

POLYESTER TETRAACRYLATE

INTRODUCTION

EBECRYL® 898 is a special purpose, 100% solids polyester acrylate resins that enables matte finishes in UV energy curable coatings, including ultra-matte coatings of < 5 gloss (60°). It is compatible with other common acrylate resin types and is effective when used with typical silica matting agents. EBECRYL® 898 does not compromise performance properties such as chemical and stain resistance.

PERFORMANCE HIGHLIGHTS

EBECRYL® 898 is characterized by:

- Extends matting effect
- Low viscosity
- Low odor
- Fast cure

UV/EB cured products based on EBECRYL® 898 are characterized by the following performance properties:

- Provides an outstanding matte effect
- Toughness and adhesion
- High surface hardness

The actual properties of UV/EB cured products also depend on the selection of other formulation components, such as reactive diluent(s), oligomers, additives and photo initiators.

SUGGESTED APPLICATIONS

Formulated UV/EB curable products containing EBECRYL® 898 may be applied by lithographic, screen, gravure, direct or reverse roll coating and spray methods.

EBECRYL® 898 is recommended for use in matte formulations:

- Wood finishes
- PVC flooring
- Plastic films
- OPVs for paper and plastic

VISCOSITY REDUCTION

Viscosity reduction of EBECRYL® 898 is possible with common reactive diluents such as dipropyleneglycol diacrylate (DPGDA)⁽¹⁾, 1,6-hexanediol diacrylate (HDDA)⁽¹⁾, octyl/decyl acrylate (ODA-N)⁽¹⁾ trimethylolpropane triacrylate (TMPTA)⁽¹⁾, and tripropylene glycol diacrylate (TPGDA)⁽¹⁾. Although viscosity reduction can be achieved with non-reactive solvents, reactive diluents are preferred because they are essentially 100 percent 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

TYPICAL PROPERTIES

Acid value, mg KOH/g	≤ 20
Appearance	White liquid
Density, g/cm ³ at 25°C	0.8
Functionality, theoretical	4
Oligomer, % by weight	84
Viscosity, 25°C, 20 s ⁻¹ , mPa.s	~4000

TYPICAL CURED PROPERTIES

Tensile strength, psi (MPa)	1247 (8.6)
Elongation at break, %	1.4
Young's modulus, psi (MPa)	122090 (842)
Glass transition temperature, °C	65
UV cured 125 µm thick films	

MATTING EFFECT

Table 1 demonstrates the effect on gloss in a UV cure wood coating formulation using EBECRYL® 898 both with and without a silica matting agents.

TABLE I

Component	Ultra-Matte ⁽³⁾	Matte ⁽³⁾	Satin ⁽³⁾	Reference ⁽³⁾
EBECRYL 265	28	29	30	32
DPGDA	39	41	42	53
EBECRYL 898	19	19	20	0
Silica matting agents ⁽⁴⁾	7	4	0	8
Wax ⁽⁵⁾	2	2	2	2
Photoinitiator ⁽⁶⁾	5	5	5	5
	High silica content	Half silica content	Silica free	High silica content
Gloss 60° angle cross/length ⁽⁷⁾	2-4	6-8	15-19	12-15
Average 6 domestic stains (max = 5/5)	4.5	4.5	4.6	4.5

⁽³⁾ UV cure at 7 m/min with a 80 W/cm Ga lamp followed by a 120 W/cm Hg lamp

⁽⁴⁾ ACEMATT® OK 520/TS 100, (5/3); Evonik

⁽⁵⁾ LANCO® PP 1362 D; Lubrizol

⁽⁶⁾ Benzophenone/2-Hydroxy-2-methyl-1-phenyl propanone, 3/2

⁽⁷⁾ ISO 2813 Standard

PRECAUTIONS

Before using EBECRYL® 898, 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® 898.