



## PRODUCT DESCRIPTION

UV1041 provides the following product characteristics:

<b>Technology</b>	Acrylic
Chemical Type	Acrylated urethane
Appearance (uncured)	Transparent liquid
Components	One component - requires no mixing
Viscosity	Low
<b>Cure</b>	Ultraviolet (UV)/ visible light
Cure Benefit	Production - high speed curing
<b>Application</b>	Bonding
Flexibility	Enhances load bearing & shock absorbing characteristics of the bond area.

UV1041 is primarily designed for bonding rigid or flexible PVC to polycarbonate, while not inducing stress cracking under typical molded stress levels. It enables easy assembly of components with close fitting tolerances (i.e. joining polycarbonate to flexible PVC tubing), and is recommended for applications involving small gaps less than 0.25mm. It has also shown excellent adhesion to a wide variety of substrates including glass, many plastics and most metals. Suitable for use in the assembly of disposable medical devices.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Specific Gravity @ 25 °C 1.1

Flash Point - See SDS

Viscosity, Brookfield - RVT, 25 °C, mPa·s (cP):

Spindle 1, speed 20 rpm, 100 ~ 300

## TYPICAL CURING PERFORMANCE

UV1041 can be cured by exposure to UV and/or visible light of sufficient intensity. To obtain full cure on surfaces exposed to air, radiation @ 220 to 260 nm is also required. The speed of cure will

depend upon the UV intensity and spectral distribution of the light source, the exposure time and the light transmittance of the substrates.

## Stress Cracking

Liquid adhesive is applied to a medical grade polycarbonate bar 6.4 cm by 13 mm by 3 mm which is then flexed to induce a known stress level.

Stress Cracking, ASTM D 3929, minutes:

7 N/mm <sup>2</sup> stress on bar	>15
12 N/mm <sup>2</sup> stress on bar	3 to 4

## Fixture Time

Fixture time is defined as the time to develop a shear strength of 0.1 N/mm<sup>2</sup>.

UV Fixture Time, Glass microscope slides, seconds:

Black light, Zeta ® 7500 light source:

6 mW/cm <sup>2</sup> , measured @ 365 nm	≤15
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UV Fixture Time, Polycarbonate, seconds:

Metal halide bulb:

30 mW/cm <sup>2</sup> , measured @ 365 nm,	<5
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Electrodeless, H & V bulbs:

50 mW/cm <sup>2</sup>	<5
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Electrodeless, D bulb:

50 mW/cm <sup>2</sup>	<5
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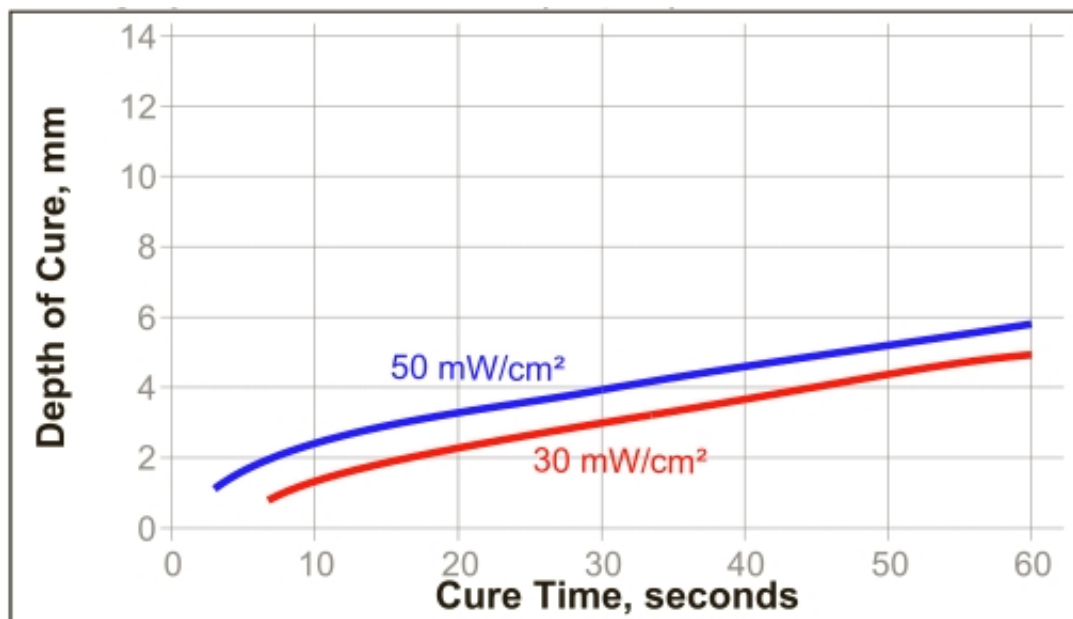
## Depth of Cure vs. Irradiance (365 nm)

The graphs below show the increase in depth of cure with time at 30 mW/cm<sup>2</sup> - 100 mW/cm<sup>2</sup> as measured from the thickness of the cured product formed in a 9.5mm trough.

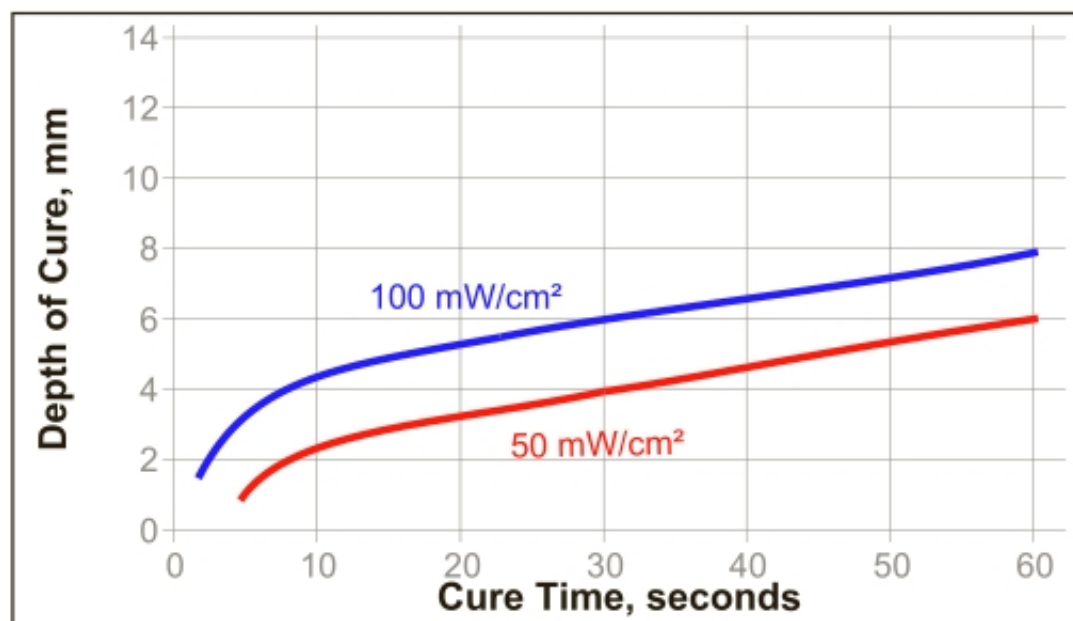
**Note:** When exposed to a V Bulb at irradiances of 50 and 100 mW/cm<sup>2</sup> for 30 seconds, a depth of cure greater than 13 mm was achieved. The performance for medium pressure Hg will be similar to Electrodeless system, H bulb

## Curing System: Metal Halide (Doped)

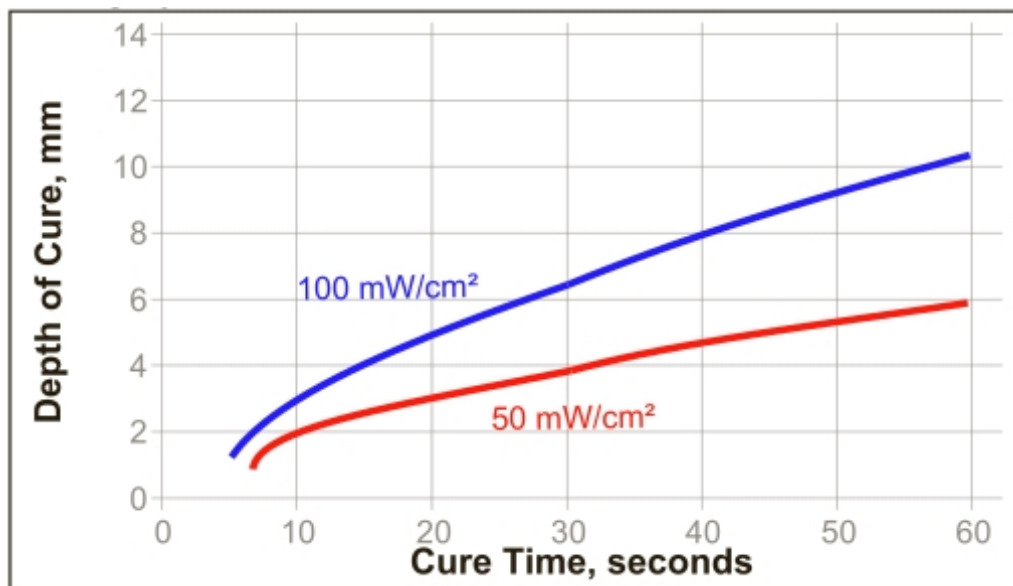
## UV1041



Curing System: Electrodeless, D bulb



Curing System: Electrodeless, H bulb



## TYPICAL PROPERTIES OF CURED MATERIAL

30 mW/cm<sup>2</sup> , measured @ 365 nm, for 80 seconds using a glass filtered metal halide light source

### Physical Properties

Shore Hardness, ISO 868, Durometer D	64
Refractive Index	1.5
Water Absorption, ISO 62, %:	
2 hours in boiling water	5.36
Elongation, at break, ISO 527-3, %	265
Tensile Modulus, ISO 527-3	N/mm <sup>2</sup> 669
	(psi) (97,000)
Tensile Strength, at break, ISO 527-3	N/mm <sup>2</sup> 23
	(psi) (3,300)

### Electrical Properties

Surface Resistivity, IEC 60093, Ω	1.0×10 <sup>15</sup>
Volume Resistivity, IEC 60093, Ω·cm	8.4×10 <sup>14</sup>
Dielectric Breakdown Strength, , kV/mm	31
Dielectric Constant / Dissipation Factor, IEC 60250:	

**UV1041**

100-Hz	4.56 / 0.05
1-kHz	4.41 / 0.02
1-MHz	4.02 / 0.03

**TYPICAL PERFORMANCE OF CURED MATERIAL****Adhesive Properties**

Cured @ 30 mW/cm<sup>2</sup> , measured @ 365 nm, for 80 seconds using a metal halide light source

Lap Shear Strength, ISO 4587:

Polycarbonate:

0.5 mm gap	N/mm <sup>2</sup>	*5.2
	(psi)	(750)

\* substrate failure

**TYPICAL ENVIRONMENTAL RESISTANCE**

Cured @ 30 mW/cm<sup>2</sup> , measured @ 365 nm, for 80 seconds using a metal halide light source

Lap Shear Strength, ISO 4587:

Polycarbonate:

0.5 mm gap

**Chemical/Solvent Resistance**

Aged under conditions indicated and tested @ 22 °C.

		% of initial strength		
Environment	°C	2 h	24 h	170 h
Boiling water	100	* 100	-----	-----
Water immersion	49	-----	-----	* 100
Isopropanol immersion	21	-----	* 100	-----
Heat/humidity	38	-----	-----	* 100

**Heat Aging**