



Biodegradable Polymers

Product Information

Version 1.0

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G-PM/PB

ecovio[®] F2224

**Biodegradable compound for compostable film
and blow molding applications**

® = ecovio and ecoflex are registered trademarks of BASF SE

Product Description

ecovio[®] F2224 is a biodegradable film and blow molding product partly based on renewable resources. It is basically a compound of our biodegradable, aliphatic-aromatic copolyester ecoflex[®] F and polylactic acid (PLA). ecovio[®] F2224 already contains a slip agent required for easy processing on film extrusion and film conversion equipment.

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

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We create chemistry

ecovio® F2224 exhibits the following properties:

- High melt strength
- Good thermostability up to 230 °C
- Excellent processability on conventional LDPE blown film lines
- High strength, stiffness and failure energy (dart drop)
- Typical thicknesses: 40-120 µm
- Nice white translucent color
- Excellent welding properties
- Printable in 8 colors by flexo printing

ecovio® F2224 exhibits excellent compatibility to ecoflex®, polylactic acid and other biodegradable polymers. According to our experience pre-drying of ecovio® F2224 is not required if the granules are taken from an unopened bag.

The processing of ecovio® F2224 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 anti-bloc properties of the final product. Detailed information concerning our ecoflex® masterbatches will be sent upon request.

Certification of Compostability and Biodegradability

ecovio® F2224 is a biodegradable & compostable compound. Available certificates:



| Norm | EN 13432 (EU) | | ASTM D 6400 (USA) | AS 4736 (AUS) |
|----------------------|---------------|------------|-------------------|---------------|
| Certification Body | DIN Certco | Vinçotte | BPI | ABAM |
| Certification Number | 7W0085 | O 12-787-A | J-00133884 | 10009+PLA |

Food Regulatory Status

ecovio® F2224 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® F2224 is supplied as lenticular pellets in 1 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® F2224 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 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® F2224.

Applications

ecovio® F2224 has been developed for the conversion to flexible films using a blown film process. Typical applications are packaging films, hygienic films. 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® F2224.

ecovio® F2224 is also suitable for blow moulding applications like bottles and containers.

We supply technical service information on demand.

Typical Basic Material Properties of ecovio® F2224

*see Quality Control

| Property | Unit | Test Method | ecovio® F2224 |
|-------------------------------------|-------------------|---------------|---------------|
| Mass Density | g/cm ³ | ISO 1183 | 1.24 - 1.26 |
| Bulk Density | kg/m ³ | DIN EN ISO 60 | 790 |
| Melt Volume Rate MVR 190°C, 5kg* | ml/10 min. | ISO 1133 | 3.0 - 6.5 |
| Melting Points | °C | DSC | 110 - 120 |
| | °C | DSC | 140 - 155 |

Typical Properties* of ecovio® F2224 Blown Film, 50 µm

*not to be construed as specifications

| Property | Unit | Test Method | ecovio® F2224 |
|----------------------------------|--|----------------------------|---------------|
| Tensile Modulus MD/TD | MPa | ISO 527 | 1100/600 |
| Tensile Strength MD/TD | MPa | ISO 527 | 47/40 |
| Ultimate Elongation MD/TD | % | ISO 527 | 440/350 |
| Dart Drop | g | ASTM D 1709-04 Method A | 320 |
| Tear Resistance | mN | DIN EN ISO 6383-2 | 280/230 |
| Permeation Rates: | | | |
| Oxygen (23°C, dry) | cm ³ /(m ² ·d·bar) | ASTM D 3985 | 860 |
| Water Vapour (23°C, 85% r.h.) | g/(m ² ·d) | ASTM F-1249 | 98 |

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 2016)