NonOilen® 3D 3056-2

TECHNICAL DATASHEET

Last actualisation: **3/2024**

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.

Physical form

Cylindrical pellets

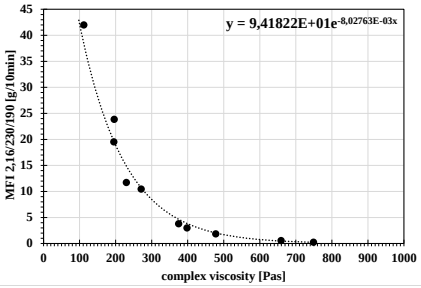
Composition

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	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		kJ/m^2	2
Charpy impact strength un-notched	-30°C		kJ/m^2	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, 1 bar,150 µm	internal	$cm^3/(m^2.day)$	N/A
Permeation of H_2O vapour	23°C, 85 % RH, 150 µm	internal	$mg(m^2.day)$	N/A
Biodegradation				
Industrial compost		EN 13432 ISO 14855	OK compost / TÜV AUSTRIA INDUSTRIAL S2777	
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

For 3D filament production melt temperature should not exceed 190°C, optimally it should range from 160 to 180°C on the die. 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