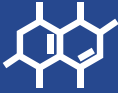




Technical Datasheet

Durable UV80



UV Resin

Photocentric



Durable UV80

Tensile Modulus (Low – High)



Impact Strength (Low – High)



Compatible Printers

UV LCD 3D Printers



Liquid Crystal

OPUS

Colour



Clear

Available in
1kg bottles



Reactor chamber

Photocentric's Durable range is the most versatile material of the Photocentric functional materials. Durable UV80 is similar to ABS in its ability to resist impact, compress, bend and stress fatigue without breaking or deforming. Photocentric Durable UV80TR works with a variety of UV LCD and DLP 3D printers, as well as the Photocentric Liquid Crystal Opus printer.

Optimised for:

● Jigs and fixtures

Fastenings

● Cover-plates

Enclosures

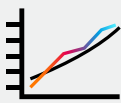
● End-use parts

Tools and couplings

Unique features:



Tough, durable,
and long lasting



Simulating the
strength and
stiffness of ABS



Smooth surface finish



Translucent finish
suitable for
micro-reactors



Durable UV80 Properties

Tensile Properties	Post-cured	Method
Tensile Modulus *	2127 MPa	ASTM D638
Tensile Strength (Break) *	68.2 MPa	ASTM D638
Tensile Strength (Yield) *	77.2 MPa	ASTM D638
Elongation at break *	16%	ASTM D638
Flexural Properties		
Flexural Strength *	89.6 MPa	ASTM D790
Flexural Modulus *	2277 MPa	ASTM D790
Impact Properties		
Impact Strength Notched Izod *	67.4 J/m	ASTM D256
General Properties		
Shore Hardness *	90 Shore D	ASTM D2240
Heat Deflection Temperature*	76°C	ASTM D648
Water absorption (%)* after 24 hrs	0.8	Internal
Water absorption (%)* after 72 hrs	Available Upon Request	Internal
Water absorption (%)* after 7 days	Available Upon Request	Internal
Viscosity	400 cPs	At 25°C Brookfield spindle 3
Density	1.10 g/cm ³	
Storage	10<T>50°C	

* Mechanical properties stated based on fully cured material.



We are constantly reviewing and improving our range of high-performance materials.
For the very latest information, please visit the Photocentric website



Design & Print Orientation Consideration Parameters

These are example parameters in relation to a UV LCD printer with 81µm XY resolution.

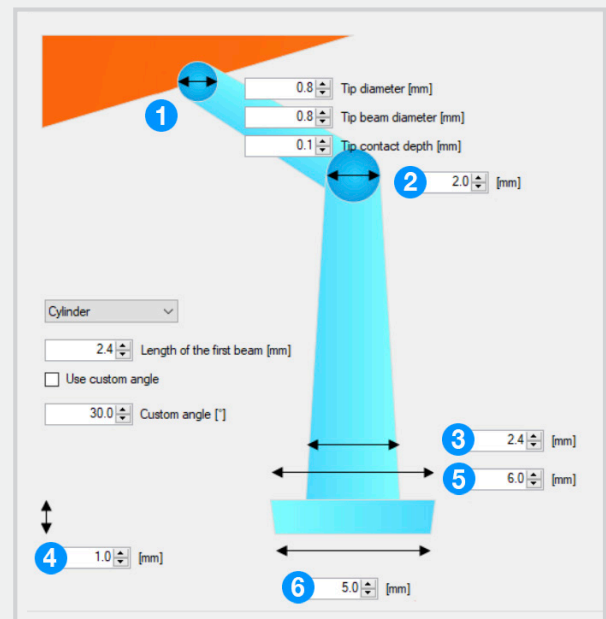
Properties	Parameters
Minimum feature size (pins)	0.4mm
Minimum hole diameter	0.8mm
Minimum slot thickness	0.6mm
Minimum wall thickness	0.4mm
Overhangs	Successful for overhangs $\leq 60^\circ$ with no support
Round Dim Fit	Parts fit with resistance at 1mm Click to view sample
Square Dim Fit	Parts fit perfectly with no resistance at 0.06mm offset Click to view sample
Minimum wall thickness unsupported	Minimum wall thickness un supported is 2mm with maximum height of 80mm.
Scaling factor	X +1% Y+1% Z+0.7%

* These are example parameters relation to a UV LCD printer with 81 µm XY



Recommended Support Parameters & Orientation

These are recommended support settings in relation to a UV LCD printer with 81µm XY resolution.



Large Models

Small Models

Diagram Ref. Nr	Parameters	Values	Parameters	Values
1	Tip Diameter (mm)	0.8	Tip Diameter (mm)	0.5
2	Pole Diameter (mm)	2	Pole Diameter (mm)	1.5
3	Pole Widening Factor	1.5	Pole Widening Factor	1.5
-	Model Height from Base (mm)	10	Model Height from Base (mm)	10
4	Height of Support Foot (mm)	2	Height of Support Foot (mm)	2
5	Top of Foot Diameter (mm)	5	Top of Foot Diameter (mm)	5
6	Bottom of Foot Diameter (mm)	3	Bottom of Foot Diameter (mm)	3

• Recommended orientation around all axes is 45 °.



Printer and Resin Profiling

Photocentric UV Printers

To print with Photocentric UV printers, choose Durable UV80 - Clear and the desired layer thickness when preparing your print file in Photocentric Studio.

3rd Party UV Printers

- Photocentric UV high-performance resins have been formulated to be compatible with a wide range of 3rd Party Printers. This list is continually updated, for the most up-to-date information, please visit our UV Resin Compatibility Page. All resins are functional at a wavelength of 385-405 nm.
- Please see below instruction on how to calculate appropriate exposure time with regards to your 3rd party UV printer and purchased resin



Layer Exposure Guidelines

This guide will assist you in establishing a layer exposure time for a desired resin and layer thickness based on the characteristics of Photocentric's UV Resin range and your UV 3D printer.

Each resin requires a specific energy to cure a certain layer thickness. 'Energy' is defined by multiplying 'light output intensity' of your printer and a 'given time of exposure'. The equation below simply explains the matter.

$$\text{Energy [mJ/cm}^2\text{]} = \text{Light Output Intensity [mW/cm}^2\text{]} \times \text{Exposure Time [s]}$$

Your UV 3D printer manufacturer will provide you with light output intensity value.

Layer Thickness (μm)	25	50	100
A UV 3D printer with 5mW/cm ² light output intensity	3 sec	3.5 sec	4 sec
Ec(mJ/cm ²)	17.2		
Dp(mm)	260		



Bear in mind the exposure time vs energy is not a linear trend, and this data is intended strictly as a guideline. Settings may need to be further optimised to suit each printer.



Pre-Print Instructions

1. Heat the resin to 30°C in the bottle.
2. Shake the resin bottle for 2 minutes before pouring into the resin vat.



Post-Print Instructions

To reach the full mechanical properties of the material, parts printed using Durable UV80 - Clear resin will need to be post-processed.

1. Remove the print platform from the printer and place in to the wash unit. You can use 'Photocentric Wash15' or 'Photocentric Air Wash L' as Wash units.
2. Follow resin cleaner/solvent TDS for relevant wash cycles. You can use 'Photocentric Resin Cleaner's as the cleaning mediums. For 'Photocentric Resin Cleaner 30' washing cycle is 10 minutes.
3. Make sure you do not exceed the recommended wash cycles as it might have adverse effect on the mechanical properties.
4. Rinse parts with warm water for 1-2 minutes.
5. Where possible, use compressed air to dry the parts, if not, leave them to dry naturally.
6. The parts printed can be cured in any UV post-curing unit. You can use 'Photocentric Cure M+' for 1-2 hours at 60°C depending on the size of parts.
7. Parts printed with UV Durable UV80TR are suitable for thermal shocking. To remove parts from the platform, remove from the cure unit and submerge immediately in cold water, the parts will become easily free.
8. Alternatively, Remove the platform from the cure unit and place on to a suitable flat surface. use a scraper or suitable cutters and take care to not damage the part/(s) when removing them from the platform.