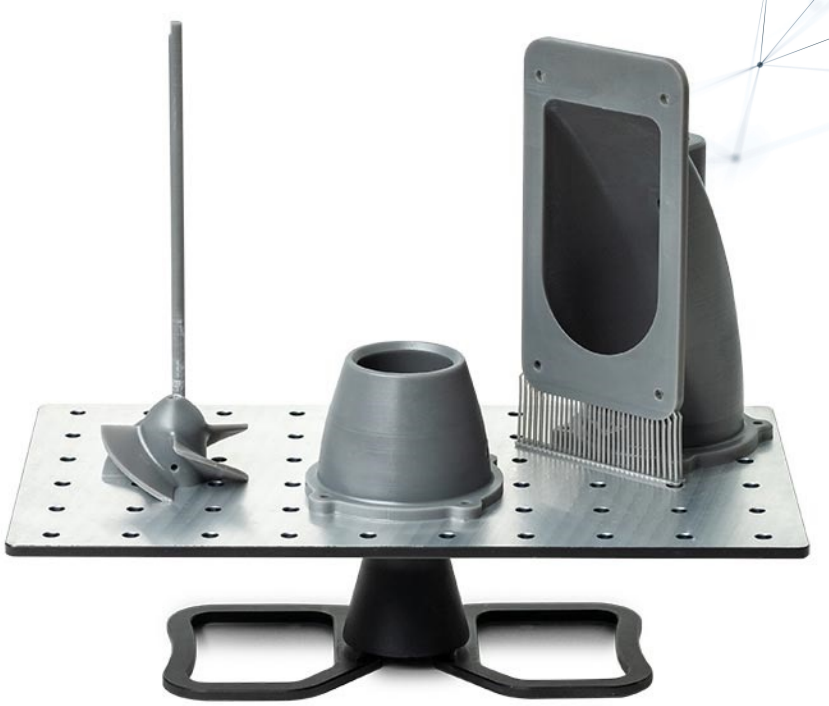
Technical Data

Photocentric

UV High Tensile



Properties

Tensile Modulus

Low — High

Shore Hardness

Soft — Hard

Compatible Printers

UV LCD & DLP 3D Printers

Liquid Crystal OPUS

Liquid Crystal DENTAL

Colours

Grey

Available in 500g & 1kg bottles

Introduction

Photocentric's UV High Tensile Grey resin is ideal for printing durable parts with high tensile strength that cannot be bent or compressed easily. They exhibit very high tensile properties and limited elongation. This resin works with a variety of UV LCD and DLP 3D printers, as well as the Photocentric Liquid Crystal Dental and Opus printers.

Best Used for:

- Prototyping
- Engineering
- Dental Models Manufacturing

Unique Features:

- Durable
- Rigid & Strong
- High Accuracy
- Smooth surface finish

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www.photocentricgroup.com

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Properties

Tensile Properties		
Tensile Modulus *	2610 MPa	ASTM D638
Ultimate Tensile Strength *	65 MPa	ASTM D638
Elongation at break *	6%	ASTM D638
Flexural Properties		
Flexural Modulus *	1910 MPa	ASTM D790
Impact Properties		
Impact Strength Notched Izod *	8.1 kJ/m2	ISO 180
General Properties		
Hardness *	80 Shore D	ASTM D2240
Heat Deflection Temperature	63 °C	ASTM D648
Viscosity	510 cPs	At 25°C Brookfield spindle 3
Density	1.16 g/cm3	
Storage	10<T>50°C	

*** Mechanical properties stated based on fully cured material.**

Resin Preparation prior to Print

- Heat the resin to 30°C in the bottle.
- Shake the resin bottle for 2 minutes before pouring into the resin vat.
- Stir resin in vat with vat cleaning tool for pigment drop out etc. before and between prints if the print is immediate and vat is not being emptied.

Printer and Resin Profiling

Photocentric UV Printers

- To print with Photocentric UV printers, choose ‘High Tensile Grey’ and the desired layer thickness when preparing your print file in Photocentric Studio.
- Please note, UV High Tensile Grey is not suitable for printing parts with a total print time of more than 12 hours at 50um layer thickness.

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

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UV Resin Layer Exposure Guidelines

Overview

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:

Energy [mJ/cm²]= Light Output Intensity [mW/cm²] x 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/cm2 light output intensity	2 sec	3 sec	4.5 sec
Ec(mJ/cm2)		20	
Dp(mm)		0.18	

NOTE: 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.

Post-Processing

To reach the full mechanical properties of the material, parts printed using UV High Tensile Grey will need to be post-processed.

1. Remove the print platform from the printer and place into the wash unit.
2. Follow resin cleaner/solvent TDS for relevant wash cycles. You can use 'Photocentric Wash15' or 'Photocentric Air Wash L'.
3. Rinse parts with water to remove excess resin and solvent.
4. Where possible, use compressed air to dry the parts, if not, leave them to dry naturally.
5. The parts printed in UV High Tensile Grey can be cured in any UV post-curing unit. You can use 'Photocentric Cure M+' for 2 hours for smaller parts or 4+ hours for larger parts at 60°C.
6. Parts printed with UV High Tensile Grey 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.
7. Alternatively, use a scraper or suitable cutters and take care to not damage the part/(s) when removing them from the platform.