

BILL OF MATERIALS: CERA-1 CLAY EXTRUDER

I.) Hardware and Fasteners

Stainless Steel Machine Screws: M3

Qty	Size	Lng	Style	Location	Source	~ Cost ea	~ Cost Total
4	M3	5mm	Socket Set Screw	Guide Follower	https://www.belmetric.com/3mm-c-563_581_1026_163/	0.1	0.4
8	M3	8mm	Socket Button Head	Tube Holder	https://www.belmetric.com/3mm-c-563_581_584_603/	0.05	0.4
4	M3	8mm	Socket Flat Head	Tube Holder	https://www.belmetric.com/3mm-c-563_581_583_609/	0.06	0.24
4	M3	12mm	Allen Socket Head	Auger housing - motor	https://www.belmetric.com/3mm-c-563_581_582_585/	0.06	0.24
2	M3	20mm	Allen Socket Head	Tube Holder	https://www.belmetric.com/3mm-c-563_581_582_585/	0.07	0.14
4	M3	30mm	Allen Socket Head	Auger housing - stage	https://www.belmetric.com/3mm-c-563_581_582_585/	0.1	0.4

Stainless Steel Machine Screws: M4

Qty	Size	Lng	Style	Location	Source		
4	M4	5mm	Socket Flat Head	Tube Base	https://www.belmetric.com/4mm-c-563_581_583_610/	0.1	0.4
4	M4	12mm	Allen Socket Head	Plunger	https://www.belmetric.com/4mm-c-563_581_582_586/	0.08	0.32
8	M4	16mm	Allen Socket Head	End Mount	https://www.belmetric.com/4mm-c-563_581_582_586/	0.09	0.72
2	M4	18mm	Allen Socket Head	End Mount - Stage	https://www.belmetric.com/4mm-c-563_581_582_586/	0.12	0.24
10	M4	20mm	Allen Socket Head	Base Mount, Guide Mount	https://www.belmetric.com/4mm-c-563_581_582_586/	0.11	1.1
2	M4	22mm	Allen Socket Head	End Mount - Stage	https://www.belmetric.com/4mm-c-563_581_582_586/	0.18	0.36

Stainless Steel Machine Screws: Other

Qty	Size	Lng	Style	Location	Source		
4	M5	16mm	Allen Socket Head	Nema 23 Worm Gearbox	https://www.belmetric.com/5mm-c-563_581_582_587/	0.14	0.56
8	M6	20mm	Allen Socket Head	Base Mount, Guide Mount	https://www.belmetric.com/6mm-c-563_581_582_588/	0.22	1.76

Stainless Steel Nuts: M3 & M4

Qty	Size	Lng	Style	Location	Source		
8	M3	1.8mm	Square, Thin	Stage, Guide Follower	https://www.belmetric.com/square-nut-thin-c-563_578_	0.11	0.88
8	M3	2.4mm	Hex	Tube Holder	https://www.belmetric.com/coarse-thread-c-563_578_6_	0.05	0.4
20	M4	3.5mm	Square	End mount, Base mount	https://www.mcmaster.com/97258a102	0.22	4.4

II.) 3D Printed / Laser Cut Components

Qty	File Name	Material	Location	Source (If applicable)		
1	auger_housing.stl	PETG or ABS, 100% i	Auger		1.52	1.52
1	auger_screw.stl	Steel	Auger	https://www.shapeways.com/product/XDJKCNMEJ/cera-	40	40
1	auger_stage.stl	PETG or ABS, 100% i	Auger		1.9	1.9
1	bearing_cover.stl	PETG or ABS, 100% i	Auger		0.02	0.02
1	screwGuide_follower	PETG or ABS, 100% i	Screw Guide		0.11	0.11
1	screwGuide_mountA	PETG or ABS, 20% in	Screw Guide		1.4	1.4
1	screwGuide_mountB	PETG or ABS, 20% in	Screw Guide		0.86	0.86
1	tube_baseMount.stl	PETG or ABS, 100% i	Ram		4.96	4.96
1	tube_endMount.stl	PETG or ABS, 100% i	Ram		1.58	1.58
1	tubeHolderA.stl	PETG or ABS, 100% i	Ram		0.5	0.5
1	tubeHolderB.stl	PETG or ABS, 100% i	Ram		0.5	0.5
1	wormGear_nut_coup	Steel	Ram	https://www.shapeways.com/product/TWY3G84AK/cera	46	46
1	plunger.stl	PETG or ABS, 100% i	Plunger		2.36	2.36
1	gasket_A.dxf	Nitrile Rubber	Auger	https://www.faucetdepot.com/prod/lasco-02-1048F-Rui	1.54	1.54
1	gasket_B.dxf	Nitrile Rubber	Auger			
2	tubeHolder_grip.dxf	Nitrile Rubber	Tube Holder			

III.) Mechanical Components / Hardware

Stainless Steel Ball Bearings

Qty	ID	OD	Height	Location	Source		
1	16mm	35mm	11mm	Tube Base Mount	https://bearingsdirect.com/ball-bearings/metric-sizes-ba	6.69	6.69
1	1/4in	3/4in	9/32in	Auger	https://www.mcmaster.com/4648k13	18.14	18.14

Stainless Steel Washer

Qty	ID	OD	Height	Location	Source		
1	6.4mm	11mm	1.6mm	Auger	https://www.belmetric.com/small-outer-diameter-c-4_3_	0.12	0.12
1	16mm	30mm	3mm	Tube Base Mount	https://www.belmetric.com/standard-outer-diameter-c-4_3_	0.3	0.3

Stainless Steel T10 Trapezoidal Lead Screw

Qty	Size	Lng	Pitch, lead	Location	Source		
1	T10	700mm	2mm, 2mm	Ram	https://www.aliexpress.com/item/32583087650.html	40	40

Brass T10 Trapezoidal Lead Screw Nut

Qty	Size	Pitch, lead	Location	Source		
2	T10	2mm, 2mm	Ram, Plunger	https://www.aliexpress.com/item/4000007745245.html	4.99	9.98

Aluminum Square Tubing

Qty	Size	Wall	Lng	Location	Source		
1	1in	1/16 in	550mm	Screw Guide	https://www.homedepot.com/p/Everbilt-1-in-x-96-in-Alu	20.48	20.48

Nema 17 Motor Coupling

Qty	Size A	Size B	Diameter	Location	Source		
1	6.35mm	10mm	20mm	Auger	https://www.aliexpress.com/item/32913158582.html?sq	2.4	2.4

Draw Toggle Latch

Qty	Length	Brand	Location	Source		
2	38mm	uxcell	Tube Holder	https://www.aliexpress.com/item/32856362177.html	2	4

IV.) Polycarbonate Tubing

Qty	ID	OD	Length	Material	Source		
1	2.75in	3in	500mm	Polycarbonate	https://www.eoplastics.com/Clear-Polycarbonate-Rigid-Tu	25	25

V.) Motors with Gearboxes

Qty	Motor	Lng	Gearbox Type	Reduction Ratio	Source		
1	Nema 17	34mm	Planetary	3.71 to 1	https://www.aliexpress.com/item/40002721889379.html	30	30
1	Nema 23	56mm	Worm	30 to 1	https://www.aliexpress.com/item/33011508459.html?sq	100	100

VI.) O-Rings

Qty	Diameter	Lng	Material	Location	Source		
3	3mm	60mm	Nitrile Rubber	Pluger, End Mount	https://www.aliexpress.com/item/4000181016661.html	0.65	1.95

VII.) Nozzles

https://www.aliexpress.com/item/32738744288.html?spm=a2a0o.productlist.0.0.1c304f6eNn0Dlt&algo_nvid=df21f6af-004c-4882-b7	6	6
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Total Cost (USD): 381.27