



IBI Biochar Certification Program

IBI Laboratory Test Form

Version: December 5, 2014 - Phase 1

IMPORTANT: Laboratory testing is required for all biochar manufacturers seeking to apply for IBI biochar certification. Biochar manufacturers/applicants must submit *complete test results on original form(s) provided by the testing labs* at the time of application. Laboratories may also complete this *optional IBI Laboratory Test Form in addition to providing the original form (s) with test results*. If this form is used, it must be signed by the laboratory, certifying that it completed the tests.

Please ensure that all forms are complete and signed upon submission. IBI reserves the right to audit all information provided and to reject any incomplete applications.

Sections 1 and 2 to be filled out by the Biochar Manufacturer.

1. Biochar Manufacturer/Applicant

In this section, please enter Biochar Manufacturer/applicant's contact information.

Company Name	_____	Phone:	_____
Contact Name	_____	Email:	_____
Street 1	_____	Web Address:	_____
Street 2	_____		
City	_____		
Postal Code	_____		
State or Region/Prov	_____		
Country/Territory	_____		

2. Biochar Identification

Note: if your biochar product is blended, information provided should only refer to the biochar portion of your product.

In this section, please enter information regarding the biochar to be certified.
 (*Click on the up/down arrow at the end of the field to select from the drop-down list.)

Date of Sample Collection (mm/dd/yyyy): _____

Biochar Name/Description (or Trademark, if applicable) _____

*Feedstock Type(s) _____

Feedstock Composition Declaration _____

Total Composition Declaration should be consistent with information entered onto the IBI Chain of Custody Form and the Application Form for IBI Biochar Certification.

Sections 3 through 5 to be filled out by the Laboratory.

3. Sample Identification

In this section, please identify sample to be tested.

Sample Type:	_____	Sample ID:	_____
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4. Test Results

Please report results from the required tests in the following sections.

Testing requirements are based on the tests and test methods specified in the *Standardized Product Definition and Product Testing Guidelines for Biochar That Is Used in Soil*, also referred to as the *IBI Biochar Standards*; the most current version is available at:
<http://www.biochar-international.org/characterizationstandard/>

Per *The IBI Biochar Standards*, all results should be reported per "dry basis" unless otherwise indicated in the unit of measure. Results for all Category A and B tests are required. Category C is optional.

More information regarding test methods is also available on the IBI Biochar Certification Program website
http://www.biochar-international.org/certification/testing_information_for_labs.



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Test Category A: Basic Biochar Utility Properties (Required of all biochars):

Requirement	Test Method	Criteria	Result	Unit
Moisture (at time of analysis)	ASTM D1762-84 (specify measurement date with respect to time from production)	Declaration		% of total mass, dry basis
Organic Carbon	Total C and H analysis by dry combustion-IR detection. Inorganic C analysis by determination of CO ₂ -C content with 1N HCl, as outlined in ASTM D4373 Standard Test Method for Rapid Determination of Carbonate Content of Soils. Organic C calculated as Total C – Inorganic C.	Declaration		% of total mass, dry basis
H:Corg	see Organic C method above	0.7 (Maximum)		Molar ratio
Total Ash	ASTM D1762-84	Declaration		% of total mass, dry basis
Total Nitrogen	Dry combustion-IR detection following the same procedure for total C and H above.	Declaration		% of total mass, dry basis
pH	pH analysis procedures as outlined in section 04.11 of TMECC (2001) using modified dilution of 1:20 biochar:deionized H ₂ O (w:v) and equilibration at 90 minutes on the shaker, according to Rajkovich et al. (2011).	Declaration		pH
Electrical Conductivity	EC analysis procedures as outlined in section 04.10 of TMECC (2001) using modified dilution of 1:20 biochar:deionized H ₂ O (w:v) and equilibration at 90 minutes on the shaker, according to Rajkovich et al. (2011).	Declaration		dS/m
Liming	AOAC 955.01 potentiometric titration on "as received" (i.e., wet) samples. Use dry weight to calculate % CaCO ₃ and report "per dry sample weight".	Declaration		% CaCO ₃
Particle Size Distribution	Progressive dry sieving with 50 mm, 25 mm, 16 mm, 8mm, 4mm, 2 mm, 1 mm, and 0.5 mm sieves.	% <0.5 mm;		mm
		% 0.5-1 mm;		mm
		% 1-2 mm;		mm
		% 2-4 mm;		mm
		% 4-8 mm;		mm
		% 8-16 mm;		mm
		% 16-25 mm;		mm
% 25-50 mm;		mm		

Test Category B: Biochar Toxicant Reporting (Required of all biochars):

Requirement	Test Method	Maximum Allowed Thresholds**	Result	Unit
Germination Inhibition Assay	OECD methodology (1984) using three test species, as described by Van Zwieten et al. (2010)	Pass/Fail	Pass	N/A
Polycyclic Aromatic Hydrocarbons (PAHs)	US EPA 8270 (2007) using Soxhlet extraction (US EPA 3540) and 100% toluene as the extracting solvent	300		mg/kg dry wt
Dioxins/Furans (PCCD/Fs)	EPA 8290	17		ng/kg WHO-TEQ
Polychlorinated Biphenyls (PCBs)	EPA 8275 or EPA 8082	0.5; 1		mg/kg dry wt
Arsenic	TMECC (2001)*	13; 41		mg/kg dry wt
Cadmium	TMECC (2001)*	3; 39		mg/kg dry wt
Chromium	TMECC (2001)*	210; 1200		mg/kg dry wt
Cobalt	TMECC (2001)*	34; 100		mg/kg dry wt
Copper	TMECC (2001)*	400; 1500		mg/kg dry wt
Lead	TMECC (2001)*	150; 300		mg/kg dry wt
Mercury	US EPA 7471	0.8; 17		mg/kg dry wt
Molybdenum	TMECC (2001)*	5; 75		mg/kg dry wt
Nickel	TMECC (2001)*	62; 420		mg/kg dry wt
Selenium	TMECC (2001)*	2; 36		mg/kg dry wt
Zinc	TMECC (2001)*	700; 2800		mg/kg dry wt



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Boron	TMECC (2001)*	Declaration		mg/kg dry wt
Chlorine	TMECC (2001)*	Declaration		mg/kg dry wt
Sodium	TMECC (2001)*	Declaration		mg/kg dry wt

* TMECC is the *Test Methods for Examination of Composting and Compost* published by the US Composting Council and US Department of Agriculture. Note that for each of these elements the TMECC often lists multiple digestion and determination methods. For expanded information on Category B test methods please visit the IBI certification website:

http://www.biochar-international.org/certification/testing_information_for_labs

** Phase 1 of the IBI Biochar Certification Program is restricted to the US and Canada. Here we list the Maximum Allowed Thresholds (MAT) for biochars in the US and Canada. For all metals where there are two values are present (i.e., the cells with red text); the first value indicates the MAT in Canada, and the second value indicates the MAT in the US. For further information please review Appendix 3 of the *IBI Biochar Standards*.

Test Category C: Biochar Advanced Analysis and Soil Enhancement Properties - Optional for All Biochars:

Requirement	Test Method	Criteria	Result	Unit
Mineral N (ammonia & nitrate)	2M KCl extraction, followed by spectrophotometry (Rayment and Higginson 1992)	Declaration		mg/kg
Total Phosphorus & Potassium (P&K)*	Modified dry ashing followed by ICP (Enders and Lehmann 2012)	Declaration		% of total mass, dry basis
Available P	2% formic acid followed by spectrophotometry (Wang et al 2012)	Declaration		mg/kg
Volatile Matter	ASTM D1762-84	Declaration		% of total mass, dry basis
Total Surface Area	ASTM D 6556-10 Standard Test Method for Carbon Black – Total and External Surface Area by Nitrogen Adsorption.	Declaration		m2/g
External Surface Area	ASTM D 6556-10 Standard Test Method for Carbon Black – Total and External Surface Area by Nitrogen Adsorption.	Declaration		m2/g

* Total K is sufficiently equivalent to available K for the purpose of this characterization

Special Notations (make any comments on test methods or results here):

5. Laboratory Performing Analysis

Laboratory Name _____ Phone: _____
 Contact Name _____ Email: _____
 Street 1 _____ Web Address: _____
 Street 2 _____
 City _____
 State or Region/Prov _____
 Country/Territory BANGLADESH

The results reported on this form represent true and accurate results of my analysis of sample indicated.

Analyst Name: _____
 Signature _____

Note: For purposes of data collection, IBI may track, organize and publish such information in an aggregate (anonymous) manner and which does not permit identification of participating biochar manufacturer, its customers or products.