

Ceramic Filter Workshop Tools and Materials

Item	Specification	Quantity	Availability	Price
Clay	high plasticity	as needed		
Burnout material	fine sawdust or rice husk, uniform if possible	as needed		
Press	Manual or Electric, at least one manual recommended if power failures common	1 or 2, depending on desired production	Nicaragua, Kenya or local	
Press Plates	Round, flat plates to fit bottom of female mold - make sure to make them sturdy, as thin plates will cause uneven filter base, and lead to cracking during drying	100		
Mixer	Motorized, mortar or dough mixer preferred	1		
Hammer mill or grain grinder	2-3 hp electric motor, interchangeable sieves	1		
Sieves	#30 mesh	2 1x0.5m hand-held or 1 vibrating table		
Large Scale (Balance)	25 - 50 kg capacity	1		
Hydraulic Jacks	20 ton (standard truck jacks)	3		
Buckets	Must be able to suspend filter, usually 5 gallon/ 20L	20		
Tarps	Large enough to spread raw material for drying	2 or 3		
Wheel Barrows	sturdy	2		
Storage Sacks	Woven plastic recommended	75 -150		
Serial Number Stamp	large enough for easy identification	1		
Graduated Flask	1-2 liter, plastic	2		
Plastic Bags	can replace with coconut or palm oil if using electric press	2 per filter, sometimes reusable		

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Car Wax	wax press-molds to ease separation after pressing	as needed		
Rubber Mallet	used to encourage separation of press-molds when wax isn't sufficient	1		
Production Log	In addition to matching serial numbers with flow rates, keep track of press, fire, and silver application dates for all filters.	1		
Safety Equipment	goggles, gloves, facemasks (for dust)	enough for each employee		
Turn Table	optional	1 or 2		
Pug Mill	optional	1		
Silver Application				
Silver	Colloidal Silver	1 kg to start		
	OR Silver Nitrate (AgNO ₃)	1kg to start	Laboratorios Argenol, Spain http://www.laboratorios-argenol.com/	
Small Scale (Balance)	Digital, 0.001g accuracy	1		
Paint Brushes	Broad, for application of silver	1		
Plastic Container	Light-proof, for storage of stock silver solution, 2L	1		
Filter Firing				
Kiln	Mani Kiln \approx 1700 bricks, (400 at 5x10x20cm for roof, 1300 at 7.5x12.5x25 cm for fireboxes, chimney, and walls, and 15 at 5x35x35cm for table) angle irons, steel rods, metal wood supports	1 or 2		

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Digital Pyrometer / Thermocouples	Two-terminal	1 pyrometer, 2 t-couples		
Pyrometric Cones	010, 012, 014	200 each		
Kiln Fuel	wood, sawdust, agricultural waste or recycled oil	as needed		
Axe	only if chopping own wood for fuel	1		
Pencils	Mark flow-rate on lip of each filter - #2 or darker	as needed		
Fire Log	record firing data	1		
Filter Finishing				
Filter Receptacles	Plastic and Ceramic, with lid, no handles - mouth should fit filter, minimum 5 gallon, silk screening if possible	1 per filter		
Faucets	sturdy, plastic or metal	1 per filter		
Packaging Material	Cardboard boxes, 2-ply, corrugated	1 per filter to be shipped		
Instructional Stickers / Silk screening	Translate to local language(s)	1 per filter		
Brush - optional	Laundry brush for filter cleaning by user, to rejuvenate flow rate			
Infrastructure				
Factory Site	Covered Building, minimum 50m x 50m	1		
Shelving	Sufficient for drying and storage of at least 1000 filters, open for air circulation, 8-10cm taller than height of filter mold			
Soaking Tanks	drainage system with capacity for 50 filters, if possible			
Kiln Shelter	Build after kiln construction, basic, all-metal construction if possible	1		

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Other				
Skilled Potters	Access to clay and equipment, skills for making mini-filters, ceramic filter receptacles, and for finishing of filter after pressing	At least 2		
Marketing and Promotional Materials	Brochures, radio and TV adverts, signs, newspaper ads, coloring books, mini-filters, live demonstrations etc	Essential for sustainability of facility		
Occasional Laboratory testing	Reliable microbiological testing to ensure quality filter performance	Frequent testing initially to ensure quality product, occasional testing once production is consistent		