EBECRYL® 4680

Technical Datasheet

ALIPHATIC URETHANE ACRYLATE

INTRODUCTION

EBECRYL® 4680 is an aliphatic urethane acrylate diluted 20% by weight with 1,6-hexanediol diacrylate (HDDA). EBECRYL® 4680 exhibits good reactivity and produces hard, tough coatings.

PERFORMANCE HIGHLIGHTS

UV/EB cured coatings based on EBECRYL® 4680 are characterized by the following performance properties:

- Very good mechanical properties
- High abrasion resistance
- Good chemical resistance
- Low yellowing

The actual properties of UV/EB energy cured products also depend on the selection of other formulation components such as reactive diluents, additives and photo initiators.

SUGGESTED APPLICATIONS

EBECRYL® 4680 is designed for use in the formulation of UV/EB energy curable coatings for application by roller coating, spraying and curtain coating on wood, cork, furniture, paper, parquet plastics and film.

FORMULATING

Coatings can be adjusted to appropriate viscosity for the application with additional HDDA(1) or the addition of other standard reactive diluents such as dipropylene glycol diacrylate (DPGDA)(1), isobornyl acrylate (IBOA)(1) and trimethylolpropane triacrylate (TMPTA)(1) or solvents such as butyl acetate.

EBECRYL® 4680 is compatible with most acrylate monomers and oligomers.

Because of the many potential combinations with reactive diluents and solvents, compatibility must be tested in each individual case.

UV curing of coatings formulated with EBECRYL® 4680 requires the addition of standard commercial photo initiators. Typical levels are 4 - 6%, though this may vary to meet the reactivity requirements of the application. In the case of EB curing, a low oxygen atmosphere must be ensured to avoid surface inhibition.

Lower gloss coatings can be produced using standard matting agents. Care should be taken with respect to sedimentation which may cause the coating to gel prematurely.

(1) product of allnex

SPECIFICATIONS

Color, Apha	max. 150
Viscosity, 23°C, mPa.s	25000 - 33000

TYPICAL PHYSICAL PROPERTIES

Acid value, mg KOH/g	1
Density, g/cm³ at 20°C	1.11
Flash point, °C	> 100
Functionality	3.8
Hydroxyl content, %	0.5

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	7000 (48)
Elongation at break, %	3
Young's modulus, psi (MPa)	275000 (1900)
Glass transition temperature, °C	108

PRECAUTIONS

Before using EBECRYL® 4680, 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® 4680.