

Product Information

Version 1.0**Ecoflex[®] F Blend C1200 –
Biodegradable polyester for compostable film**03.01.2011
G-KT/BM

Product description

Ecoflex[®] F Blend C1200 is our biodegradable, statistical, aliphatic-aromatic copolyester based on the monomers 1,4-butanediol, adipic acid and terephthalic acid in the polymer chain. Ecoflex[®] F Blend C1200 will biodegrade to the basic monomers 1,4-butanediol, adipic acid and terephthalic acid and eventually to carbon dioxide, water and biomass when metabolized in the soil or compost under standard conditions.

Ecoflex[®] F Blend C1200 has properties similar to PE-LD because of its high molecular weight and its long chain branched molecular structure

- Transparent to translucent, semi-crystalline structure with DSC melting point in the range of PE-LD: 110 – 120 °C
- High ultimate elongation at break and high failure energy (dart drop)
- High, but controllable water vapour transmission rate (WVTR)
- MVR (190 °C, 2,16 kg): 2,5 – 4,5 ml/10 min.
- Good thermostability up to 230 °C
- No regular predrying of pellets
- Good processability on blown film lines
- Down gaging to 10 µm possible
- Weldable and printable

Ecoflex[®] F Blend C1200 fulfils the requirements of the European standard DIN EN 13432, the US standard ASTM D 6400 and the Japanese GreenPla standard for compostable and biodegradable polymers, because it can be degraded by micro-organisms. The biodegradation process in soil depends on the specific environment (climate, soil quality, population of micro-organisms).

Ecoflex[®] F Blend C1200 is one of the few biodegradable plastics, which complies in its composition with the European and American food stuff legislation for food contact: EU Directive 2002/72/EC (as amended) and US food contact notification FCN 907. Specific limitations

and more details are given on request. The converter or packer has to check the suitability of the article for the application.

Ecoflex[®] F Blend C1200 exhibits an excellent compatibility to polylactic acid, starch or cellulose. The processing of Ecoflex[®] F Blend C1200 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.

According to our experience drying of Ecoflex[®] F Blend C1200 prior to conversion is not required in most cases if more than 50 % of Ecoflex[®] F Blend C1200 is used in the formulation and if Ecoflex[®] F Blend C1200 is kept in the coherent phase. In this case Ecoflex[®] F Blend C1200 contributes significantly to the performance of a formulation in processing and application.

Form supplied and storage

Ecoflex[®] F Blend C1200 is supplied as lens shaped pellets in 1 t big bags or bulk containers. Temperatures during transportation and storage may not exceed 70 °C at any time. Storage time of unopened bags may not surpass 12 month at room temperature (23 °C).

Quality Control

Ecoflex[®] F Blend C1200 is produced as a standard material in a continuous production process according to DIN EN ISO 9001: 2000. The melt volume rate, MVR, at 190 °C, 2.16 kg, according to ISO 1133 has been defined as specified parameter for quality control. A certificate can be provided with each lot number (10 t) upon request. In order to obtain a high accuracy for the MVR measurement the granules should be dried for 30 minutes at 70 °C using e.g. an electronic moisture analyser (e.g. Brabender Aquatrac plus). Other data given in our literature are typical values, which are not part of our product specification for Ecoflex[®] F Blend C1200.

Applications

Ecoflex[®] F Blend C1200 has been developed for the conversion to flexible films using a blown film or cast film process. Typical applications are packaging films, agricultural films and compost bags. In view of numerous factors influencing functionality and shelf life of Ecoflex[®] films and finished articles made thereof these parameters have to be tested by the converters before utilisation.

We supply technical service information concerning the blown or cast film process with Ecoflex[®] F Blend C1200 on demand.

Intellectual Property

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. Some uses of Ecoflex[®] and product obtained by use of Ecoflex[®] are subject of intellectual property rights. Purchase of Ecoflex[®] does not entitle the buyer or any third to produce, offer or use any blends of Ecoflex[®] protected under property rights and all their equivalents as listed here:

EP-B 1656423
EP-B 937120
EP-B 950689

EP-B 1838784
EP-B 947559
EP-B 965615

Typical basic material properties of **Ecoflex® F Blend C1200**

Property	Unit	Test Method	Ecoflex® F Blend C1200	Lupolen® 2420 F
Mass density	g/cm ³	ISO 1183	1.25 – 1.27	0.924
Melt flow rate MFR 190 °C, 2,16 kg	g/10 min.	ISO 1133	2.7 – 4.9	0.6 – 0.9
Melt volume rate MVR 190 °C, 2,16 kg	ml/10 min.	ISO 1133	2.5 – 4.5	0.8 – 1.2
Melting point	°C	DSC	110 - 120	111
Shore D hardness	-	ISO 868	32	48
Vicat VST A/50	°C	ISO 306	91	96

Typical properties of **Ecoflex® F Blend C1200** blown film, 50 µm

Property	Unit	Test Method	Ecoflex® F Blend C1200	Lupolen® 2420 F
Transparency	%	ASTM D 1003	82	89
Tensile strength	N/mm ²	ISO 527	35/44	26/20
Ultimate strength	N/mm ²	ISO 527	36/45	-
Ultimate Elongation	%	ISO 527	560/710	300/600
Failure Energy (Dyna Test)	J/mm	DIN 53373	24	5.5
Permeation rates:				
Oxygen (23°C, dry)	cm ³ /(m ² *d*bar)	ASTM D 3985	1200	2900
Water vapour (23°C, 85 % r.h.)	g/(m ² *d)	ASTM F-1249	135	1.7

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.