

## Technical data sheet

**Product name:** Bio-Flex® F 1804  
**Date of issue:** 29 April 2020

Version: 2.1

### Designation of product, preparation and manufacturer

**Trade name:** Bio-Flex® F 1804

**Use of product:** Biodegradable and home compostable polymer compound suitable for blown film applications. Certified as home compostable according to EN 13432 (at ambient temperature) with a maximum thickness of 27 µm. The biobased carbon content (BCC) is 43 % (determined according to ISO 16620). Use in applications such as fruit bags.

**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 15 µm, BUR 2.3)

Tensile modulus MD/TD	300 / 100	[MPa]	ISO 527-3
Tensile strength (yield stress) MD/TD	25 / 34	[MPa]	ISO 527-3
Tensile strain at tensile strength MD/TD	360 / 630	[%]	ISO 527-3
Tensile stress at break MD/TD	25 / 34	[MPa]	ISO 527-3
Tensile strain at break MD/TD	370 / 630	[%]	ISO 527-3
Elmendorf tear resistance MD/TD	110 / 30	[N/mm]	ASTM D 1922
Impact strength (Spencer Impact Test)	480	[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.

### Film properties (thickness 25 µm, BUR 2.3)

Tensile modulus MD/TD	290 / 100	[MPa]	ISO 527-3
Tensile strength (yield stress) MD/TD	34 / 35	[MPa]	ISO 527-3
Tensile strain at tensile strength MD/TD	665 / 670	[%]	ISO 527-3
Tensile stress at break MD/TD	34 / 35	[MPa]	ISO 527-3
Tensile strain at break MD/TD	665 / 675	[%]	ISO 527-3
Elmendorf tear resistance MD/TD	120 / 32	[N/mm]	ASTM D 1922
Impact strength (Spencer Impact Test)	400	[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.

### Barrier properties (thickness 24 µm)

Water Vapour	94	[g/(m <sup>2</sup> ·d)]	ISO 15 106-3
--------------	----	-------------------------	--------------

### Physical properties

Melt flow rate (190 °C/2.16 kg)	3.2	[g/10 min]	ISO 1133
Melting temperature	> 155	[°C]	ISO 3146-C
Density	1.21	[g/cm <sup>3</sup> ]	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® 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® at 60°C for a period of 2 - 4 hours.

## Technical data sheet

**Product name:** Bio-Flex® F 1804  
**Date of issue:** 29 April 2020

Version: 2.1

### Storage

If not specified otherwise product life is 6 month 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.

### Processing conditions for blown film extrusion

Machine equipment:	Standard low-density polyethylene screw.		
Machine settings:	Feeding Zone	40 - 60	[°C]
	Zone 1	155	[°C]
	Zone 2	160	[°C]
	Zone 3	165	[°C]
	Zone 4	170	[°C]
	Adapter	165	[°C]
	Die	165	[°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.

### 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.

### Legal notice

Neither FKUR Kunststoff GmbH nor its marketing affiliates shall be responsible for the use of this information or of any product, method or equipment mentioned. Customers must undertake their own determination of this product's suitability and completeness for their own use, for the protection of the environment, for the health and safety of their employees and purchasers of their products. No warranty is made of the merchantability or fitness of any product, and nothing herein waives any of the seller's conditions of sale.

The current version of General Conditions of Sale of FKUR Kunststoff GmbH is valid. The brands „FKuR – Plastics made by nature“ and “BIO-FLEX“ are registered trademarks of FKUR Kunststoff GmbH, according to the international 'Nice-Classifications' (NCL9).