

**PUNYO Soft-Bubble Gripper Bill of Materials (BOM) v2.0**

Group	Subgroup	Part Number	Item	Qty	Qty/Pkg	Price	Link	
Tools	3D Printing	PRI-MK3S-KIT-ORG-PEI	FDM 3D Printer, Any type	1	1	N/A	<a href="https://shop.prusa3d.com/en/3d-printers/180-original-prusa-3-mk3s-kit.html">https://shop.prusa3d.com/en/3d-printers/180-original-prusa-3-mk3s-kit.html</a>	
		4289A71	Deburring tool	1	1	\$11.66	<a href="https://www.mcmaster.com/4289A71/">https://www.mcmaster.com/4289A71/</a>	
	Laser Cutting	Speedy 400	Laser cutter	1	1	N/A	<a href="https://www.troteclaser.com/en-us/laser-machines/laser-engravers-speedy-series/">https://www.troteclaser.com/en-us/laser-machines/laser-engravers-speedy-series/</a>	
		6997A23	Temperature controlled soldering iron	1	1	\$119.05	<a href="https://www.mcmaster.com/6997A23/">https://www.mcmaster.com/6997A23/</a>	
		92160A123	Heat set installation soldering iron tip	1	1	\$19.67	<a href="https://www.mcmaster.com/92160A123/">https://www.mcmaster.com/92160A123/</a>	
		FA400-04	Bench top fume absorber	1	1	\$107.61	<a href="https://www.grainger.com/product/32TV20">https://www.grainger.com/product/32TV20</a>	
		5153A32	Solder scour pad with metal brass wire	1	1	\$28.04	<a href="https://www.mcmaster.com/5153A32/">https://www.mcmaster.com/5153A32/</a>	
		JIC-2030	Wire stripper	1	1	\$10.40	<a href="https://www.digikay.com/en/products/detail/ionard-tools/JIC-2030/2308356">https://www.digikay.com/en/products/detail/ionard-tools/JIC-2030/2308356</a>	
		8464A49	Vise	1	1	\$39.33	<a href="https://www.mcmaster.com/8464A49/">https://www.mcmaster.com/8464A49/</a>	
		170MN	Pliers	1	1	\$10.40	<a href="https://www.digikay.com/en/products/detail/apex-tool-group/170MN/278946">https://www.digikay.com/en/products/detail/apex-tool-group/170MN/278946</a>	
		Soldering	32000556	Thermally insulated flat load	1	1	\$13.54	<a href="https://www.msdirect.com/browse/tnpla/32000556">https://www.msdirect.com/browse/tnpla/32000556</a>
			Air Source	082-01-0063	Standard bike pump for schrader valves	1	1	\$22.99
		ProPerf48foam2		Large sponge paintbrush	1	48	\$13.49	<a href="https://www.amazon.com/Lightweight-Durable-Acrylics-Varnishes-Polyurethane/dp/B01MR5NB5I/">https://www.amazon.com/Lightweight-Durable-Acrylics-Varnishes-Polyurethane/dp/B01MR5NB5I/</a>
		4927A11		Stanley Retracting-Blade Utility Knives	1	1	\$5.70	<a href="https://www.mcmaster.com/products/box-cutters/stanley-retracting-blade-utility-knives-10/">https://www.mcmaster.com/products/box-cutters/stanley-retracting-blade-utility-knives-10/</a>
		QP-1		Paint stirring sticks	1	30	\$0.98	<a href="https://www.homedepot.com/p/1-qt-Paint-Stick-30-Pack-QP-1/301810963">https://www.homedepot.com/p/1-qt-Paint-Stick-30-Pack-QP-1/301810963</a>
	ACM10562	Ruler		1	1	\$1.48	<a href="https://www.amazon.com/Westcott-Clear-Flexible-Acrylic-Metric/dp/B004E3NK92/">https://www.amazon.com/Westcott-Clear-Flexible-Acrylic-Metric/dp/B004E3NK92/</a>	
	01-005413	Scissors		1	1	\$9.64	<a href="https://www.amazon.com/Fiskars-1541301001-Non-Stick-Titanium-Softgrip/dp/B003YNI688/">https://www.amazon.com/Fiskars-1541301001-Non-Stick-Titanium-Softgrip/dp/B003YNI688/</a>	
	70875A12	Cutting board		1	1	\$16.90	<a href="https://www.mcmaster.com/70875A12/">https://www.mcmaster.com/70875A12/</a>	
	54845T42	Isopropyl alcohol		1	1	\$2.69	<a href="https://www.mcmaster.com/54845T42/">https://www.mcmaster.com/54845T42/</a>	
	70585T2	Shop towels		1	100	\$19.83	<a href="https://www.mcmaster.com/70585T2/">https://www.mcmaster.com/70585T2/</a>	
	8754000975	Powder free nitrile gloves		2	100	\$26.79	<a href="https://www.amazon.com/MedPride-Powder-Free-Nitrile-Gloves-Medium/dp/B00GSSW3T4">https://www.amazon.com/MedPride-Powder-Free-Nitrile-Gloves-Medium/dp/B00GSSW3T4</a>	
	B07YDNKSH6	Rubber brayer		1	1	\$6.99	<a href="https://www.amazon.com/4-inch-Printmaking-Application-Original-Version/dp/B07YDNKSH6/ref=sr_1_4?crd=HCZMHB29J732&amp;keywords=rubber%2B">https://www.amazon.com/4-inch-Printmaking-Application-Original-Version/dp/B07YDNKSH6/ref=sr_1_4?crd=HCZMHB29J732&amp;keywords=rubber%2B</a>	
	B002YCFJHG	Plastic ink tray		1	1	\$2.60	<a href="https://www.amazon.com/Precision-Defined-Supreme-4-Inch-Brushes/dp/B07QX8PZRW/ref=sr_1_32_sspa?crd=FORQYMK8VRHG&amp;keywords=paint%2B">https://www.amazon.com/Precision-Defined-Supreme-4-Inch-Brushes/dp/B07QX8PZRW/ref=sr_1_32_sspa?crd=FORQYMK8VRHG&amp;keywords=paint%2B</a>	
	B073TQ26JX	Canned air		1	2	\$15.69	<a href="https://www.amazon.com/Dust-Off-Disposable-Compressed-Gas-Duster/dp/B073TQ26JX/ref=sr_1_4?crd=CYASQPNT398&amp;keywords=canned%2Ba">https://www.amazon.com/Dust-Off-Disposable-Compressed-Gas-Duster/dp/B073TQ26JX/ref=sr_1_4?crd=CYASQPNT398&amp;keywords=canned%2Ba</a>	
	2703A71	M3 tap		1	1	\$12.39	<a href="https://www.mcmaster.com/2703A71/">https://www.mcmaster.com/2703A71/</a>	
2548A12	Tap wrench with aligner and fixed t-handle	1		1	\$58.33	<a href="https://www.mcmaster.com/2548A12/">https://www.mcmaster.com/2548A12/</a>		
8541533089	Suction cups	1		2	\$8.89	<a href="https://www.amazon.com/Kaisiking-Suction-Computer-Compatible-MacBook/dp/B077QP2QG5">https://www.amazon.com/Kaisiking-Suction-Computer-Compatible-MacBook/dp/B077QP2QG5</a>		
FEHE030	Spudger	1		3	\$11.99	<a href="https://www.amazon.com/Foresay-Printer-Removal-Enhanced-Version/dp/B01A81FXMK">https://www.amazon.com/Foresay-Printer-Removal-Enhanced-Version/dp/B01A81FXMK</a>		
6835A37	Sandpaper	1	1	\$17.87	<a href="https://www.mcmaster.com/6835A37/">https://www.mcmaster.com/6835A37/</a>			
B089YBJN37	45 mm rotary cutter	1	1	\$9.99	<a href="https://www.amazon.com/Ergonomic-Quilting-Crafting-Replacement-Included/dp/B089YBJN37/ref=sr_1_5?crd=IASC09GY2B0XY&amp;keywords=rotary%2B">https://www.amazon.com/Ergonomic-Quilting-Crafting-Replacement-Included/dp/B089YBJN37/ref=sr_1_5?crd=IASC09GY2B0XY&amp;keywords=rotary%2B</a>			
CMHT65002	Phillips-head screwdriver	1	1	\$4.98	<a href="https://www.amazon.com/CRAFTSMAN-CMHT65002-CFT-SD-ACETATE/dp/B09JB94VR8/ref=sr_1_2?crd=PCGYLYE7YUOX&amp;keywords=phillips+hea">https://www.amazon.com/CRAFTSMAN-CMHT65002-CFT-SD-ACETATE/dp/B09JB94VR8/ref=sr_1_2?crd=PCGYLYE7YUOX&amp;keywords=phillips+hea</a>			
B0756D2T73	PTFE Teflon tube cutter	1	1	\$7.99	<a href="https://www.amazon.com/PTFE-Teflon-cutter-tube-Allen/dp/B0756D2T73/ref=sr_1_1_sspa?crd=3GR36YCGJRK81&amp;keywords=flexible%2Btubing%2B">https://www.amazon.com/PTFE-Teflon-cutter-tube-Allen/dp/B0756D2T73/ref=sr_1_1_sspa?crd=3GR36YCGJRK81&amp;keywords=flexible%2Btubing%2B</a>			
6958A21	1.5 mm allen key	1	1	\$0.24	<a href="https://www.mcmaster.com/6958A21/">https://www.mcmaster.com/6958A21/</a>			
6958A12	2.5 mm allen key	1	1	\$0.34	<a href="https://www.mcmaster.com/6958A12/">https://www.mcmaster.com/6958A12/</a>			
6958A51	3.0 mm allen key	1	1	\$0.41	<a href="https://www.mcmaster.com/7289A14/">https://www.mcmaster.com/7289A14/</a>			
Materials	Connectors	5225K183	Push-to-Connect Tube Fitting for Air - Straight Adapter (8 mm STEM OD, 4 mm Tube OD)	1	1	\$3.38	<a href="https://www.mcmaster.com/5225K183/">https://www.mcmaster.com/5225K183/</a>	
		5225K739	Push-to-Connect Tube Fitting for Air - 90 Degree Swivel Elbow (4 mm Tube OD, M3 x 0.5 mm pipe w/ O-ring)	2	1	\$7.63	<a href="https://www.mcmaster.com/5225K739/">https://www.mcmaster.com/5225K739/</a>	
		1201N56	Push-to-Connect Fitting with Shut-Off for Air, Straight Connector (4 mm Tube OD)	2	1	\$5.04	<a href="https://www.mcmaster.com/1201N56/">https://www.mcmaster.com/1201N56/</a>	
	Tubing	50315K68	Firm Polyurethane Rubber Tubing 2.4 mm ID, 4 mm OD	1	1	\$13.50	<a href="https://www.mcmaster.com/50315K68-50315K682/">https://www.mcmaster.com/50315K68-50315K682/</a>	
		74985A65	Loctite 415 Cyanoacrylate (CA) glue	1	1	\$32.25	<a href="https://www.mcmaster.com/74985A65/">https://www.mcmaster.com/74985A65/</a>	
		K07020007	Repositionable spray adhesive	1	1	\$18.44	<a href="https://www.amazon.com/Easy-Tack-Spray-Adhesive-10-25oz/dp/B00MOX4O2K/">https://www.amazon.com/Easy-Tack-Spray-Adhesive-10-25oz/dp/B00MOX4O2K/</a>	
		TAPE-STICK-1-3PK	Painters Tape	1	1	\$7.97	<a href="https://www.amazon.com/ScotchBlue-Painters-Multi-Use-94-Inch-60-Yard/dp/B00004Z4CP">https://www.amazon.com/ScotchBlue-Painters-Multi-Use-94-Inch-60-Yard/dp/B00004Z4CP</a>	
		7612A25	1/2" Wide Gaffer's Tape	1	1	\$13.58	<a href="https://www.mcmaster.com/7612A25-7612A251/">https://www.mcmaster.com/7612A25-7612A251/</a>	
	Adhesives	VHB 4950 - S-10117	VHB double sided tape	1	1	\$23.25	<a href="https://www.amazon.com/3M-4950-Heavy-Duty-Mounting/dp/B007Y7GIK/">https://www.amazon.com/3M-4950-Heavy-Duty-Mounting/dp/B007Y7GIK/</a>	
		SUP459WHT	Latex sheet, 0.65 mm thick, 5 meters	1	1	\$98.95	<a href="https://www.supatex.com/product/supatex-white/">https://www.supatex.com/product/supatex-white/</a>	
		RPO035-EA	Rubber stamp sheet for laser engraving	1	1	\$8.99	<a href="https://www.amazon.com/Rubber-Engraving-Machine-Cutter-Stamps/dp/B09NBZS3TD/ref=sr_1_2?crd=1WRAKTJGRZ3K&amp;keywords=low%2Bodor%2B">https://www.amazon.com/Rubber-Engraving-Machine-Cutter-Stamps/dp/B09NBZS3TD/ref=sr_1_2?crd=1WRAKTJGRZ3K&amp;keywords=low%2Bodor%2B</a>	
	Pattern Printing	LX-802	Black or colored latex screen printing ink	1	1	\$45.00	<a href="https://www.floridaflex.com/latex-inks--balloons.html">https://www.floridaflex.com/latex-inks--balloons.html</a>	
		6938936705468	PLA Filament	1	1	\$22.99	<a href="https://www.amazon.com/PolyLite-Printer-Filament-PLA-2-2lb/dp/B011AVQVH6?h=1">https://www.amazon.com/PolyLite-Printer-Filament-PLA-2-2lb/dp/B011AVQVH6?h=1</a>	
	Fasteners	Soldering	7659A121	Lead-free solder, 0.125" Diameter	1	1	\$23.37	<a href="https://www.mcmaster.com/7659A121/">https://www.mcmaster.com/7659A121/</a>
			8560K215	Cast acrylic sheet - 3/16" thick 24" x 36" x 3/16"	1	1	\$56.12	<a href="https://www.mcmaster.com/8560K215/">https://www.mcmaster.com/8560K215/</a>
Laser Cutting		B08Z8LN28Y	Parchment paper	1	1	\$2.98	<a href="https://www.amazon.com/Reynolds-Kitchens-Pop-Up-Parchment-Sheets/dp/B07L25WYS2/">https://www.amazon.com/Reynolds-Kitchens-Pop-Up-Parchment-Sheets/dp/B07L25WYS2/</a>	
		Washers	93475A195	M2 washers	8	100	\$1.06	<a href="https://www.mcmaster.com/93475A195/">https://www.mcmaster.com/93475A195/</a>
98269A420			M3 washers	8	100	\$2.47	<a href="https://www.mcmaster.com/98269A420/">https://www.mcmaster.com/98269A420/</a>	
98269A430			M4 washers	4	100	\$3.13	<a href="https://www.mcmaster.com/98269A430/">https://www.mcmaster.com/98269A430/</a>	
91290A012			M2 x 5 mm socket head cap screws	16	100	\$13.91	<a href="https://www.mcmaster.com/91290A012/">https://www.mcmaster.com/91290A012/</a>	
91290A017			M2 x 10 mm socket head cap screws	12	100	\$11.96	<a href="https://www.mcmaster.com/91290A017/">https://www.mcmaster.com/91290A017/</a>	
91290A113			M3 x 8 mm socket head cap screws	16	100	\$7.37	<a href="https://www.mcmaster.com/91290A113/">https://www.mcmaster.com/91290A113/</a>	
Screws		91290A150	M4 x 14 mm socket head cap screws	4	100	\$10.69	<a href="https://www.mcmaster.com/91290A150/">https://www.mcmaster.com/91290A150/</a>	
	94180A307	M2 heat-set inserts, 2.9 mm installed length	28	100	\$14.69	<a href="https://www.mcmaster.com/94180A307/">https://www.mcmaster.com/94180A307/</a>		
	94180A331	M3 heat-set inserts, 3.8 mm installed length	16	100	\$13.35	<a href="https://www.mcmaster.com/94180A331/">https://www.mcmaster.com/94180A331/</a>		
	5779K433	Push-to-connect fitting clips	2	7	\$5.53	<a href="https://www.mcmaster.com/5779K433/">https://www.mcmaster.com/5779K433/</a>		
Electronics	Cables	USB3AU50CMRS	StarTech0.5m 20in USB 3.0 A to Micro B - Angled Micro USB 3.1 Black RIGHT ANGLED	2	1	\$11.99	<a href="https://www.amazon.com/gp/product/B013TPIM3Y/ref=ewc_pr_img_3?smid=ATVPDKIKX0DER&amp;th=1">https://www.amazon.com/gp/product/B013TPIM3Y/ref=ewc_pr_img_3?smid=ATVPDKIKX0DER&amp;th=1</a>	
		CC0141-3	USB C Cable 0.5 FT USB A to USB C Cable USB to C Cable Braided	2	3	\$14.19	<a href="https://www.amazon.com/gp/product/B07CKW6W24/ref=ox_sc_act_title_1?smid=A21TE5CLH2DYA78&amp;th=1">https://www.amazon.com/gp/product/B07CKW6W24/ref=ox_sc_act_title_1?smid=A21TE5CLH2DYA78&amp;th=1</a>	
		PRT-14426	50 mm Qwic Cable	2	1	\$0.95	<a href="https://www.sparkfun.com/products/14426">https://www.sparkfun.com/products/14426</a>	
		B01DC0KIT2	BTF Lighting 3-pin connector male and female pair	1	20	\$9.99	<a href="https://www.amazon.com/BTF-LIGHTING-Connectors-WS2812B-WS2811-WS2812/dp/B01DC0KIT2/ref=sr_1_7?hvid=384241354203&amp;hvdev=c&amp;hvd=384241354203">https://www.amazon.com/BTF-LIGHTING-Connectors-WS2812B-WS2811-WS2812/dp/B01DC0KIT2/ref=sr_1_7?hvid=384241354203&amp;hvdev=c&amp;hvd=384241354203</a>	
		AK-A7516012	USB Hub	2	1	\$14.99	<a href="https://www.amazon.com/gp/product/B00XMD7KPU">https://www.amazon.com/gp/product/B00XMD7KPU</a>	
	Sensors	D405	Intel Realsense D405	2	1	\$272.00	<a href="https://store.intelrealsense.com/buy-intel-realsense-depth-camera-d405.html?_ga=2.187321697.830133923.1677706313-1485411550.1677706313">https://store.intelrealsense.com/buy-intel-realsense-depth-camera-d405.html?_ga=2.187321697.830133923.1677706313-1485411550.1677706313</a>	
		SEN-16476	SparkFun Qwic MicroPressure Sensor	2	1	\$14.95	<a href="https://www.sparkfun.com/products/16476">https://www.sparkfun.com/products/16476</a>	
		4600	Adafruit QT Py - SAMD21 Dev Board with STEMMA QT	2	1	\$7.50	<a href="https://www.adafruit.com/product/4600">https://www.adafruit.com/product/4600</a>	
	Microcontroller	Grippers	WSG 032-068-B	Schunk WSG 32 or other gripper	1	1	\$5,500.00	<a href="https://schunk.com/us_en/gripping-systems/product/43613-0308130-wsg-032-068-b/">https://schunk.com/us_en/gripping-systems/product/43613-0308130-wsg-032-068-b/</a>