

# Technical Data Sheet

## ABS Fusion<sup>+</sup> by Innofil3D BV

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

### IDENTIFICATION OF THE MATERIAL

Trade name	ABS Fusion <sup>+</sup>
Chemical name	Acetonitrile Butadiene Styrene
Chemical family	Thermoplastic Copolymer
Use	3D-Printing
Origin	Innofil3D BV

### GUIDELINE FOR PRINT SETTINGS

Nozzle temperature	240 – 260 °C
Bed temperature	100 – 120 °C
Bed modification	Clean the bed properly with Ethanol/Alcohol
Active cooling fan	0%
Layer height	0.08 – 0.2 mm
Shell thickness	0.8 – 1.2 mm
Print speed	40 – 80 mm/s

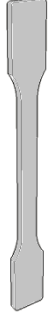

Settings are based on a 0.4 mm nozzle

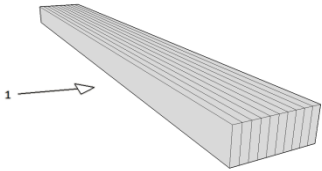
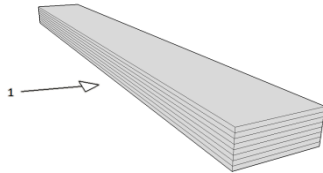
### MATERIAL PROPERTIES

MATERIAL PROPERTIES		Test Method
Melt temperature	N/A	ASTM D3418
Glass transition temperature	82 and 117 °C	ASTM D3418
Melt Flow Rate <sup>1</sup>	9.70 g/10 min	ISO 1133
Melt Volume Rate <sup>1</sup>	9.96 cm <sup>3</sup> /10 min	ISO 1133
Density	1.08 g/cm <sup>3</sup>	ASTM D1505
Odor	Little odor	/
Water solubility	Insoluble	/

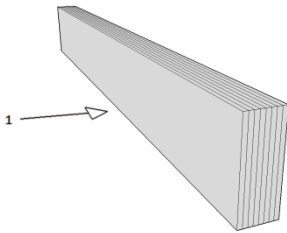
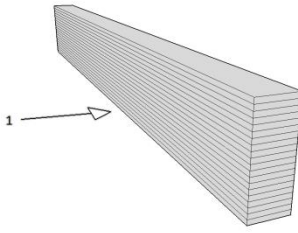
<sup>1</sup>Test conditions: T = 220 °C ; m = 10 kg



MECHANICAL PROPERTIES   TENSILE TEST			Test Method	ISO 527
<p>All test specimens were printed using an Ultimaker 2+ under the following conditions:                      printing temperature: 250°C                      heated bed temperature: 100°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)	5.7 ± 0.7	6.3 ± 0.7	12.7 ± 0.7	18.9 ± 0.5
Force at break (MPa)	5.6 ± 1.0	6.1 ± 0.8	11.2 ± 0.5	16.4 ± 1.5
Elongation at max force (%)	1.0 ± 0.2	0.7 ± 0.1	2.6 ± 0.2	2.8 ± 0.1
Elongation at break (%)	1.0 ± 0.2	0.7 ± 0.1	3.5 ± 1.4	5.1 ± 0.5
Relative tensile strength (MPa/g)	0.8 ± 0.1	0.7 ± 0.1	1.7 ± 0.1	1.9 ± 0.1
Emodulus (MPa)	653 ± 10	950 ± 69	743 ± 16	1068 ± 41

MECHANICAL PROPERTIES   IMPACT TEST			Test Method	ISO 179
<p>All test specimens were printed using an Ultimaker 2+ under the following conditions:                      printing temperature: 250°C                      heated bed temperature: 100°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%	100%
Impact strength (kJ/m <sup>2</sup> )	32.2 ± 4.2	24.5 ± 1.8	24.5 ± 1.8	
Impact energy (mJ)	1277 ± 172	971 ± 68	971 ± 68	



<b>MECHANICAL PROPERTIES   FLEXURAL TEST</b>		Test Method	ISO 178
<p>All test specimens were printed using an Ultimaker 2+ under the following conditions:                      printing temperature: 250°C                      heated bed temperature: 100°C                      print speed: 40 mm/s                      number of shells: 2                      Infill under 45°                      1 →: bending direction</p>	 <p>Normal</p>	 <p>Parallel</p>	
	Infill	100%	100%
	Flexural modulus (MPa)	838 ± 55	1104 ± 17
	Maximum force (MPa)	30.6 ± 2.0	43.6 ± 1.0
	Deformation (%)	9.1 ± 0.6	8.2 ± 0.5

<b>FILAMENT SPECIFICATIONS</b>		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 <sup>1</sup>	FDA <sup>2</sup>	2011/65 <sup>3</sup>	EN 71-3 <sup>4</sup>
Natural White	0201	N/A				
Black	0208	9005				
Grey	0223	7045				

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

\*\* RAL number used to manufacture the semi-transparent colour.

Certifications/approvals	Description
<sup>1</sup> 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)
<sup>2</sup> FDA:	Food and Drug administration approval (U.S.A.)
<sup>3</sup> Directive 2011/65/EU:	The restriction of the use of certain hazardous substances in electrical and electronic equipment (Europe)
<sup>4</sup> Directive 2009/48/EC; EN 71-3:	Safety of toys – Part 3: Migration of certain elements (Europe)

<b>Part number</b>	<b>Colour</b>	<b>Diameter</b>	<b>Weight</b>
10926	Black	1.75mm	750g
10927	Black	2.85mm	750g
10928	Grey	1.75mm	750g
10929	Grey	2.85mm	750g
10924	Natural White	1.75mm	750g
10925	Natural White	2.85mm	750g