

Materials List for:

Three-dimensional Printing of Thermoplastic Materials to Create Automated Syringe Pumps with Feedback Control for Microfluidic Applications

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Materials

Name	Company	Catalog Number	Comments
Arduino IDE	Arduino.org		Arduino Uno R3 control software
Header Connector, 2 Positions	Digi-Key	WM4000-ND	
Header Connector, 3 Positions	Digi-Key	WM4001-ND	
Header Connector, 4 Positions	Digi-Key	WM4002-ND	
Hook-up Wire, 22 Gauge, Black	Digi-Key	1528-1752-ND	
Hook-up Wire, 22 Gauge, Blue	Digi-Key	1528-1757-ND	
Hook-up Wire, 22 Gauge, Red	Digi-Key	1528-1750-ND	
Hook-up Wire, 22 Gauge, White	Digi-Key	1528-1768-ND	
Hook-up Wire, 22 Gauge, Yellow	Digi-Key	1528-1751-ND	
Instrumentation Amplifier	Texas Instruments	INA122P	
Microcontroller, Arduino Uno R3	Arduino.org	A000066	
Mini Breadboard	Amazon	B01IMS0II0	
Power Supply	BK Precision	1550	
Pressure Sensor	PendoTech	PRESS-S-000	
Rectangular Connectors, Housings	Digi-Key	WM2802-ND	
Rectangular Connectors, Male	Digi-Key	WM2565CT-ND	
Resistors, 10k Ohm	Digi-Key	1135-1174-1-ND	
Resistors, 330 Ohm	Digi-Key	330ADCT-ND	
Stepper Motor Driver, EasyDriver	Digi-Key	1568-1108-ND	
USB 2.0 Cable, A-Male to B-Male	Amazon	PC045	
3D Printed Material, Z-ABS	Zortrax		A variety of colors are available
3D Printer	Zortrax	M200	Printing out the syringe pump components
Ball Bearing, 17x6x6mm	Amazon	B008X18NWK	
Hex Machine Screws, M3x16mm	Amazon	B00W97MTII	
Hex Machine Screws, M3x35mm	Amazon	B00W97N2UW	
Hex Nut, M3 0.5	Amazon	B012U6PKMO	
Hex Nut, M5	Amazon	B012T3C8YQ	
Lathe Round Rod	Amazon	B00AUB73HW	
Linear Ball Bearing	Amazon	B01IDKG1WO	
Linear Flexible Coupler	Amazon	B010MZ8SQU	
Steel Lock Nut, M3 0.5	Amazon	B000NBKLOQ	

Stepper Motor, NEMA-17, 1.8o/step	Digi-Key	1568-1105-ND	
Syringe, 10mL, Luer-Lok Tip	BD	309604	
Threaded Rod	Amazon	B01MA5XREY	
1H,1H,2H,2H-Perfluorooctyltrichlorosilane	FisherScientific	AAL1660609	
Camera Module	Raspberry Pi Foundation	V2	
Compact Oven	FisherScientific	PR305220G	Baking PDMS pre-polymer mixture and the device
Dispensing Needle, 22 Gauge	McMaster-Carr	75165A682	
Dispensing Needle, 23 Gauge	McMaster-Carr	75165A684	
Fisherbrand Premium Cover Glasses	FisherScientific	12-548-5C	
Glass Culture Petri Dish, 130x25mm	American Educational Products	7-1500-5	
Plasma Cleaner	Harrick Plasma	PDC-32G	Binding the cover glass with the PDMS device
Razor Blades	FisherScientific	7071A141	
Scotch Magic Tape	Amazon	B00RB1YAL6	
Single-board Computer	Raspberry Pi Foundation	Raspberry Pi 2 model B	
Smart Spatula	FisherScientific	EW-06265-12	
Sylgard 184 Silicone Elastomer Kit	FisherScientific	NC9644388	
Syringe Filters	Thermo Scientific	7252520	
Tygon Tubing	ColeParmer	EW-06419-01	
Vacuum Desiccator	FisherScientific	08-594-15C	Degasing PDMS pre-polymer mixture and coating fluorosilane on the master mold
Weighing Dishes	FisherScientific	S67090A	