

MODIFIED BISPHENOL A EPOXY DIACRYLATE

INTRODUCTION

EBECRYL® 3503 is the modified diacrylate ester of a bisphenol A based epoxy resin diluted ~20% by weight with the reactive diluent propoxylated glycerol triacrylate (OTA-480). It is designed primarily for use in ultraviolet light (UV) or electron beam (EB) curable formulations. EBECRYL® 3503 is light in color with high UV/EB reactivity, and exhibits good wetting of pigments, matting agents and substrates compared to unmodified epoxy acrylates. Cured films based on EBECRYL® 3503 will typically demonstrate high gloss and hardness, and good chemical resistance.

PERFORMANCE HIGHLIGHTS

EBECRYL® 3503 is characterized by:

- Light color
- Fast cure response
- Good wetting of pigments, matting agents, and substrates

UV/EB cured properties based on EBECRYL® 3503 are characterized by the following performance properties:

- High surface hardness
- High gloss
- Good chemical resistance
- Water 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® 3503 may be applied via direct or reverse roll, offset gravure, metering rod, slot die, knife over roll, air knife, curtain and immersion coating methods. EBECRYL® 3503 is suggested for use in:

- Coatings for paper, rigid plastics (i.e. polycarbonate), metal
- Wood fillers and sealers
- Pigmented coatings
- Low gloss overprint varnishes

SPECIFICATIONS

Acid value, mg KOH/g	max. 3
Appearance at elevated temperature	Clear liquid
Color, Gardner	max. 2.0
Epoxy content, %	max. 0.5
Viscosity at 60°C, mPa.s	850 - 1150

TYPICAL PHYSICAL PROPERTIES

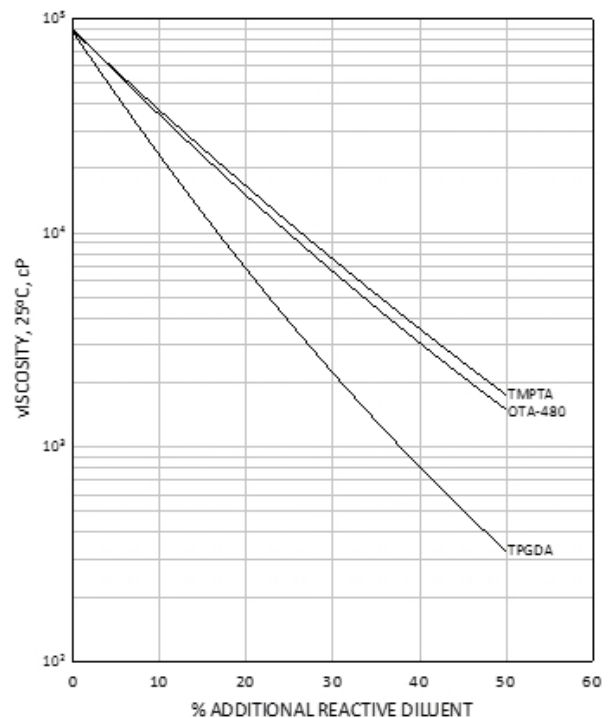
Density, g/ml at 25°C	1.16
Functionality, theoretical	2
Oligomer, % by weight	~80
OTA-480, % by weight	~20

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	10300 (71)
Elongation at break, %	3.1
Young's modulus, psi (MPa)	470000 (3241)

GRAPH I

EBECRYL® 3503 - VISCOSITY REDUCTION WITH REACTIVE DILUENTS



VISCOSITY REDUCTION

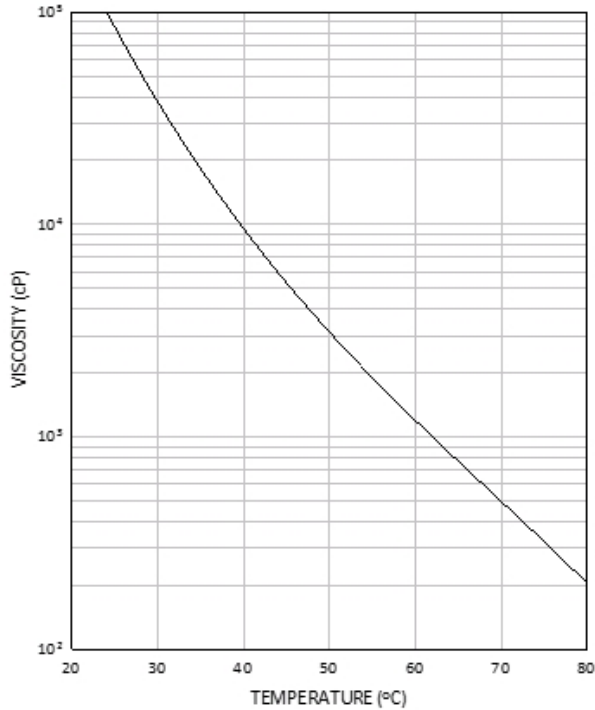
Graph I shows the viscosity reduction of EBECRYL® 3503 with propoxylated glycerol triacrylate (OTA-480)⁽¹⁾, trimethylolpropane triacrylate (TMPTA)⁽¹⁾ and tripropylene glycol diacrylate (TPGDA)⁽¹⁾. Although viscosity reduction can be achieved with non-reactive solvents, reactive diluents are preferred 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® 3503 with increasing temperature.

GRAPH II

EBECRYL® 3503 - VISCOSITY VS. TEMPERATURE



PRECAUTIONS

Before using EBECRYL® 3503, 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® 3503.