

FUNCTIONALIZED NANOCOMPOSITE ACRYLATE

INTRODUCTION

EBECRYL® 154 is a functionalized nanocomposite acrylate that exhibits low viscosity and high reactivity in ultraviolet (UV) light or electron beam (EB) curable coatings. EBECRYL® 154 is a result of an innovative process that improves the compatibility, functionality, and stability of functionalized nanocomposite. EBECRYL® 154 can be easily incorporated into at any stage of formulating. Films of EBECRYL® 154 exhibit outstanding hardness, chemical, scratch and abrasion resistance coupled with very low haze development after abrasion. EBECRYL® 154 can be used as the main oligomer or modifying oligomer in formulations requiring a high degree of hardness, scratch, abrasion resistance coupled with low haze development after abrasion.

PERFORMANCE HIGHLIGHTS

EBECRYL® 154 is characterized by:

- Good compatibility and stability
- Low viscosity
- Light colour
- Excellent reactivity
- Outstanding hardness
- Low haze development after abrasion
- No agglomeration or sedimentation
- PETA free

UV/EB cured products containing EBECRYL® 154 are characterized by the following performance properties:

- High gloss
- High cross-link density
- Outstanding scratch and abrasion resistance
- Chemical resistance
- Low haze development

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® 154 may be applied via direct or reverse roll, offset gravure, metering rod, slot die, knife over roll, air knife, curtain, immersion, spin and spray coating methods. EBECRYL® 154 is recommended for:

- Coatings requiring high scratch/abrasion resistance
- Coating requiring low haze development after abrasion

As a modifying oligomer to increase cure speed, solvent resistance and abrasion resistance.

TYPICAL PROPERTIES

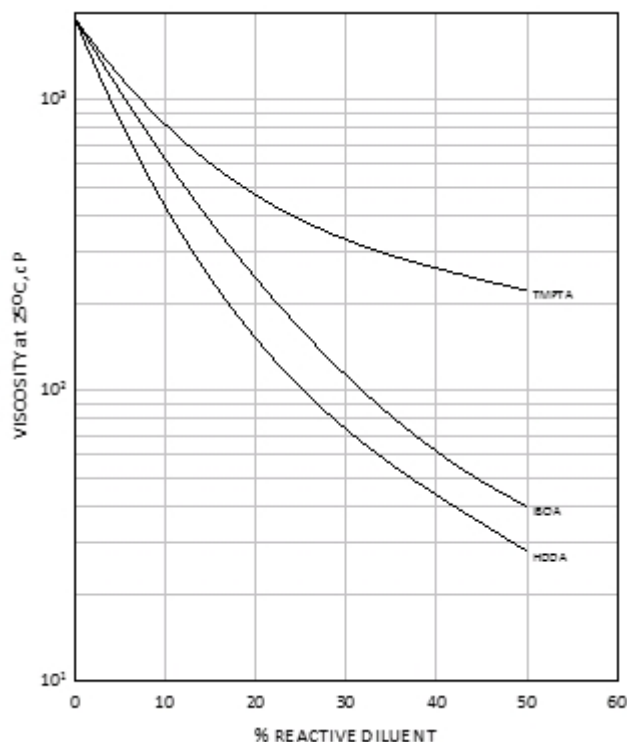
Colour, Gardner	≤ 2
Functionalized nanocomposite, weight %	40 - 60
Particle size distribution, nm	15 - 40
Viscosity, 25°C, mPa.s	2800

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	4000 (28)
Elongation at break, %	1.0
Young's modulus, psi (MPa)	64000 (441)

GRAPH I

EBECRYL® 154 - VISCOSITY REDUCTION WITH REACTIVE DILUENTS



VISCOSITY REDUCTION

Graph I shows the viscosity reduction of EBECRYL® 154 with 1,6-hexanediol diacrylate (HDDA)⁽¹⁾, isobornyl acrylate (IBOA)⁽¹⁾, and trimethylolpropane triacrylate (TMPTA)⁽¹⁾. Although viscosity reduction can be achieved with non-reactive solvents, reactive diluents are preferred because they are essentially 100 per cent converted during UV/EB exposure to form a part of the coating or ink, thus reducing solvent emissions. The specific reactive diluents used will influence performance properties such as hardness and flexibility.

⁽¹⁾ Product of allnex

PRECAUTION

Avoid contact with eyes and skin. Direct contact with this material may cause skin irritation and serious eye irritation. Repeated or prolonged dermal contact may cause allergic skin reactions. Wash thoroughly after handling. Keep container tightly closed. Use with adequate ventilation.

STORAGE AND HANDLING

Before using EBECRYL® 154, consult the Safety Data Sheet for additional information on safety and handling procedures, and recommended personal protective equipment.

The recommended storage temperature range for EBECRYL® 154 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. 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.

STATUTORY LABELING

For Statutory Labeling information, please refer to Safety Data Sheet.