

NonOilen® TF 3300-1

TECHNICAL DATASHEET

Last actualisation: 7/2023

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® TF 3300-1 is optimised for sheet extrusion for thermoforming and vacuum forming technology.

Physical form

Cylindrical pellets

Composition

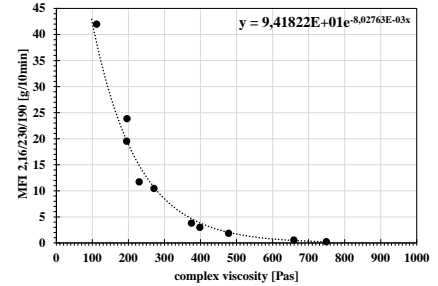
Major components	PLA, PHA polymers
Minor components	Biodegradable plasticiser(s) and other additives

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	1559	
	180°C	Internal method	957	
Mechanical properties				
Density at 23°C	ISO 1183	g/cm ³	1,35	
Tensile strength	ISO 527	MPa	55	
Tensile strength		MD	MPa	48
Elongation at break		TD	%	1.4
Elongation at break		MD	%	1.4
Tensile modulus		TD	GPa	5.8
Tensile modulus		MD	GPa	4.5
Charpy impact strength un-notched		ISO 179	kJ/m ²	23°C
Charpy impact strength un-notched	-30°C			13
Flexural strength	ISO178	MPa	80	
Flexural deformation		%	37	
Flexural modulus		GPa	5,7	

(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
Thermal properties			
Glass transition temperature	DSC	°C	57
Melting point	DSC	°C	172
Crystallisation temperature	DSC	°C	108
Heat deflection temperature	ISO 75, B	°C	112
Vicat softening point VST	ISO 306, A/50	°C	77
Barrier properties			
Permeation of O ₂ (OTR)	23°C, 0 % RH, 1bar, 150 µm	internal	cm ³ /(m ² .day)
Permeation of H ₂ O vapour	23°C, 85 % RH, 150 µm	internal	mg(m ² .day)
Biodegradation			
Industrial compost	ISO 14855		OK compost Industrial TÜV Austria*
Home compost			N/A
Biodegradability at soil conditions	ISO 17556		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%).

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°C on the die. NonOilen® TF 3300-1 is suitable for cast film (sheet) extrusion in thickens up to 1 mm – semi-product for thermoforming. Thermoforming process parameters have to be adjusted according to specifics of production line and product shape.

Zone 1	Zone 2	Zone 3	Zone 4	Die	Chill rolls
180-190 °C	180-190 °C	180-190 °C	180-190 °C	190°C	40-60°C

