



BIOGRADE LIMITED ACN 102 302 134
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Rigid Moulding Grade Resin - Biodegradable

Biograde B-M

- A fully biodegradable resin for rigid moulding applications
- Greater than 98% biodegradability when tested to ISO14855
- Can be used for injection moulding and profile extrusion

Description

BIOGRADE B-M is a fully biodegradable plastic based on a blend of thermoplastic starch (TPS), aliphatic polyesters (AP) and natural plasticizers (glycerol and sorbitol). This grade of resin is compatibilised to offer a high level of mechanical strength, good elongation properties and toughness. The resin is based on corn starch which is a renewable material. The resin does not contain polyolefins.

Applications

- Biodegradable injection moulded products such as cutlery, toothbrushes, combs, shavers, golf-tees, plant markers, etc.
- Extruded tubes and rods
- Biodegradable stakes and pegs
- Biodegradable tags
- Extruded pipes
- Injection moulded caps and closures
- Compostable rigid products if wall thickness is kept below 1 mm.

Properties

<i>Properties</i>	<i>Test Method</i>	<i>Typical Value/ Unit</i>
Melt flow index	ASTM D-1238	15-20 g/10 min (2.16 kg/190°C)
Density	ASTM D-4883	1.0 -1.2 g/cm ³
Melting Temperature Range	ASTM D-3418	80 deg.C
Tensile strength at yield	ASTM D-883	> 13 MPa
Tensile strength at break	ASTM D-883	> 13 MPa
% Elongation at break	ASTM D-883	> 200 %



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Processing Conditions

BIOGRADE B-M resin can be processed on standard injection moulding machines or profile extruders

Suggested Max Moisture (%)	0.025
Middle Temperature (°C)	150 to 160 deg.C
Front Temperature (°F)	130 to 140 deg.C
Nozzle Temperature (°C)	140 to 160 deg.C
Processing (Melt) Temp (°C)	160 to 165 deg.C
Mold Temperature (°C)	24 to 30 deg.C

Specific Instructions for Moulding of BIOGRADE B-M Resin:

Before moulding the resin, the extruder needs to be purged and cleaned of residual polyethylene or other polymers and then the BIOGRADE B-M resin can be used as the last cleaning step, after which the temperature can be adjusted to the correct settings.

Other Comments

1. The mouldings need to condition for 1-2 days after processing to develop their full strength. During the conditioning the starch component reabsorbs its moisture content making it more ductile.
2. BIOGRADE B-M resins can be blended with natural fibres such as flax, hemp, sisal and coconut hair (coir) to add reinforcement and to assist with water-wicking into thick section mouldings.
3. Wet resin should be dried before processing to limit degradation induced by water (hydrolysis).