Waterline Renewal Technologies™

TECHNICAL DATA SHEET

LightRay® High-Temp UV Resin

CHARACTERIZATION

Application field

LightRay® High-Temp UV Resin has been developed for UV-cured pipe rehabilitation process. The resin suits for inversion lining repair.. The resin can be used as a matrix material for in-situ or for pre-impregnated composites.

Properties

- tack-free
- outstanding chemical resistance
- high mechanical properties
- adhere to concrete, steel, PVC[1)]

[1)] Adhesion was measured on composites consist of High-Temp UV resin + TyvLiner Glass-flex, steel plates were roughened.

Composition

LightRay® High-Temp UV Resin resin resin is a methacrylate-based, one-component system that already contains the necessary UV initiator. The resin is completely **Styrene-free**.

TECHNICAL DATA

Liquid components

Characteristics[2)]	Value	Unit
Density	1,1 ± 0,1	g/cm³
Viscosity (20 min⁻¹)	3000 ± 400	mPas
Flash point (closed space)	~ 110	°C
Appearance, color	transparent, yellowish liquid	-

[2)] Measured at 25 °C

Hardened resin / Essential characteristics

Characteristics[3)]	Test method	Performance	Unit
Young's modulus	EN ISO 527	> 3000	MPa
Tensile strength	EN ISO 527	> 60	MPa
Elongation at break	EN ISO 527	> 3	%
Flexural modulus	EN ISO 178	> 2700	MPa
Flexural strength	EN ISO 178	> 80	MPa
Compressive strength	EN ISO 604	> 150	MPa
Shore-D hardness	ISO 868:2003	> 85	-
Glass-transition temp., T_g	EN ISO 6721	170 ± 10	°C
Overall chemical resistance	-	outstanding	-

[3)] all the properties were measured on UV cured samples (irradiation strength ~30 mW/cm²)

RESISTANCE

Chemical resistance

Chemicals tested	Result[4)]	Chemicals tested	Result[4)]		Result[4)]
Normal petrol	5	H_2O_2 30%	3	HNO_3 40%	3
Super petrol	5	H_2O_2 5%	5	IPA	5
$CaCl_2$- saturated	5	H_2SO_4 10%	5	$MgCl_2$ - saturated	5
Diesel	5	H_2SO_4 20%	5	NaCl 20%	5
Acetic acid 10%	5	H_2SO_4 40%	5	NaOH 10%	5
Acetic acid 20%	4	HCl 10%	5	NaOH 30%	5
Ethanol	5	HCl 37%	5	NaOH 50%	5
Oil	5	HNO_3 10%	5	Lactic acid 10%	5
Phosphoric acid 10%	5	HNO_3 20%	5	Toluol	5

[4)]After one month soaking on 25 °C :

Assessment guide:

1 Mechanical properties changed significantly (color may change) - the coating is not suitable for the storage of the test chemical

2 Mechanical properties changed considerably (color may change) - the coating may be suitable for the storage of the test chemical for less than one week period

3 Mechanical properties changed moderately (color may change) - the coating may be suitable for the storage of the test chemical for less than one month period

4 Mechanical properties changed slightly (color may change) - the coating may be suitable for the storage of the test chemical for one to two months period

5 Mechanical properties remained unchanged (color may change) - the coating is suitable for the permanent storage of the test chemical

[4)] the surface of the specimen was exposed to permanent contact with the test chemical

APPLICATION

Ambient temperature at work

Minimum ambient temperature at work: -5 °C
Maximum ambient temperature at work: +40 °C

Workability time

It remains liquid as long as the resin is not exposed to sunlight or any UV light.

Mixing

The resin is a one-component system, therefore mixing the components is not required.

Material consumption

Way of application	Material consumption[5)]
DN150 2–3 mm thick liner material	1.0 kg/m

[5)] Material consumption, among others, depends on various conditions. These consumption data are indicative values only. The exact consumption value shall be determined for the actual application, individually.

Curing conditions

LightRay® High-Temp UV Resin contains the required amount of photoinitiator. For proper curing, the resin shall be irradiated by UV-light, preferably with a wavelength of 400 nm ± 20 nm and a power intensity of at least 200 mW/cm² for inversion lining technique. The photoinitiator allows the use of high-pressure mercury lamps or UV-LEDs for curing.

Tool cleaning

Before any exposure to UV light, the resin shall be removed from the tools and equipment that are contaminated by resin, by using clean rugs. The thin remaining resin layer can be removed by acetone. Where acetone is applied, an operable fire extinguisher must be available at the construction site.

Waste treatment

Remaining liquid or gel-like resin mix must be considered **hazardous waste**. However, hardened resin and the remaining pieces of the reinforcing materials are inert, and therefore, can be handled as normal household or industrial waste. Acetone contaminated waste must be stored separately from other litter, in well-sealed metal vessels.

DELIVERY

Packaging

Designation	Packaging	Net mass
LightRay® High-Temp UV Resin Small Pack	10 l lid can	10 kg
LightRay® High-Temp UV Resin Medium Pack	30 l lid can	30 kg
LightRay® High-Temp UV Resin Large Pack	200 l drum	200 kg

STORAGE

Storage conditions

LightRay® High-Temp UV Resin shall be stored indoors in the original, unopened and undamaged packaging in a dry place at temperatures between 5°C and 30°C. Store in dark and 100% light tight containers only. Exposure to direct sunlight should be avoided.

Storage time

The quality of the product is guaranteed for 6 months from delivery provided it remains in its original, unopened packaging.

MARKING

Product group

UV-cured pipe rehabilitation product

Safety

At the first purchase, the manufacturer provides the customer with separate safety data sheets. Please follow the instructions on the treatment, storage and disposal of the product.Beyond the general working clothes and special protection tools (e.g. safety helmets and belts) the following items are necessary for the safe use of resins: thin rubber gloves, protective glasses that provide side protection as well or transparent protective mask, on top of the working clothes: removable thin full-body overalls made of polyethylene or paper. Moreover, the contractor shall provide the following items in situ: first aid kit (e.g. bandages), eye washing liquid, reserve working clothes and protective clothes, and fire extinguisher.

SPECIAL INFORMATION

Any application of the product to purposes other than clearly mentioned in this data sheet, is possible only by preliminary consulting with Waterline Renewal Technologies.