



WE MAKE BIOPLAST



 **BIOPLAST**<sup>®</sup>  
GS 2189

-  69% biobased
-  Fit for food packaging
-  Injection moulding



# BIOPLAST®

## GS 2189

BIOPLAST GS 2189 is a plasticizer-free thermoplastic material that contains a high portion of biologically sourced raw materials. The biobased carbon share of the entire formulation achieves 69%. BIOPLAST GS 2189 is easy-flowing and therefore particularly suitable for processing by injection moulding to produce items that are completely biodegradable. The material can also be converted by sheet film extrusion. The absence of plasticizer allows the material to be easily processed to manufacture stable products of consistent quality. BIOPLAST GS 2189 has an excellent shelf life but will biodegrade readily in an industrial composting environment.

### PROPERTIES

Parameter	Target value	Unit	Test Method
Pellet size	3.0	mm	Caliper gauge
Density	1.35	g/cm <sup>3</sup>	EN ISO 1183-1/A
Bulk density	860	kg/m <sup>3</sup>	EN ISO 60
MFR (190°C, 2.16 kg)	35	g/10 min	EN ISO 1133
Moisture content	< 0.2	weight-%	BIOTEC test directive

### PROCESSING

BIOPLAST GS 2189 was designed for use in injection moulding, but also can be processed in conventional equipment for sheet film extrusion (thermoforming) and blown film extrusion.

For further processing information, please refer to our specific "Configuration and Operating Guidelines"

### MECHANICAL PROPERTIES OF INJECTION MOULDED PRODUCTS\* MADE OF BIOPLAST GS 2189

Parameter	Typical value	Unit	Test Method
Tensile strength	34	MPa	EN ISO 527-3
Elongation at break	16	%	EN ISO 527-3
Young's modulus	2.4	GPa	EN ISO 527-3
Flexural modulus	2.5	GPa	EN ISO 178
Charpy impact resistance, unnotched, at			
-20°C	75	kJ/m <sup>2</sup>	EN ISO 179
+23°C	140	kJ/m <sup>2</sup>	EN ISO 179

(\*norm bar according to EN ISO 527-2 [1B])

### PRODUCTS MADE OF BIOPLAST GS 2189

- are biodegradable according to EN 13432
- are recyclable
- are printable by flexographic and offset printing without pretreatment
- can be coloured with masterbatches
- are sealable (hot, RF, ultra sonic)

### GENERAL APPLICATIONS

- injection moulded articles (e.g. cutlery, medical devices, clips)
- semi-finished products
- thermoformed products (e.g. food trays)
- blend partner in combination with other BIOPLAST materials (e.g. BIOPLAST GF 106/02)

### SUSTAINABILITY

BIOPLAST GS 2189 contains 75% of renewable raw material and has a biobased carbon share of 69% according to ASTM D6866.

### END OF LIFE OPTIONS

BIOPLAST GS 2189 is compostable, recyclable and can be incinerated.

### COMPOSTABILITY

Products made of BIOPLAST GS 2189 are completely biodegradable and, depending on their thickness, compostable. The material is certified and registered by Vinçotte according to EN 13432 awarding the "OK compost" and "seedling" logo.

For further information regarding biodegradability and compostability of BIOPLAST materials please refer to our product information "Biodegradability and Compostability".

Although it is biodegradable, the material should only be disposed of in a controlled waste management environment.

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### BARRIER PROPERTIES

Parameter	Typical value	Unit	Test Method
Oxygen permeability (400 µm)	50	cm <sup>3</sup> /(m <sup>2</sup> d bar)	ASTM F1927
Carbon dioxide permeability (400 µm)	175	cm <sup>3</sup> /(m <sup>2</sup> d bar)	ASTM D1434
Water vapour permeability (400 µm)	8	g/(m <sup>2</sup> d)	ASTM F1249

### THERMAL PROPERTIES

Parameter	Typical value	Unit	Test Method
Vicat A, softening temperature (VST/A120)	58	°C	EN ISO 306

### SAFETY DATA

BIOPLAST GS 2189 is not a dangerous product as defined by directive 67/548/EEC and not subject to transport regulations. General safety, protection and hygiene rules for the handling of the molten granule, as for any other polymer, should be observed. For details please refer to the Material Safety Data Sheet (MSDS).

### DISCLAIMER

This information and our technical advice - whether verbal, in writing or by way of trials - are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to check its validity and to test our products as to their suitability for the intended processes and uses. The application, use and processing of our products and the products manufactured by you on the basis of our technical advice are beyond our control and, therefore, entirely your own responsibility. Our products are sold in accordance with our General Conditions of Sale and Delivery.

### FOOD PACKAGING

BIOPLAST GS 2189 is mainly designed for packaging dry and/or fatty food. All raw materials used for BIOPLAST GS 2189 are listed in directive EU 10/2011. For additional food packaging options and further information, please refer to our product information "Suitability of BIOPLAST Products for Food Contact".

### DELIVERY FORMAT

BIOPLAST GS 2189 is available in Telescope-Octabins (with PE-inliner) or bags. Pallet: CP3 or CP9 (114 cm x 114 cm).

### SHELF LIFE, STORAGE AND HANDLING

The granule should be stored cool, shaded and dry in the closed PE-inliner bag. During storage BIOPLAST GS 2189 can take up humidity. Therefore, once an Octabin or a bag is opened, the material should be processed without delay.

Following these recommendations it is advisable to use the material within 6 months after delivery.

## QUALITY AND ENVIRONMENTAL MANAGEMENT

Quality and Environmental Management is a central component of BIOTEC's corporate strategy.

BIOTEC has successfully implemented a Quality and Environmental Management System and is certified by TÜV Rheinland according to DIN EN ISO 9001:2008 and DIN EN ISO 14001:2004. The certifications include all services which BIOTEC provides in connection with the development, production and marketing of BIOPLAST material.

Regular audits and training courses for the employees contribute to maintaining the high quality standard as well as the continuous improvement of the Quality and Environmental Management System.





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