TECHNICAL DATA SHEET
FLEX MEDIUM

1. DESCRIPTION

TPU FLEX Medium has been specially developed for the FDM/FFF process. With an extensibility of up to 470%, high material quality, high chemical resistance and a heat distortion resistance of up to 115°C, the material is suitable for numerous industrial applications. The raw material is compliant with REACH and RoHS standards.

2. FEATURES

- Very impact and breakage resistant
- Halogen-free
- Free of silicone, plasticisers and oils
- Shore hardness A98
- UV-resistant
- Extreme layer adhesion

3. PROPERTIES

TEST	METHOD	UNIT	VALUE
Tensile modulus (E-Modulus)	ISO 527-2/5A/500	MPa	40
Ultimate elongation	ISO 527-2/5A/500	%	475
Stress at break	ISO 527-2/5A/500	MPa	- (50%)
	ISO 527-2/5A/500	MPa	17 (100%)
	ISO 527-2/5A/500	MPa	30 (300%)
VICAT A (VST)	ISO 306	°C	110*
Melting temperature	ISO 3146-C	°C	190-220
Density	ISO 2781	g/cm³	1.19
Abrasion resistance	ISO 4649-A	mm³	25
Shore hardness	ISO 868	Shore	98A
Tear strength	ISO 34-1B	kN/m	170
Glass transition temperature		oC	-30
Compressive strength	DIN 53452	MPa	40
Permeability AIR	DIN 53380	25°/60°C	450/-
Permeability N2	DIN 53380	25°/60°C	330/1800
Permeability O2	DIN 53380	25°/60°C	840/4500
Permeability CO2	DIN 53380	25°/60°C	6500/19000
Permeability N2O	DIN 53380	25°/60°C	12400/-
Poisson-ratio	acc. to Hencky		0.47

*Temperature resistance tested at a minimum wall thickness of 4 mm.

PRINT SETTINGS	
Nozzle	230-250°C
Heatbed	50-90°C
Adhesive	not required
Speed	20-100mm/s
Cooling	0-30%
Enclosed Space	no
Hardened Nozzle	no
Max. Volumetric Speed	3,2 mm³/s

Recommended settings for printers with a 0.4mm Nozzle. Max. 50% layerheight. Optimal print settings may vary between different printers and also depend on environmental factors.

4. CERTIFICATIONS & ADDITIONAL INFORMATION

FDA compliant · RoHS compliant · REACH compliant · CHEMICAL resistent · FREE of Silicone · SHORE 98A

Certifications depend on colors in final product. More info in the additional information sheet.

5. STORAGE AND SHELF LIFE

Store in a dry room at room temperature (18-27°C / 65-80°F). Keep out of direct heat and sunlight.
When stored correctly, this material has a shelf life of 2 years.
Additional info in our regulatory, additional information and chemical resistance data sheets.

ADDITIONAL INFORMATION SHEET

DISCLAIMER

Our products are manufactured with the highest quality resources as a base for our filament. These come with different certifications, that validate certain standards.

To ensure that a specific material is compliant with a certification, both the material and color need to be considered, as well as the printer and other external factors. The compliance of the final product has to be determined on a case-by-case basis. Extrudr cannot guarantee compliance for the final product.

NEED HELP?

If you have any question about the product and/or you are experiencing an issue, please contact us via:

support@extrudr.com
www.extrudr.com

1. COLORS AND FDA

	BIOFUSION	DURAPRO ABS	DURAPRO ASA	DURAPRO ASA CF	DURAPRO ASA GF	FLEX SEMISOFT	FLEX MEDIUM	FLEX HARD	FLEX HARD CF	WOOD	PEARL	FLAX	GREENTEC	GREENTEC PRO	GREENTEC PRO CF	PCTG	PETG	XPETG CF	XPETG MATT	XPETG REC	PLA BASIC	PLA NX2 MATT
transparent						○	✓	○								✓	✓			○	✓	
white		✓	✓			○	✓	○					✓	✓		✓	✓		✓	○	✓	✓
arctic white	✓																					
nature		✓	✓		○					✓	✓	✓	✓	✓								
yellow			✓														✓					✓
neon yellow			○				○										○					○
trans. yellow																	○					
military beige																						✓
gold																	○				○	
inca gold	○																					
copper																	○					
steampunk copper	○																					
orange																	○					○
neon orange			○				○										○					○
trans. orange																	○					
red		✓	✓										✓			✓	✓		✓			
cherry red	✓																					
neon red							○										○					
trans. red																	○					
hellfire red							✓							✓			✓					✓

✓ FDA COMPLIANT

○ NOT FDA COMPLIANT

ADDITIONAL INFORMATION SHEET

	BIOFUSION	DURAPRO ABS	DURAPRO ASA	DURAPRO ASA CF	DURAPRO ASA GF	FLEX SEMISOFT	FLEX MEDIUM	FLEX HARD	FLEX HARD CF	WOOD	PEARL	FLAX	GREENTEC	GREENTEC PRO	GREENTEC PRO CF	PCTG	PETG	XPETG CF	XPETG MATT	XPETG REC	PLA BASIC	PLA NX2 MATT
magenta																	✓					
purple																	✓					✓
epic purple	✓																					✓
blue		✓	✓				✓						✓	✓		✓	✓		✓			✓
blue steel																						✓
trans. blue																	○					
blue fire	✓																					
light blue																	✓					✓
turquoise																	✓					✓
glowEx																	○					
signal green																	○					○
emerald green			✓														✓					✓
neon green			○				○										○					
trans. green																	○					
reptile green	✓																					
venom green	○																					
military green																	✓		✓			✓
bronze																	○					
brown										✓												✓
silver		○											○	○		○	○					○
dark silver			○																			
quicksilver	○																					
grey		✓	✓														✓					✓
metallic		○	○													○	○		○			
metallic grey	○																					○
anthracite		✓	✓				✓						✓	✓		✓	✓		✓			✓
black		✓	✓	○		○	✓	○	○				✓	✓	○	✓	✓	○	✓	○	✓	✓
jet black	✓																					

✓ FDA COMPLIANT

○ NOT FDA COMPLIANT

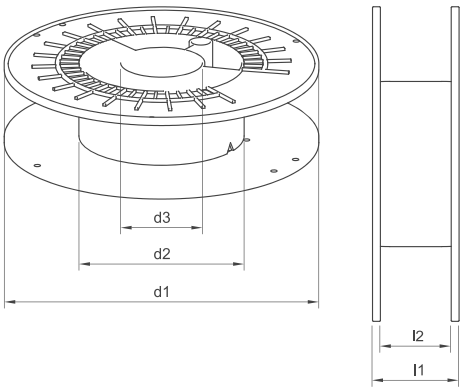
ADDITIONAL INFORMATION SHEET

2. SPOOL INFORMATION

SPOOL TYPE	S	M	L	XL
l1	68	100	100	244
l2	59	90	90	220
d1	200	300	350	335
d2	105	212	180	190
d3	52	52	52	51
Net Weight*	260	600	820	1020

*Deviations of +/- 10 % possible
Measurements (l, d) in mm.
Net Weight in g.

SPOOL TYPES			
S	0,5 kg	0,75 kg	0,8 kg
	1 kg	1,1 kg	
M	2 kg	2,5 kg	
L	5 kg		
XL	10 kg		



3. CERTIFICATIONS

FDA compliant
The raw material and additives used are FDA certified. Classification and compliance with the standard is linked to external limitations. According to external limitations, a certification of food approval in accordance with the rules can only be carried out on a case-by-case basis for the respective product.

RoHS compliant
The EU Directive 2011/65/EU (RoHS 2) serves to restrict the use of certain hazardous substances and specifies their maximum concentrations in materials, such as:

- Lead (Pb), 0.1% - use e.g. for solder joints
- Mercury (Hg), 0.1% - Use e.g. for inclination switches, mercury vapour rectifiers
- Cadmium (Cd), 0.01% - Use e.g. for nickel-cadmium batteries
- Hexavalent chromium (Cr6+), 0.1% - Use e.g. in paints and varnishes, wood preservatives
- Polybrominated biphenyls (PBB), 0.1% - Flame retardant in plastic insulations
- Polybrominated diphenyl ethers (PBDE), 0.1% - Flame retardants in plastic insulations
- Bis(2-ethylhexyl) phthalate (DEHP), 0.1% - Use e.g. as plasticizer in PVC
- Benzyl butyl phthalate (BBP), 0.1% - Use e.g. as plasticizer in plastics
- Dibutylphthalate (DBP), 0.1% - Use e.g. as plasticizer in plastics
- Diisobutylphthalate (DIBP), 0.1% - Use e.g. as plasticizer in plastics

In a chemical analysis (screening), the test object is subjected to procedures that indicate the concentrations of the elements present (example: X-ray fluorescence analysis). Products that comply with the directives are marked with the CE logo.

REACH compliant
REACH is the European Directive 1907/2006 for the registration, evaluation, authorisation and estriction of certain chemical substances. It came into effect in 2007 and replaced the previous system. The directive shifts the responsibility for providing information on risks and safety information from the authorities to the industry. Thus, companies are required to meet the new requirements and strengthen and secure communication along the production chain.

ADDITIONAL INFORMATION SHEET

DEGRADABLE ISO 14855
The product is biodegradable according to the DIN EN ISO 14855 guideline. The complete aerobic degradability of the material is determined under controlled composting and examined on the basis of the released carbon dioxide. The compliance of the final product with the guideline needs to be evaluated on a case-by-case basis for the respective product.

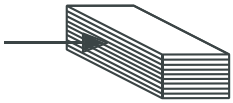
FLAMERETARDANT UL 94 HB
The raw material is flame-retardant and is based on the DIN 4102 - UL94 - B1 standard. Classification and compliance with the standard is linked to external limitations. In order to guarantee the flammability of the end product, a certified testing laboratory must test the properties.

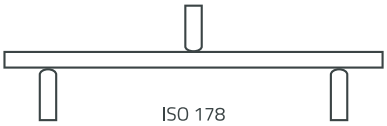
UV RESISTENT
The material is capable of withstanding direct UV-impact for a certain time period. The UV-resistance of the final product needs to be evaluated on a case-by-case basis for the respective product.

4. TEST VALUES AND TEST SPECIMEN

To determine a specific value for the technical data sheets, standardized test specimen are being used. These are designed and manufactured according to the specific regulation (e.g. ISO 527 oder ISO 179). The test specimen are manufactured through injection moulding and are tested afterwards. The analysis is conducted by an external entity. The values in the technical data sheet are for comparison purposes only and depend on external factors, like temperature, printer and settings, user experience and others, that have to be checked on a case-by-case basis. The technical properties have to be checked by the user before use. Extrudr assumes no liability for fulfilment of the values in the end product. Product properties are subject to change without prior announcement. In case users want to engineer parts with Extrudr filament and need exact information for calculation, contact the Extrudr Support Team.

ISO 527


ISO 179


ISO 178

5. LIABILITY LIMITATION

Please note that this compound has not been tested for trace amounts of the substances aforementioned or listed within the regulations. However, based on the information obtained from upstream suppliers there is no reason to expect any of the substances listed to be present within this compound. The values listed have been established on standardized test specimens at standard temperature and humidity conditions. The figures should be considered as guide values only. Under certain conditions the processing conditions can have a significant influenceon the properties.

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