



Filament 3D Printing

UTILITY3D INC.

TEL: +1 (514) 402-2666

E-MAIL: RAPHAEL@UTILITY3D.CA

Materials

PLA – (POLYLACTIC ACID)



- PROS**
- VERY EASY TO PRINT
 - GOOD SURFACE FINISH
 - LOW WARPING/ SHRINKING/DEFORMATION
 - COMPATIBLE WITH PVA AND BREAKAWAY SUPPORT
 - GOOD DIMENSIONAL ACCURACY
- CONS**
- LOW TEMPERATURE RESISTANCE
 - LOW IMPACT RESISTANCE



TPLA – (TOUGH POLYLACTIC ACID)



- PROS**
- EXCELLENT SURFACE FINISH
 - EASY TO PRINT
 - ROBUST MATERIAL
 - GOOD ACCURACY
 - VERY WIDE OPERATIONAL RANGE
- CONS**
- LOW TEMPERATURE RESISTANCE
 - LOW IMPACT RESISTANCE



PRO1 (POLYLACTIC ACID COMPOUND)

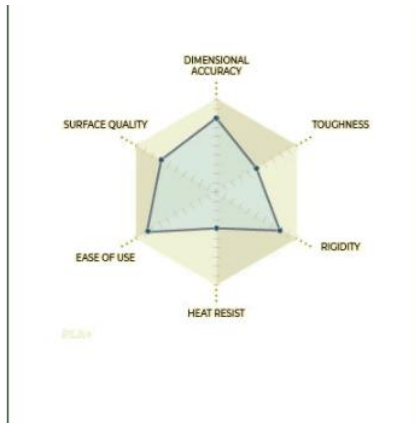


- PROS**
- EXCELLENT SURFACE FINISH
 - EASY TO PRINT
 - ROBUST MATERIAL
 - GOOD ACCURACY
 - VERY WIDE OPERATIONAL RANGE
- CONS**
- LOW TEMPERATURE RESISTANCE
 - LOW IMPACT RESISTANCE



Materials

PLA+ (POLYLACTIC ACID COMPOUND)

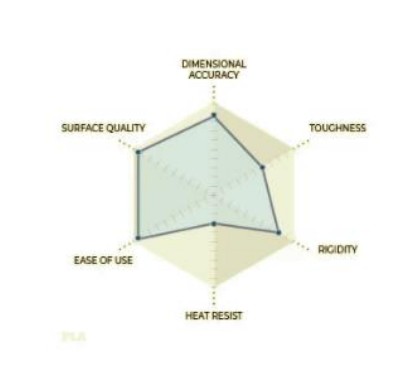


- PROS**
- EASY TO PRINT
 - GOOD SURFACE FINISH
 - LOW WARPING/ SHRINKING/DEFORMATION
 - COMPATIBLE WITH BOTH PVA AND BREAKAWAY SUPPORT

- CONS**
- LOW TEMPERATURE RESISTANCE
 - LOW UV RESISTANCE
 - LOW IMPACT RESISTANCE
 - LOW CHEMICAL RESISTANCE



SPEC (AESTHETIC PLA COMPOUND)

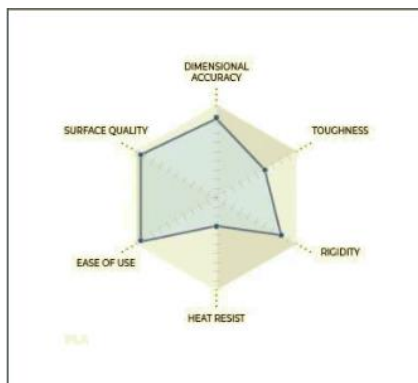


- PROS**
- UNIQUE VISUAL PROPERTIES
 - EASY TO PRINT
 - SUPERB SURFACE QUALITY

- CONS**
- LOW IMPACT RESISTANCE
 - SLOWER PRINTING SPEED FOR BETTER QUALITY

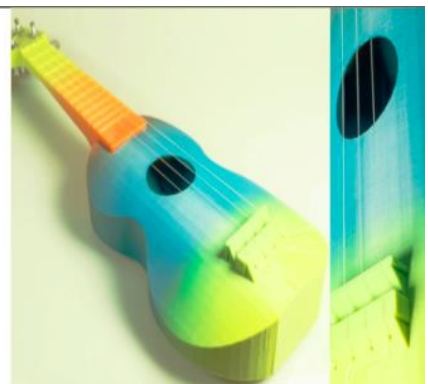


CHGE (COLOR CHANGE)





- PROS**
- VERY EASY TO PRINT
 - GOOD SURFACE FINISH
 - LOW WARPING/ SHRINKING/DEFORMATION
 - COMPATIBLE WITH BOTH PVA AND BREAKAWAY SUPPORT

- CONS**
- LOW TEMPERATURE RESISTANCE
 - LOW IMPACT RESISTANCE



Materials

PVA (POLYVINYL ALCOHOL)

 <p>PVA</p>	<p>PROS</p> <ul style="list-style-type: none">DON'T HAVE TO SACRIFICE DESIGN FOR PRINTABILITYHANDS FREE SUPPORT REMOVALEXCELLENT DIMENSIONAL ACCURACYEASY TO PRINT <p>CONS</p> <ul style="list-style-type: none">PRO-LONG EXPOSURE TO AIR MAKES THE FILAMENT BRITTLENOT COMPATIBLE WITH SOME ENGINEERING MATERIALSREQUIRES REGULAR MAINTENANCE OF THE NOZZLEREQUIRES DUAL EXTRUSION PRINTER	
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BRK (BREAKAWAY MATERIAL)

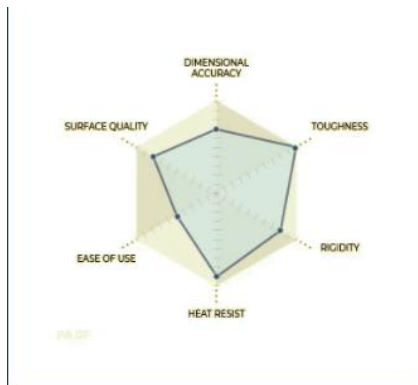
 <p>BREAKAWAY</p>	<p>PROS</p> <ul style="list-style-type: none">EASY TO PRINTUSABLE WITH MOST MATERIALSEASY SUPPORT REMOVAL <p>CONS</p> <ul style="list-style-type: none">REQUIRES DUAL EXTRUSION PRINTERMANUAL SUPPORT REMOVAL	
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PA (NYLON)

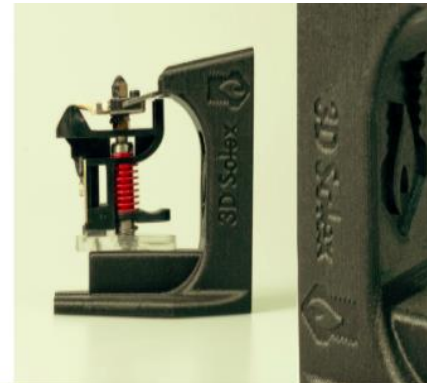
 <p>NYLON</p>	<p>PROS</p> <ul style="list-style-type: none">EXTREMELY ROBUST PRINTSFLEXIBLE PRINTSEXCELLENT IMPACT AND ABRASION RESISTANCELOW FRICTION COEFFICIENTGOOD CORROSION RESISTANCE TO ALKALIS AND ORGANIC CHEMICAL <p>CONS</p> <ul style="list-style-type: none">DIMA FIX OR PVA INTERFACE FOR INITIAL LAYER ADHESIONENCLOSURE RECOMMENDED	
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Materials

PA CF (NYLON GLASS/CARBON FIBER)



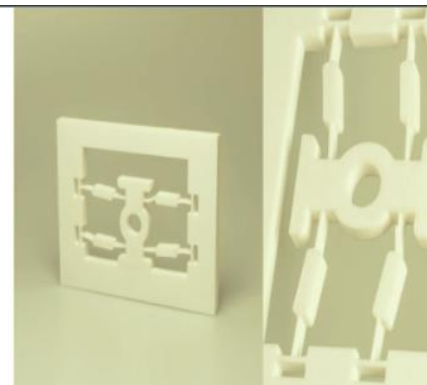
- PROS**
- BEAUTIFUL TEXTURED MATT SURFACE FINISH
 - STIFF AND ROBUST PRINTS
 - GOOD DIMENSIONAL STABILITY
- CONS**
- SLOW PRINT SPEED
 - WEARS OUT BRASS NOZZLES QUICKLY



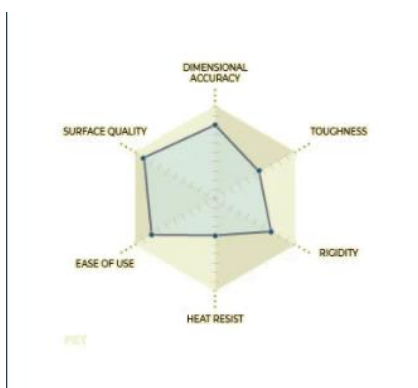
PETG (POLYETHYLENE TEREPHTHALATE GLYCOL)



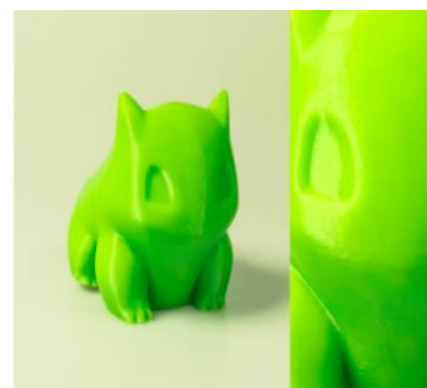
- PROS**
- VERY ROBUST MATERIAL
 - EXCELLENT LAYER ADHESION
 - HEAT TRANSITION -80°C
 - EXCELLENT CHEMICAL RESISTANCES
- CONS**
- MINIMAL SHRINKING
 - STRINGING
 - REQUIRES DIMA FIX



PET (POLYETHYLENE TEREPHTALATE)

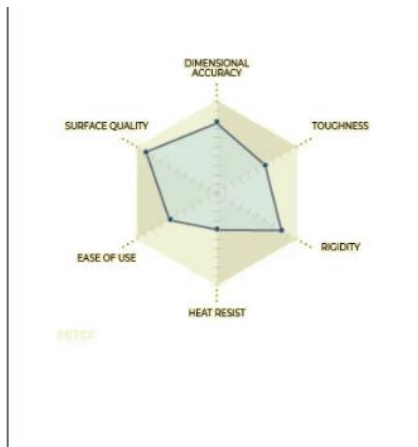


- PROS**
- EASY TO PRINT
 - EXCELLENT LAYER ADHESION
 - DOES NOT ABSORB MOISTURE
 - GOOD CHEMICAL RESISTANCES
 - GOOD SURFACE FINISH
- CONS**
- STRINGING
 - RECOMMEND USING BREAKAWAY SUPPORTS



Materials

PET CF (PET BASE CARBON FIBER)



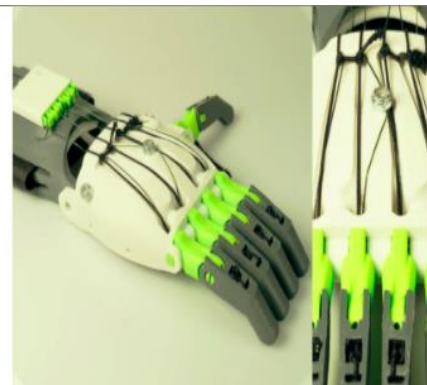
- PROS**
- VERY ROBUST
 - BEAUTIFUL AND UNIQUE SURFACE FINISH
 - HIGH IMPACT RESISTANCE
 - HEAT RESISTANCE 100°C
 - GOOD DIMENSIONAL STABILITY
- CONS**
- MODERATE WEAR AGAINST BRASS COMPONENTS
 - SLOW PRINT SPEED
 - REQUIRE DIMA FIX
 - MINIMUM NOZZLE SIZE 0.6MM



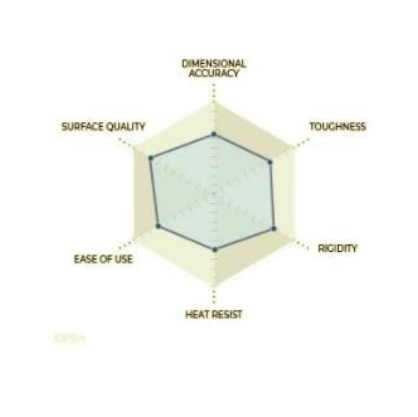
CPE (CO-POLYESTER)



- PROS**
- EASY TO PRINT
 - EXCELLENT LAYER ADHESION
 - GOOD CHEMICAL RESISTANCES
 - GOOD SURFACE QUALITY
- CONS**
- SOME STRINGING
 - LOW SHRINKING/WARPING



CPE+ (COPOLYESTER COMPOUND)



- PROS**
- HEAT RESISTANCE UP TO 100°C
 - HIGH IMPACT RESISTANCE
 - RESISTANT TO WATER ABSORPTION
 - GOOD DIMENSIONAL ACCURACY
 - EXCELLENT INTERLAYER ADHESION
- CONS**
- ENCLOSURE RECOMMENDED
 - DIMA FIX RECOMMENDED
 - SLOWER THEN AVERAGE PRINTSPEED



Materials

PC (POLYCARBONATE)



- PROS**
- 110°C HEAT RESISTANCE
 - SOME FIRE RETARDANT CHARACTERISTICS
 - DIMENSIONALLY STABLE
 - INTERLAYER ADHESION
 - VERY ROBUST MATERIAL

- CONS**
- NOT SUITABLE FOR FOOD CONTACT
 - HIGHLY RECOMMEND ENCLOSURE
 - RECOMMEND DIMA FIX
 - SLOWER THEN AVERAGE PRINT SPEEDS



PP (POLYPROPYLENE)



- PROS**
- FLEXIBLE PRINTS
 - CHEMICALLY INERT
 - EXCELLENT IMPACT RESISTANCE

- CONS**
- DIFFICULT TO PRINT



PP GF (POLYPROPYLENE GLASS FIBRE COMPOSITE)



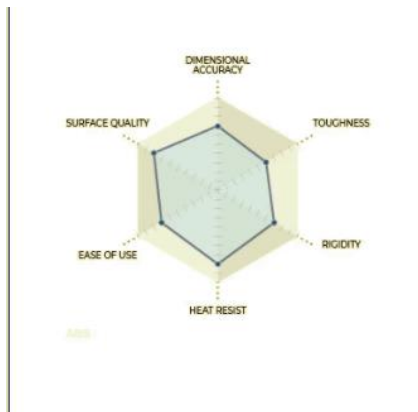
- PROS**
- FANTASTIC SURFACE FINISH
 - LOW WARPING
 - ULTIMAKER PROFILE READY
 - HIGH IMPACT RESISTANCE THAN OTHER CF MATERIALS

- CONS**
- REQUIRES SPECIAL ADHESION GLUE OR SHEETS
 - REQUIRES RUBY/STEEL NOZZLE
 - INCOMPATIBLE WITH MOST SUPPORTS



Materials

ABS (ACETONITRILE BUTADIENE STYRENE)

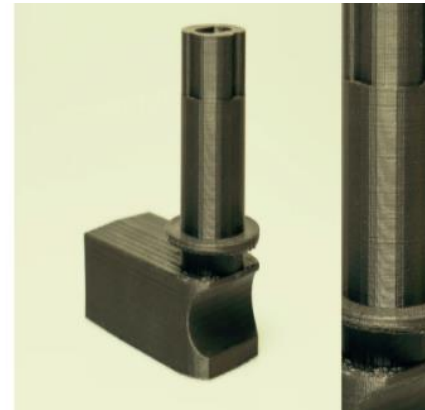


PROS

- ROBUST MATERIAL
- UV RESISTANT
- GOOD HEAT RESISTANCE
- INEXPENSIVE ENGINEERING MATERIAL

CONS

- SOME SHRINKING AND WARPING
- POOR LAYER ADHESION
- ENCLOSURE RECOMMENDED
- STRONG ODOR DURING PRINT



HIPS (HIGH IMPACT POLYSTYRENE)



PROS

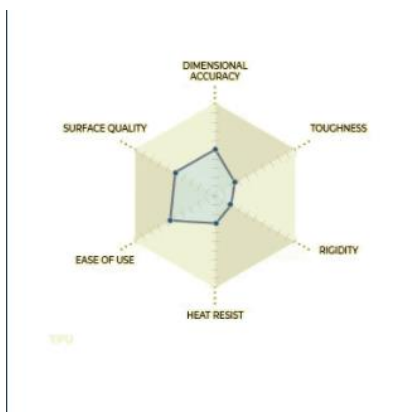
- GOOD DIMENSIONAL ACCURACY
- EASY TO PRINT
- GOOD IMPACT RESISTANCE
- CAN BE SANDED FOR SMOOTHER SURFACE

CONS

- SOME SHRINKING/WARPING
- POOR CHEMICAL RESISTANCES
- RECOMMENDED TO USE AN ENCLOSURE



TPU (THERMOPLASTIC POLYURETHANE)



PROS

- WEAR RESISTANT
- RUBBER LIKE PROPERTIES
- IMPACT RESISTANCE
- RESISTANCE TO COMMON INDUSTRIAL OILS AND CHEMICALS

CONS

- VERY DIFFICULT TO PRINT
- VERY SLOW PRINT SPEED
- ROUGH SURFACE FINISH



Materials

FLEX (INNOFLEX 45-60 (TPC))



PROS

- RUBBER LIKE PROPERTIES
- BIO-BASED THERMOPLASTIC
- GOOD LAYER ADHESION
- GOOD WEAR RESISTANCE

CONS

- VERY SLOW PRINTING SPEED
- POOR DIMENSIONAL ACCURACY
- ROUGH SURFACE QUALITY



ASA (ACRYLONITRILE STYRENE ACRYLATE)



PROS

- WEATHERING RESISTANT
- CHEMICAL RESISTANT
- HEAT RESISTANT
- GOOD ANTI-STATIC PROPERTIES
- RIGID

CONS

- SOME SHRINKING AND WARPING
- RECOMMEND DIMA FIX INITIAL LAYER ADHESION
- NO COLOUR CHOICES

ZYT (ZYTEL DUPONT POLYAMIDE FORMULATION)



PROS

- INDUSTRIAL GRADE MATERIAL
- ROBUST MATERIAL
- HEAT RESISTANCE UP TO 110°C

CONS

- RECOMMEND ENCLOSURE
- ABSORBS MOISTURE OUT OF AIR



Materials

TYPE OF FILE SUPPORTED

.STL

.OBJ

.STEP

**MAIN ONES USED, CONTACT IF NOT
SURE**