

Processing advice

Product name: **Bio-Flex® F 1138**
Bio-Flex® Shopper

Date of issue: 19 September 2013

Version: 1.0

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1. Designation of product, preparation and manufacturer

- 1.1 Trade name: Bio-Flex® F 1138 / Bio-Flex® Shopper
previously Bio-Flex® V 2878
- 1.2 Description: Biodegradable and compostable compound for film extrusion, certified according to EN 13432. Used in applications such as T-shirt bags and waste bags.
- 1.3 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

2. Processing conditions for blown film extrusion

- 2.1 Machine equipment: Standard low-density polyethylene screw
- 2.2 Machine settings:
- | | | |
|----------------------|-----------|----------------------|
| Zone 1 | 160 | [°C] |
| Zone 2 | 160 | [°C] |
| Zone 3 | 165 | [°C] |
| Zone 4 | 170 | [°C] |
| Adapter | 170 | [°C] |
| Lower die | 175 | [°C] |
| Upper die | 175 | [°C] |
| Water jacket (feed) | 35 | [°C] |
| Mass temperature | max. 190 | [°C] |
| Density | 1,47 | [g/cm ³] |
| MFR (190 °C/2.16 kg) | 2.0 - 4.5 | [g/10 min] |
| Die gap | 0.8 - 1.4 | [mm] |
| Die diameter | up to 400 | [mm] |
| Blow film ratio | 2.5 - 4 | [-] |
- 2.3 General advice: Start at temperatures given above. If gel particles or die lines appear, increase temperature in 5 °C steps up to a maximum of 190 °C melt temperature.

3. Purging advice

- 3.1 Before production: Ensure that all temperature zones work correctly!
Purge the extruder with low melting LDPE, MFR approx. 4 - 6 g/10min using the above temperature settings.
Purging time: approximately 10 - 20 minutes.
We recommend to change the screen before production.
- 3.2 During production: Monitor melt temperature continually!
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 melt is soft when emerging from the die.
- 3.3 After production: Purge out 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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4. Drying conditions and storage

- 4.1 General: Bio-Flex[®] F 1138 is a biodegradable plastic based on PLA and other biopolymers. Moisture content can start hydrolysis. Residual moisture content of more than 0.2 % can result in fish eyes and/or pin holes during processing of blown film.
- 4.2 Drying: We recommend drying Bio-Flex[®] F 1138 at 60 °C for a period of 2 - 4 hours.
- 4.3 Storage conditions: If not specified otherwise product life is 6 months after shipment from Sellers warehouse if product is in its original packaging and stored under dry conditions (max. 70 % relative humidity) and normal room temperature or, if necessary, using air conditioning. It is important to observe that a major drip in external air temperature (e.g. during transportation) can result in a development of water condensate. Prior to processing of the material, it should be ensured that there is no condensate on the packaged product.
- 4.4 Storage conditions for films and finished products: Films on rolls and 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. In any case we recommend to use films on rolls and products as soon as possible and not to store them for a time period of more than six months. 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 goods. Please notice that the conditions mentioned above depend on experiences of our customers. Each customer should execute individual storage tests according to product specifications and storage requirements.

5. Legal notice

- 5.1 General: 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.
- 5.2 Brands: The brands „FKuR – Plastics made by Nature“ and „BIO-FLEX“, are registered trademarks of FKUR Kunststoff GmbH, according to the international 'Nice-Classifications' (NCL9), no. 01, 02 and 17.