

19.2 Rocks

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	Fe	MgO	CaO	Na ₂ O	K ₂ O	CO ₂	TiO ₂	P ₂ O ₅	MnO	S	Pb		
192 BG COD 89	56.28	16.58	6.51	3.28	...	2.84	5.56	3.39	4.76	0.20	0.60	0.223	0.125	...	...
192 BG COD 36a	47.67	18.51	6.74	3.98	...	8.42	14.92	1.43	0.25	...	0.50	0.054	0.137	...	...	continued
192 BG COD 161a	55.40	13.23	6.09	...	...	1.69	3.70	1.48	4.10	3.16	0.42	0.27	1.11	2.29	1.73	
CRM 192 B 2780	...	16.75	...	...	2.784	0.888	0.273	0.298	4.07	...	(1.20)	(0.096)	(0.060)	1.263	0.577	continued
Continuation from above																	
All Elements ppm																	
	Ba	Ce	Cr	Co	Cu	Ga	La	Li	Ni	Rb	Sr	V					
192 BG COD 89	443	...	27	14	97	...	...	20	...	167	461	130				
192 BG COD 36a	...	...	101	30	97	...	...	...	63	...	...	190	continued			
192 BG COD 161a	2180	75	610	14	1940	15	38	38	13	221	277	61					
192 B 2780	(993)	(64)	(44)	(2.2)	(215.5)	(26)	(38)	(18)	(12)	(175)	(217)	(268)	continued				
Continuation from above																	
All Elements ppm																	
	Zn	Zr	Mo	Ag	As	Cd	Sc	Yb	Cs	Cl	Hg	% L.O.I.	Type	Size			
192 BG COD 89a	58	122	2.5	...	...	...	17	...	...	...	...	3.29	Monzonite	50g		
192 BG COD 36b	58	...	...	...	...	...	...	...	...	...	...	...	Gabbro	50g		
192 BG COD 161b	2.44%	181	20	12.8	61	190	...	2.1	12.1	...	...	...	Pb-Zn Sulphide Ore	50g		
192 B 2780	2570	(176)	(11)	(27)	48.8	12.10	(23)	...	(13)	...	0.710	...	Hard Rock Mine Waste	50g			
Continuation from above																	
	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	TiO ₂	P ₂ O ₅	MnO	Na ₂ O	K ₂ O	S	H ₂ O	CO ₂	Type	Size	
CRM 192 A FER-1	16.95	0.52	(49.88)	(23.34)	0.30	3.29	0.03	2.39	0.22	0.03	0.02	0.26	0.41	1.39	Iron Formation	100g	
CRM 192 A FER-2	49.21	5.16	22.5	15.24	2.10	2.17	0.18	0.27	0.12	0.57	1.33	0.17	0.98	0.07	Iron Formation	100g	
CRM 192 A FER-3	53.61	0.09	(29.4)	(13.63)	1.02	0.84	0.01	0.07	0.08	0.03	0.03	(0.03)	(0.20)	1.20	Iron Formation	100g	
CRM 192 A FER-4	50.07	1.70	22.7	15.54	1.41	2.23	0.07	0.13	0.19	0.05	0.29	0.11	0.72	4.86	Iron Formation	100g	
Continuation from above																	
	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	TiO ₂	P ₂ O ₅	MnO	Na ₂ O	K ₂ O	Cr ₂ O ₃	H ₂ O	CO ₂	Type	Size	
192 CG 07101	34.34	0.67	(4.21)	(2.42)	41.03	0.10	0.008	0.004	0.068	0.008	0.010	1.57	14.17	0.58	continued		
192 CG 07102	37.75	0.21	(4.85)	(1.97)	38.34	1.80	0.004	0.003	0.097	0.028	0.009	0.42	12.69	1.66			
CRM 192 A UM-2	(39.2)	(7.23)	...	...	(25.45)	(4.68)	(0.24)	(0.02)	(0.08)	(0.32)	(0.11)	(1.51)	(6.27)	(0.10)	continued	
CRM 192 A UM-4	39.35	8.89	...	...	22.5	6.79	0.35	0.02	0.15	0.45	0.18	2.59	(4.86)	0.26		
Continuation from above																	
	S	NiO	CoO	V ₂ O ₅	Cl	ZnO	CuO									Type	Size
192 CG 07101	0.051	0.32	0.012	0.007	0.57									Ultrabasic	150g
192 CG 07102	0.008	0.30	0.013	0.003	0.022	Plus another 39 elements								Ultrabasic	150g
192 A UM-2	(0.94)	0.29	0.012	(0.004)	0.095									Sulfide-ultramafic	100g
192 A UM-4	0.44	0.19	0.007	0.008	0.054									Sulfide-ultramafic	100g
Continuation from above																	
	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	TiO ₂	P ₂ O ₅	MnO	Na ₂ O	K ₂ O	H ₂ O	CO ₂	Total L.O.I.	Type	Size	
192 CG 03104	69.63	14.82	5.67	(0.40)	0.67	0.22	0.68	0.043	0.024	0.20	3.76	(3.71)	0.13	4.17	Shale	50g	
192 CG 03116	66.26	18.63	0.19	...	0.054	0.76	0.048	...	...	3.69	9.6	...	...	...	Feldspar	50g
192 CG 03124	60.64	20.05	1.37	0.28	0.13	0.52	0.12	0.020	0.050	8.97	5.06	...	...	2.37	Nepheline Syenite	50g
192 CG 03125	39.42	29.67	0.33	1.24	0.92	5.98	0.14	0.072	0.031	12.59	4.72	...	2.97	...	Nepheline Syenite	50g	
192 CG 03126	66.84	23.58	1.94	...	0.087	0.17	0.70	0.20	0.004	0.34	0.38	4.15	...	5.48	Pyrophyllite	50g	
192 CG 03127	70.34	22.20	0.220	...	0.041	0.066	0.18	0.11	0.0040	0.043	0.028	5.57	...	6.34	Pyrophyllite	50g	
192 CG 07103	72.83	13.40	2.14	1.02	0.42	1.55	0.287	0.091	0.060	3.13	5.01	0.60	0.15	...	Granite	70g	
192 CG 07104	60.62	16.17	4.90	2.39	1.72	5.20	0.52	0.23	0.08	3.86	1.89	1.50	3.47	...	Each	Andesite	70g
192 CG 07105	44.64	13.83	13.4	7.60	7.77	8.81	2.37	0.93	0.17	3.38	2.32	2.86	with	Basalt	70g
192 CG 07106	90.36	3.52	3.22	0.61	0.082	0.30	0.263	0.218	0.020	0.061	0.65	1.01	0.19	...	50+	Sandstone	70g
192 CG 07107	59.23	18.82	7.60	1.39	2.01	0.60	...	0.155	0.022	0.35	4.16	5.60	0.077	...	other	Shale	70g
192 CG 07109	54.48	17.72	6.04	1.23	0.65	1.39	0.48	0.018	0.12	7.16	7.48	2.38	0.26	...	elements	Syenite	100g
192 CG 07110	63.06	16.1	4.51	0.19	0.84	2.47	0.80	0.36	0.089	3.06	5.17	1.79	1.03	...	certified	Andesite	100g
192 CG 07111	59.68	16.56	2.64	3.08	2.81	4.72	0.77	0.34	0.094	4.05	3.50	0.88	0.15	...	at the	Granodiorite	100g
192 CG 07112	35.69	14.14	9.90	13.36	5.25	9.86	7.69	0.028	0.193	2.11	0.15	1.09	0.12	...	ppm	Gabbro	100g
192 CG 07113	72.78	12.96	1.14	1.86	0.16	0.59	0.30	0.045	0.14	2.57	5.43	1.18	0.52	...	Level	Rhyolite	100g
CRM 192 A 375/1	69.24	17.88	0.291	...	0.180	0.78	0.312	0.226	...	8.89	1.47	0.72		Soda-Feldspar	100g
192 S JA-1b	63.97	15.22	2.59	3.98	1.57	5.70	0.85	0.165	0.157	3.84	0.77	0.72		Andesite	20g
192 S JA-2	56.42	15.41	2.16	3.69	7.60	6.29	0.66	0.146	0.108	3.11	1.81	1.12		Andesite	20g
192 S JA-3	62.27	15.56	1.15	4.83	3.72	6.24	0.70	0.116	0.104	3.19	1.41	0.20		Andesite	20g
192 S JB-1b	51.11	14.38	3.29	5.16	8.14	9.6	1.26	0.256	0.147	2.63	1.32	1.53	with	Basalt	100g
192 S JB-2	53.25	14.64	3.33	9.98	4.62	9.82	1.19	0.101	0.218	2.04	0.42	0.25	50+	Basalt	20g
192 S JB-3	50.96	17.20	3.20	7.85	5.19	9.79	1.44	0.294	0.177	2.73	0.78	0.18	other	Basalt	20g
192 S JF-1	66.69	18.08	0.06	<0.04	0.006	0.93	0.005	0.01	0.001	3.37	9.99	0.23	elements	Feldspar	100g
192 S JF-2	65.30	18.52	0.06	<0.03	0.004	0.09	0.005	0.003	0.001	2.39	12.94	0.24	certified	Feldspar	100g
192 S JG-1	72.30	14.24	0.38	1.61	0.74	2.20	0.26	0.099	0.063	3.38	3.98	0.54	at the	Granodiorite	20g
192 S JG-1a	72.30	14.30	0.51	1.36	0.69	2.13	0.25	0.083	0.057	3.39	3.96	0.59	ppm	Granodiorite	20g
192 S JG-2	76.83	12.47	0.33	0.57	0.037	0.70	0.044	0.002	0.016	3.54	4.71	0.33	Level	Granite	20g
192 S JG-3	67.29	15.48	1.62	1.83	1.79	3.69	0.48	0.122	0.071	3.96	2.64	0.67		Granodiorite	100g
192 S JGb-1	43.66	17.49	4.79	9.43	7.85	11.90	1.60	0.056	0.189	1.20	0.24	1.28		Gabbro	20g
192 S JGb-2	46.47	23.48	0.62	5.41	6.18	14.10	0.56	0.017	0.13	0.92	0.059	1.46		Gabbro	100g
192 S JP-1	42.38	0.66	1.98	5.99	44.60	0.55	0.006	0.002	0.121	0.021	0.003	2.39		Peridotite	20g

19.2 Rocks (continued)																	
	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	Na ₂ O	K ₂ O	H ₂ O	CO ₂	TiO ₂	P ₂ O ₅	MnO	F	Others	Type	Size
192 S JH-1	48.18	5.66	1.39	8.09	16.73	15.02	0.71	0.53	1.82	...	0.67	0.099	0.19	...	Each with	Hornblende	100g
192 S JSI-1	59.47	17.60	1.875	4.523	2.413	1.479	2.184	2.845	3.92	0.769	0.725	0.202	0.0599	0.0598	~50 other	Slate	100g
192 S JSI-2	59.45	18.17	0.959	5.048	2.385	1.885	1.344	3.008	4.158	1.236	0.754	0.164	0.0818	0.0678	elements	Slate	100g
192 S JCh-1	97.81	0.734	0.272	0.0867	0.0754	0.0449	0.0305	0.221	0.356	0.055	0.0316	0.0167	0.0173	0.0134	certified	Chert	20g
192 S JR-1	75.45	12.83	0.35	0.49	0.12	0.67	4.02	4.41	1.16	...	0.11	0.021	0.099	0.0991	at the	Rhyolite	20g
192 S JR-2	75.69	12.72	0.27	0.44	0.04	0.50	3.99	4.45	1.19	...	0.07	0.012	0.112	0.1109	ppm or ppb	Rhyolite	20g
192 S JR-3	72.76	11.90	2.61	1.86	0.050	0.093	4.69	4.29	0.72	...	0.21	0.017	0.083	...	level	Rhyolite	100g
192 S JSy-1	60.02	23.17	...	...	0.016	0.25	10.74	4.82	...	...	0.0015	0.014	0.0024	...		Syenite	100g
192 S JCRM R651	21.74	71.7	1.48	...	0.10	0.19	0.03	0.65	...	...	3.15	0.19	...	...	+ Zr, LOI	Aluminous Shale	100g
192 S JCRM R802	60.7	32.3	0.23	...	<0.01	0.04	0.09	0.07	...	...	0.19	0.05	...	...	LOI 6.0	Pyrophyllite	50g
192 S JCRM R901	59.77	0.924	1.224	...	31.22	0.438	0.054	0.004	...	...	0.019	0.195	0.004	...	LOI 6.14	Talc	50g
192 S JCRM R902	60.77	0.115	0.091	...	31.97	0.342	0.006	0.003	...	...	0.004	0.046	(0.002)	...	LOI 6.64	set only	50g
192 S JCRM R903	55.76	2.447	0.564	...	31.84	0.998	0.029	0.007	...	...	0.075	0.051	(0.003)	...	LOI 8.23		50g
CRM 192 A SY4	49.9	20.69	6.21	2.86	0.54	8.05	7.10	1.66	(1.0)	3.5	0.287	0.131	0.108	(0.06)	Many others	Diorite	100g
CRM 192 LI Zeo 1	67.11	12.21	1.75	...	1.41	4.51	0.612	2.19	...	...	0.190	0.055	0.045	...		Natural Zeolite	50g
CRM 192 E 18B	1.15	0.35	0.21	...	1.65	52.6	0.14	0.23	...	...	...	35.7	...	...		Phosphate	100g
CRM 192 A SA 32	(0.4)	(0.05)	0.14	...	0.50	54.44	...	...	...	1.61	...	39.96	...	2.49		Phosphate	100g
CRM 192 A SA 34	39.04	59.15	0.75	...	0.13	(0.13)	0.093	0.24	...	...	0.17	...	...	...		Andalusite	100g
CRM 192 B 120c	5.5	1.30	1.08	...	0.32	48.02	0.52	0.147	...	3.27	0.103	33.34	0.027	3.82	+ U, V	Florida Phosphate	90g
CRM 192 B 694	11.2	1.8	0.79	...	0.33	43.6	0.86	0.51	...	...	(0.11)	30.2	0.0116	3.2	+ U, V	Western Phosphate	90g
CRM 192 A SA 1	75.70	12.08	(0.6)	1.30	(0.06)	0.78	3.36	4.99	0.49	(0.10)	...	...	0.02	0.42			
CRM 192 A SA 2	63.63	17.34	1.11	0.30	0.46	0.68	0.43	15.35	0.22	0.09	...	0.12	0.01	...			
CRM 192 A SA 3	52.40	13.64	8.78	1.13	0.28	3.22	8.37	5.51	2.31	0.17	0.48	0.06	0.77	0.44	continued		
CRM 192 A SA 4	52.64	16.50	(0.8)	7.47	7.50	11.50	2.46	0.25	0.33	(0.10)	0.20	(0.03)	0.18	...			
CRM 192 A SA 5	51.10	4.18	0.87	10.59	25.33	2.66	0.37	0.09	0.26	(0.08)	0.20	0.02	0.22	...			
CRM 192 A SA 6	38.96	(0.3)	0.71	14.63	43.51	0.28	(0.04)	(0.01)	0.30	0.40	...	...	0.22	...			
CRM 192 A SA 39	33.44	4.29	9.29	(4.0)	26.24	9.69	(0.5)	1.04	...	...	1.58	1.46	0.17	...			
CRM 192 A SA 40	3.08	0.41	2.75	(0.4)	1.97	49.77	(0.05)	(0.03)	...	...	0.05	2.05	0.18	...			
CRM 192 A SA 41	56.67	13.50	4.23	(0.3)	8.10	1.50	0.93	1.39	...	...	0.55	0.05	0.06	...			
CRM 192 A SA 44	34.84	58.80	2.06	(1.0)	(0.1)	0.14	(0.05)	0.18	...	...	1.83	0.10	0.03	...	continued		
CRM 192 A SA 45	49.62	26.22	12.6	(10.0)	3.39	0.78	0.84	3.18	...	...	1.82	0.08	0.10	...			
CRM 192 A SA 47	36.30	1.09	4.14	(0.4)	42.09	(0.1)	(0.05)	(0.02)	...	...	(0.01)	(0.02)	0.06	...			
CRM 192 A SA 48	67.11	11.24	0.58	(0.2)	0.18	8.90	3.22	4.26	...	...	0.10	(0.09)	0.02	...			
CRM 192 A SA 50	51.56	15.28	11.0	8.49	7.57	10.80	2.30	0.61	...	...	0.86	0.15	0.17	...			
CRM 192 PI AC1	1.22	(0.77)	(0.71)	...	(0.072)	45.8	0.52	(0.25)	...	...	0.49	...	0.41	...	continued		
Continuation from above																	
All Elements ppm																	
	Ba	Ce	Cr	Co	Cu	Ga	La	Li	Nb	Ni	P	Pb					
192 A SA 1	(120)	195	12	...	12	27	109	(12)	53	(8)	...	40					
192 A SA 2	2400	12	12	(3)	19	11	(5)	...	...	(7)	520	(5)					
192 A SA 3	450	(240)	(10)	...	13	(54)	(250)	(48)	960	...	260	43	continued				
192 A SA 4	102	(6)	(30)	58	14	16	(3)	...	...	120	(130)	...					
192 A SA 5	46	...	24000	110	18	(8)	(2)	...	...	555	90	...					
192 A SA 6	(10)	...	2900	208	10	...	(0.2)	...	...	2040	(40)	(40)					
192 A SA 39	1700	(85)	...	77	58	(10)	...	...	110	994	...	(25)					
192 A SA 40	(310)	(160)	(35)	(20)	(10)	(10)	...	...	(10)	(250)	...	(20)					
192 A SA 41	820	(60)	123	(15)	53	(20)	...	...	8	122	...	(30)					
192 A SA 44	(50)	(220)	384	(8)	(10)	(55)	...	...	96	(15)	...	(30)	continued				
192 A SA 45	(900)	(100)	256	41	11	(35)	...	...	27	80	...	(20)					
192 A SA 47	(75)	(20)	...	79	(5)	(5)	...	...	...	2221	...	(60)					
192 A SA 48	(290)	(850)	23	...	(10)	...	...	...	202	...	...	135					
192 A SA 50	220	(30)	357	40	84	...	...	...	(10)	(85)	...	(25)					
192 PI AC1	767	3326	(13)	2.72	54.0	...	2176	...	...	(9)	...	...	continued				
Continuation from above																	
All Elements ppm																	
	Rb	S	Sr	Th	Ti	V	Zn	Zr	Cl	Y	Others	Type	Size				
192 A SA 1	325	...	10	51	540	(2)	50	300	...	143	Eu, Nd, Yb	Granite	100g				
192 A SA 2	530	...	62	1	265	10	(10)	(33)	...	...	Eu	Syenite	100g				
192 A SA 3	190	(650)	4600	66	2900	81	395	11000	1200	22	Eu, Nd, U,	Lujavrite	100g				
192 A SA 4	...	...	260	...	1200	220	68	(23)	(23)	(7)	Eu	Norite	100g				
192 A SA 5	...	...	32	...	1200	230	100	...	...	(5)	Eu	Pyroxenite	100g				
192 A SA 6	...	...	(3)	...	120	40	90	...	...	...	...	Dunite	100g				
192 A SA 39	52	(1500)	1400	(10)	...	109	70	239	...	17	...	Kimberlite	100g				
192 A SA 40	(10)	(500)	1600	(12)	...	27	25	87	...	33	...	Carbonatite	100g				
192 A SA 41	59	(1500)	54	(12)	...	139	76	146	...	17	...	Carbonaceous Shale	100g				
192 A SA 44	13	(300)	5	50	...	395	271	406	...	84	...	Sillimanite Schist	100g				
192 A SA 45	142	(500)	92	(21)	...	266	74	322	...	63	...	Kinzingite	100g				
192 A SA 47	...	(200)	(3)	...	...	(16)	45	...	...	(5)	...	Serpentinite	100g				
192 A SA 48	291	...	29	113	...	(8)	53	300	...	436	...	Fluorspar Granite	100g				
192 A SA 50	14	(300)	195	(6)	...	216	81	86	...	23	...	Dolerite	100g				
192 PI AC1	...	...	(2.0)	21.8	...	104	38.0	(51)	...	272	Many	Apatite	50g				