

## TECHNICAL DATA SHEET

01.08.2024

Version 1.0

### SULAPAC UNIVERSAL

### SULAPAC UNIVERSAL FLEX 30

### SULAPAC UNIVERSAL FLEX 35

### SULAPAC UNIVERSAL HEAT 30

Sulapac's Universal materials are a sustainable solution for injection molding. Sulapac Universal is for rigid items and Sulapac Universal Flex grades are designed for items that require more flexibility. Sulapac Universal Heat 30 possess better heat resistance.

#### TYPICAL MATERIAL PROPERTIES

	SULAPAC UNIVERSAL	SULAPAC UNIVERSAL FLEX 30	SULAPAC UNIVERSAL FLEX 35	SULAPAC UNIVERSAL HEAT 30
<b>PHYSICAL PROPERTIES</b>				
Hardness (Shore D)	80	82	76	82
Material density (g/cm <sup>3</sup> )	1,27	1,27	1,27	1,41
Shrinkage (%)	0,2	0,3	0,3	0,2
<b>TENSILE PROPERTIES (ISO 527-1)</b>				
Tensile strength at yield (MPa)	45	35	40	26
Tensile modulus (GPa)	4,5	3,0	3,5	3,3
Tensile strain at yield (%)	1,6	2,7	2,5	2,7
<b>FLEXURAL PROPERTIES (ISO 178)</b>				
Flexural strength at max load (MPa)	74	53	65	36
Flexural modulus (GPa)	5,1	3,1	4,0	3,4
Flexural strain at max load (%)	1,9	2,7	2,5	2,9
<b>IMPACT PROPERTIES (Unnotched, ISO 179-1)</b>				
Charpy impact strength (kJ/m <sup>2</sup> )	10	12	11	8
<b>RHEOLOGICAL PROPERTIES (ISO 1133) (190°C/2,16 kg)</b>				
MFI (g/10min)	12	12	12	7

### HEAT RESISTANCE

HDT-B (°C)	56	56	56	95
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### BIOBASED CONTENT (ASTM D6866)

Biobased content (%)	100	79	87	70
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### MATERIAL COLOR

Due to the natural origin of wood, color variation is possible both between and within material batches.

## DRYING AND MASTERBATCH INSTRUCTIONS

### DRYING

- Before processing, the granules should be dried using a dehumidifying dryer or a vacuum dryer
  - Dehumidifying dryer: the granules should be dried for at least 5-6 hours at 80°C
  - Vacuum dryer: the granules should be first dried for at least 20 minutes at 80°C
- The best end result will be achieved if the residual moisture of the granules is < 0,2 %
- After drying, avoid exposing the material to ambient conditions
- Moisture content can lead to hydrolysis

### MASTERBATCH

- If color masterbatch is added, the granules should be cooled down to 50°C in order to avoid the agglomeration of color masterbatch granules

## PROCESSING CONDITIONS

### GENERAL INSTRUCTIONS

- Typical settings may require optimization
- Both cold and hot runner systems are suitable for these materials
- Valve gate systems can be used
- Avoid using temperatures above 200°C in order to lower the risk of wood and polymer degradation
- The dwell time of the material shall be reduced to minimum in order to lower the risk of thermal degradation

### RECOMMENDED TEMPERATURES

Throat	40 – 60 °C
Feed zone	150 – 170 °C
Compression zone	160 – 180 °C
Homogenizing zone	175 – 190 °C
Machine nozzle	175 – 190 °C
Back pressure	5 – 10 bar
Hot runner nozzle and bushing	175 – 190 °C
Tooling temperature	20 – 40 °C

## PURGING INSTRUCTIONS

### BEFORE PRODUCTION

- Purge the plasticization unit and the hot runner with PP or PE

### DURING PRODUCTION

- The material is heat sensitive. Avoid high processing temperatures and long dwell times
- If an extensive amount of burned material or fumes starts to appear in the products, try lowering processing temperature
- In case of production break flush the plasticization unit with fresh material

### AFTER PRODUCTION

- Purge the plasticization unit and the hot runner with PP or PE
- Clean up the mold after production

## STORAGE, TRANSPORTATION AND SHELF-LIFE

### STORAGE

- In original unopened packaging at temperatures below 45°C
- Once opened, reseal the package after each use
- In dry conditions and avoid exposure to high humidity and rain
- Away from direct sunlight

### TRANSPORTATION

- Temperatures during transportation may not exceed 60°C

### SHELF-LIFE

- Shelf-life is from the date of manufacture, for unopened bags at room temperature (23°C)
- Date of manufacture can be found on the label attached to the original packaging

<b>Sulapac Universal</b>	24 months
<b>Sulapac Universal Flex 30</b>	18 months
<b>Sulapac Universal Flex 35</b>	24 months
<b>Sulapac Universal Heat 30</b>	12 months

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