

Job #: **P**

Project Leader	Department	Date Submitted
Sample Submitter	Phone	# of Samples:
Send Data to (e-mail):		

<b>BILLING INFO:</b> Please complete one of the three boxes to indicate the method of payment		<b>Non-UMN Invoice (B or C Rate)</b> - CustomerID # :
<b>Upfront Payment</b>	<b>UMN Invoice (A-Rate)</b> - EFS Chart String:	Billing Contact name/number:
Credit Card <input type="checkbox"/>		Physical Address (required):
Check <input type="checkbox"/>		
Cash <input type="checkbox"/>	Grant Expiration Date:	Purchase Order (if needed):

Name of Study \_\_\_\_\_  Samples will be picked up \_\_\_\_\_ Are Samples Ground?  Yes  No

Type and Part of Plant \_\_\_\_\_

**RATE SCHEDULES (SUBJECT TO CHANGE)**

**SAMPLES WILL BE DISCARDED 3 MONTHS AFTER COMPLETION OF ANALYSIS**

- A: University of Minnesota (all Colleges, Departments, and Research and Outreach Centers)
- B: Government Agencies, other Colleges and Universities
- C: Private Individuals and Organizations

*RUSH requests are 2x to 3x the rate shown*

**PLEASE USE THE "SAMPLE COUNT" COLUMN TO ENTER THE NUMBER OF SAMPLES FOR EACH TEST REQUEST**

Test Code	Determinations Requested	Sample Count	Rate C	Rate B	Rate A	Rate Total	Set-up Charge
P 01	Grinding <i>e.g., leaves, needles</i>		6.70	4.30	3.00		25.00
P 02	Grinding <i>difficult samples - e.g., lichens, stalks or large bulk</i>		9.20	5.80	4.00		25.00
P 03	Moisture (%) <i>105°C</i>		17.40	10.70	7.20		25.00
P 04	Ash (%) <i>485°C</i>		17.40	10.70	7.20		25.00
<b>Combustion Analysis - Total C, Total N, Total S, Total Hg</b>							
P 05	Total Sulfur (%) <i>Combustion Analysis via Elemental Rapid CS Cube</i>		30.20	18.30	12.10		30.00
P 06	Total Nitrogen (%) <i>Combustion Analysis via Elemental VarioMAX CN</i>		27.20	17.00	11.10		30.00
P 07	Total Carbon (%C) <i>Combustion Analysis via Elemental VarioMAX CN</i>		27.20	17.00	11.10		30.00
P 08	Total Nitrogen and Total Carbon <i>Combustion Analysis via Elemental VarioMAX CN</i>		40.80	17.00	16.65		30.00
P 09	Total Mercury <i>Milestone Inc. Direct Mercury Analyzer 80</i>		call for pricing				55.00
<b>Nutrient Extractions with Colorimetric Analysis</b>							
P 10	Nitrate Nitrogen (ppm) <i>Colorimetry following extraction with CaSO4</i>		23.20	14.50	9.80		30.00
P 11	Chloride (ppm) <i>Colorimetry following extraction with CaSO4</i>		31.80	19.90	13.10		40.00
<b>Elemental Analysis by Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES)</b>							
P 12	<b>Dry ashing method (485°C ashing temperature)</b>						
	<b>A.*</b> 15 element: Al B Ca Cd Cr Cu Fe K Mg Mn Na Ni P Pb Zn		50.30	31.50	21.00		30.00
	<b>B.*</b> 27 element: Al As B Ba Be Ca Cd Co Cr Cu Fe K Mg Mn Li Mo Na Ni P Pb Rb S Si Sr Ti V Zn		67.20	42.00	28.50		30.00
	<b>C.</b> Post dry ash boiling treatment for improved recovery Al, Cr, Fe / other refractories. <i>Add-on to P12 and P13</i>		31.00	19.60	13.60		30.00
P 13	<b>Wet ashing method (microwave with HNO3-H2O2 digest)</b>						
	<b>A.</b> 15 element: Al B Ca Cd Cr Cu Fe K Mg Mn Na Ni P Pb Zn		67.70	42.40	28.90		55.00
	<b>B.</b> 27 element: Al As B Ba Be Ca Cd Co Cr Cu Fe K Mg Mn Li Mo Na Ni P Pb Rb S Si Sr Ti V Zn		81.20	50.70	33.90		55.00
P 14	Other <i>quoted</i>						

*All samples will be dried at 65°C prior to testing.*

*\*Dry ashing may not give complete recovery for Al, Be, Cr, Fe, Si, Ti, & V. Refer to add-on treatment P12C.*

**Analysis      Set-up**

Subtotals 0.00

**Research Analytical Laboratory**

University of Minnesota  
135 Crops Research Building  
1902 Dudley Avenue  
St. Paul, Minnesota 55108

Total Billing: \$ \_\_\_\_\_

ral@umn.edu -- https://ral.cfans.umn.edu

(612) 625-3101

(612) 624-3420 (FAX)

Date Completed: \_\_\_\_\_

Billing Date: \_\_\_\_\_

**See reverse side for further instructions**



**SAMPLE SIZE**

The recommended minimum sample amount is 5-10 grams of dried and ground material. This amount typically provides enough material for duplicate analyses, potential reruns, and for ease of handling.

Test Code	Amount of sample consumed in single analysis (grams of dried and ground material)	Recommended minimum sample amount (grams of dried and ground material)
P03	1.00	5-10
P04	0.50	5-10
P05	0.10	5-10
P06	0.30	5-10
P07	0.30	5-10
P08	0.30	5-10
P09	1.00	5-10
P10	0.25	5-10
P11	0.50	5-10
P12	0.50	5-10
P13	0.25	5-10

**PACKAGING**

Unground, dried samples can be submitted in paper or plastic bags, coin envelopes, etc.

Ground samples can be submitted in coin envelopes (preferred, 2.5" X 4.5" size coin envelopes are usually the best fit), vials, etc.

Before analysis, all samples are re-dried at 65° C in coin envelopes, and kept in a dessicator until sub-sampling.

**SAMPLE CODES**

- 1) Please provide an example of sample codes or attach a sample key. (Electronic (\*.xlsx) files are appreciated.)
- 2) Limit sample code to a maximum of six alpha-numeric characters.
- 3) Results will be reported according to the sample identifications we receive.

<u>Sample Code</u>	<u>Sample Code</u>	<u>Sample Code</u>	<u>Sample Code</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**SAMPLE DISPOSAL**

Samples will be discarded three months after data is sent from the laboratory, due to limited storage space.