

NONOILEN® FB 3046-4

TECHNICAL DATASHEET

Last actualisation: 9/2022

Basic description

NONOILEN® is thermoplastic material based on biodegradable polymer blends made of renewable raw materials. NONOILEN®, produced by PANARA a.s., undergoes biodegradation under various natural conditions (e.g. at home compost, industrial compost, soil, seawater) according to material composition.

Application segment

NONOILEN® FB 3046-4 is optimised for film blowing technology.

Physical form

Cylindrical pellets

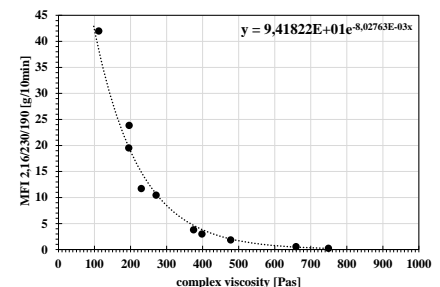
Composition

Major components	PLA, PHB polymers
Minor components	Biodegradable plasticiser(s) and other additives

Material properties (typical values, do not perform a specification of given grade)

Parameter	Test method	Unit	Value
Rheological properties			
Complex viscosity (measured using oscillating rheometer)	160°C	Internal method	Pas
	180°C	Internal method	139
Shrinkage		%	90
Mechanical properties			
Density at 23°C	ISO 1183	g/cm ³	N/A
Tensile strength	ISO 527	MPa	1,2
Tensile strength at break		MPa	31,0
Elongation at break		%	296
Young modulus		GPa	0,56
Charpy impact strength un-notched	ISO 179	23°C	kJ/m ²
Charpy impact strength un-notched		23°C notched	
Impact resistance - Dart drop test, 50µm thickness	ISO 7765-1	g	64

MFI is not relevant parameter for Nonoilen materials because measurement system for MFI does not allow to determine true flow properties of Nonoilen blend. The best testing method is represented by oscillating rheometry which give values of complex viscosity. For better understanding relation between complex viscosity and commonly using MFI parameter, correlation curve between both parameters is in Figure on right side. MFI values represent there MFI of LDPE at 190°C or PP at 230°C under 2.16 kg loading. Viscosity was measured at low shear rates (15/s), so at real high shear rate during injection, Nonoilen will flow much easily.



Parameter	Test method	Unit	Value	
Thermal properties				
Glass transition temperature	DSC	°C	22	
Melting point Tm1	DSC	°C	166	
Melting point Tm2	DSC	°C	N/A	
Crystallisation temperature	DSC	°C	56	
Heat deflection temperature	ISO 75, B	°C	N/A	
Vicat softening point VST	ISO 306, A/50	°C	N/A	
Barrier properties				
Permeation of N ₂			N/A	
Permeation of O ₂ (OTR)	23°C, 50%RH, 0,21bar	internal	cm ³ /(m ² .day)	
Permeation of CO ₂			N/A	
Permeation of H ₂ O vapour	23°C, 50%RH	internal	mg/(m ² .day)	
Biodegradation				
Degree of disintegration after 90 days incubation	58°C (thermophilic)	ISO 20200	%	*
	25°C (mesophilic)		%	*
Time to 100% disintegration	58°C (thermophilic)		days	*
	25°C (mesophilic)		days	*
Total microbial decomposition	N/A			

* Under certification process

Storage and handling

NONOILEN® is delivered in 20kg barrier bags. The original package should be stored at humidity up to 60% and temperature in range 10 – 30°C. Pellets are pre-dried. Before processing, drying for 1 hour at 70°C is recommended. The moisture content should be below 1000 ppm (0,1%).

Processing conditions

Standard film blowing line for LDPE processing is recommended. Melt temperature should not exceed 170°C, optimally it should range from 140 to 160°C on the head.

Special additives

Colour masterbatches and other additive masterbatches can be used for processing as well as other properties modification. The Clariant masterbatches for NONOILEN® are recommended.