

LUMICRYL® 101S UV/EB CURABLE RESIN FOR ENERGY CURABLE COATINGS



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GENERAL DESCRIPTION

Lumicryl® 101S is a UV/EB-curable acrylic macromer suitable for formulating coatings and inks for application on film, laminate, plastic, metal, wood, paper or other substrates. Cured coatings based on Lumicryl® 101S have excellent abrasion and chemical resistance. Lumicryl® 101S can be used to formulate clear, pigmented or highly filled systems.

Coatings utilizing Lumicryl® 101S may be applied using conventional application equipment such as roller, spray, flexo, gravure, screen and others. The addition of common photoinitiators during the formulating stage is generally sufficient to afford rapid cure of the coating after solvent removal.

Formulations based on Lumicryl® 101S will dry to a tack-free, dry-to-touch, film after the solvent is flashed off. The dried, but uncured, coating remains in a thermoplastic state and can undergo intermediate processing such as stamping, forming, transfer laminating, thermal transfer, sanding, and re-coating prior to UV curing.

TYPICAL PROPERTIES*

Solids	27 - 29%
Solvents	19 - 21% MEK 51 - 53% n-propyl acetate
Viscosity	25 - 100 cps
APHA Color	100 Max
Specific Gravity	0.95 at 25°C

* Not to be used for specification purposes

BLENDING

Lumicryl® 101S can be blended with various UV/EB curable reactive diluents or oligomers to enhance certain coating attributes.

Blended With...	% 101S	Property Enhanced
EA	25%	<ul style="list-style-type: none">Gloss values
EA	75%	<ul style="list-style-type: none">Adhesion to Phosphate Treated Cold Rolled Steel
PA	25%	<ul style="list-style-type: none">Gloss valuesSolvent Resistance
PA	50%	<ul style="list-style-type: none">Adhesion to Phosphate Treated Cold Rolled Steel
AUA	25%	<ul style="list-style-type: none">Adhesion to Cold Rolled SteelGloss valuesSolvent ResistanceResistance to Coffee and Mustard Staining
AUA	50%	<ul style="list-style-type: none">Adhesion to Phosphate Treated Cold Rolled Steel

EA = Epoxy Acrylate

PA = Polyester Acrylate

AUA = Aliphatic Urethane Acrylate

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EXAMPLE FORMULATION

Lumicryl® 101S	98.0
Irgacure 651	1.0
Irgacure 819	1.0

APPLICATION AND CURING

The above formula was applied with a spiral bar to achieve a final cured film thickness of 0.5 mil on the substrates listed below. Following application, the films were allowed to flash off for a minimum of five minutes and a maximum of thirty minutes. All films were exposed to five passes through the FusionUV Model I-6. Gloss readings were taken after 30 seconds of post-cure rest, and all other testing was after a minimum of one hour of post-cure rest. Cured film properties are dependent upon degree of cure and, in some cases (e.g. adhesion), upon type of substrates.

RESULTS

Property	
20° Gloss Value	69.4
Pencil Hardness	6H
Hoffman Scratch Resistance (grams)	150
Solvent Resistance (MEK double rubs)	200
Adhesion Values*	
Polypropylene	0
ABS	0
PC/ABS	5
HIPS	5
Chromate Treated Aluminum	0
Phosphate Treated Cold Rolled Steel	5

*Cross Hatch, ASTM D3359-87, Method A
0-5 Scale: 0=No Adhesion, 5=Excellent Adhesion

Stain and Spot Resistance to:**	
3% Acetic Acid	5
5% Ammonia	5
40% Ethanol	5
Acetone	5
Distilled Water	5
Red Wine	5
Mustard	5
Coffee	5

** 0-5 Scale: 0=Deep Staining, 5=No Effect on Film

CURE CONDITIONS AND CURED FILM PROPERTIES

Most free radical producing initiators can be used such as benzophenone, Irgacure 651 and Irgacure 819. Cured films of Lumicryl® 101S have good chemical resistance (200 MEK double rubs), high hardness (6H Pencil Lead), and excellent abrasion resistance (steel wool). Cured film properties are dependent upon cure extent and conditions.

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The degree of UV cure may be increased by the application of heat just prior to UV exposure. Additional improvements in adhesion, cure rate and abrasion resistance are possible by utilization of appropriate additives in the fully formulated end-use product.

BLOCKING RESISTANCE

Post-solvent evaporation uncured coated sheets placed face-to-face under a 1.0 lb/in² weight and stored in an oven at 42°C for 24 hours show no evidence of film transfer or blocking.

REGULATORY LISTINGS

The components in this material are either listed or exempt from listing due to polymer exemption criteria for the following chemical listing inventories: AICS (Australia), DSL (Canada), EINECS (Europe), IECSC (China), NZIoC (New Zealand), TSCA (USA).

PACKAGING (NET WEIGHT)

40 lb. / 18.1 kg in steel pail

400 lb. / 181.4 kg in steel drum

PRODUCT AVAILABILITY

This product is commercially available and may require lead time.

STORAGE AND HANDLING

Store unopened containers of Lumicryl® 101S at or below 25°C (77°F) away from direct sunlight, ignition sources, and heat sources. Maintain an adequate air headspace in the product container and do not blanket or mix with inert gas as this may render the inhibitor ineffective. Use within 6 months of delivery. Properly stored material may have a longer useful shelf life, but Estron's warranty period is 6 months from date of shipment. Unexpected or uncontrolled temperature excursions during shipping, transit storage, and final storage may adversely affect useful shelf life and is beyond the manufacturer's control or responsibility.

CONTACT INFORMATION

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