EBECRYL® 657

Technical Datasheet

POLYESTER TETRAACRYLATE

INTRODUCTION

EBECRYL® 657 is a polyester tetraacrylate developed specifically for ultraviolet light (UV) and electron beam (EB) cured lithographic ink formulations. EBECRYL® 657 provides the proper hydrophilic-lipophilic balance necessary for lithography, good pigment wetting, and low misting. It can be blended with epoxy acrylates or EBECRYL® 436 or EBECRYL® 438 to increase cure speed.

PERFORMANCE HIGHLIGHTS

EBECRYL® 657 is characterized by:

- Good pigment wetting
- Excellent lithographic behavior
- Good anti-misting properties

UV/EB cured products based on EBECRYL® 657 are characterized by the following performance properties:

- Toughness
- Flexibility
- Low residual odor

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® 657 may be applied via various coating methods, such as direct or reverse roll, and curtain coating. EBECRYL® 657 is recommended for:

- Lithographic inks and varnishes
- Coatings on paper, metal, and plastic
- Pigment grinding vehicles

TYPICAL TACK RANGES

Oligomer / Reactive diluent	Tack, g-m
EBECRYL® 657	22-24
EBECRYL® 657 / 5% OTA 480	18-20
EBECRYL® 657 / 10% OTA-480	11-13
EBECRYL® 657 / 5% TPGDA	17-19
EBECRYL® 657 / 10% TPGDA	8-10

400 RPM, 90°F, 3 minutes; Thwing-Albert Electronic Inkometer

SPECIFICATIONS

Acid value, mg KOH/g	max. 20
Appearance	Dark clear liquid
Viscosity, 60°C, mPa.s	3000 - 4000

TYPICAL PHYSICAL PROPERTIES

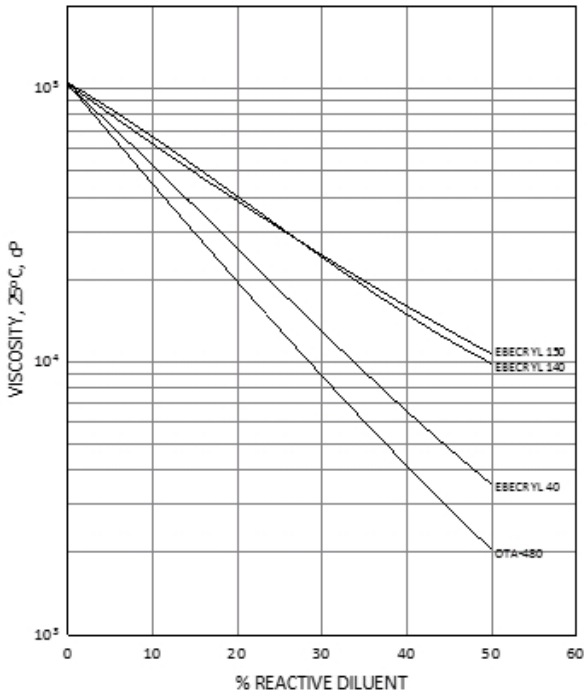
Density, g/cm³ at 25°C	1.03
Functionality, theoretical	4
Oligomer, % by weight	100

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	4300 (30)
Elongation at break, %	23
Glass transition temperature, °C	33

GRAPH I

EBECRYL® 657 - VISCOSITY REDUCTION WITH REACTIVE DILUENTS



VISCOSITY REDUCTION

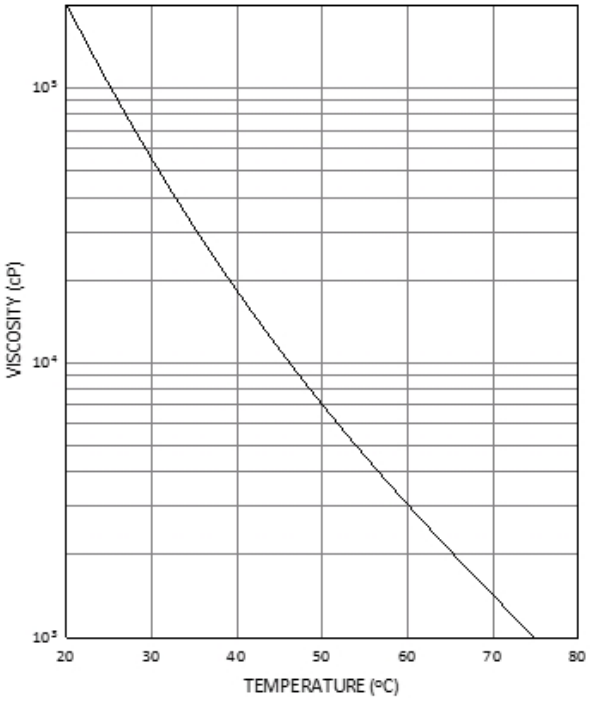
Graph I show the viscosity reduction of EBECRYL® 657 with the reactive diluents EBECRYL® 40[(1)], EBECRYL 140[(1)] (ditrimethylolpropane tetraacrylate), EBECRYL® 150[(1)] (ethoxylated bisphenol A diacrylate), and OTA-480[(1)]. Although viscosity reduction can be achieved with non-reactive solvents, reactive diluents are preferred because they are essentially 100 percent converted during UV/EB exposure to form a part of the coating or ink, thus avoiding 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® 657 with increasing temperature.

GRAPH II

EBECRYL® 657 - VISCOSITY VS. TEMPERATURE



PRECAUTIONS

Before using EBECRYL® 657, 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® 657.