Technical Datasheet

Elastic DL160

460nm

Photocentric

Optimised for:

- Sportswear protection and helmets at room and cold temperatures
- Dampening rubbers and foams
- Cushioning
- Gaskets and seals

Cricket Helmet

Elastic DL160 is designed for applications where a high level of energy dampening, even at low temperatures (-24°C), is required. It displays elastomeric properties before break, rebound resilience of 10% (90% of energy is absorbed) and 70 Shore A hardness.

Compatible:
LC Magna, LC Titan

Colour
Translucent , Black

Avaliable:
5kg bottles

MADE IN THE UK

Key Features

High elongation at break >160%

Energy damping even at cold temperature, glass transition temperature of -24°C

Elastomeric properties

Accurate printing, no Z bleeding

Rebound Resilience 10%

Good tear strength 20kN/m

Low water absorption (0.3%) potentially making it suitable for contact with the body during periods of high exertion

Fast post curing

Elastic DL160 Translucent Properties

Tensile Properites*	Green	Post-Cured	Method
Tensile Modulus	1.48 MPa	13 MPa	ASTM D412
Ultimate Tensile Strength	0.98 MPa	12 MPa	ASTM D412
Tensile strength at 50% Elongation	-	2 MPa	ASTM D412
Tensile strength at 100% Elongation	-	4 MPa	ASTM D412
Elongation at Break	TBC	162%	ASTM D412

Mechanical Properties*	Post-Cured	Method
Tear Strength	20 kN/m	ASTM 624
Rebound Resilience	10%	ASTM D7121

General Properties*		
Shore Hardness	70 Shore A	ASTM D2240
Tg (DSC, S1 –57, S2 8)	-24 °C	Internal
Water absorption (%)* after 24 hrs	0.34%	ASTM D570
Water absorption (%)* after 72 hrs	0.38%	ASTM D570
Water absorption (%)* after 7 days	0.56%	ASTM D570

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

Liquid Properties	Value	Method
Viscosity	1100 cPs	At 25°C Brookfield spindle 3
Liquid density	1.04 g/cm3	-
Storage	10<T<50°C	-

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

Elastic DL160 Black Properties

Tensile Properites	Green	Post-Cured	Method
Tensile Modulus	1.60 MPa	19.5 MPa	ASTM D412
Ultimate Tensile Strength	1.16 MPa	18.6 MPa	ASTM D412
Tensile strength at 50% Elongation	-	2.5 MPa	ASTM D412
Tensile strength at 100% Elongation	-	18 MPa	ASTM D412
Elongation at Break	86.4%	149%	ASTM D412

Mechanical Properties	Post-Cured*	Method
Tear Strength	23.2 kN/m	ASTM 624
Rebound Resilience	9.5%	ASTM D7121

General Properties		
Shore Hardness	74 Shore A	ASTM D2240
Tg (DSC, S1 –57, S2 8)	-24 °C	Internal
Water absorption (%)* after 24 hrs	0.29%	ASTM D570
Water absorption (%)* after 72 hrs	0.45%	ASTM D570
Water absorption (%)* after 7 days	0.62%	ASTM D570
Viscosity	1100 cPs	At 25°C Brookfield spindle 3
Liquid density	1.04 g/cm3	-
Storage	10<T<50°C	-

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

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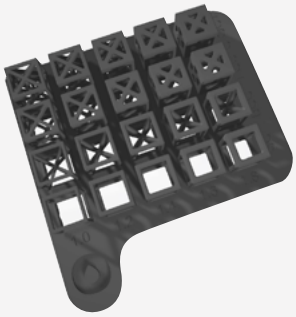
Design & Print Orientation Consideration Parameters

Properties	Parameters
Minimum feature size (pins)	0.6mm
Minimum hole diameter	1mm
Minimum slot thickness	1.2mm
Minimum wall thickness	0.5mm
Overhangs	Successful for overhangs ≤45°
Scaling factor	N/A (Photocentric Studio profiles reflect this value, no need for adjustment)
Scaling factor for lattice structure with beam thickness ≤2mm	-4% XY and N/A Z (requires adjustment on Photocentric Studio profiles) 
Lattice Parameters	Photocentric applications team designed the following lattice test piece, as a recommendation for the user's first print with any flexible resin. By doing so, the user will understand the resin properties in relation to design parameters and assist them to design their next parts accordingly. To download the file please click here. 
	FRONTIER Photocentric worked closely with General Lattice Frontier Software, a free-to-search material library of validated mechanical property data designed to support users in the selection of the best lattice, material, and hardware combination. Elastic DL160 is one of the validated materials on Frontier library. https://www.generallattice.com/frontier
Recommended orientations to print	45° angle or vertical as possible.
Recommended support structure to print	Depending on part size, choose a desired support profile in Photocentric Studio.

Pre-Print Instructions

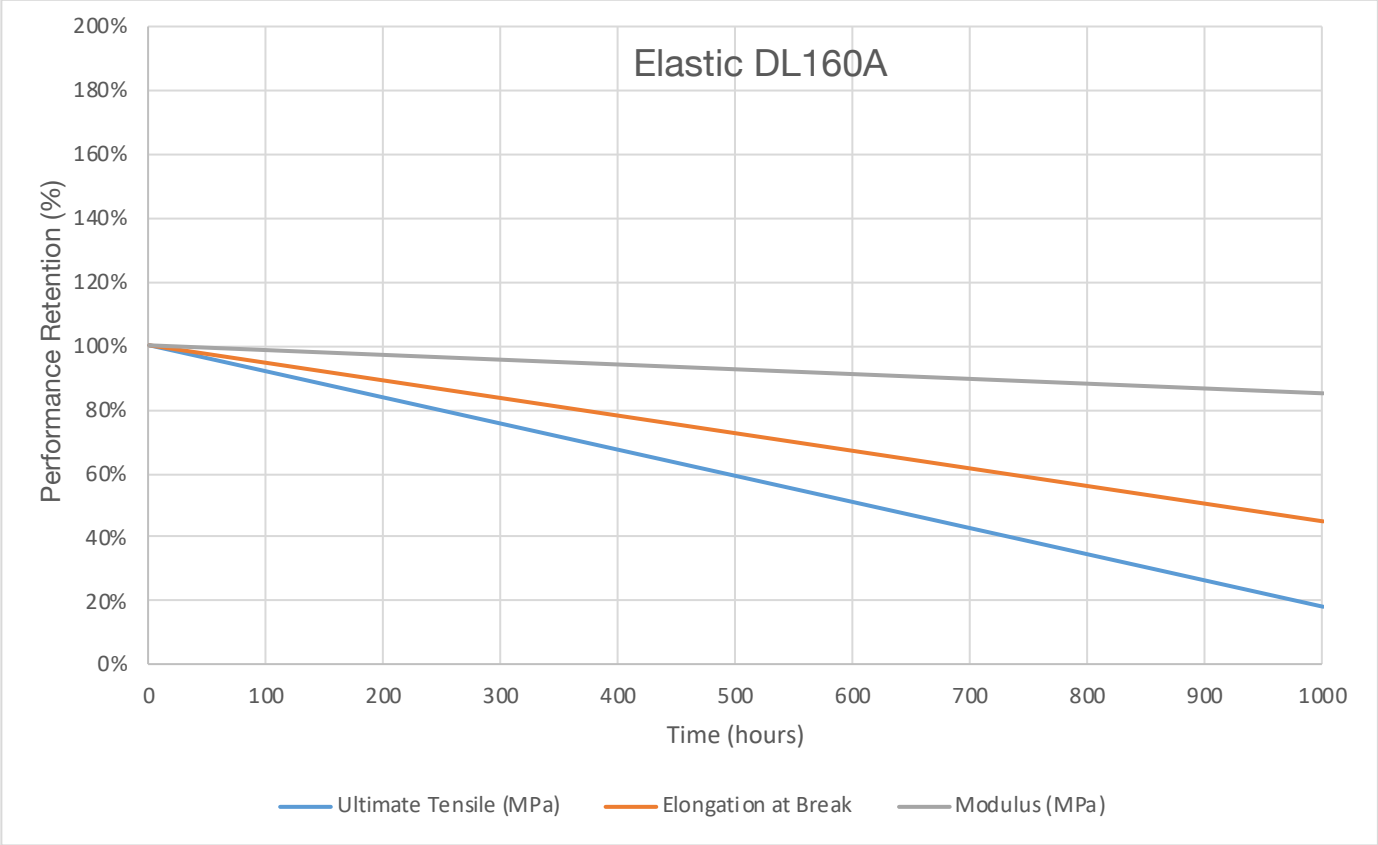
- To print with Photocentric Liquid Crystal Magna, choose Elastic DL160 - Translucent at desired layer thickness when preparing your print file in Photocentric Studio.
- Heat the resin to 30°C in the bottle.

Post-Print Instructions

1. Parts can be washed in ‘Photocentric Air Wash L’ for 10-12 minutes using ‘Photocentric Resin Cleaner 30’.
2. Make sure you do not exceed the recommended wash cycles as it might have an adverse effect on the mechanical properties.
3. Once washed, rinse with lukewarm water for 1-2 minutes. Parts can deform in hot/warm water.
4. Gently 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.
6. Remove the platform from the Cure L2 and remove the part/s from the platform with using a scraper. It is easier to remove parts when they are still warm.

Elastic DL160 Translucent UV Aging

Specific UV ageing testing in accordance with 'ISO 4892 Part2 Method A Cycle 1 for a duration of 1000 hrs' was externally performed on Photocentric Elastic DL160 - Translucent Resin.
Mechanical properties including Tensile Modulus, Tensile Strength at Break and Elongation at Break were evaluated after 1000 hours of exposure and compared against a zero-hour control.*



*All mechanical testing was carried out under ASTM D412 (Type C) for flexible/elastomeric materials, and ASTM D638 (Type IV) for rigid/durable materials.