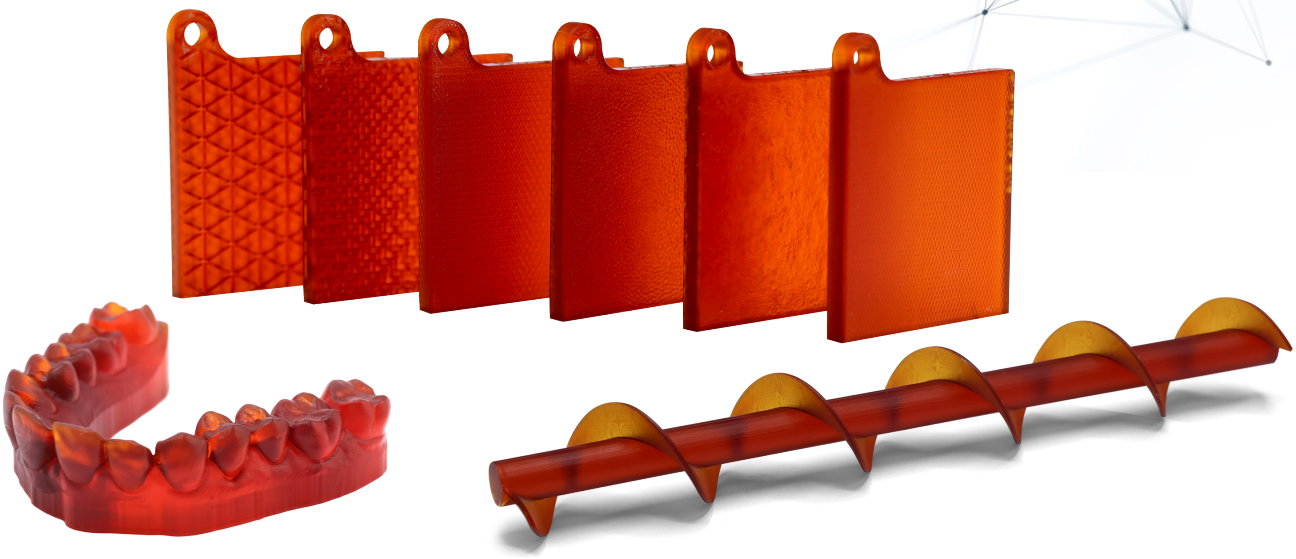
Technical Data

Photocentric

Rigid DL240 Plant-Based



Dental model aligner, Spiral and Textured tiles

Compatible Printers

Liquid Crystal MAGNA

Colours

Dark Amber

Available in 5kg bottle

Introduction

'Rigid DL240 Plant-Based' is a high-performance rigid 3D printing resin which consists of 50% plant-based raw materials, offering a substantial reduction on net CO_2 emission compared to conventional resins.

'Rigid DL240 Plant-Based' is remarkably easy to handle and process, along with exhibiting the following outstanding properties:

Best Used for:

- Fast & Accurate Prototyping
- Dental Models for Aligner manufacturing

USPs

- High accuracy
  - o Over 98% of scanned data within +/- 100µm for dental models printed horizontally.
  - o Over 83% of scanned data within +/- 100µm for dental models printed vertically, increasing output for overnight production.
- Exceptional surface finish and smooth feel
- Fast post-curing
- Dry to touch
- Rigid
- 50% of components from plant-based materials
- Enabling quick design iterations by offering 250 and 350µm layer thickness print profiles

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Properties

Tensile Properties	Green	Post-cured*	Method
Tensile Modulus *	1210 MPa	2440 MPa	ASTM D638
Tensile Strength (Break) *	27 MPa	56.6 MPa	ASTM D638
Tensile Strength (Yield) *	24.3 MPa	64.5 MPa	ASTM D638
Elongation at break *	19.2%	6.1%	ASTM D638
Flexural Properties			
Flexural Strength *	-	108 MPa	ASTM D790
Flexural Modulus *	-	2656 MPa	ASTM D790
Impact Properties			
Impact Strength Notched Izod	-	12.2 J/m	ASTM D256
Impact Strength Notched Izod	-	2.2 kJ/m2	ISO 180
General Properties			
Shore Hardness	-	88 Shore D	ASTM D2240
HDT (@ 0.455 MPa)	-	78.4°C	ASTM D648
HDT (@ 1.82 MPa)	-	62.6°C	ASTM D648
Water absorption (%)* after 24 hrs		0.470%	ASTM D570
Water absorption (%)* after 72 hrs		0.625%	ASTM D570
Water absorption (%)* after 7 days		0.933%	ASTM D570

*** Post-cured for 2 hours at 60°C in Photocentric Cure L2**

Liquid Properties	Value	Method
Viscosity	580 cPs	At 25°C Brookfield spindle 3
Density	1.10 g/cm3	
Storage	10<T>50°C	

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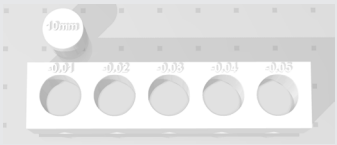
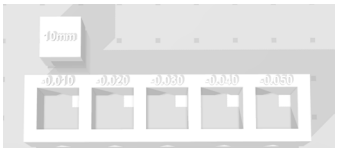
Design Consideration Parameters

There are some design guidelines for printing parts with Liquid Crystal Magna.

Properties	Parameters
Minimum feature size (pins)	0.2mm
Minimum hole diameter	0.4mm
Minimum slot thickness	0.4mm
Minimum wall thickness	0.3mm
Overhangs	Successful for overhangs ≤15°
Round Dim Fit	Parts fit with no resistance at 0.09mm offset 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 unsupported is 1mm with maximum height of 100mm.

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Processing Instructions

- To print with Photocentric Liquid Crystal Magna, choose ‘Rigid DL240Bio’ at desired layer thickness when preparing your print file in Photocentric Studio.
- Heat the resin to 30°C in the bottle.
- Shake the resin bottle for 2 minutes before pouring into the resin vat.

Post-Processing Instructions

1 Parts can be washed in 15 minutes using Photocentric Resin Cleaner or alternatively, in 10 minutes using Photocentric Resin Cleaner 30.

2- Make sure you do not exceed the recommended wash cycles as it might have adverse effect on the mechanical properties.

3- Once washed, rinse with warm water for 1-2 minutes

4- Dry with compressed air to remove any remaining water. Or alternatively, leave to air-dry.

5- To reach the ultimate mechanical properties: Place the platform into the Photocentric Cure L2 for a minimum of 2 hours at 60°C. for medium to large parts post curing might take between 3 to 4 hours.

- If only ‘dry to touch’ finish is required, for example for dental models, 30 minutes post curing should be adequate.

6- Remove the platform from the Cure L2 and immediately leave it for 2 minutes under running cold water below 14°C for thermal shocking. Parts can be removed from the platform with minimal effort.

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