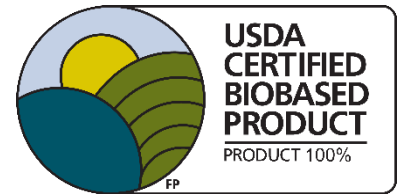


## SULAPAC SOLID – IM1019

### MATERIAL FEATURES

Sulapac Solid is an appealing, sustainable material alternative especially suitable for products used on daily basis, such as plates, mugs, bowls, and containers. With a beautiful ceramic look and feel, the hard-wearing Sulapac Solid has high impact strength and is dishwasher and microwave safe. This sustainable material has a low carbon footprint and is made of responsibly sourced bio-based raw materials and naturally occurring clay minerals. To reach the high performance, the material is injection molded with a hot (100°C) mold and can be processed with existing plastic product machinery.

The material is 100% bio-based and certified according to ASTM D6866 under the USDA BioPreferred® program. Most importantly, Sulapac Solid doesn't leave permanent microplastics behind.



## MECHANICAL PROPERTIES

MATERIAL	SULAPAC SOLID	POLYPROPYLENE
<b>PHYSICAL PROPERTIES</b>		
Hardness (Shore D)	n.d.	55-75
Material density (g/cm <sup>3</sup> )	1.38	0.9
Shrinkage (%)	< 0.5	1 ... 2
Heat deflection temperature (HDT-B) (°C)	130	
<b>TENSILE PROPERTIES (ISO 527-1)</b>		
Tensile strength (MPa)	59	20
Tensile modulus (GPa)	8.5	1.20
Tensile strain (%)	1.2	100-600 (typical)
<b>FLEXURAL PROPERTIES (ISO 178)</b>		
Flexural strength (MPa)	83	23
Flexural modulus (GPa)	8.5	1.25
Flexural strain (%)	1.3	-
<b>IMPACT PROPERTIES (Unnotched, ISO 179-1)</b>		
Charpy impact strength (kJ/m <sup>2</sup> )	14	165
<b>RHEOLOGICAL PROPERTIES (ISO 1133)</b>		
MFI (190°C/2.16 kg)	3-6 g/10 min	5-35 (typical)

## 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 in order 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 210°C in order to lower the risk of polymer degradation.</li> <li>• The dwell time of the material inside the machine shall be reduced to minimum in order to lower the risk of thermal degradation.</li> </ul>
Feed zone	150-165°C	
Compression zone	180-200°C	
Homogenizing zone	185-200°C	
Machine nozzle	185-210°C	
Back pressure	5-10 bar	
Screw speed, max	< 0,25 m/s	
Hot runner nozzle and pushing	180-210°C	
Tooling temperature T <sub> mold</sub>	<b>100°C</b>	

## 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

#### GRANUELS

- It is recommended to store granules in their closed, original moisture barrier packaging.
- 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.

### SULAPAC COLOR PALETTE

#### GRANUELS

- Sulapac color masterbatches for Sulapac Solid are currently under development.

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to be an  
ISO 9001  
and  
ISO 14001  
certified  
company

