

BOWSER-MORNER, INC. - CONSTRUCTION MATERIALS LABORATORY
2011a Laboratory Testing Fees - Filter Media & Frac Sand
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	\$125.00/Hour

Sample Preparation (if required)	
1. Necessary Sample Preparation (BMI SOP)	\$60.00/Hour
a. Ledge Rock, etc., crush to test specimens	
b. Rock Core, split & archive representative half	\$3.80/ft.
c. Rock Core, crush/reduce to test specimens	\$3.80/ft.
d. Geologist Log	\$3.80/ft.
e. Rock Core, log, split, crush (items 1b, 1c, & 1d)	\$8.00/ft.

Granular Filter Media (AWWA B 100)	
2. Sieve Analysis; Gradation (AWWA B100, sec. 5.3.4) (ASTM C 136) includes Effective Size (D10) & Uniformity Coefficient (UC)	
a. Coarse, + No. 4 sieve (support gravel)	\$80.00
b. Fine, - No. 4 sieve (sand & anthracite)	\$80.00

3. Decantation (percent minus No. 200, 0.075 mm) (ASTM C 117)	\$60.00
4. Gravel Shape (AWWA B 100, sec. 5.3.2) (% fractured, flat, or elongated)	\$80.00
5. Specific Gravity (ASTM C 127, 128, AWWA B 100, sec. 5.3.3)	\$86.00
6. Acid Solubility (AWWA B 100, sec. 5.3.1)	\$95.00
7. Moh's Hardness (AWWA B100, sec. 5.3.5)	
a. Plus No. 4 Material	\$66.00
b. Minus No. 4 Material, include prep	\$160.00

8. Percent of Organic Impurities by Heavy Media (Gs @ 2.0) (AWWA B 100, sec. 4.1.1.1 (3) note, ASTM C 123)	\$200.00
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9. Organic Impurities by Colorimetric (ASTM C 40) (AWWA B100, sec. 4.1.1.2 & 4.1.1.3 notes.)	\$60.00
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10. Heavy Media Separation (ASTM C 123)	
a. Sand/Anthracite Separation at 2.00 Gs	\$240.00
b. Anthracite/Anthracite Separation at 1.45 & 1.95 Gs	\$320.00

11. Caustic Solubility (ASTM D 1109)	\$120.00
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12. Loss on Ignition (LOI) (ASTM D 2974)	\$60.00
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13. Phase Determinations & Calcs.(Unit Weight, Porosity, Void Ratio) (ASTM C 29, C 127, C 128, D 7263)	\$150.00
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AWWA B100 Table 3 Minimum Size of Composite Sample			
Max Size of Particles		Minimum Sample Size	
2 1/2-in.	63.0 mm	100 lbs	45.0 kg
1 1/2-in.	37.5 mm	70 lbs	32.0 kg
1-in.	25.4 mm	50 lbs	23.0 kg
3/4-in.	19.0 mm	30 lbs	14.0 kg
1/2-in.	12.5 mm	30 lbs	9.0 kg
3/8 & smaller	9.5 mm	10 lbs	4.5 kg

Frac Sand (API RP 19C, 56, 58, 60)	
14. Sieve Analysis (API RP 19C, sec. 6; RP 56-60, sec. 5)	\$80.00
15. Sphericity & Roundness (API RP 19C, sec. 7, RP 56-60, sec. 6) (Krumbien/Sloss Index)	\$90.00
16. Acid Solubility, 12:3 HCl:HF (API RP 19C, sec. 8; RP 56-60, sec. 7)	\$130.00
17. Turbidity (API RP 19C, sec 9; RP 56-60, sec. 8)	\$100.00
18. Bulk, Apparent, & Absolute Density (API RP 19C, sec 10)	\$86.00
19. Crush Resistance Test (API RP 19C, sec. 11, RP 56-60, sec 9)	\$300.00
20. Loss on Ignition (LOI) (API RP 19C, sec 12)	\$60.00
21. X-Ray Diffraction, Sand Mineralogy (API RP 56-60, sec. 10)	\$150.00

Chemistry	
22. Basic Elemental Analysis (ASTM C 25) incl.: Al ₂ O ₃ , Fe ₂ O ₃ , Ca, CaO	
a. CaCO ₃ , Mg, MgO, MgCO ₃ , SiO ₂	\$135.00
b. Additional Element Charge	\$27.00

23. % Silica Dioxide, SiO ₂ , High Purity Silica Materials (ASTM C 146)	\$100.00
24. Prep Bulk Sample, crush and or pulverize (C 50)	\$60.00
25. Prep for Fine Aggregate, pulverize to - #60 (C 50)	\$27.00

Misc. Parameters	
26. Friability (Paint Can Method)	\$100.00
27. Micro Photographs	\$20.00
28. Unit Weight (ASTM C 29)	\$64.00

AWWA B100 Tables 3 and 4 are presented for your convenience in order to obtain test samples that will be in compliance with the applicable test methods.

AWWA B100 Table 4 Sampling of Bagged Filter Material		
Lot Size* (number of bags)		Minimum Sample Sizes (number of bags)
More than	Less than or equal to	
2	8	2
9	15	3
16	25	5
26	50	8
51	90	13
91	150	20
151	280	32
281	500	50
501	1,200	80
1,201	3,200	125
3,201	10,000	200
10,001	35,000	315
35,001	150,000	500

* AWWA B100, section 5.2.3 Table 4 note: Lot size at the producer's plant is the number of bags produced in a batch. Lot size at the jobsite is the number of bags of a particular production batch delivered to the project site.

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