Biodegradable Polymers

Product Information

**Version 1.1**
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G-PMF/SB

# ecovio® FS22C3

## Biodegradable compound for compostable film with a bio-based content of 55 %*

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**Product Description**

ecovio® FS22C3 is our new biodegradable film product partly based on renewable resources. It is basically a compound of a special grade of our new biodegradable copolyester ecoflex® FS and polylactic acid (PLA). ecovio® FS22C3 already contains antiblocking and slip agents required for easy processing on film extrusion and film conversion equipment. ecoflex® FS is the continuous phase in the structure of ecovio® FS22C3 resulting in beneficial film properties of the new product. The bio-based content of ecovio® FS22C3 is 55%*.

* bio-based content measured according to ASTM D6866-12 ($^{14}C$ method)

For more information please visit us at www.ecovio.com

We create chemistry

Our new ecovio® FS22C3 exhibits the following properties:

- High melt strength
- Good thermostability up to 230 °C
- Good processability on conventional blown film lines
- High strength, medium stiffness and high failure energy (dart drop)
- Typical thicknesses: 25 - 240 µm
- Good processability on bag making equipment
- Wet strength (e. g. needed in organic waste bag applications)
- Printable in 8 colors by flexo printing

ecovio® FS22C3 exhibits excellent compatibility to ecoflex®, polylactic acid and other biodegradable polymers. According to our experience pre-drying of ecovio® FS22C3 is not required if the granules are taken from an unopened bag.

The processing of ecovio® FS22C3 on extrusion lines depends on the formulation, the extrusion technology and processing conditions. Trials are always recommended to assess the quality of the final product. ecoflex® masterbatches are available to tailor the slip and antiblock properties of the final product. Detailed information concerning our ecoflex® masterbatches will be sent on request.

Advantages of new ecovio® FS22C3 versus ecovio® standard film grades are:

- Softer touch
- Improved contact transparency and clarity
- Higher bio-based content: 55 %*
- Accelerated biodegradation speed improves composting according to EN 13432
- Better welding performance and hot tack due to lower melting point of ecovio® FS22C3

## Certification of Compostability and Biodegradability

ecovio® FS22C3 is a biodegradable & compostable compound. Available certificates:

European standard
EN 13432

| Norm | EN 13432 (EU) | | ASTM D 6400 (USA) | AS 4736 (AUS) |
|---|---|---|---|---|
| Certification Body | DIN Certco | Vinçotte | BPI | ABAM |
| Certification Number | 7W0140 | not listed | not listed | not listed |

* bio-based content measured according to ASTM D6866-12 ($^{14}C$ method)

## Food Regulatory Status

ecovio® FS22C3 is one of the few biodegradable plastics, which complies in its composition with the European food stuff legislation for food contact as well as with the regulations of the US food and drug administration for food packaging. A detailed food law status is given in our specific certificates which are send on request via a local BASF representative or Plastic Safety (plastics.safety@basf.com). The converter or packer has to check the suitability of the article for the application.

## Form Supplied and Storage

ecovio® FS22C3 is supplied as lenticular shaped pellets in 1.0 t big bags. Temperatures during transportation and storage may not exceed 60 °C at any time. Storage time in an unopened bag may not surpass 12 month at room temperature (23 °C).

## Quality Control

ecovio® FS22C3 is produced as a standard material in a continuous production process according to DIN EN ISO 9001: 2008. The melt volume rate, MVR, at 190 °C, 5 kg, according to ISO 1133 has been defined as specified parameter for quality control. A certificate of the MVR value can be provided with each lot number upon request. The ecovio® granules have to be pre-dried (6 hours at 70°C) before MVR measurement in order to obtain accurate values. Other data given in our literature are typical values, which are not part of our product specification for ecovio® FS22C3.

## Applications

ecovio® FS22C3 has been developed for the conversion to flexible films using a blown film process. Typical applications are packaging films, hygienic films, carrier bags and compost bags. In view of numerous factors influencing functionality and shelf life of ecovio® films and finished articles made thereof the production parameters have to be tested by the converters before utilisation. Additionally sufficient field tests are required to ensure the right functionality of the articles made from ecovio® FS22C3.

We supply technical service information concerning the blown film process with ecovio® FS22C3 on demand.

## Typical Basic Material Properties of ecovio® FS22C3

*see Quality Control

| Property | Unit | Test Method | ecovio® FS22C3 |
|---|---|---|---|
| Mass Density | g/cm³ | ISO 1183 | 1.19 - 1.21 |
| Melt volume rate MVR 190 °C, 5 kg* | ml/10 min. | ISO 1133 | 2.5 - 6.5 |
| Melting Points | °C<br>°C | DSC<br>DSC | 105 - 115<br>140 - 155 |

## Typical Properties* of ecovio® FS22C3 Blown Film, 30 µm

*not to be construed as specifications

| Property | Unit | Test Method | ecovio® FS22C3 |
|---|---|---|---|
| Tensile Modulus MD/TD | MPa | ISO 527 | 780/360 |
| Tensile Strength MD/TD | MPa | ISO 527 | 39/28 |
| Elongation at break | % | ISO 527 | 400/560 |
| Dart Drop | g | ASTM D 1709 Method A | 250 |
| Tear Resistance | mN | DIN EN ISO 6383-2 | 700/500 |

**Note**

The information submitted in this document is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance for a special purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed. (December 2017)

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