

# 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

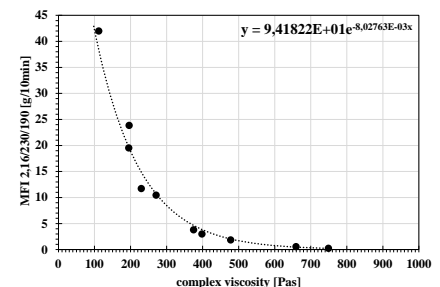
### Composition

<b>Major components</b>	PLA, PHB polymers
<b>Minor components</b>	Biodegradable plasticiser(s) and other additives

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

Parameter	Test method	Unit	Value
<b>Rheological properties</b>			
Complex viscosity (measured using oscillating rheometer)	160°C	Internal method	139
	180°C	Internal method	90
Shrinkage		%	N/A
<b>Mechanical properties</b>			
Density at 23°C	ISO 1183	g/cm <sup>3</sup>	1,2
Tensile strength	ISO 527	MPa	31,0
Tensile strength at break		MPa	31,0
Elongation at break		%	296
Young modulus		GPa	0,56
Charpy impact strength un-notched	23°C	ISO 179	kJ/m <sup>2</sup>
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	
<b>Thermal properties</b>				
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	
<b>Barrier properties</b>				
Permeation of N <sub>2</sub>			N/A	
Permeation of O <sub>2</sub> (OTR)	23°C, 50%RH, 0,21bar	internal	cm <sup>3</sup> /(m <sup>2</sup> .day)	
Permeation of CO <sub>2</sub>			N/A	
Permeation of H <sub>2</sub> O vapour	23°C, 50%RH	internal	mg/(m <sup>2</sup> .day)	
<b>Biodegradation</b>				
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.