

BOWSER-MORNER, INC. - CONSTRUCTION MATERIALS LABORATORY
2011 Laboratory Testing Fees - Lime & Limestone Chemical and Physical Testing (Non-Construction Uses)
AASHTO/ISO 17025 ACCREDITED • AASHTO R 18 ACCREDITED • USACE VALIDATED



Miscellaneous Fees

Sampling - Time	\$60.00/Hour
Sampling - Mileage	\$0.60/Mile
Consultation, Senior Geologist/ Engineer/ Chemist	\$125.00/Hour

Bulk Sample Preparation (rock core &/or large pieces)

1. Ledge Rock, etc., crush to test specimens	\$60.00/Hour
2. Rock Core, split & archive representative half	\$3.80/ft.
3. Rock Core, crush to test specimens	\$3.80/ft.
4. Geologist Log	\$3.80/ft.
5. Rock Core, log, split, crush (items 2, 3, & 4)	\$8.00/ft.

Test Specimen Preparation (+ No. 4 reduced to - No. 60 mesh)

6. Prep Bulk Sample (+ No. 4), crush and or pulverize (C 50)	\$60.00
7. Prep for Fine Aggregate (-#4), pulverize to - #60 (C 50)	\$27.00

Aglime Quality Parameters

8. Wet Sieve Analysis (C110, sec. 22)	\$80.00
9. Elemental Analysis (C 25/ C 1271) per each element:	
a. calcium, reported as Ca, CaO, CaCO ₃	\$27.00
b. magnesium, reported as Mg, MgO, MgCO ₃	\$27.00
c. iron, reported as Fe, Fe ₂ O ₃	\$27.00
d. aluminum, reported as Al, Al ₂ O ₃	\$27.00
e. silicon, reported as Si, SiO ₂	\$27.00
f. residual oxides	\$27.00
10. Calcium Carbonate Equivalent - CCE (C 25, sec. 33) (Total Neutralizing Power - TNP)	\$55.00
11. Loss on Ignition - LOI (C25, sec. 19)	\$27.00
12. Relative Neutralizing Value (RNV) - Indiana Method	NC
13. Effective Neutralizing Power (ENP) - Ohio Method (items 12. RNV & 13. ENP are calculations based upon items 8 & 10)	NC
14. Acid Insoluble (C 25)	\$27.00

Scrubber Stone Parameters

15. Wet Sieve Analysis (C110, sec. 22)	\$80.00
16. Elemental Analysis (C25/ C 1271) per each element:	
a. calcium, reported as Ca, CaO, CaCO ₃	\$27.00
b. magnesium, reported as Mg, MgO, MgCO ₃	\$27.00
c. iron, reported as Fe, Fe ₂ O ₃	\$27.00
d. aluminum, reported as Al, Al ₂ O ₃	\$27.00
e. silicon, reported as Si, SiO ₂	\$27.00
f. sulfur, reported as S, SO ₃	\$27.00
g. residual oxides	\$27.00
17. Calcium Carbonate Equivalent - CCE (C 25, sec. 33) (Total Neutralizing Power - TNP)	\$55.00
18. Loss on Ignition - LOI (C25, sec. 19)	\$27.00
19. Limestone Reactivity Test (ABB-FGD, Alstom SOP)	\$800.00
20. Acid Insoluble (C 25)	\$27.00
21. Available Lime Index, Rapid Sugar (C 25, sec. 28)	\$55.00
22. Carbon Dioxide, CO ₂ , by Schroetter's Alkalimeter	\$75.00

ASTM C 110 Physical Test Parameters

23. Apparent Loose & Packed Density (sec. 19 & 20)	\$40.00
24. Hunter Dry Brightness (sec. 12)	\$180.00
25. Limestone Grindability (sec. 13)	\$120.00
26. Particle Size by Sieve & Hydrometer (sec. 17)	\$100.00
27. Residue & Sieve Analysis (sec. 15)	\$100.00
28. Settling Rate (sec. 14)	\$100.00
29. Specific Gravity (sec. 21)	\$80.00
30. Water Retention (sec. 7)	\$80.00
31. Wet Sieve Analysis (sec. 22)	\$80.00
32. Slaking Rate, Reactivity (sec. 11)	\$300.00
33. Decrepitation Index (BGS TR WG/92/29)	\$200.00

Other Common Elements (usually trace)

33. phosphorus, reported as P, P ₂ O ₃	\$27.00
34. sulfur, reported as S, SO ₃	\$27.00
35. potassium, reported as K, K ₂ O	\$27.00
36. sodium, reported as Na, Na ₂ O	\$27.00
37. titanium, reported as Ti, TiO ₂	\$27.00
38. manganese, reported as Mn, MnO ₂	\$27.00

The following table recommends the number and weight of increments for general purpose sampling and are based upon a 1000-ton lot size. To determine the number of increments recommended for a specific lot size use the following equation: $N_2 = N_1 [specific\ lot\ size\ (tons) / 1000\ tons]^{1/2}$ where:
N₁ = minimum increments required, per 1000 ton lot, and
N₂ = increments required for specified lot size

ASTM C 50 Table 1 - Recommended Number & Weight of Increments for General Purpose Sampling			
Particle Size	- 1/4 in.	+ 1/4 in. by - 3/4 in.	+ 3/4 in.
minimum number of increments	10	10	10
minimum weight of increment, lb	5	10	15
total minimum sample weight, lb	50	100	150

Refer to ASTM C 50, "Sampling, Sample Preparation, Packaging, and Marking of Lime and Limestone Products" for more detailed information and guidance.

The following table describes the level of crushing and/or pulverizing required in order to prepare a proper test specimen for laboratory analysis:

Levels of Preparation for Laboratory Testing		
as-submitted	crush to - No. 4	pulverize to - No. 60
rock core	\$3.80/ ft	\$27.00 ea. Interval
ledge rock	\$60.00 ea.	\$27.00 ea. sample
stockpile + No. 4	\$60.00 ea.	\$27.00 ea. sample
stockpile - No. 4	not applicable	\$27.00 ea. sample
pulverized >#60	not applicable	\$27.00 ea. sample
pulverized <#60	not applicable	not applicable (no charge)

(total prep charge = crush fee plus pulverizing fee)

Mailing Address:	Shipping Address:	Contact Person:	Alternate Contacts:	
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