EBECRYL® 4738

Aliphatic Allophanate Urethane Acrylate

INTRODUCTION

EBECRYL 4738 is a weather-stable aliphatic urethane acrylate having a relatively low viscosity due to the allophanate structure. Formulations based on EBECRYL 4738 exhibit high reactivity and result in hard coatings.

PERFORMANCE HIGHLIGHTS

EBECRYL 4738 is characterized by:

- Low color
- Relatively low viscosity

UV/EB cured properties based on EBECRYL 4738 are characterized by the following performance properties:

- Very good chemical and mechanical resistance
- Good scratch resistance
- High abrasion resistance
- Resistance to yellowing

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.

EBECRYL 4738 coating formulations require less reactive diluent and thus the binder properties are retained over a broad range of viscosities. Application at higher temperatures is also possible.

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.

UV curing of coatings formulated with EBECRYL 4738 requires the addition of standard commercial photoinitiators. 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	0.2
Color, Pt-Co scale(1)	100
Density, g/ml at 20°C	1.15
Flash point, °C	>100
Functionality	3
Hydroxyl content, %	<0.1
Viscosity, 23°C, cP/mPa·s	30000

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	5800 (40)
Elongation at break, %	3
Tg, C°	80

STORAGE AND HANDLING

Before using EBECRYL 4738, consult the Safety Data Sheet for additional information on safety and handling procedures, and recommended personal protective equipment.

The maximum recommended storage temperature for EBECRYL 4738 is 4°C to 40°C (39°F to 104°F). Care should be taken not to expose the product to high temperature conditions, direct sunlight, ignition sources, oxidizing agents, alkalis or acids. Prevent inadvertent contact with peroxides and other radical initiators and contact with copper, copper alloys, carbon steel, iron and rust. 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.

The product can become slightly opaque upon storage conditions. This turbidity is reversible by stirring and/or oven heating to a maximum of 60 °C.

PRECAUTIONS

Avoid contact with eyes and skin. Direct contact with this material may cause moderate eye and skin irritation. Use with adequate ventilation. Wash thoroughly after handling. Keep container tightly closed.

(1) Product of Allnex
(2) Also referred to as APHA/Hazen color