

URETHANE OLIGOMER FOR FLEXO THERMOFORMING

INTRODUCTION

EBECRYL® 8414 is a urethane acrylate developed for liquid energy curable thermoforming inks. Flexographic inks made with EBECRYL® 8414 exhibit excellent thermoformability with draws up to 1" without cracking, blistering, separation or loss of adhesion. This medium viscosity oligomer has good pigment wetting capability and ink performance.

PERFORMANCE HIGHLIGHTS

EBECRYL® 8414 is characterized by:

- Excellent thermoformability; 150% elongation at break
- Medium viscosity
- Good ink rheology
- Good pigment wetting properties
- Good reactivity

UV/EB cured thermoformable inks based on EBECRYL® 8414 are characterized by the following performance properties:

- Excellent thermoformability
- Good adhesion to a variety of corona treated non-porous substrates including:
 - PET-G (glycol modified polyethylene terephthalate)
 - PVC (polyvinylchloride)
 - Polycarbonate
 - Polyethylene

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

STARTING POINT FORMULA

Pigment dispersion	%
EBECRYL® 8414	50-60
In can stabilizer	1.0-1.5
EBECRYL® 113	3-5
Pigment wetting additive	4-5
Pigment	25-30
Ink	
EBECRYL® 8414 pigment dispersion	55-60
DPGDA	25-30
Photoinitiator ⁽¹⁾	8-10

⁽¹⁾ e.g., a mixture of 11% 2-Hydroxy-2-methyl-1-phenyl propanone (7473-98-5), 25% Benzophenone (119-61-9), 11% 1-Hydroxy-cyclohexylphenyl-ketone (947-19-3), 4.5% Isopropyl thioxanthone (5495-84-1), 31% Ethyl-4-(dimethylamino)benzoate (10287-53-3), 17.5% 2-Benzyl-2-dimethylamino-1-(4-morpholinophenyl)-butanone-1 (119313-12-1).

SUGGESTED APPLICATIONS

UV/EB formulations containing EBECRYL® 8414 may be applied via flexography or gravure and are recommended for use in markets such as:

- Blister pack products
- Cosmetic cases and packages
- Trays and plates

SPECIFICATIONS

Appearance Clear to slightly hazy liquid

TYPICAL PHYSICAL PROPERTIES

Color, elevated temp., Gardner max. 1.0
 Density, g/cm³ at 25°C 1.1
 Functionality, theoretical 2
 Viscosity, 25°C, mPa.s 22900 - 34360

TYPICAL CURED PROPERTIES

Tensile Strength, psi (MPa) 1100 (7.6)
 Elongation at break, % 150
 Young's modulus, psi (MPa) 2200 (15)

CYAN FLEXO INK
Thermoforming/Post forming - 1"Draw

	EBECRYL® 8414	Competitive Ink
PET-G		
600/610 tape adhesion ⁽²⁾	100/100	100/100
Discoloration	None	None
Ink Separation	None	Yes
PVC		
600/610 tape adhesion	100/100	100/100
Discoloration	None	None
Ink Separation	None	None
PC		
600/610 tape adhesion	100/100	100/100
Discoloration	None	None
Ink Separation	None	Yes

⁽²⁾ percent ink remaining after cross hatch tape adhesion testing with 3M Performance Tapes.

PRECAUTIONS

Before using EBECRYL® 8414, 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® 8414.