



Recycling marine plastics into 3D printer filament

Extended Technical Data Sheet (updated 20th March 2020) Product Name - Porthcurno Material - Recycled Nylon 6, Polyamide 6, PA 6

Description

Porthcurno is a semi-crystalline nylon blend with high tensile strength, good impact resistance and low surface friction.

Its properties make an especially interesting material for use in applications where moderate flexibility and high strength are useful e.g. homewares, in-production fittings, wearables and live hinges.

Nylon is a technical, engineering grade material and is not recommended for novice users.

As with most nylons, Porthcurno is susceptible to absorption of moisture both before and after forming.

Porthcurno should be dried prior to use and kept in a controlled environment between uses. Insufficient drying prior to use will result in warping, poor surface quality and an increased probability of failure.

Typical drying parameters are 5 hours at 80°C at a controlled humidity of 10% H₂O or lower. Effective drying cannot be achieved reliably at temperatures below 70°C.

We expect most conventional masterbatch already validated for use with nylons to be suitable for compounding

Test	Test Standard	SI Unit	Measured Value	Standard Deviation
Density	ISO 1183	kg/m ³	1127	7
Water Absorption	40°C for 28 Days	%	9.12	
Wear Resistance	Taber Abrasion H22/3000 cycles	%	0.02	0.01

Resistance to UV -28 Days

Tensile Strength @ Break	ISO 527-2	Mpa	42	4
Elongation @ Break	ISO 527-2	%	22	10
Tensile Modulus	ISO 527-2	Mpa	1280	379

DISCLAIMER

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Typical IM Parameters

Mold Temperature	50-80°C
Injection Temperature	250-280 °C
New Polymer	5% (95% Porthcurno)

Test	Test Standard	SI Unit	Measured Value at 23C	Standard Deviation	Measured Value at 60C	Measured Value at 90C	Measured Value at 120C	Measured Value at 150C
Tensile Strength								
Tensile Strength @ Break	ISO 527-2	Mpa	48	6	40	29	26	23
Elongation @ Break	ISO 527-2	%	3.6	1.2	58	-	-	-
Tensile Strength @ Yield	ISO 527-2	Mpa	59	2				
Elongation @ Yield	ISO 527-2	%	41	18				
Tensile Modus	ISO 527-2	Mpa	2262	208	638	559	368	279
Flex (3 Point)								
Flexural Stress	ISO 178	Mpa	70	2				
Flexural Modulus	ISO 178	Mpa	2126	184				
Charpy Impact								
Charpy Impact at -20C	ISO180	kJ/m ²	2.76	0.54				
Charpy Impact at +23C	ISO180	kJ/m ²	5.15	0.72				
Heat & Flammability								
VICAT	ISO306/B120	C	195.4	0.2				
Heat Distortion temperature	ISO 75/A/ 1.8MPa	C	53.4	0.1				
Melting Temperature	ISO 11357-3	C	220					
Thermal Expansion	ISO 11359	µm/m°C	105.3					
Flammability	UL94 Vertical test	V0,1 or 2	V0					