

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

1.1. Product identifier

| | |
|--------------|--|
| Product form | : Granulate |
| Name | : Beograde BTL043 |
| Product code | : 980207043 |
| Product use | : Biodegradable and compostable compound developed for the bottle blowing 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 | | ≥ 66 | % |
| Colour | | White | |
| Transmission | | Opaque | |
| Physical state | | Solid | |
| Relative density | ISO 1183-1 | 1,25-1,3 | g/cm ³ |
| Mechanical | | | |
| Tensile modulus | ISO 527 | 2660 | MPa |
| Tensile stress at yield | ISO 527 | 37,9 | MPa |
| Tensile elongation at yield | ISO 527 | 2,1 | % |
| Break stress | ISO 527 | 11,9 | MPa |
| Total elongation | ISO 527 | 9 | % |
| Flexural modulus | ISO 178 | 2222 | MPa |
| Flexural strength | ISO 178 | 57,2 | MPa |
| Charpy impact strength | (Notched 1eA , 23 °C) ISO 179 | 8,9 | kJ/m ² |
| Thermal | | | |
| MFI | (190°C, 2.16 kg) ISO 1133-1 | 3-4 | g/10min |
| Melting temperature range | ISO 11357-3 | 130-150 | °C |
| Vicat softening point | (B120) ISO 306 | n/a | °C |
| HDT B | (0,45 MPa) ISO 75 | 57-60 | °C |
| Decomposition temperature (TGA) | ISO 3451-1 | 300 | °C |
| Ash content (TGA) | ISO 3451-1 | ≤ 10 | % |
| Processing conditions | | | |
| Feed Throat | | 60 – 80 | °C |
| Feed temperature | | 160 – 170 | °C |
| Compression zone | | 170 – 180 | °C |
| Metering zone | | 180 – 185 | °C |
| Die | | 180 – 190 | °C |

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

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

2.2. Other information

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

General advice

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

1. Before production, ensure to clean 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 3: Drying conditions and storage

Beograde BTL043 is a compound of biodegradable polymers (such as PLA). Residual moisture content can lead to hydrolysis degradation. **We recommend drying Beograde BTL043 at 70°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 ...).

SECTION 4 Biodegradability and compostability

Beograde BTL043 fulfills the requirements of the existing standards for compostable and biodegradable polymers (EN 13432), because it can be degraded by microorganisms.

As the compostability of the end product is 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: Food regulation

Beograde BTL043 complies in its composition with the European food stuff legislation for food contact, EU Directive 10/2011/EC (and the amendments 2018/213 and 2018/831).

The material also complies with the US food contact notification for the main components: e.g. FCN 178, 475 and 907. A detailed food law status can be given on request. Whether the article is suitable for the application, has to be checked by the converter or packer.

SECTION 6: Stability and reactivity

6.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

6.2. Chemical stability

Stable under normal conditions of use.

6.3. Possibility of hazardous reactions

None under normal use.

6.4. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

The technical data above are based on our current knowledge and experience. They do not release from the obligation to make one's own evaluation and trials, in respect to a variety of possible influences in processing and application of the product. A legally binding guarantee of certain properties or suitabilities for a special kind of application cannot be derived from the data.