

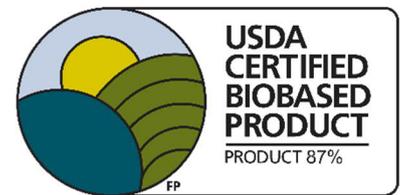
## SULAPAC PREMIUM FLEX 40 – IM1011

### MATERIAL FEATURES

The Sulapac Premium materials makes your products look and feel luxurious. The ceramic sound and visible wood chips' haptic touch make it stand out. It is ideal for sustainable products that aim for an air of luxury. The grade of Sulapac Premium Flex 40 is more flexible and has better impact strength. It is processable with existing injection molding machinery. Our experts assist with the tests and production settings.

The material is 87% bio-based and certified according to ASTM D6866 under the USDA BioPreferred® program. It biodegrades without leaving permanent microplastics behind.<sup>1</sup> The main components are wood from industrial side streams and biopolymers. All of the raw materials are sourced according to a strict sustainability policy and the wood originates from certified forests.

The material is recyclable via industrial composting.<sup>2</sup>



Sulapac Premium Flex 40 is safe for both people and the planet: the ecotoxicity and threshold values for heavy metals of the raw materials have been verified to meet EN 13432 and/or ASTM D6400. The raw materials comply with the food contact requirements of the EU and FDA legislation. They are also REACH and Proposition 65 compliant and meet the framework regulation (EC) No.1223/2009 for cosmetic products. The material is GMO-free.

Sulapac Premium Flex 40 is available as FSC-certified meaning the wood is sustainable sourced. By choosing this product, you help take care of the world's forests. Sulapac's FSC license number is FSC-C140323.



For more details, visit [www.sulapac.com/key-features](http://www.sulapac.com/key-features)

<sup>1</sup> Sulapac materials within the same family of recipes show biodegradation of 26-60% at 140 days in the marine environment (30°C / 86°F) (ASTM D6691).

<sup>2</sup> The raw materials used in this recipe have been shown either by analysis performed by the supplier or by Sulapac to be industrially compostable.

## MECHANICAL PROPERTIES

MATERIAL	SULAPAC PREMIUM FLEX 40	POLYPROPYLENE
<b>TENSILE PROPERTIES (ISO 527-1)</b>		
Tensile strength (MPa)	38	20
Tensile modulus (GPa)	4.3	1.20
Tensile strain (%)	1.4	100-600 (typical)
<b>FLEXURAL PROPERTIES (ISO 178)</b>		
Flexural strength (MPa)	70	25
Flexural modulus (GPa)	4.6	1.25
Flexural strain (%)	2.2	-
<b>IMPACT PROPERTIES (Unnotched, ISO 179-1)</b>		
Charpy impact strength (kJ/m <sup>2</sup> )	8	165
<b>RHEOLOGICAL PROPERTIES (ISO 1133)</b>		
MFI (190°C/2.16 kg)	n.a*	5-35 (typical)

\*Not possible to measure due to large wood particles.

## PROCESSING INSTRUCTIONS FOR INJECTION MOLDING

### MOISTURE AND DRYING

#### INSTRUCTIONS

- Before processing, the granules should be dried using a dehumidifying or vacuum dryer.
- If a dehumidifying dryer is used, the granules should be dried for at least 4 hours at 100°C.
- If a vacuum drying system is used, the granules should be first dried for at least 20 minutes at 100°C and then kept in the vacuum for at least 40 minutes.
- Avoid exposing the material to ambient conditions after drying.
- Moisture content can lead to hydrolysis.
- Dried granules should be mixed with the color masterbatch after the granules have cooled down to avoid the agglomeration of color masterbatch granules.

## PROCESSING CONDITIONS

TEMPERATURE		GENERAL INSTRUCTIONS
Throat	40-60°C	<ul style="list-style-type: none"> <li>• Typical settings may require optimization.</li> <li>• Both cold and hot runner systems are suitable for this material.</li> <li>• Valve gate systems can be used.</li> <li>• Avoid using temperatures above 200°C to reduce the risk of wood and polymer degradation.</li> <li>• The dwell time of the material inside the machine shall be reduced to a minimum to lower the risk of thermal degradation.</li> </ul>
Feed zone	160-170°C	
Compression zone	170-185°C	
Homogenizing zone	175-190°C	
Machine nozzle	175-190°C	
Back pressure	5-10 bar	
Screw Speed, max	< 0,25 m/s	
Hot runner nozzle and bushing	180-200°C	
Tooling temperature $T_{mold}$ ,	20-40°C	

## PURGING INSTRUCTIONS

BEFORE PRODUCTION	DURING PRODUCTION	AFTER PRODUCTION
<ul style="list-style-type: none"> <li>• Purge the plasticization unit and the hot runner with PE (or PP).</li> <li>• To purge the plasticization unit and hot runner from residual PE (or PP) or previous production recipes, at least 10 cycles should be produced from Sulapac material before starting the actual production.</li> </ul>	<ul style="list-style-type: none"> <li>• The material has a tendency to degrade and therefore needs a constant melt flow.</li> <li>• 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.</li> <li>• If an extensive amount of burned material starts to appear in the products, try lowering processing temperature.</li> </ul>	<ul style="list-style-type: none"> <li>• Purge the plasticization unit and the hot runner with PE (or PP).</li> <li>• Clean up the mold after production. The temperature of the mold is recommended to be elevated to 70°C. Generally used mold cleaning agents can be utilized.</li> </ul>

## STORAGE AND TRANSPORTATION INSTRUCTIONS

### STORAGE AND TRANSPORTATION CONDITIONS

#### GRANULES

- It is recommended to store granules in their closed, original moisture barrier packaging at temperatures below 45°C.
- Storage in dry conditions.
- Storage in direct sunlight or in rain should be avoided.
- Storage time of unopened bags at room temperature (23 °C) may not surpass 12 months.
- Temperatures during transportation and storage may not exceed 60°C at any time.

## COLOUR MASTERBATCHES

### SULAPAC COLOR PALETTE

#### MASTERBATCHES

Sulapac's colors have been inspired by Nordic nature. The Sulapac Premium Flex 40 is by default Natural Wood - colored. Sulapac has 8 food contact approved color masterbatches that can be used to color the natural Premium Material. The recommended loading percentage or dosage of the color masterbatches is 0.5-4 weight-%.



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

