

WATERBORNE URETHANE ACRYLATE FOR HARDCOAT APPLICATIONS

INTRODUCTION

UCECOAT® 7200 is an energy curable solvent-free urethane acrylate in water developed for hardcoat application. This urethane acrylate is highly reactive upon cure and exhibits high scratch and abrasion resistance after curing. Due to its low viscosity, it can be used as the main binder in waterborne hardcoat formulations for spray or curtain coater. UCECOAT® 7200 can be blended with other waterborne UV resins (after pH neutralization) to increase solid content and/or hardness property.

PERFORMANCE HIGHLIGHTS

UCECOAT® 7200 is characterized by:

- white appearance
- high solid content
- good colloidal stability
- low viscosity.

UV/EB cured formulations based on UCECOAT® 7200 are characterized by the following performance properties:

- very high reactivity
- very high hardness, scratch and abrasion resistance
- excellent stain resistance
- direct adhesion onto common plastic substrates.

The actual properties of UV cured formulations also depend on the selection of other formulation components such as additives and photo initiators.

TYPICAL PHYSICAL PROPERTIES

Appearance	white liquid
Solid content, % by weight	63.5 - 66.5
Brookfield viscosity at 25°C, mPa.s	max. 700
pH	3.0 - 5.0
Density, g/cm ³	1.10
Particle size, nm	300 - 500

FORMULATION RECOMMENDATIONS

It is always recommended to stir UCECOAT® 7200 prior to use. After prolonged storage, product can settle and may require agitation to re-disperse. UCECOAT® 7200 can be further diluted with water. Further formulation with additives and/or blending with other waterborne UV resins may require to adjust the pH of UCECOAT® 7200 (before formulation) to neutrality by addition of a solution of sodium hydroxide or of an amine solution like triethylamine or Advantex™.

If necessary, the aspect of the coating can benefit from the addition of an anti-crater and wetting agent like Tego™ Twin 4100 (supplier: Evonik), typically added at a concentration of 0.5 % in the wet formulation.

STARTING POINT FORMULATION FOR SPRAY APPLICATION

Ingredient	Function	Parts
UCECOAT® 7200	Hardcoat Resin	100
Liquid photo-initiator for WB UV coatings	Photo-initiator	2.0
Deionized water	Dilution	20
Tegowet™ 265 ⁽¹⁾	Flow and wetting agent	2.0
ADDITOL® VXW 6386	Defoamer	0.5

(1) Product of Evonik

STORAGE AND HANDLING

Care should be taken not to expose energy curable products like UCECOAT® 7200 to temperatures exceeding 40°C for prolonged periods or to direct sunlight. This might cause the destabilisation or the uncontrollable polymerization of the product with generation of heat. Due to the presence of water, UCECOAT® 7200 needs to be stored above 4°C.

Storage and handling should make use of stainless steel, amber glass, amber polyethylene or baked phenolic lined containers. Do not store this material under an oxygen free atmosphere. Use air to displace material removed from the container. This material should not be stored for more than 6 months.

PRECAUTIONS

Avoid contact with skin and eyes and breathing vapours. Direct contact with this material may cause minimal eye and skin irritation. Wash thoroughly after handling.

The following is a summary of the precautions to be taken when handling this product. Please refer to the Safety Data Sheet for further details.

The toxicological properties of this material have not been fully determined. Appropriate precautions should be taken to avoid eye and skin contact and to avoid inhalation of the aerosols or vapours. Consult the relevant Safety Data Sheet for appropriate handling procedures and protective equipment prior to using this or any other material referred to in this bulletin.

See Safety Data Sheet for emergency and first aid procedures.

STATUTORY LABELING

Please refer to the Safety Data Sheet.