

# Quad-Cure® UVLH-400

## TECHNICAL DATA

### TYPICAL PERFORMANCE CHARACTERISTICS\*

#### LIQUID COMPONENTS

| CHARACTERISTICS                                        | TEST METHOD          | PERFORMANCE                   |
|--------------------------------------------------------|----------------------|-------------------------------|
| Density 77°F   25°C                                    | ASTM D1475-85        | 1,1 ± 0,1 g/cm³               |
| Viscosity (1 min⁻¹) 77°F   25°C                        | ASTM D445-83**       | N/A                           |
| Viscosity (20 min⁻¹) 77°F   25°C                       | ASTM D445-83**       | 2,200 ± 300 mPa·s             |
| Flash point (closed space)                             | Seta Flash Point Cup | > 212°F   100°C               |
| Appearance, color                                      | ASTM D1544-80        | transparent, yellowish liquid |
| Shelf life (protected from light, at max. 77°F   25°C) |                      | 6 months                      |

\* The values stated in inch-pound units are to be regarded as the standard.  
The values given in international system are for information only.

\*\* Brookfield, RVTD, Spindle 4

#### CURED RESIN AND LINER SAMPLE

| CHARACTERISTICS                     | TEST METHOD   | PERFORMANCE             |
|-------------------------------------|---------------|-------------------------|
| Young's modulus                     | ASTM D638     | > 348 ksi   2,400 MPa   |
| Tensile strength                    | ASTM D638     | > 1,740 psi   12 MPa    |
| Elongation at break                 | ASTM D638     | > 1.0%                  |
| Flexural modulus                    | ASTM D790     | > 217.5 ksi   1,500 MPa |
| Flexural strength                   | ASTM D790     | > 3,625 psi   25 MPa    |
| Deflection temperature<br>(66 psi)  | ASTM D648-18  | > 554°F   290°C         |
| Deflection temperature<br>(264 psi) | ASTM D648-18  | > 554°F   290°C         |
| Glass Transition                    | ASTM D3418-21 | 378°F   192°C           |

A Highly Chemical-Resistant, Styrene-Free UV Resin with an Extremely High Glass Transition Temperature of 378°F | 192°C

#### DESCRIPTION

Quad-Cure® UVLH-400 has been developed for the UV-CIPP rehabilitation process. The resin is best suited for inversion lining repair. The resin can be used as a matrix material for in-situ or for pre-impregnated composites. Quad-Cure UVLH-400 resin is a one-component system, which already contains the necessary UV initiator. The resin is completely Styrene-free.

#### PROPERTIES

- Excellent chemical resistance<sup>1</sup>
- High strength
- High T<sub>g</sub>

<sup>1</sup> Mechanical properties of the treated composites are included in the special information section.

#### AMBIENT TEMPERATURE AT WORK

- Minimum ambient temperature at work: 32°F | 0°C
- Maximum ambient temperature at work: 104°F | 40°C

#### WORKABILITY TIME

It remains liquid as long as the resin is not exposed to UV light, to include sunlight.



### MIXING

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

### CURING CONDITIONS

Quad-Cure UVLH-400 contains the required amount of photo-initiator. For proper curing, the resin shall be irradiated by UV-light, preferably with a wavelength of 400 nm  $\pm$  20 nm and a power intensity of at least 200 mW/cm<sup>2</sup> for inversion lining technique. The photo-initiator 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 have been contaminated, using clean rags. The resin layer which remains can be removed by wiping with an acetone soaked rag.

### DELIVERY

#### PACKAGING

| DESIGNATION                       | PACKAGING              | NET MASS           |
|-----------------------------------|------------------------|--------------------|
| Quad-Cure UVLH-400<br>Medium Pack | 5 Gallon   18.9 L Pail | 40 lb.   18.1 kg   |
| Quad-Cure UVLH-400<br>Large Pack  | 55 Gallon   208 L Drum | 425 lb.   192.8 kg |

### STORAGE

Quad-Cure UVLH-400 shall be stored indoors in the original, unopened and undamaged packaging in a dry place at temperatures between 41°F | 5°C and 86°F | 30°C. Store in dark and 100% light tight containers only. Exposure to direct sunlight should be avoided. When stored as directed the quality of the product is guaranteed for 6 months from delivery provided it remains in its original, unopened packaging.

### SAFETY

Always use safety glasses and protective clothing including gloves when using this product. Do not ingest. Always read the container warning label and Safety Data Sheet (SDS) prior to use.

### CHEMICAL RESISTANCE

| IMMERSION LIQUID                   | YOUNG'S MODULUS                       | TENSILE STRENGTH                      | ELONGATION AT BREAK |
|------------------------------------|---------------------------------------|---------------------------------------|---------------------|
| - (reference)                      | 361 +/- 14.5 ksi<br>2,489 +/- 100 MPa | 2,320 +/- 145 psi<br>16.0 +/- 1.0 MPa | 1.0 $\pm$ 0.2%      |
| 1% NaOH                            | 377 +/- 15.0 ksi<br>2,600 +/- 108 MPa | 2,465 +/- 362 psi<br>17.0 +/- 2.5 MPa | 1.0 $\pm$ 0.1%      |
| 10% H <sub>2</sub> SO <sub>4</sub> | 348 +/- 7.25 ksi<br>2,400 +/- 50 MPa  | 2,538 +/- 725 psi<br>17.5 +/- 5.0 MPa | 1.1 $\pm$ 0.3%      |
| 5% H <sub>2</sub> O <sub>2</sub>   | 322 +/- 26.0 ksi<br>2,220 +/- 179 MPa | 2,030 +/- 580 psi<br>14.0 +/- 4.0 MPa | 1.5 $\pm$ 0.5%      |

Any application of the product for purposes other than clearly mentioned in this data sheet, is possible only by preliminary consulting with Vortex Companies, Products division.