

ALIPHATIC URETHANE ACRYLATE

INTRODUCTION

EBECRYL® 4513 is an aliphatic urethane acrylate supplied for use in formulations of ultraviolet (UV) and electron beam (EB) energy curable coatings. EBECRYL® 4513 exhibits elastic properties making it suitable for use flexible substrates. Coatings formulated with EBECRYL® 4513 also demonstrate high chemical and wear resistance and are highly resistant to yellowing.

SUGGESTED APPLICATIONS

EBECRYL® 4513 is used to formulate flexible UV/EB energy curable coatings for application by roller coating, spraying, curtain coating and printing on wood, cork, furniture, paper, parquet, plastics, glass and films. EBECRYL® 4513 can also be used to formulate temporary (strippable) coatings.

FORMULATING

Depending on the application, the coating can be adjusted to the appropriate viscosity 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⁾ or solvents such as butyl acetate.

⁽¹⁾ product of allnex

The reactive diluent must be selected carefully as it may impact considerably on the properties and storage stability of the coating. Because of the many potential combinations with reactive diluents and solvents compatibility must be tested in each individual case. The binder may be heated to a maximum of 60°C for application. It is possible to combine EBECRYL® 4513 with selected other EBECRYL® binders.

UV curing of coatings formulated with EBECRYL® 4513 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.

TYPICAL PHYSICAL PROPERTIES

Acid number, mg KOH/g	1
Color, Apha	100
Density, g/cm ³ at 20°C	1.15
Flash point, °C	> 100
Functionality	3.2
Hydroxyl content, %	0.1
Viscosity, 23°C, mPa.s	25000

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	1600 (11.0)
Elongation at break, %	44
Young's modulus, psi (MPa)	4900 (34)
Glass transition temperature, °C	32

PRECAUTIONS

Before using EBECRYL® 4513, 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® 4513.