Technical data sheet

Product name: **Bio-Flex® N 31310**
Date of issue: 10 March 2025 Version: 1.0

Designation of product, preparation and manufacturer

Trade name: Bio-Flex® N 31310

Use of product: Biodegradable polymer compound suitable for blown film applications. Certification as soil degradable possible, due to this application such as mulching film, labels, etc. are possible.

Manufacturer:
FKuR Kunststoff GmbH
Siemensring 79
D - 47 877 Willich
Phone: + 49 (0) 2154 / 92 51-0
Fax: + 49 (0) 2154 / 92 51-51
Mail: info@fkur.com
Web: www.fkur.com

Film properties (thickness 25 µm, BUR 2.3)

Tensile modulus MD/TD	240 / 180	[MPa]	ISO 527-3
Tensile strength (yield stress) MD/TD	26 / 23	[MPa]	ISO 527-3
Tensile strain at tensile strength MD/TD	370 / 560	[%]	ISO 527-3
Tensile stress at break MD/TD	25 / 23	[MPa]	ISO 527-3
Tensile strain at break MD/TD	375 / 560	[%]	ISO 527-3
Elmendorf tear resistance MD/TD	75 / 195	[N/mm]	ASTM D 1922
Impact strength (Spencer Impact Test)	270	[N/mm]	ASTM D 3420

MD= machine direction, TD = transverse direction
The values listed have been established on films at standard temperature and humidity conditions.

Physical properties

Melt flow rate (190 °C/2.16 kg)	3	[g/10 min]	ISO 1133
Melting temperature	> 155	[°C]	
Density	1.41	[g/cm³]	ISO 1183

The figures should be regarded as guide values only. Under certain conditions the properties can be influenced to a significant extent by the processing conditions.

Processing and Handling Information

General

Bio-Flex® N 31310 is a biodegradable plastic based on PLA and other biopolymers. Moisture content can lead to hydrolysis. Residual moisture content of more than 0.2 % can result in fish eyes and/or pin holes during processing.

Drying

We recommend drying Bio-Flex® N 31310 at 60°C for a period of 2 - 4 hours.

Storage

If not specified otherwise product life is 6 months after shipment from Sellers warehouse if product is in its original packaging, stored under dry (max. 70% relative humidity) and dark conditions (not exposed to sunlight at a temperature of 5 °C to max. 30°C (ambient temperature). It is important to observe that a major drop in external air temperature (e.g. during transportation) can result in a development of water condensate. Prior to the processing of the material, it should be ensured that there is no condensate on the packaged product.
Finished products made from Bio-Flex® must be stored dry and cold. It is recommended to wrap goods in black PE liners to protect them against moisture and UV radiation. Storage time depends on processing parameters and of climate conditions in the respective area. Because of these essential and complex interacting parameters, FKuR Kunststoff GmbH cannot give any shelf life guarantees for finished products. Please notice that the conditions mentioned above depend on experience of our customers. Each customer should execute individual storage tests according to product specifications and storage requirements.

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Processing conditions for blown film extrusion

Machine equipment: Standard low-density polyethylene screw.

Machine settings:

Feeding Zone	25 - 40	[°C]
Zone 1	160	[°C]
Zone 2	160	[°C]
Zone 3	165	[°C]
Zone 4	170	[°C]
Adapter	170	[°C]
Die	175	[°C]
Mass temperature	max. 190	[°C]
Die gap	0.8 - 1.4	[mm]
Die diameter	up to 400	[mm]
Blow up ratio	2.5 - 4.0	[-]

Start at temperatures given above. If gel particles or die lines appear, increase temperature stepwise by 5°C up to a maximum of 190°C melt temperature.

Use of recyclate / production waste: The use of recycled production waste from Bio-Flex® N 31310 is principally possible. However, only unmixed material should be used. Mixing with recyclates based on other bioplastics or from other manufacturers is not recommended.

The amount that can be added depends crucially on the quality of the recycling process and the recycled material. We recommend determining the melt flow rate (MFR) and the residual moisture of the recycled material before each addition. A significant increase in MFR after recycling can be caused either by degradation, ageing and/or excessive mechanical stress on the material during processing. Internal moisture in the recyclate, e.g. due to inadequate degassing, can lead to defects such as fish eyes, reduced melt strength and weldability, and low mechanical strength.

If the recycled material is of good quality (MFR similar to virgin material, moisture content below 0.1%), we recommend adding a maximum of 20% of this recycled material to the Bio-Flex® N 31310 virgin material. When adding any type of bio-plastic recyclate, we do not guarantee the quality of the final product.

Purging advice for blown film extrusion

Before production: Ensure that all temperature zones work correctly. Purge the extruder with low melting LDPE, MFR approx. 4 - 6 g/10 min using the above temperature settings. Purging time: approximately 10 - 20 minutes. We recommend to change the screen before production.

During production: Use sufficient cooling for extruder and bubble, a dual lip air ring and/or inner bubble cooling system is preferred with chilled air, as the bubble stability is low when emerging from the die.

After production: Purge the extruder with an LDPE (MFR 0.4 - 2.0 g/10min). Do not allow material to remain hot inside the machine for extended periods as the material will degrade.

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