

Materials List for:

# Continuously-stirred Anaerobic Digester to Convert Organic Wastes into Biogas: System Setup and Basic Operation

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## Materials

Name	Company	Catalog Number	Comments
Heated Recirculator	VWR Scientific	13271-063 VWR	For use with a heating jacket reactor system
Variable Speed Electric Lab Stirrer	Cleveland Mixer Co.	(Model 5VB)	This mixer model facilitates mounting with a ring stand
Wet-Type Precision Gas Meter	Ritter Gasmeters	(Model TG-01)	This model needs a minimum flow of (0.1 L/h) and can handle a maximum flow of 30 L/h
Gas Bubbler	Chemglass	(Model AF-0513-20)	
Gas Sampling Tube	Chemglass	(Model CG-1808)	
Axial Impeller	Lightnin'	R04560-25 Cole-Parmer	Impeller blades with 7.9375 mm bore diameter
Impeller Shaft	Grainger	2EXC9 Grainger	1.83 m stainless steel rod with 7.9375 mm O.D. (needs to be cut to appropriate size)
Cast Iron Support Stands	American Educational Products	(Model 7-G16)	For mixer mounting
Three-Prong Extension Clamp	Talon	21572-803 VWR	For mixer mounting
Regular Clamp Holder	Talon	21572-501 VWR	For mixer mounting
Peristaltic Pump	Masterflex	WU-07523-80 Cole-Parmer	For effluent decanting
L/S Standard Pump Head	Masterflex	EW-07018-21 Cole-Parmer	For effluent decanting - accessory to peristaltic pump
L/S Precision Pump Tubing	Masterflex	EW-06508-18 Cole-Parmer	For effluent decanting - accessory to peristaltic pump
pH Analysis			
pH Meter	Thermo Fisher Scientific - Orion	1212000	
Total and Volatile Solids Analysis (Standard Methods: 2540-B,E)			
Glass Vacuum Dessicator	Kimax	WU-06536-30 Cole-Parmer	
Porcelain Evaporating Dishes	VWR	89038-082 VWR	
Lab Oven	Thermo Fisher Scientific	(Model 13-246-516GAQ)	
Medium Chamber Muffle Furnace	Barnstead/ Thermolyne	F6010 Thermo Scientific	
Total Volatile Fatty Acid Analysis (Standard Methods: 5560-C)			
Large Capacity Variable Speed Centrifuge	Sigma	WU-17451-00 Cole-Parmer	
Laboratory Hot Plate	Thermo Scientific	(Model HP53013A)	
Large Condenser	Kemtech America	(Model C150190)	
Acetic Acid Reagent [CAS: 64-19-7]	Alfa Aesar	AA33252-AK	
Chemical Oxygen Demand (Standard Methods: 5520-C)			
COD Block Heater	HACH	(Model DRB-200)	

Borosilicate Culture Tubes	Pyrex	(Model 9825-13)	
Potassium Dichromate Reagent [CAS: 7778-50-9]	Avantor Performance Materials	3090-01	
Mercury II Sulfate Reagent [CAS: 7783-35-9]	Avantor Performance Materials	2640-04	
Ferriin Indicator Solution [CAS: 14634-91-4]	Ricca Chemical	R3140000-120C	
Ammonium iron(II) sulfate hexahydrate [CAS: 7783-85-9]	Alfa Aesar	13448-36	
Gas Composition by Gas Chromatography Analysis			
Gas Chromatograph	SRI Instruments	Model 8610C	Must be equipped with a thermal conductivity detector (TCD), using below mentioned column and carrier gas operated at an isothermal temperature of 105 °C
Helium Gas	Airgas	He HP300	To be used as the carrier gas
Packed-Column	Restek	80484-800	To be used for N <sub>2</sub> , CH <sub>4</sub> , and CO <sub>2</sub> separation