

Materials List for:

Physical, Chemical and Biological Characterization of Six Biochars Produced for the Remediation of Contaminated Sites

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Materials

Name	Company	Catalog Number	Comments
Biochar	Burt's Greenhouses		All six biochars were produced at Burt's Greenhouses via BlueFlame Boiler system
NaOAc	Fisher Scientific	E124-4	Dissolving 136.08 g of NaOAc·3H ₂ O in 750 ml distilled, deionized water (DDI water)
Acetic Acid	Fisher Scientific	A38-212	
Sodium Hydroxide	Fisher Scientific	SS284-1	
Isopropanol	Fisher Scientific	A416P4	80% IPA: 800 ml IPA with 200 ml DDI water.
NH ₄ Cl	Fisher Scientific	A649500	Dissolving 5.35 g NH ₄ Cl into 1 L DDI water.
Aluminum Drying Pan	Fisher Scientific	08-732-110	
Drying Oven	Fisher Scientific	508N0024	200 °C for 2 hr.
Desiccator	Fisher Scientific	08-595A	
Balance	Mettler	1113032410	
Saturating Solution	Fisher Scientific	06-664-25	
Vortex	Barnstead/Thermolyne	871000536389	
Centrifuge	International Equipment Company	24372808	3,000 x g for 5 min.
Rinsing Solution	Fisher Scientific (Ricca Chemistry Company)	06-664-24	
Conductivity Meter	WESCAN	88298	
Replacing Solution	Fisher Scientific	06-664-24	
ICP-AES	Varian	EL00053841	
ASAP 2000 Surface Area Analyser	Cavlon	885	Degassing at 120 °C for a minimum of 2 hr.
Muffle Furnace	Fisher Scientific	806N0024	Heat for 16 hr covering at 420 °C.
pH Meter	Fisher Scientific	1230185263	
Sieve	Fisher Scientific	2288926	4.7 mm sieve being at the top.
Sieve Skaker	Meinzer II	0414-02	Shake for 10 min.
Sodium Sulphate	VWR	EM-SX0761-5	
Ottawa Sand	Fisher Scientific	S23-3	
Soxhlet Apparatus	Fisher Scientific (Pyrex)	09-557A	4 hr at 4–6 cycles/hr.
DCBP	Suprlco Analytical	48318	
Dichloromethane	Sigma Aldrich	40042-40855-U	

6890 Plus Gas Chromatograph Micro 63 Ni ECD	Agilent	US00034778	
Helium	AlphaGaz	SPG-NIT1AL50SMART	
Nitrogen	AlphaGaz	SPG-HEL1AL50SMART	
Mortar and Pestle	Fisher Scientific (CoorsTeh)	12-948G	
Nitric Acid	Fisher Scientific	351288212	
No. 40 Filter Paper	Fisher Scientific (Whatman)	09-845A	
Quartz/Nickel weigh boats	Fisher Scientific	11-474-210	
DMA-80	ATS Scientific	5090264	
98–99% Formic Acid	Sigma Aldrich	33015-1L	1 L volumetric filled to 750 ml with DDI water add 20 ml formic acid and fill to volume with DDI water.
Sonicator	Fisher Scientific	15338284	
Rotating Shaker	New Brunswick Scientific (Innova 2100)	14-278-108	1 hr at 200 rpm.
No. 42 Filter Paper	Fisher Scientific (Whatman)	09-855A	
WhirlPacks	Fisher Scientific	R55048	
Potassium Dihydrogen Orthophosphate	Fisher Scientific	181525	
2 M KCl	Fisher Scientific	P282100	
Plastic Vials	Fisher Scientific	03-337-20	
Ammonium Chloride	Fisher Scientific	PX05115	Allow to warm up to room temperature
Colour Reagent	Fisher Scientific	361028260	Allow to warm up to room temperature
Colorimeter	Fisher Scientific	13-642-400	Turn on to let the lamp warm up and run for 5 min.
ASEAL Auto Analyzer 2	SEAL	4723A12068	
Liquefied Phenol	Fisher Scientific	MPX05115	Alkaline Phenol: Measure 87 ml of liquefied phenol into 1-L volumetric filled 2/3 with DDI water. Add 34 g NaOH, make up to volume with DDI water.
NaOH	Fisher Scientific	S318-3	
Commercial Bleach	Retail Store		Hypochlorite Solution: Using 100-ml graduated cylinder measure 31.5 ml of commercial bleach and fill to 100 ml with DDI water.
NaOH Pellets	Fisher Scientific	S320-1	
Disodium EDTA	Sigma Aldrich	E5124	
Sodium Hypochlorite	Fisher Scientific	SS290-1	
Triton (10%)	Fisher Scientific	BP151-100	
Sodium Nitroprusside	Fisher Scientific	S350-100	
Ammonium Salts	Fisher Scientific	A637-10	
Phenoxide	Fisher Scientific	AC388611000	
Eisenia Fetida	The Worm Factory		
Spade	Retail Store		
Bucket	Retail Store		
Potting Soil	Retail Store		

Avoidance Wheel	Environment Canada		Constructed by a modified design from Environment Canada's Acute Avoidance Test.
Alumminum Foil	Fisher Scientific	01-213-100	
Petri Dishes	Fisher Scientific	08-757-11	8.5 cm in diameter.
Pumpkin Seeds	Ontario Seed Company (OSC)	2055	
Alfalpa Seeds	Ontario Seed Company (OSC)	6675	
Centrifuge Tubes (30 ml)	Fisher Scientific	22-038-906	
Beakers (50 ml)	Fisher Scientific (Pyrex)	02-540G	Oven dry at 105 °C.
Beakers (30 ml)	Fisher Scientific (Pyrex)	20-540C	
Erlenmeyer Flasks (125 ml)	Fisher Scientific (Pyrex)	S76106C	
Volumetric Flask (100 ml)	Fisher Scientific (Pyrex)	10-211C	
Estuarine Sediment	National Insitute of Standards	1546A	Standard Reference Material
Bleach	Clorox Ultra (5–10% sodium hypochlorite)		