

TECHNICAL DATA SHEET

04.07.2023

Version 3.1

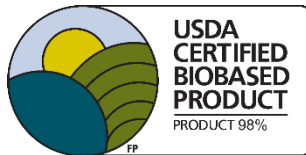
SULAPAC BARRIER – BA2002

MATERIAL FEATURES

Sulapac Barrier is a sustainable injection molding material developed for the inner layer of cosmetic jars. It provides excellent barrier against water evaporation allowing you to package your water-based cosmetics in the sustainable Sulapac jars. It can be used both in bi-injection (2K jars) or with 4-part molds.

Sulapac Barrier contains 98% USDA certified biobased content¹. The material is safe for people and the planet. It is certified as industrially compostable by BPI² and leaves no persistent microplastics³ or toxic load behind³. Sulapac Barrier also meets the EU requirements for food contact materials⁴.

For more details, visit sulapac.com/sulapac-material-innovation/



¹ The USDA Certified Biobased Product label is a certification mark of the U.S. Department of Agriculture.

² Compostability verified up to the thickness of 107 microns. 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.

³ Fully biodegradable in simulated marine environment tests according to ISO 22403 and ASTM D6691. Relative biodegradation of 100% (ISO 22403, 27°C / 80°F) and 92% (ASTM D6691, 30°C / 86°F) in 56 days using natural sea water. Not considered biodegradable in California. Relative biodegradation of 100% in 75 days under home compost conditions (ISO 14855, 28°C / 82 °F). Relative biodegradation of 70% in 58 days when tested in simulated solid-state anaerobic condition (ASTM D5511, 37°C / 99 °F) representing an accelerated biodegradation in a landfill.

⁴ Long-term contact with dry food only. Restrictions and specifications of use apply, please refer to the relevant Declaration of Compliance for further information.

| MECHANICAL PROPERTIES | |
|---|------------------------|
| MATERIAL | SULAPAC BARRIER |
| PHYSICAL PROPERTIES | |
| Hardness (Shore D) | 85 |
| Material density (g/cm ³) | 1.49 |
| Shrinkage (%) | 1.0 |
| TENSILE PROPERTIES (ISO 527-1) | |
| Tensile strength (MPa) | 44 |
| Tensile modulus (GPa) | 8.7 |
| Tensile strain (%) | 1.1 |
| FLEXURAL PROPERTIES (ISO 178) | |
| Flexural strength (MPa) | 65 |
| Flexural modulus (GPa) | 8.2 |
| Flexural strain (%) | 1.1 |
| IMPACT PROPERTIES (Unnotched, ISO 179-1) | |
| Charpy impact strength (kJ/m ²) | 8.7 |
| RHEOLOGICAL PROPERTIES (ISO 1133) | |
| MFI (190°C/2.16 kg) | 8,0 – 13,0 (g/10 min) |

| BARRIER PROPERTIES | | |
|---|------------------------|----------------------|
| MATERIAL | SULAPAC BARRIER | POLYPROPYLENE |
| WVTR (g/m ² /day) ASTM F1249 (23 C/85%) | 0.01 | 0.01 |
| OTR (cm ³ /m ² /day) ASTM D3985 (23 C/0%) | 2.3 | 35-377* |

WVTR = water vapor transmission rate

OTR = oxygen transmission rate

* Based on literature

PROCESSING INSTRUCTIONS FOR INJECTION MOLDING

MOISTURE AND DRYING

INSTRUCTIONS

- It is recommended that the temperature of granules is stabilized to room temperature before drying.
- Before processing, the granules should be dried using a dehumidifying or vacuum dryer.
- The granules should be dried for at least 4 hours at 80-90 °C (not exceeding 100 °C).
- Avoid exposing the material to the ambient conditions after drying.
- Moisture content together with exceeded temperatures and long residence times can lead to thermal degradation of the material.

PURGING INSTRUCTIONS

BEFORE PRODUCTION

- Purge the plasticization unit and, if existing, the hot runner with low MFI PP or PE at least for 10-30 minutes.
- Introduce high melt flow PP and change to SULAPAC BARRIER material with resin operating temperatures, and purge for 10-30 minutes.
- It is critical that all drying and conveying/receiving systems are free of any residual PP/PE/PET before adding SULAPAC BARRIER material.
- The operator must ensure that the quality of the products corresponds with the reference samples.

DURING PRODUCTION

- The material is sensitive to prolonged dwell time and therefore needs a constant melt flow.
- The condition of the mold should be regularly monitored and, if necessary, the mold should be cleaned using, e.g., a glass fiber brush or mold cleaning agents.

AFTER PRODUCTION

- Purge the plasticization unit and, if existing, the hot runner with PP or PE.

PROCESSING CONDITIONS

GENERAL INSTRUCTIONS

- Typical starting parameters are shown in the table below.
- Due to normal variation between different processing batches, suitable final parameters may require adjustments.
- Material has relatively narrow processing window (sensitive for temperature adjustments), thus correct processing parameters must be ensured.
- An end user is solely responsible to verify the correct processing parameter set for each material batch.
- Both cold and hot runner systems are suitable for this material.
- Valve gate systems can be used.
- Tool temperature must be kept at given temperature interval due to secure barrier properties and easy ejection of the final part from the mold.

TEMPERATURE

| | |
|-------------------------------|------------|
| Throat | 40 – 60°C |
| Feed zone | 165°C |
| Compression zone | 175°C |
| Homogenizing zone | 180°C |
| Machine nozzle | 180°C |
| Back pressure | 5 – 10 bar |
| Hot runner nozzle and bushing | 180-183°C |
| T _{mold, Front} | 60 – 70°C |
| T _{mold, Back} | 60 – 70°C |

TROUBLESHOOTING

- Too high processing temperatures may cause flashing, material degradation, and lower than typical pressure values for a manufactured product.
 - Typical solution: gentle temperature decrease.
- Too low processing temperatures cause incomplete mold filling, and higher than typical pressure values for a manufactured product.
 - Typical solution: gentle temperature increase.
- Too low mold temperatures may make it difficult to eject a product from the mold and hinder crystallization which may lead to compromised barrier properties.
 - Typical solution: use 60 - 70°C mold temperature.

STORAGE AND TRANSPORTATION INSTRUCTIONS

STORAGE AND TRANSPORTATION CONDITIONS

GRANULES

- It is recommended to store granules in their closed, original moisture barrier packaging.
- Storage in direct sunlight or in rain should be avoided.
- Temperatures during transportation and storage may not exceed 60°C at any time.
- Material shelf-life is 12 months from the manufacturing date when stored at room temperatures (23 °C).
Manufacturing date can be found on the label on material packaging.

COLOURING INSTRUCTIONS

COLOURING INSTRUCTIONS

TWO POSSIBLE COLORS

- White: Artic White MB, dosing max. 2 %
- Black: MB, dosing max. 1 %



**Sulapac
is proud
to be an
ISO 9001
and
ISO 14001
certified
company**

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