

# NonOilen® EX 3361-9

## TECHNICAL DATASHEET

Last actualisation: **01/2024**

### Basic description

NonOilen® is thermoplastic material based on biodegradable polymer blends made of 100% 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® EX 3361-9 is optimised for extrusion.

### Physical form

Cylindrical pellets

### Composition

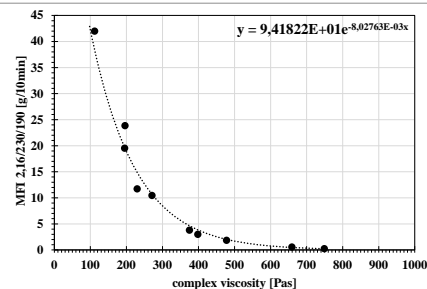
<b>Major components</b>	PLA, PHA polymers
<b>Minor components</b>	Biodegradable plasticiser(s) and other additives

### 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	1243	
	180°C	Internal method	695	
<b>Mechanical properties</b>				
Density at 23°C	ISO 1183	g/cm <sup>3</sup>	1,2	
Tensile strength	MD	MPa	19	
	TD	MPa	14	
Elongation at break	MD	%	90	
	TD	%	105	
Tensile modulus	MD	GPa	0,86	
	TD	GPa	0,7	
Tear strength	MD	ISO 6383	N/mm	20
	TD	ISO 527	N/mm	90
Charpy impact strength un-notched	23°C	ISO 179	kJ/m <sup>2</sup>	N/A
	-30°C		kJ/m <sup>2</sup>	N/A
Flexural strength	ISO 178	MPa	N/A	
Flexural deformation		%	N/A	
Flexural modulus		GPa	N/A	

(MD) = Machine direction; (TD) = Transversal direction

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	-11
Melting point	DSC	°C	173
Crystallisation temperature	DSC	°C	92
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 O <sub>2</sub> (OTR)	23°C, 0 % RH, 1bar, 150 µm	internal	cm <sup>3</sup> /(m <sup>2</sup> .day)
Permeation of H <sub>2</sub> O vapour	23°C, 85 % RH, 150 µm	internal	mg(m <sup>2</sup> .day)
<b>Biodegradation</b>			
Industrial compost	ISO 14855		OK compost Industrial TÜV Austria*
Home compost			*
Biodegradability at soil conditions	ISO 17556		*

\* 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%).

**Special additives**

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

**Processing conditions**

Melt temperature should not exceed 200°C, optimally it should range from 160 to 180°. NonOilen® EX 3361-9 is suitable for extrusion in thickens up to 1 mm. Process parameters have to be adjusted according to specifics of production line and product shape.

Zone 1	Zone 2	Zone 3	Zone 4	Die	Cooling bath
130-150 °C	140-170 °C	160-180 °C	160-180 °C	160-190°C	25-40°C

