

NonOilen® 3D 3056-2

TECHNICAL DATASHEET

Last actualisation: 11/2024

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® 3D 3056-2 is optimised for additive manufacturing, mainly for 3D filament production.

Certification

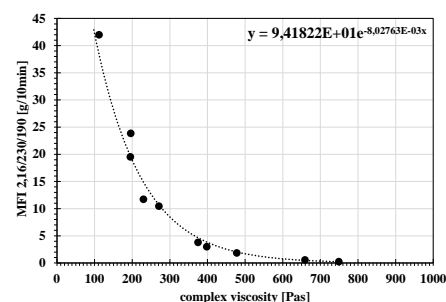
OK compost INDUSTRIAL (EN 13432, certified by TÜV AUSTRIA Belgium)



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	716
	180°C	Internal method		441
Shrinkage		%	N/A	
Mechanical properties				
Density at 23°C	ISO 1183	g/cm ³	1,2	
Tensile strength	ISO 527	MPa	43	
Tensile strength at break		MPa	26	
Elongation at break		%	11	
Tensile modulus		GPa	2,5	
Flexural modulus	ISO 178	GPa	3,3	
Charpy impact strength un-notched	23°C	ISO 179	kJ/m ²	15
Charpy impact strength notched	23°C			2
Charpy impact strength un-notched	-30°C			13

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	45	
Melting point	DSC	°C	170	
Crystallisation temperature	DSC	°C	105	
Heat deflection temperature	ISO 75, B	°C	110	
Vicat softening point VST	ISO 306, A/50	°C	140	
Barrier properties				
Permeation of O ₂ (OTR)	23°C, 0 % RH, 1bar, 150 µm	internal	cm ³ /(m ² .day)	N/A
Permeation of H ₂ O vapour	23°C, 85 % RH, 150 µm	internal	mg(m ² .day)	N/a

Storage and handling

NonOilen® is supplied in 25 kg foil-aluminum bags or 1-ton octabins. The original packaging should be stored in a humidity up to 60% and at a temperature between 10°C - 30°C, protected from heat and direct sunlight. The pellets are pre-dried, but it is recommended to dry them for 2 hours at 60°C before processing. The moisture content should be kept below 1000 ppm (0.1%).

Special additives

PLA color masterbatches can be used during processing. These masterbatches should also be certified in accordance with EN 13432. Please be aware that the use of masterbatches may affect the mechanical and optical properties of the final product.

Start-up and purging

Start by purging the extruder with a suitable polyolefin (e.g., MFR 20-30 g/10 min) for approximately 15-30 minutes to remove any residual material. Adjust the processing temperature to the recommended settings. Once the temperature is within 10°C of the target range, initiate the transition to NonOilen®.

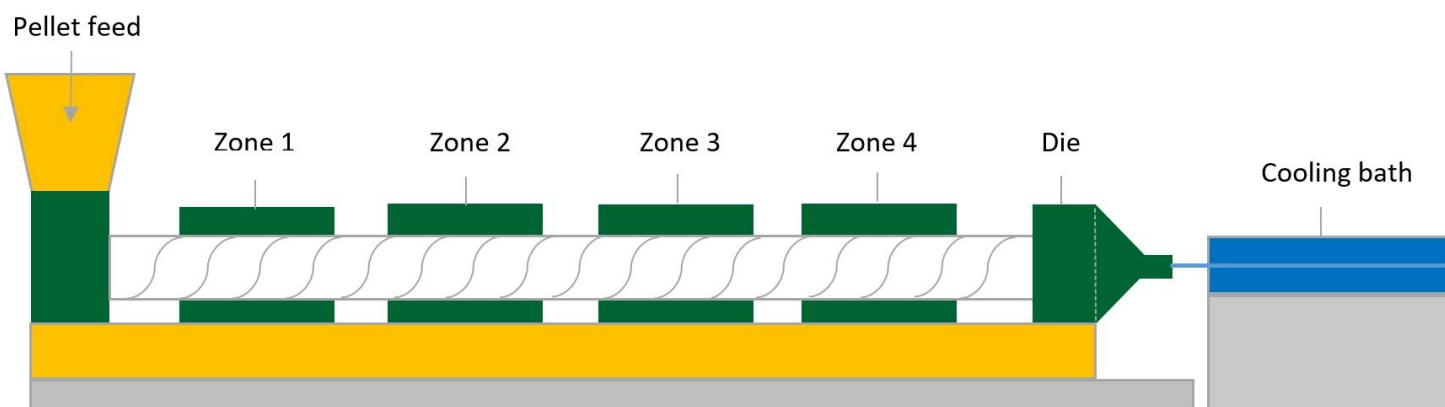
Interruption and shut-down

In case of a prolonged interruption, reduce the screw speed to approximately 10 rpm. For longer period, please purge the extruder with the same polyolefin used in the start-up procedure. Never leave NonOilen® product in the extruder for an extended period, such as overnight.

Processing conditions

For 3D filament production melt temperature should not exceed 190°C, optimally it should range from 160 to 180°C on the die. The feeding zone must be cooled. NonOilen® 3D 3056-2 is suitable for filaments with diameter 1,75 mm or 2,85 mm are usually produced. For 3D printing the base plate temperature is recommended 20-50°C. Filaments on spool are also pre-dried.

Zone 1	Zone 2	Zone 3	Zone 4	Die	Cooling bath
160-180°C	160-180°C	160-180°C	160-180°C	160-180°C	40-60°C



NonOilen® is a registered trademark of Panara a.s. This information and our technical advice, whether verbal, in writing, or provided through trials, is based on our current knowledge and experience. It is given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to verify its validity and test our products for suitability in your intended processes and applications. The application, use, and processing of our products, as well as the products you manufacture based on our technical advice, are beyond our control and therefore entirely your responsibility.