

Technical Data Sheet

ABS by Innofil3D BV

Filament suitable for all commercially available leading brands 3D FDM/FFF printers

IDENTIFICATION OF THE MATERIAL

Trade name	Innofil3D ABS
Chemical name	Acrylonitrile Butadiene Styrene
Chemical family	Thermoplastic Copolymers
Use	3D-Printing
Origin	Innofil3D BV

GUIDELINE FOR PRINT SETTINGS

Nozzle temperature	240 ± 10 °C
Bed temperature	80 - 100 °C
Bed modification	Tape
Active cooling fan	No/Yes (up to 25%)
Layer height	0.08 - 0.2 mm
Shell thickness	0.4 - 0.8 mm
Print speed	40 - 80 mm/s

Settings are based on a 0.4 mm nozzle

MATERIAL PROPERTIES

MATERIAL PROPERTIES		Test Method
Melt temperature	Not applicable	ASTM D3418
Glass transition temperature	~ 105 °C	ASTM D3418
Melt Flow Rate ¹	43.1 g/10min	ISO 1133
Melt Volume Rate ¹	45.9 cm ³ /10min	ISO 1133
Density	1.04 g/cm ³	ASTM D1505
Odor	Little odor	/
Solubility	Insoluble in water	/

¹Test conditions: T = 210 °C; m = 2.16 kg



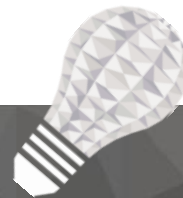
MECHANICAL PROPERTIES TENSILE TEST			Test Method	ISO 527
<p>All test specimens were printed using an Ultimaker 2+ under the following conditions: Printing temperature: 210 °C Heated bed temperature: 60 °C Print speed: 40 mm/s Number of shells: 2 Infill under 45°</p>	<p>Printed vertical (Z-axis)</p>		<p>Printed horizontal (X,Y-axis)</p>	
	Infill	50%	100%	50%
Tensile strength (MPa)	4.4 ± 0.6	6.5 ± 1.8	17.0 ± 0.8	29.3 ± 0.8
Force at break (MPa)	2.7 ± 1.8	7.8 ± 1.3	13.6 ± 0.8	26.4 ± 1.8
Elongation at max force (%)	0.5 ± 0.1	0.7 ± 0.1	2.3 ± 0.1	2.4 ± 0.1
Elongation at break (%)	0.5 ± 0.2	0.7 ± 0.1	4.8 ± 0.9	3.7 ± 0.9
Relative tensile strength (MPa/g)	0.7 ± 0.1	0.8 ± 0.2	2.5 ± 0.1	3.0 ± 0.1
Emodulus (MPa)	1031 ± 53	1358 ± 139	1072 ± 38	2030 ± 45

MECHANICAL PROPERTIES IMPACT TEST		Test Method	ISO 179
<p>All test specimens were printed using an Ultimaker 2+ under the following conditions: Printing temperature: 210 °C Heated bed temperature: 60 °C Print speed: 40 mm/s Number of shells: 2 Infill under 45° 1 →: impact direction</p>	<p>Charpy (en)</p>	<p>Charpy (ep)</p>	
	Infill	100%	100%
Impact strength (kJ/m ²)	39.3 ± 3.3	35.4 ± 3.4	
Impact energy (mJ)	1500.0 ± 134.4	1371.6 ± 125.9	



MECHANICAL PROPERTIES FLEXURAL TEST		Test Method	ISO 178
All test specimens were printed using an Ultimaker 2+ under the following conditions: printing temperature: 210 °C heated bed temperature: 60 °C print speed: 40 mm/s number of shells: 2 Infill under 45° 1 →: bending direction	<p>Normal</p>	<p>Parallel</p>	
	Infill	100%	100%
	Flexural modulus (MPa)	1965.3 ± 115.5	1680.8 ± 127.9
	Maximum force (MPa)	67.3 ± 2.3	72.6 ± 1.0
	Deformation (%)	4.3 ± 0.1	4.4 ± 0.1

FILAMENT SPECIFICATIONS		Test Method
Diameter 1.75	1.75 ± 0.05 mm	Innofil3D
Diameter 2.85	2.85 ± 0.10 mm	Innofil3D
Max. roundness deviation 1.75	0.05 mm	Innofil3D
Max. roundness deviation 2.85	0.10 mm	Innofil3D
Net weight on reel	750 g ± 2%	Innofil3D



LIST OF COLORS AND CERTIFICATIONS*						
Colour	Code	RAL nr.	Certifications/approvals			
			10/2011 ¹	FDA ²	2011/65 ³	EN 71-3 ⁴
Naturel	0001	N/A	Yes	Yes	Yes	Yes
Black	0002	9005	Yes	Yes	Yes	Yes
Red	0004	3020	Yes	<u>No</u>	Yes	Yes
Blue	0005	5002	Yes	Yes	Yes	Yes
Yellow	0006	1003	Yes	Yes	Yes	Yes
Green	0007	6018	Yes	Yes	Yes	Yes
Orange	0009	2008	Yes	<u>No</u>	Yes	Yes
Pink	0020	N/A	Yes	<u>No</u>	Yes	Yes
Silver	0021	9006	Yes	Yes	Yes	Yes

* This overview is generated using information obtained from the raw material suppliers.

Certifications/approvals	Description
¹ Regulation EU No 10/2011:	Union Guidelines on Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food (Europe)
² FDA:	Food and Drug administration approval (U.S.A.)
³ Directive 2011/65/EU:	The restriction of the use of certain hazardous substances in electrical and electronic equipment (Europe)
⁴ Directive 2009/48/EC; EN 71-3:	Safety of toys - Part 3: Migration of certain elements (Europe)