

ISOCYANATE FUNCTIONAL ALIPHATIC URETHANE ACRYLATE

INTRODUCTION

EBECRYL® 4510 is an isocyanate functional aliphatic urethane acrylate supplied at 90% solids in butyl acetate. It is useful as an adhesion promoter ultraviolet (UV) and electron beam (EB) energy curable coatings and in two-component dual cure coatings.

SUGGESTED APPLICATIONS

Formulations with EBECRYL® 4510 can be used for;

- Adhesion promotion in UV/EB curing coatings
- UV/EB curable, two component polyurethane coatings

EBECRYL® 4510 can be combined with hydroxyl functional resins to formulate coatings which cure by dual processes; UV/EB induced polymerization and NCO/OH reaction.

The product is also used in straight UV curing coatings to improve the adhesion on substrates as plastic, metal and exotic woods.

Compared to EBECRYL® 4396, EBECRYL® 4510 exhibits significantly higher UV reactivity and, depending on the amount added, can even increase the UV reactivity of existing formulations.

FORMULATING

The viscosity of EBECRYL® 4510 can be reduced using standard reactive diluents such as dipropylene glycol diacrylate (DPGDA)⁽¹⁾, 1,6-hexanediol diacrylate (HDDA)⁽¹⁾, isobornyl acrylate (IBOA)⁽¹⁾ and trimethylolpropane triacrylate (TMPTA)⁽¹⁾. Suitable solvents are esters, ketones and aromatic hydrocarbons.

⁽¹⁾ product of allnex

Reactive diluents and solvents containing reactive groups such as hydroxyl or amine groups strongly influence pot life and thus storage stability.

Coatings containing EBECRYL® 4510 are applied by spraying, curtain coating or roller coating (cover rate max 100 g/m²). After an adequate flash-off time of solvents (if any), the coatings are UV/EB cured. This creates a tack free and dust-dry surface. Following UV/EB curing, the post-reaction of NCO/OH groups takes place at room temperature or is forced. This results in good adhesion and good mechanical and chemical resistance of the coating.

EBECRYL® 4510 has good compatibility with esters, ketones and aromatic hydrocarbons such as ethyl acetate, butyl acetate, methoxypropyl acetate, acetone, methyl ethyl ketone, methyl isobutyl ketone, xylene and mixtures thereof.

Only pure grade solvents should be used (max 0.05% water). EBECRYL 4510 should not be thinned below a non-volatile content of 40%. Prolonged storage of a solution with lower binder content may result in turbidity, sedimentation or gelling.

Because of the many possible combinations with thinners and solvents, the compatibility and storage stability must be tested in each individual case.

SPECIFICATIONS

Color, Apha	max. 100
NCO content, %	6.7 - 7.3
Viscosity, 23°C, mPa.s	18000 - 22000

TYPICAL PHYSICAL PROPERTIES

Density, g/cm ³ at 20°C	1.16
Flash point, °C	≅39
Functionality, acrylate groups	≅1.5
Functionality, NCO groups	≅1.5

PRECAUTIONS

Before using EBECRYL® 4510, 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, acids or water. 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. The product is sensitive to moisture. Skin formation may occur in opened containers. Dry air is recommended to displace material removed from the container. Wash thoroughly after handling. Keep container tightly closed. Use with adequate ventilation.

EBECRYL 4510 contains a flammable or combustible liquid and vapor. Consult the SDS for additional storage and handling recommendations. See the SDS for the recommended storage temperature range for EBECRYL® 4510.