

# AFPC Rock Check Program

Sample No. 2009-04

	Method #	# of Anal.	Grand Median	Std Dev
<b>Moisture</b>				
Ground Sample AFPC 9-2	101	9	1.25	0.138
Other (describe)	102	10	1.21	0.116
Method Group 100		19	1.22	0.13
<b>BPL or P<sub>2</sub>O<sub>5</sub></b>				
Gravimetric AFPC 9-5	201	1	32.47	0.000
ICP-induced coupled plasma	202	5	32.53	0.123
Photometric-AFPC 9-6	203	5	32.81	0.269
Automated -AOAC 978.01-15th	204	7	32.69	0.095
Other(describe)	205	6	32.65	0.157
Method Group 200		24	32.69	0.18
<b>BPL or P<sub>2</sub>O<sub>5</sub> (on Dry Basis)</b>				
Gravimetric AFPC 9-5	211	1	32.86	0.000
ICP-induced coupled plasma	212	4	33.01	0.214
Photometric-AFPC 9-6	213	4	33.11	0.225
Automated -AOAC 978.01-15th	214	7	33.08	0.076
Other(describe)	215	3	33.20	0.342
Method Group 210		19	33.09	0.14
<b>Fe<sub>2</sub>O<sub>3</sub></b>				
Atomic Absorption-AFPC 9-12,13	301	3	0.97	0.235
ICP-induced coupled plasma	302	17	1.16	0.063
Other(describe)	303	1	1.07	0.000
Method Group 300		21	1.15	0.07
<b>Al<sub>2</sub>O<sub>3</sub></b>				
Atomic Absorption-AFPC 9-16,17	401	2	1.23	0.009
ICP-induced coupled plasma	402	17	1.19	0.049
Other(describe)	403	1	0.96	0.000
Method Group 400		20	1.19	0.05
<b>MgO</b>				
Atomic Absorption-AFPC 9-18,19	501	4	0.47	0.151
ICP-induced coupled plasma	502	16	0.44	0.015
Other(describe)	503	1	0.48	0.000
Method Group 500		21	0.45	0.02
<b>Acid Insoluble</b>				
Insoluble-AFPC 9-8	601	14	2.95	0.153
Other(describe)	602	3	3.27	0.612
Method Group 600		17	2.96	0.21
<b>CaO</b>				
Gravimetric sulfate	701			
ICP-induced coupled plasma	702	3	47.54	0.078
Ceric Sulfate volumetric	703			
Permanganate	704	3	47.70	0.149
EDTA Volumetric	705	10	47.99	0.894
Other(describe)	706	5	47.84	0.104
Method Group 700		21	47.80	0.45
<b>CaO (on Dry Basis)</b>				
Gravimetric sulfate	711			
ICP-induced coupled plasma	712	2	48.08	0.012
Ceric Sulfate volumetric	713			
Permanganate	714	2	48.31	0.061
EDTA Volumetric	715	9	49.03	0.654
Other(describe)	716	4	48.43	0.060
Method Group 710		19	48.39	0.53

	Method #	# of Anal.	Grand Median	Std Dev
<b>Fluorine, F</b>				
Volumetric-AFPC 9-37	801			
Specific Ion Electrode	802	15	3.78	0.104
Other( describe)	803			
Method Group 800		15	3.78	0.10
<b>Arsenic, As</b>				
Atomic Absorption	911			
ICP-induced coupled plasma	912	5	12.9	1.23
Other(describe)	913	2	6.6	0.46
Method Group 900		7	11.6	3.29
<b>Cadmium, Cd</b>				
Atomic Absorption	921	1	6	0.0
ICP-induced coupled plasma	922	7	4	0.3
Other(describe)	923	1	4	0.0
Method Group 910		9	4	0.4
<b>Cobalt, Co</b>				
Atomic Absorption	931			
ICP-induced coupled plasma	932	6	4	0.5
Other(describe)	933	1	4	0.0
Method Group 920		7	4	0.4
<b>Mercury, Hg</b>				
Atomic Absorption	941			
ICP-induced coupled plasma	942	1	0.1	0.00
Other(describe)	943			
Method Group 930		1	0.1	0.00
<b>Molybdenum, Mo</b>				
Atomic Absorption	951			
ICP-induced coupled plasma	952	6	15	2.5
Other(describe)	953	1	16	0.0
Method Group 940		7	16	2.0
<b>Nickel, Ni</b>				
Atomic Absorption	961			
ICP-induced coupled plasma	962	6	9	0.5
Other(describe)	963	1	11	0.0
Method Group 950		7	9	1.1
<b>Lead, Pb</b>				
Atomic Absorption	971	1	20	0.0
ICP-induced coupled plasma	972	6	22	2.2
Other(describe)	973	1	21	0.0
Method Group 960		8	21	2.0
<b>Selenium, Se</b>				
Atomic Absorption	981			
ICP-induced coupled plasma	982	3	1	1.9
Other(describe)	983	1	2	0.0
Method Group 970		4	1	1.5
<b>Zinc, Zn</b>				
Atomic Absorption	991	1	66	0
ICP-induced coupled plasma	992	7	41	6
Other(describe)	993	1	67	0
Method Group 980		9	45	7

101 Ground Sample AFPC 9-2		
Lab	%	H <sub>2</sub> O
266	1.40	-1.086
Std Dev	1.39	-1.000
49	1.34	-0.652
24	1.28	-0.181
24	1.26	-0.072
10	1.25	0.000
Median	1.25	0.000
10	1.16	0.652
Std Dev	1.11	1.000
51	1.09	1.159
6	1.02	1.666
35	1.00	1.811

102 Other (describe)		
Lab	%	H <sub>2</sub> O
55	1.82	-5.274
55	1.58	-3.199
13	1.35	-1.210
Std Dev	1.33	-1.000
13	1.25	-0.346
21	1.22	-0.086
Median	1.21	0.000
9	1.20	0.086
26	1.20	0.086
9	1.16	0.432
237	1.10	0.951
Std Dev	1.09	1.000
21	1.09	1.037

201 Gravimetric AFPC 9-5		
Lab	%	P2O5
26	32.47	0.000
Median	32.47	0.000

202 ICP-induced coupled plasma		
Lab	%	P2O5
55	32.91	-3.045
10	32.69	-1.259
Std Dev	32.65	-1.000
6	32.53	0.000
Median	32.53	0.000
10	32.52	0.081

266	32.46	0.568
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203 Photometric-AFPC 9-6		
Lab	%	P2O5
237	33.60	-2.941
Std Dev	33.08	-1.000
60	33.05	-0.893
35	32.81	0.000
Median	32.81	0.000
9	32.69	0.447
9	32.58	0.875

204 Automated -AOAC 978.01-15th		
Lab	%	P2O5
21	32.88	-1.944
Std Dev	32.79	-1.000
6	32.74	-0.525
21	32.73	-0.420
24	32.69	0.000
Median	32.69	0.000
24	32.64	0.578
Std Dev	32.59	1.000
13	32.58	1.156
13	32.47	2.312

205 Other(describe)		
Lab	%	P2O5
55	33.47	-5.248
Std Dev	32.80	-1.000
49	32.76	-0.718
51	32.73	-0.526
Median	32.65	0.000
51	32.57	0.526
244	32.54	0.718
Std Dev	32.49	1.000
19	32.40	1.579

211 Gravimetric AFPC 9-5			
Lab	%	P2O5	dB
26	32.86	0.000	
Median	32.86	0.000	

212 ICP-induced coupled plasma			
Lab	%	P2O5	dB

55	33.51	-2.361
Std Dev	33.22	-1.000
10	33.10	-0.416
Median	33.01	0.000
266	32.92	0.416
10	32.90	0.505

213 Photometric-AFPC 9-6			
Lab	%	P2O5	dB
237	33.97	-3.849	
Std Dev	33.33	-1.000	
35	33.14	-0.151	
Median	33.11	0.000	
9	33.07	0.151	
9	32.97	0.608	

214 Automated -AOAC 978.01-15th			
Lab	%	P2O5	dB
21	33.24	-2.115	
Std Dev	33.15	-1.000	
21	33.13	-0.752	
24	33.11	-0.460	
6	33.08	0.000	
Median	33.08	0.000	
24	33.05	0.343	
Std Dev	33.00	1.000	
13	32.99	1.124	
13	32.91	2.157	

215 Other(describe)			
Lab	%	P2O5	dB
55	34.01	-2.346	
Std Dev	33.55	-1.000	
49	33.20	0.000	
Median	33.20	0.000	
51	33.09	0.334	

301 Atomic Absorption-AFPC 9-12,13		
Lab	%	Fe2O3
60	1.08	-0.468
51	0.97	0.000
Median	0.97	0.000
Std Dev	0.73	1.000
55	0.45	2.212

302 ICP-induced coupled plasma		
Lab	%	Fe2O3
35	1.62	-7.252
266	1.28	-1.892
Std Dev	1.22	-1.000
9	1.22	-0.867
10	1.17	-0.158
9	1.16	0.000
10	1.16	0.000
13	1.16	0.000
13	1.16	0.000
49	1.16	0.000
Median	1.16	0.000
6	1.15	0.158
55	1.15	0.158
Std Dev	1.10	1.000
21	1.09	1.182
51	1.08	1.340
237	1.06	1.576
24	1.06	1.655
26	1.04	1.892
21	1.03	2.049

303 Other(describe)		
Lab	%	Fe2O3
19	1.07	0.000
Median	1.07	0.000

401 Atomic Absorption-AFPC 9-16,17		
Lab	%	Al2O3
51	1.25	-1.340
Std Dev	1.24	-1.000
Median	1.23	0.000
Std Dev	1.22	1.000
55	1.22	1.340

402 ICP-induced coupled plasma		
Lab	%	Al2O3
266	1.55	-7.525
35	1.31	-2.577
51	1.25	-1.237
Std Dev	1.23	-1.000
9	1.23	-0.825

237	1.22	-0.722
9	1.20	-0.309
24	1.20	-0.309
21	1.19	0.000
55	1.19	0.000
<b>Median</b>	<b>1.19</b>	<b>0.000</b>
6	1.18	0.103
10	1.16	0.515
13	1.16	0.515
10	1.16	0.618
13	1.15	0.722
26	1.15	0.722
<b>Std Dev</b>	<b>1.14</b>	<b>1.000</b>
21	1.12	1.340
49	1.12	1.340

403 Other(describe)		
Lab	%	Al2O3
19	0.96	0.000
<b>Median</b>	<b>0.96</b>	<b>0.000</b>

501 Atomic Absorption-AFPC 9-18,19		
Lab	%	MgO
55	1.17	-4.632
<b>Std Dev</b>	<b>0.62</b>	<b>-1.000</b>
51	0.48	-0.066
<b>Median</b>	<b>0.47</b>	<b>0.000</b>
35	0.46	0.066
60	0.42	0.331

502 ICP-induced coupled plasma		
Lab	%	MgO
13	0.47	-2.010
9	0.47	-1.675
21	0.46	-1.340
<b>Std Dev</b>	<b>0.45</b>	<b>-1.000</b>
6	0.45	-0.670
49	0.45	-0.670
266	0.45	-0.670
9	0.45	-0.335
10	0.44	0.000
26	0.44	0.000
55	0.44	0.000
<b>Median</b>	<b>0.44</b>	<b>0.000</b>

237	0.44	0.335
10	0.43	0.670
13	0.43	0.670
24	0.43	0.670
51	0.43	0.670
<b>Std Dev</b>	<b>0.43</b>	<b>1.000</b>
21	0.42	1.340

503 Other(describe)		
Lab	%	MgO
19	0.48	0.000
<b>Median</b>	<b>0.48</b>	<b>0.000</b>

601 Insoluble-AFPC 9-8		
Lab	%	Al
26	3.18	-1.520
55	3.15	-1.324
35	3.11	-1.062
<b>Std Dev</b>	<b>3.10</b>	<b>-1.000</b>
21	3.07	-0.801
10	3.01	-0.409
10	2.99	-0.278
9	2.96	-0.082
<b>Median</b>	<b>2.95</b>	<b>0.000</b>
21	2.94	0.082
9	2.92	0.212
24	2.91	0.245
13	2.83	0.768
13	2.82	0.833
<b>Std Dev</b>	<b>2.79</b>	<b>1.000</b>
24	2.73	1.422
55	2.60	2.271

602 Other(describe)		
Lab	%	Al
19	4.33	-1.732
<b>Std Dev</b>	<b>3.88</b>	<b>-1.000</b>
266	3.27	0.000
<b>Median</b>	<b>3.27</b>	<b>0.000</b>
6	2.69	0.948

701 Gravimetric sulfate		
Lab	%	CaO
<b>Median</b>	<b>0.00</b>	<b>0.000</b>

702 ICP-induced coupled plasma		
Lab	%	CaO
49	47.67	-1.723
<b>Std Dev</b>	<b>47.61</b>	<b>-1.000</b>
10	47.54	0.000
<b>Median</b>	<b>47.54</b>	<b>0.000</b>
10	47.46	0.957

703 Ceric Sulfate volumetric		
Lab	%	CaO
<b>Median</b>	<b>0.00</b>	<b>0.000</b>

704 Permanganate		
Lab	%	CaO
21	47.80	-0.670
21	47.70	0.000
<b>Median</b>	<b>47.70</b>	<b>0.000</b>
<b>Std Dev</b>	<b>47.55</b>	<b>1.000</b>
60	47.40	2.010

705 EDTA Volumetric		
Lab	%	CaO
266	49.06	-1.203
55	48.90	-1.024
<b>Std Dev</b>	<b>48.88</b>	<b>-1.000</b>
9	48.52	-0.599
9	48.47	-0.537
55	48.14	-0.173
<b>Median</b>	<b>47.99</b>	<b>0.000</b>
6	47.83	0.173
26	47.64	0.392
237	47.20	0.878
19	47.10	0.990
<b>Std Dev</b>	<b>47.09</b>	<b>1.000</b>
35	46.26	1.930

706 Other(describe)		
Lab	%	CaO
51	48.30	-4.403
13	47.95	-1.053
<b>Std Dev</b>	<b>47.94</b>	<b>-1.000</b>
24	47.84	0.000
<b>Median</b>	<b>47.84</b>	<b>0.000</b>

13	47.81	0.287
24	47.78	0.622

711 Gravimetric sulfate			
Lab	%	CaO	dB
<b>Median</b>	<b>0.00</b>	<b>0.000</b>	<b>0.000</b>

712 ICP-induced coupled plasma			
Lab	%	CaO	dB
10	48.09	-1.340	
<b>Std Dev</b>	<b>48.09</b>	<b>-1.000</b>	
<b>Median</b>	<b>48.08</b>	<b>0.000</b>	
<b>Std Dev</b>	<b>48.06</b>	<b>1.000</b>	
10	48.06	1.340	

713 Ceric Sulfate volumetric			
Lab	%	CaO	dB
<b>Median</b>	<b>0.00</b>	<b>0.000</b>	<b>0.000</b>

714 Permanganate			
Lab	%	CaO	dB
21	48.39	-1.340	
<b>Std Dev</b>	<b>48.37</b>	<b>-1.000</b>	
<b>Median</b>	<b>48.31</b>	<b>0.000</b>	
<b>Std Dev</b>	<b>48.25</b>	<b>1.000</b>	
21	48.23	1.340	

715 EDTA Volumetric			
Lab	%	CaO	dB
266	49.76	-1.108	
<b>Std Dev</b>	<b>49.69</b>	<b>-1.000</b>	
55	49.69	-0.998	
9	49.09	-0.087	
9	49.05	-0.033	
55	49.03	0.000	
<b>Median</b>	<b>49.03</b>	<b>0.000</b>	
<b>Std Dev</b>	<b>48.38</b>	<b>1.000</b>	

6	48.32	1.085
26	48.21	1.253
19	47.10	2.956
35	46.73	3.527

716 Other(describe)			
Lab	%	CaO	dB

13	48.61	-2.903
Std Dev	48.49	-1.000
24	48.45	-0.295
Median	48.43	0.000
13	48.42	0.295
24	48.39	0.684

801	Volumetric-AFPC 9-37	
Lab	%	Fluorine, F
Median	0.00	0.000

802	Specific Ion Electrode	
Lab	%	Fluorine, F

35	4.35	-5.456
Std Dev	3.88	-1.000
266	3.88	-0.957
9	3.87	-0.814
21	3.86	-0.766
24	3.86	-0.718
24	3.83	-0.479
13	3.80	-0.191
9	3.78	0.000
Median	3.78	0.000
13	3.76	0.191
49	3.75	0.287
51	3.74	0.431
55	3.70	0.766
Std Dev	3.68	1.000
237	3.68	1.005
21	3.29	4.690
55	2.40	13.209

803	Other( describe)	
Lab	%	Fluorine, F
Median	0.00	0.000

911	Atomic Absorption-AFPC 9-18,19	
Lab	ppm	Arsenic, As
Median	0.0	0.000

912	ICP-induced coupled plasma	
Lab	ppm	Arsenic, As
6	14.3	-1.178
Std Dev	14.1	-1.000

266	13.2	-0.284
55	12.9	0.000
Median	12.9	0.000
Std Dev	11.6	1.000
55	11.6	1.056
26	10.0	2.315

913	Other(describe)	
Lab	ppm	Arsenic, As
13	7.2	-1.340
Std Dev	7.1	-1.000
Median	6.6	0.000
Std Dev	6.2	1.000
51	6.0	1.340

921	Atomic Absorption-AFPC 9-12,13	
Lab	ppm	Cadmium, Cd
51	6	0.000
Median	6	0.000

922	ICP-induced coupled plasma	
Lab	ppm	Cadmium, Cd
51	5	-3.510
Std Dev	4	-1.000
6	4	-0.319
26	4	-0.319
55	4	0.000
Median	4	0.000
55	4	0.798
Std Dev	4	1.000
266	4	1.244
237	3	2.712

923	Other(describe)	
Lab	ppm	Cadmium, Cd
13	4	0.000
Median	4	0.000

931	Atomic Absorption-AFPC 9-16,17	
Lab	ppm	Cobalt, Co
Median	0	0.000

932	ICP-induced coupled plasma	
Lab	ppm	Cobalt, Co

51	5	-0.875
55	5	-0.875
266	4	-0.219
Median	4	0.000
6	4	0.219
55	4	0.766
Std Dev	4	1.000
237	2	3.829

933	Other(describe)	
Lab	ppm	Cobalt, Co
13	4	0.000
Median	4	0.000

941	Atomic Absorption-AFPC 9-18,19	
Lab	ppm	Mercury, Hg
Median	0.0	0.000

942	ICP-induced coupled plasma	
Lab	ppm	Mercury, Hg
266	0.1	0.000
Median	0.1	0.000

943	Other(describe)	
Lab	ppm	Mercury, Hg
13	<0.07	0.000
Median	0.0	0.000

951	Atomic Absorption-AFPC 9-18,19	
Lab	ppm	Molybdenum, Mo
Median	0	0.000

952	ICP-induced coupled plasma	
Lab	ppm	Molybdenum, Mo
266	17	-0.593
6	16	-0.277
51	16	-0.277
Median	15	0.000
55	15	0.277
Std Dev	13	1.000
55	12	1.325
237	10	2.097

953	Other(describe)	
Lab	ppm	Iolybdenum, Mo
13	16	0.000
Median	16	0.000

961	Atomic Absorption-AFPC 9-12,13	
Lab	ppm	Nickel, Ni
Median	0	0.000

962	ICP-induced coupled plasma	
Lab	ppm	Nickel, Ni
266	17	-17.010
Std Dev	9	-1.000
55	9	-0.820
55	9	-0.055
Median	9	0.000
51	9	0.055
6	9	0.930
Std Dev	9	1.000
237	8	2.789

963	Other(describe)	
Lab	ppm	Nickel, Ni
13	11	0.000
Median	11	0.000

971	Atomic Absorption-AFPC 9-16,17	
Lab	ppm	Lead, Pb
51	20	0.000
Median	20	0.000

972	ICP-induced coupled plasma	
Lab	ppm	Lead, Pb
266	29	-3.035
55	24	-1.042
Std Dev	24	-1.000
55	23	-0.447
Median	22	0.000
6	21	0.447
26	21	0.447
Std Dev	20	1.000
237	15	3.195

973 Other(describe)		
Lab	ppm	Lead, Pb
13	21	0.000
Median	21	0.000

981 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Selenium, Se
Median	0	0.000

982 ICP-induced coupled plasma		
Lab	ppm	Selenium, Se
266	6	-2.577
Std Dev	3	-1.000
55	1	0.000
Median	1	0.000
55	0	0.103

983 Other(describe)		
Lab	ppm	Selenium, Se
13	2	0.000
Median	2	0.000

991 Atomic Absorption-AFPC 9-18,19		
Lab	ppm	Zinc, Zn
60	66	0.000
Median	66	0.000

992 ICP-induced coupled plasma		
Lab	ppm	Zinc, Zn
55	47	-1.053
Std Dev	47	-1.000
51	46	-0.809
266	45	-0.618
55	41	0.000
Median	41	0.000
26	39	0.496
6	37	0.757
Std Dev	36	1.000
237	29	2.149

993 Other(describe)		
Lab	ppm	Zinc, Zn
13	67	0.000
Median	67	0.000

