Apr 02, 2021

Woodchip Ashing

Feyereisen[1]
[1]USDA

1 Works for me This protocol is published without a DOI.

PDI Test

Josh Birlingmair
USDA-ARS

ABSTRACT

Woodchip ashing protocol

PROTOCOL CITATION

Feyereisen 2021. Woodchip Ashing. **protocols.io**
https://protocols.io/view/woodchip-ashing-btwrnpd6

CREATED

Apr 02, 2021

LAST MODIFIED

Apr 02, 2021

PROTOCOL INTEGER ID

48817

GUIDELINES

% Total Solids = [(Weight dry pan + sample – Weight dry pan)/ Weight of wet sample] x 100
ODW = (Weight Air Dry Sample x % Total Solids)/100
% Ash = [(Weight crucible + Ash – Weight Crucible)/ODW sample] x 100

DISCLAIMER:

SOP 004-S-GF-19

BEFORE STARTING

Required Safety Items: Lab Coat, High Temperature Gloves

1 Place up to 5 crucibles into the muffle furnace

2 Move the muffle furnace near the hood in 197 Borlaug and turn on the hood

3 Turn on the muffle furnace, set temperature to 300o C, leave for 1 hour

4 Turn the muffle furnace temperature to 550o C and leave for 4 hours

5 After 4 hours, turn off the muffle furnace and hood, allow crucibles to cool for 1 hour inside the furnace

6 DANGER: THE CRUCIBLES ARE VERY HOT, ALWAYS USE HIGH TEMPERATURE GLOVES AND TONGS

7 USING HIGH TEMPERATURE GLOVES AND TONGS, remove crucibles and place them into a desiccator with a CERAMIC base.

8 Place the cover onto the desiccator and apply vacuum to the desiccator using a sink vacuum setup

9 Check to see if the desiccator is under vacuum by pulling on the cover, it should be held on by the vacuum

10 Make sure to close the valve on the desiccator BEFORE turning off the water

11 Allow the crucibles to cool under vacuum for 1 hour

12 Weigh the samples on an analytical balance that can read to 0.1 mg

13 Use the same scale for ALL weighing activities, and check calibration with 2 g test weight

14 Remove a crucible from the desiccator with tongs, and place it onto a scale

15 In a lab book, record the crucible number and dry mass to 0.1 mg

16 Continue to record all the crucible numbers and dry mass

17 In a lab book, record sample and crucible number

18 Weigh 3.5g +/- 0.5g of ground woodchip material into the recorded crucible

19 Weigh 2 replicates for each individual sample

20 Continue until all the crucibles or samples are used

21 Place up to 18 crucibles into the muffle furnace

22 Feyereisen Lab muffle furnace- setpoint of 300o C for 1 hour, then up to 550o C for remaining 4 hours

23 Move the muffle furnace into the hood and turn on the hood (room 197 hood for Feyereisen Lab muffle furnace)

24 Turn on the muffle furnace according to the instruction sheet on the cart

25 Allow the crucibles and samples to ash for 5 hours

26 After 5 hours, turn off the muffle furnace and hood, allow crucibles to cool for 1 hour

27 DANGER, THE SAMPLES ARE VERY HOT, ALWAYS USE HIGH TEMPERATURE GLOVES AND TONGS

28 USING HIGH TEMPERATURE GLOVES AND TONGS, remove crucibles and place them into a desiccator with a CERAMIC base.

29 Place the cover onto the desiccator and apply vacuum to the desiccator using a sink vacuum setup

30 Check to see if the desiccator is under vacuum by pulling on the cover of the desiccator, it should be held on by the vacuum

31 Make sure to close the valve on the desiccator BEFORE turning off the water

32 Allow the crucibles to cool under vacuum for 1 hour

33 Weigh the crucible + ash material on the same scale you used to record the dry mass of the crucibles

34 Record the mass of the crucible + ash material in the proper location for the sample in the lab book

35 Continue recording the mass of all the crucibles and ash samples

36 When you are finished weighing all the samples, clean the crucibles and place them into Ulrike's lab

37 Obtain an aluminum tray, and number the tab

38 Weigh the aluminum tray with numbered tab on a scale that can read to 0.1 mg

39 Record the aluminum tray number and mass in a lab book

40 Weigh out 1.5g +/- 0.5 g of ground "wet" woodchip material into the aluminum tray, and record samples name and mass to 0.1 mg for the sample in the lab book

41 Continue to label, weigh trays, and weigh samples until all samples are weighed

42 Place the aluminum trays into an oven at 105o C for 24+ hours

43 The next day, weigh the samples on the SAME SCALE you used to weigh the aluminum tray and wet sample weight and record mass to 0.1 mg in the lab book