

ACRYLATED AMINE

INTRODUCTION

EBECRYL® 7110 is an acrylated amine primarily used as a hydrogen donor, or photo activator, in ultraviolet light (UV) curable coatings and inks. When used in formulations in combination with a photosensitizer (e.g. benzophenone), EBECRYL® 7110 provides rapid UV cure response in air by mitigating the effects of oxygen inhibition at the coating or ink surface. Unlike conventional tertiary amines such as N-methyldiethanolamine, EBECRYL® 7110 reacts to become part of the UV cured polymer, resulting in lower residual odor and improved moisture resistance. EBECRYL® 7110 also promotes adhesion to plastic substrates and lowers viscosity when used as a primary component in UV adhesives and coatings.

PERFORMANCE HIGHLIGHTS

EBECRYL® 7110 is characterized by:

- Low color
- Moderate viscosity
- Improved stability vs. conventional tertiary amines
- Excellent pigment wetting

UV/EB cured products based on EBECRYL® 7110 are characterized by the following performance properties:

- Excellent UV cure response
- Reduced odor
- Improved moisture resistance
- No surface migration of amine
- High gloss
- Good adhesion to plastics (e.g. treated polyester, ABS, polycarbonate and polyphenylene oxide)

The final properties of UV/EB cured products also depend on the selection of the other formulation components, such as reactive diluents, additives and photo initiators.

SUGGESTED APPLICATIONS

Formulated UV/EB curable products containing EBECRYL® 7110 may be applied via direct or reverse roll, offset gravure, metering rod, slot die, knife over roll, air knife, curtain and immersion and spin coating methods, as well as screen printing. EBECRYL® 7110 is recommended for:

- Coatings for paper and plastics
- Overprint varnishes
- Screen inks
- Wood topcoats

SPECIFICATIONS

Appearance	Clear liquid
Color, Pt-Co scale ⁽¹⁾ , max.	80
Viscosity, 25°C, mPa.s	800 - 1500

(1) Also referred to as APHA color.

TYPICAL PHYSICAL PROPERTIES

Density, g/ml at 25°C	1.10
Weight/amine, theoretical	404

TYPICAL CURED PROPERTIES

Tensile strength, MPa (psi)	3.1 (450)
Elongation at break, %	23
Young's modulus, MPa (psi)	17.9 (2600)

TABLE I

EBECRYL 7110 – PERFORMANCE COMPARISON WITH EBECRYL 7100

INGREDIENT	%	
EBECRYL® 608	37.0	37.0
DPGDA	43.0	43.0
EBECRYL® 7100	15.0	
EBECRYL® 7110		15.0
Benzophenone	4.0	4.0
1-hydroxy-cyclohexylphenyl-ketone	1.0	1.0
Total	100	100
Viscosity at 25°C, 100/s, mPa.s	229	229
#2 bar, ~5 µm on uncoated Leneta chart Graphite reactivity, 1x400 W/inch Hg lamp		
Max. speed for surface cure, fpm	100	100
Min. energy density, mJ/cm ²	196	196
#2 bar on uncoated Leneta chart; cured with 1x400 W/inch Hg lamp, 3 x 100 fpm		
Gloss @ 20°, black area on Leneta chart	80	79
MEK DR ⁽¹⁾ (1 kg ball-peen hammer)	<20	<20
Scratch resistance ⁽²⁾	1	1
ΔE ⁽³⁾	3.60	3.64

(1) MEK saturated 6-layer cheese cloth wrapped around head of 1 kg ball-peen hammer

(2) dry 6-layer cheese cloth wrapped around head of 1 kg ball-peen hammer

(3) white area on Leneta chart; 1 day after cure; 3 x 100 fpm

PRECAUTIONS

Before using EBECRYL® 7110, 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® 7110.