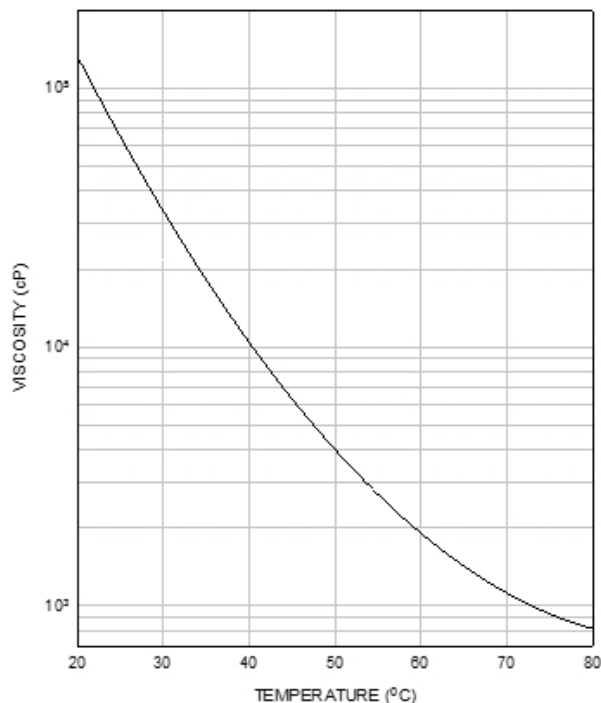
Graph I shows the viscosity reduction of EBECRYL® 8602 with 1,6-hexanediol diacrylate (HDDA)⁽¹⁾, isobornyl acrylate (IBOA)⁽¹⁾, trimethylolpropane triacrylate (TMPTA)⁽¹⁾ and butyl acetate. Although viscosity reduction can be achieved with non-reactive solvents, reactive diluents are preferred because 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® 8602 with increasing temperature.

GRAPH II

EBECRYL® 8602 - VISCOSITY VS. TEMPERATURE



PRECAUTIONS

Before using EBECRYL® 8602, 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® 8602.