

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

| | |
|---------------------|--|
| Product form | : Granulate |
| Name | : Beograde EXT037 T |
| Product code | : 9802070037 |
| Product use | : Biodegradable, transparent and rigid material, fully based on renewable resources developed for the extrusion process. |

1.2. Details of the supplier of the material specification sheet

Manufacturer

Beologic
Jolainstraat 44
8554 Sint-Denijs
info@beologic.com

SECTION 2: Physical, mechanical and thermal properties

2.1. Information on basic physical, mechanical and thermal properties

| Properties ⁽¹⁾ | Method | Typical Value | Unit |
|---------------------------------|-------------------------------|------------------------------|-------------------|
| Composition / Physical | | | |
| Content | | Complex blend of biopolymers | |
| Renewable content | | ≥ 95 | % |
| Colour | | / | |
| Transmission | | Transparent | |
| Physical state | | Solid | |
| Relative density | ISO 1183-1 | 1,2-1,25 | g/cm ³ |
| Mechanical | | | |
| Tensile modulus | ISO 527 | 3500 | MPa |
| Tensile stress at yield | ISO 527 | 60 | MPa |
| Tensile elongation at yield | ISO 527 | 2 | % |
| Break stress | ISO 527 | 66 | MPa |
| Total elongation | ISO 527 | 2 | % |
| Flexural modulus | ISO 178 | 3600 | MPa |
| Flexural strength | ISO 178 | 70 | MPa |
| Charpy impact strength | (Notched 1eA , 23 °C) ISO 179 | 3,5 | kJ/m ² |
| Thermal | | | |
| MFI | (190°C, 2.16 kg) ISO 1133-1 | 4 | g/10min |
| Melting temperature range | ISO 11357-3 | 160-180 | °C |
| Vicat softening point | (B120) ISO 306 | n/a | °C |
| HDT B | (0,45 MPa) ISO 75 | 55-60 | °C |
| Decomposition temperature (TGA) | ISO 3451-1 | 300 | °C |
| Ash content (TGA) | ISO 3451-1 | ≤ 5 | % |
| Processing conditions | | | |
| Feed Throat | | 60 – 80 | °C |
| Feed temperature | | 160 – 170 | °C |
| Compression zone | | 170 – 180 | °C |
| Metering zone | | 175 – 185 | °C |
| Die | | 175 – 185 | °C |

(1) Typical properties; not to be construed as specifications.

BEOGRADE EXT037 T

Material Technical Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

2.2. Other information

No other information

SECTION 3: Processing conditions – guidelines

| | | |
|------------------|-----------|----|
| Feed throat | 60 – 80 | °C |
| Feed temperature | 180 – 190 | °C |
| Compression zone | 190 – 200 | °C |
| Metering zone | 190 – 210 | °C |
| Die | 190 – 210 | °C |

If melt is too viscous, the temperatures can be increased stepwise by 5°C up to a maximum of 200°C melt temperature.

3.1 General comments

Discoloured surface and/or a burnt smell is a symptom of a too high temperature, too long residence time or uncontrolled friction heat. To counter that there is burning or damaging of the screw, barrel or tool, it's obliged to stop the machine only after it has been purged with cleaning compound. Gas formation or bubbles at the surface are a sign of insufficient degassing or a too high moisture content in the material of the co-extruder and/or main extruder.

Beograde is not compatible with a wide variety of other resins, and special purging sequences should be followed:

1. Before production, ensure to clean the extruder and bring temperature to steady state. with low viscosity, general purpose PP or PE.
2. Vacuum out hopper system to avoid contamination.
3. Introduce Beograde into the extruder at the operating conditions used in step one.
4. Once Beograde has purged, reduce barrel temperatures to desired set points.
5. At shutdown, purge machine with high viscosity polystyrene or polypropylene

Purging time: approximately 10 to 20 minutes.

At higher temperature, the dwell time of the material inside the machine shall be reduced to a minimum in order to lower the risk of degradation.

Don't leave the material hot inside the machine for long periods as the material will degrade.

SECTION 4: Biodegradability and compostability

Composting of organic waste helps to divert organic waste from landfill or incineration. Composting is a biological process in which organic wastes are degraded by microorganisms into carbon dioxide, water and humus, a soil nutrient. **Beograde EXT037 T** PLA polymers are in compliance with the EN-13432 standard.

As the compostability of the end product is also dependent on the geometry of product, it is the responsibility of the manufacturer of the end product to ensure compliance with the regulations.

SECTION 5: Drying conditions and storage

Beograde EXT037 T is a compound of biodegradable polymers (such as PLA). Residual moisture content can lead to hydrolysis degradation. **We recommend drying Beograde EXT037 T at 100°C for a period of 2 – 4 hours.** Don't overheat or dry it longer than recommended.

Residual moisture content (> 0.2%) can result in lower melt stability, surface mark or bubble formation during processing.

We recommend to store the material in dry conditions below 50°C and protected from UV-light. Opened bigbag should be used immediately or adequately sealed back up after use to avoid moisture uptake and have negative effects on the physical properties of the product. It is recommended to use Beograde granules within a time period of maximum 6 months.

Finished product made from Beograde should be stored dry and cold. Storage time and lifetime of finished products depends on processing parameters and on storage conditions (moisture, UV radiation ...).