

TIN-FREE UV/EB ENERGY CURABLE POLYURETHANE DISPERSION FOR HIGH GLOSS COATINGS

INTRODUCTION

UCECOAT® 7856 is a new high-solids and solvent-free radiation curable polyurethane dispersion in water suitable for high gloss applications with excellent clarity and distinctness of image (DOI). The product has an excellent colloidal stability (shelf life of 12 months) and complies with VOC-free, tin-free⁽¹⁾ and stenomer⁽²⁾-free requirements. Due to its low viscosity and its good responsiveness to rheology modifiers, it can be easily applied by spray, roller or curtain coating operation. The product can be advantageously applied in one single coat and does not require sanding, although it can still benefit from polishing. The cured coating exhibits good chemical and scratch resistance required for high-end wooden furniture topcoats, though it is also suitable for other substrates and applications.

⁽¹⁾ Does not contain intentionally added organic tin compounds

⁽²⁾ Chemically well-defined monomeric or multi functional acrylates, with low molecular weight and very narrow molecular weight distribution

PERFORMANCE HIGHLIGHTS

UCECOAT® 7856 is characterized by the following properties:

- High solids with a low viscosity
- Excellent colloidal stability
- Tin-free and stenomer-free composition
- Easy to formulate with additives
- Good leveling after application
- Good water release upon drying
- Good water resolubility before cure

UV/EB cured formulations based on UCECOAT® 7856 are characterized by the following performance properties:

- High gloss and distinctness of image (DOI)
- High clarity and low yellowing
- Good hardness and scratch resistance
- Good stain and chemical resistance

The final properties of UV/EB energy cured formulations also depend on the selection of the other components such as additives and photo initiators.

SUGGESTED APPLICATIONS

Water-based UV curable formulations containing UCECOAT® 7856 are typically applied by spray, curtain coating roll coating. Additional methods may also be used.

UCECOAT® 7856 is recommended for use in:

- Clear topcoats for wooden furniture
- Clear topcoats for plastic substrates⁽³⁾

⁽³⁾ May require the use of a surface treatment or an adhesion primer

SPECIFICATIONS

Appearance	white
Non-volatile matter, %	43.0 - 46.0
pH	6.5 - 7.5
Viscosity at 25°C, mPa.s	< 500

TYPICAL PROPERTIES

Density, g/cm ³ at 25°C	1.10
MFFT, °C	< 0
Particle size, nm	<100

STARTING POINT FORMULATION

High Gloss Clear Coating

Component	Function	Parts by weight
UCECOAT® 7856	Resin	100.0
ADDITOL® VXW 6360 (50% in water) ⁽⁴⁾	Rheology Modifier	1.0
Esacure® HB ⁽⁵⁾	Photoinitiator	2.0

⁽⁴⁾ Product of allnex

⁽⁵⁾ Product of Lamberti

Additives Recommendations:

- MODAFLOW® AQ 3025 - improves mirror effect and reduces pinholes
- ADDITOL® VXW 6503 N - improves substrate wetting on critical surfaces, eliminating craters

Note: By varying the ratio of MODAFLOW® AQ 3025 and ADDITOL® VXW 6503 N the leveling performance can be improved to meet the requirements of the substrate.

STORAGE AND HANDLING

Protect the product from freezing. Care should be taken not to expose the product to high temperature conditions or direct sunlight. Containers should be kept closed and away from materials that react with water. Bacteriological contamination can occur if the product is stored for an extended period in a container which is not sufficiently sealed or clean. Storage and handling should be in stainless steel, amber glass, or amber polyethylene containers. After prolonged storage product can settle and may require agitation to re-disperse. This product is stable under normal conditions of handling and storage. Do not store this material under an oxygen free atmosphere. Wash thoroughly after handling. Use with adequate ventilation.

See the SDS for the recommended storage temperature range for UCECOAT® 7856.

PRECAUTIONS

Before using UCECOAT® 7856, see the Safety Data Sheet for information on the identified hazards of the material and the recommended personal protective equipment and procedures.