

MERCAPTO MODIFIED RESIN

INTRODUCTION

ADDITOL® LED 01 is a mercapto modified polyester acrylate resin. It is added as co-resin to UV curable formulations, in order to transform them into UV LED curable systems.

PERFORMANCE DATA

ADDITOL® LED 01 is used as co-resin, in order to increase the surface cure of a formulation when cured with an UV LED lamp. A typical starting point formulation (SPF) is given below.

	Ref.	SPF
EBECRYL® 8465 (*)	85	65
DPGDA	10	10
ADDITOL® LED 01	/	20
IRGACURE® 2100	5	5
Reactivity at fingernail resistance (m/min) (**)	4 x 5 not OK	1 x 5

(*) EBECRYL® 8465: a tri-functional urethane acrylate with balanced properties

(**) Curing is performed with a 8 W/cm² UV LED lamp emitting at 395 nm, at 2 cm distance from the substrate.

Without ADDITOL® LED 01, the above reference formulation remains tacky after 4 passes at 5 m/min. After replacement of 20 parts of the EBECRYL® 8465 by 20 parts of ADDITOL® LED 01 (SPF), a single pass at 5 m/min was enough to obtain fingernail resistance.

The obtained reactivity can further be influenced by:

- Level of ADDITOL® LED 01
- Type and functionality of the oligomer(s)
- Monomer dilution
- Coating thickness
- UV LED dose and distance to substrate

Mono- (MAPO) and bisacrylphosphineoxides (BAPO) are recommended photo initiator types for UV LED curing.

Some commercial examples are IRGACURE® 2100, LUCIRIN® TPO-L and ADDITOL® TPO.

PHYSICAL DATA

ADDITOL® LED 01 is characterized by:

- Transparent liquid appearance
- Dynamic Viscosity, 25°C, mPa.s: 210 (DIN EN ISO 321920 1/s)
- Pink to red colour
- Density: 1.17 g/cm³

COMPATIBILITY

ADDITOL® LED 01 is compatible with a broad range of selected resins of different chemical families, like urethane acrylates, polyester – and epoxy acrylates.

ADDITOL® LED 01 is nevertheless not compatible with all resins and it is recommended to check its compatibility prior to use. Resins containing amines have a limited compatibility with ADDITOL® LED 01.

ADDITOL® LED 01 is also compatible with acidic additives like adhesion promoters.

SUGGESTED APPLICATION

ADDITOL® LED 01 has been developed for UV LED applications, but is equally suitable for other low energy curing applications (e.g. UV-A curing).

ADDITOL® LED 01 can also be used for reduction of oxygen inhibition in UV/EB curable systems, when cured with the standard medium pressure Hg lamps

STORAGE AND HANDLING

Care should be taken not to expose radiation curable products to temperatures exceeding 40°C for prolonged periods or to direct sunlight. This might cause uncontrollable polymerization of the product with generation of heat.

Storage and handling should be in stainless steel, amber glass, amber polyethylene or baked phenolic lined containers. Do not store this material under an oxygen free atmosphere.

Use dry air to displace material removed from the container.

See Certificate of Analysis (CoA) for the actual shelf life of ADDITOL® LED 01.

PRECAUTION

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. Products of this type can be expected to be eye and skin irritant and have the potential to cause sensitization or other allergic responses. 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.