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ALUMINA

= class, where 1 = CRM and 2 = RM analysis listed in mass % except * which is mg/kg T = Total

#	Number	Al ₂ O ₃	Be*	CaO	Cr ₂ O ₃	Fe ₂ O ₃	K ₂ O	MgO	MnO*	Na ₂ O	P*	P ₂ O ₅	SiO ₂	TiO ₂	LOI	Units
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AVAILABLE INDIVIDUALLY

2	CERAM AN27	99.76	.	0.03	.	0.02	<0.01	<0.01	.	0.00	.	.	0.00	<0.01	.	25 or 100 g
2	CERAM AN26	99.76	.	0.03	.	0.03	<0.01	<0.01	.	0.02	.	.	0.12	<0.01	(0.08)	25 or 100 g
2	CERAM AN25	99.39	.	0.03	.	0.03	0.01	<0.01	.	0.53	.	<0.01	<0.01	<0.01	(0.34)	25 or 100 g
1	VS SH12/3	73.6	.	18.8	0.46	0.66T	.	2.15	.	.	.	.	0.76	.	.	100 g
1	NCS DC62107b	67.64	.	0.60	.	2.48	0.11	0.21	.	0.03	SO ₃	0.03	10.85	3.14	14.50	20 g
1	DSZU 123.45-03	.	.	.	2.7*	0.02	V ₂ O ₅	3.7*	2.3	0.33	.	3	4.0*	0.022	0.0046	50 g last

AVAILABLE ONLY AS SET 1-5

1	DSZU 123.46-03-1	.	.	.	0.022	.	.	.	0.20	.	.	.	0.020	.	.	20 g SET 1-5 only
1	DSZU 123.46-03-2	.	.	.	0.022	.	.	.	0.33	.	.	.	0.021	.	.	20 g SET 1-5 only
1	DSZU 123.46-03-3	.	.	.	0.037	.	.	.	0.44	.	.	.	0.037	.	.	20 g SET 1-5 only
1	DSZU 123.46-03-4	.	.	.	0.055	.	.	.	0.47	.	.	.	0.054	.	.	20 g SET 1-5 only
1	DSZU 123.46-03-5	.	.	.	0.090	.	.	.	0.72	.	.	.	0.077	.	.	20 g SET 1-5 only

CRM	ALUMINA SET	SET/3 ONLY for R034, others set or individually										trace informational Cl, NiO, SO ₃			50 g
Number	B ₂ O ₃	CaO	CuO	Fe ₂ O ₃	Ga ₂ O ₃	K ₂ O	MgO	Na ₂ O	SiO ₂	SrO	TiO ₂	ZnO	ZrO ₂	LOI	
JCRM R034	(<0.0006)	0.0002	(<0.0003)	(0.0003)	0.0021	0.0020	(<0.0001)	0.0018	0.0045	(<0.0001)	(<0.0004)	(<0.0002)	(<0.0002)	0.188	
JCRM R035	(<0.0006)	0.0188	0.0018	0.0151	0.0074	0.0005	0.0013	0.222	0.0116	0.0007	0.0029	0.0012	0.0009	0.156	
JCRM R036	0.0533	0.0242	(<0.0003)	0.0139	0.0076	(0.0002)	0.0006	0.0316	0.0569	0.0002	0.0032	0.0007	0.0004	0.072	

CRM	ALUMINOUS SET	available in SET/3 only										100 g units		
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Number	Type	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	ZrO ₂ +HfO ₂	LOI	
JCRM R303	Bauxite	88.49	0.012	1.51	.	0.006	.	0.064	5.55	2.93	0.110	.	
JCRM R304	Sillimanite	55.94	0.427	0.585	0.329	0.451	0.273	.	35.90	1.33	0.105	4.26	
JCRM R041	Mullite	70.18	0.059	0.598	0.174	0.190	0.197	0.136	28.11	0.185	0.058	.	

CRM ALUMINUM FLUORITE

analysis listed in mass % 100 g units

Number	F	Al	Fe ₂ O ₃	Na	P ₂ O ₅	SiO ₂	SO ₄	LOI
NCS DC91016	64.97	31.92	0.025	0.028	0.0275	0.196	0.076	1.25
NCS DC91008	61.79	30.70	0.132	0.097	0.0253	0.104	0.585	(4.61)
NCS DC91011	61.51	32.28	0.021	0.121	0.1317	0.429	0.627	0.754
NCS DC91010	60.96	30.52	0.126	0.125	0.0265	0.251	0.748	(5.48)
NCS DC91013	60.88	33.12	0.020	0.315	0.0013	0.017	0.098	0.467
NCS DC91007	60.76	30.27	0.156	0.104	0.0295	0.146	0.654	(6.00)
NCS DC91015	59.99	30.70	0.107	0.111	0.0247	0.301	0.702	(5.61)
NCS DC91012	59.74	33.93	0.037	0.126	0.0027	0.016	0.136	0.547
NCS DC91009	57.79	34.68	0.028	0.113	0.0008	0.015	0.093	0.662
NCS DC91014	57.72	34.76	0.015	0.113	0.0007	0.014	0.104	0.640

CRM	ANDALUSITE	100 g units							
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Number	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	SiO ₂	TiO ₂	LOI
SARM 34	59.15	(0.13)	0.75	0.23	0.13	0.093	39.04	0.16	0.62

CRM ANDESITE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

Number	Si	SiO ₂	Al	Al ₂ O ₃	CO ₂	CaO	Fe	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂	LOI	
JA-1	29.90	63.97	8.06	15.22	.	5.70	4.95	3.98	2.59	7.07	+0.72	-0.30	0.77	1.57	0.157	3.84	0.165	0.85	.
JA-1a	.	63.66	.	15.40	.	5.74	.	3.67	.	7.17	.	.	0.78	1.55	0.157	3.90	0.165	0.87	.
GBW 07110	.	63.06	.	16.1	1.03	2.47	.	0.19	4.51	.	+1.79	.	5.17	0.84	0.089	3.06	0.36	0.80	.
JA-3	29.11	62.27	8.23	15.56	.	6.24	4.62	4.83	1.15	6.60	+0.20	-0.11	1.41	3.72	0.104	3.19	0.116	0.70	.
GBW 07104	.	60.62	.	16.17	3.47	5.20	.	2.39	.	4.90	+(1.5)	.	1.89	1.72	.	3.86	.	.	4.44
US AGV-2a	27.7	59.3	8.95	16.91	.	5.20	4.60	.	.	6.69	.	.	2.00	1.79	.	4.19	0.40	1.05	.
USZ 48-2009	.	59.20	.	16.72	.	5.58	(1.66)	.	.	5.43	.	.	2.42	3.52	0.081	4.46	0.264	0.71	1.39
JA-2	26.37	56.42	8.16	15.41	.	6.29	4.34	3.69	2.16	6.21	+1.12	-1.25	1.81	7.60	0.108	3.11	0.146	0.66	.

continued analysis listed in mg/kg except * which is ppb and % which is mass %

Number	Ag	As	Au*	B	Ba	Be	Bi	Ca*	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu
JA-1	.	2.78	0.16	21.0	311	0.50	.	4.07	0.11	13.3	43.0	12.3	7.83	0.62	43.0	4.55	3.04	1.20
JA-1a	.	.	.	.	(322)	.	.	.	.	.	.	(12.9)	(4.1)	.	(41.8)	.	.	.
GBW 07110	0.17	5.96	.	10.8	1053	3.64	0.09	.	0.61	117	160	7.9	7.7	7.16	9.1	5.32	2.93	1.96
JA-3	0.084	.	.	24.8	323	0.80	.	4.46	.	22.8	.	21.1	66.2	2.08	43.4	3.01	1.57	0.82
GBW 07104	0.071	2.1	(0.95)	4.7	1020	1.1	0.081	.	0.061	40	(46)	13.2	32	2.3	55	1.85	0.85	1.02
US AGV-2a	.	.	.	.	1140	2.3	.	3.72	.	60	.	16	17	(1.16)	53	3.6	(1.79)	(1.54)
USZ 48-2009	(0.08)	(3.64)	.	.	672	(2.01)	(0.12)	.	(0.06)	55.2	.	19.2	95.9	1.09	41.2	(2.55)	(1.18)	1.44
JA-2	.	.	0.26	20.7	321	2.05	.	4.50	.	32.7	.	29.5	436	4.63	29.7	2.80	1.48	0.93

Number	F	Ga	Gd	Ge	Hf	Hg	Ho	I	In	K%	La	Li	Lu	Mg%	Mn%	Mo	Na%	Nb
JA-1	161	16.7	4.36	1.33	2.42	.	0.95	.	.	0.64	5.24	10.8	0.47	0.95	0.122	1.59	2.85	1.85
JA-1a	.	.	.	.	.	.	.	.	.	.	.	(11.6)	.	.	.	(1.2)	.	.
GBW 07110	1120	19.8	6.54	1.11	7.5	0.014	1.10	0.07	0.11	.	62.5	17.5	0.49	.	.	0.95	.	20.8
JA-3	.	16.3	2.96	.	3.42	0.51	.	.	.	1.17	9.33	14.5	0.32	2.24	0.081	1.89	2.37	3.41
GBW 07104	280	18.1	2.7	0.93	2.9	0.012	0.34	(0.14)	0.037	22	18.3	0.12	.	.	0.0604	0.54	.	6.8
US AGV-2a	(440)	20	(4.69)	.	(5.00)	.	(0.71)	.	.	2.39	30	(11)	(0.25)	1.00	0.0770	.	3.11	15
USZ 48-2009	.	21.1	(3.93)	.	3.80	(0.004)	(0.46)	.	.	.	26.2	(13.2)	(0.15)	.	.	(0.60)	.	3.23
JA-2	.	16.9	3.06	.	2.86	.	0.50	.	.	1.50	15.8	27.3	0.27	4.58	0.084	0.60	2.31	9.47

Number	Nd	Ni	P%	Pb	Pr	Rb	S	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti%
JA-1	10.9	.	0.072	6.55	1.71	12.3	21.6	0.22	28.5	.	3.52	.	263	0.13	0.75	.	0.82	0.51
JA-1a	.	(2.3)	.	.	.	.	.	.	.	.	.	.	(268)	.	.	.	.	.
GBW 07110	47.2	12.6	.	97.7	13.2	183	230	1.34	7.52	0.03	8.63	3.12	318	1.42	0.99	(0.007)	16.7	.
JA-3	12.3	32.2	0.051	7.70	2.40	36.7	.	.	22.0	.	3.05	.	287	0.27	0.52	.	3.25	0.42
GBW 07104	19	17	0.1030	11.3	4.9	38	192	0.12	9.5	(0.04)	3.4	0.79	790	0.40	0.41	0.017	2.6	0.3090
US AGV-2a	30	19	0.21	13	0.3	60.6	.	(0.6)	13	.	(5.7)	(2.3)	650	(0.09)	(0.64)	.	6.1	0.63
USZ 48-2009	27.2	61.2	.	18.7	(6.77)	49.7	.	(0.27)	11.8	.	5.16	(0.86)	1116	(0.25)	0.49	.	6.46	.
JA-2	13.9	130	0.064	19.2	3.84	72.9	.	.	19.6	.	3.11	1.68	248	0.80	0.44	.	5.03	0.40

Number	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	Units
JA-1	.	0.47	0.34	.	.	30.6	3.03	90.9	88.3	20 g
JA-1a	.	.	.	(107)	.	.	.	(91)	(94.9)	100 g
GBW 07110	1.02	0.50	3.04	64.3	1.62	28.0	3.15	164	335	50 g
JA-3	.	.	1.18	169	.	21.2	2.16	67.7	118	20 g
GBW 07104	0.16	0.15	0.090	94	(0.45)	9.3	0.89	71	99	70 g
US AGV-2a	(0.27)	(0.26)	1.00	120	.	20	1.6	06	230	25 g
USZ 48-2009	(0.22)	(0.17)	1.96	123	(1.70)	11.8	1.00	71.5	141	100 g
JA-2	0.32	0.28	2.21	126	.	18.3	1.62	64.7	116	20 g

CRM ANHYDRITE

analysis listed in mass %

50 g units

Number	Al ₂ O ₃	CO ₂	CaO	Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	SO ₃	SiO ₂	Sr	TiO ₂
GUW AN	(0.023)	0.65	40.7	0.014	(0.5)	0.013	0.34	(0.002)	0.032	57.6	(0.22)	0.14	(0.003)

continued analysis listed in mg/kg

Number	B	Ba	Cl	Cr	Cs	Cu	Ga	Li	Mo	Rb	Sb	Ta	Th	V	Zn	Zr
GUW AN	100	14.8	0.033	0.90	0.037	4	4.3	9	1.2	4.7	0.044	0.007	0.048	18	7.9	13

CRM ANORTHOSITE

analysis listed in mass %

40 g units

Number	SiO ₂	Al ₂ O ₃	Ba	CaO	CO ₂	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O	H ₂ O+	T.H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂
VS M011	53.46	27.42	0.0319	10.95	0.0	1.09	0.53	1.74	0.088	0.33	0.42	0.65	0.49	0.037	4.39	0.041	0.0100	0.18
VS 2120-81	51.77	22.78	0.051	10.06	0.36	4.66	6.26	.	0.40	.	.	0.76	2.10	0.076	4.04	0.140	0.069	1.87
VS M010	51.65	23.91	0.0294	10.18	0.14	4.40	1.45	6.34	0.095	0.26	0.36	0.50	2.24	0.073	3.99	0.13	0.0460	0.83

continued

analysis listed in mg/kg except % which is mass %

Number	B	Be	Co	Cr	Cs	Cu	F	Ga	La	Li	Mo	Nb	Ni	Pb	Rb	Sc	Sn	Sr	V%	Y	Yb	Zn	Zr
VS M011	4.5	0.8	9.6	12	0.73	26	420	21	20	7.5	1.2	2.6	14	6.8	2.7	5	5.1	802	0.0024	8	1.1	50	42
VS 2120-81	.	0.9	23	36	.	31	.	17	.	.	.	.	10	7	.	23	.	0.013	.	.	.	83	72
VS M010	8.7	1.1	27	23	0.55	44	380	26	24	7.1	2.0	3.9	32	8.0	5.5	11	5.0	477	0.0109	17	2.0	96	58

CRM ANTIMONY ORE

analysis listed in mass

200 g units

Number	Al	As	C	Ca	Cu	Fe	H ₂ O	K	Mg	Na	Pb	S	Sb	Si	LOI
CAN CD-1	(5.5)	0.66	(0.2)	(1.4)	(<0.01)	(2.8)	(0.2)	(1.8)	(0.6)	(0.1)	(0.02)	(3.1)	3.57	(32.9)	(4.0)

CRM ANTIMONY ORE

analysis listed in mass %

analysis in mg/kg * Sb calculated from certified results for 4ACID, ICP, and XRF

Number	Sb	Pb	S	Se	Zn	Ag	As	Au	Bi	Cd	Co	Cu	Ga	Li	Nb	Ni	Sn	Units
GSb-3 *	53.69	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
GSb-2	31.0838	.	.	.	.	.	.	23.64	.	.	.	.	.	.	.	.	.	10 g
GSb-11 *	21.10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
GSb-10 *	11.66	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
GSb-6 *	9.88	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
GSb-9 *	6.50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
GSb-4 *	3.43	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
NCS DC70013	1.81	0.012	1.02	0.018	0.037	7.3	25.3	.	(0.24)	2.6	2.2	51.3	9.1	22.8	5.4	3.2	3.0	50 g
GSb-7 *	1.75	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
GSb-8 *	1.63	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
GSb-5 *	0.18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g
GSb-1	0.1636	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g

CRM ARAGONITE/CALCITE

100 g units

Number	Al ₂ O ₃	CO ₂	CaO	F	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	S	SiO ₂	SrO	LOI
UNS AK	0.11	43.0	54.9	0.20	0.130	0.037	0.110	0.047	0.029	0.046	0.64	0.28	43.27

CRM ASCHARITE ORE

Number	B ₂ O ₃	CaO	T.Fe	FeO	MgO	P	S	SiO ₂	Ins.Res.	Units
NCS DC16005	5.65	0.15	52.98	26.13	11.64	0.016	1.242	4.51	4.72	100 g

CRM BARITE ORE

70 g units

Number	BaO	BaSO ₄	CaF ₂	Cu	T.Fe ₂ O ₃	Pb	Salt	SO ₃	Sr	Zn
NCS DC86002	65.40	98.47	.	(0.00029)	.	.	(0.11)	34.37	0.10	(0.00060)
NCS DC86004	57.36	86.14	.	0.00421	.	.	(0.13)	31.44	1.22	(0.00056)
NCS DC86005	44.80	66.93	.	0.0129	.	.	(0.21)	24.50	1.12	0.00269
NCS DC86003	28.36	41.46	14.03	0.00067	.	.	(0.37)	14.99	0.054	0.00124
NCS DC86001	28.34	42.41	.	0.0109	49.37	.	(0.28)	15.94	0.39	0.00223
NCS DC86007	27.01	40.54	.	0.00102	.	.	(0.21)	13.95	0.059	0.00364
NCS DC86006	13.00	18.87	.	0.14	20.96	0.41	0.93	51.33	0.058	3.76

CRM

BASALT WITH EXTENSIVE ANALYSIS

analysis listed in mass %

Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O	H ₂ O+	T.H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂
US BCR-2	54.1	13.5	.	7.12	.	.	13.8	.	.	.	1.79	3.59	.	3.16	0.35	2.26
JB-2a	53.22	14.67	.	9.79	9.83	.	14.18	.	.	.	0.41	4.58	0.214	2.03	0.095	1.18
USZ 46-2008	51.85	14.50	.	5.41	6.15	9.85	.	.	.	.	3.99	6.33	0.13	4.40	0.85	2.11
JB-1b	51.11	14.38	.	9.6	5.16	3.29	9.02	1.06-	1.53	.	1.32	8.14	0.147	2.63	0.256	1.26
JB-3	50.96	17.20	.	9.79	7.85	3.20	11.82	0.07-	0.18	.	0.78	5.19	0.177	2.73	0.294	1.44
JB-3a	50.87	17.16	.	9.75	7.71	.	11.83	.	.	.	0.78	5.17	0.179	2.74	0.291	1.44
US BHVO-2	49.9	13.5	.	11.4	.	.	12.3	.	.	.	0.52	7.23	.	2.22	0.27	2.73
VS M015	49.55	16.93	0.20	8.30	4.60	4.96	10.07	0.32-	1.34	1.66	1.51	5.23	0.059	4.35	0.39	1.68
GUW BM	49.51	16.25	1.35	6.47	7.28	9.67	.	3.62	.	.	0.20	7.47	0.140	4.65	0.106	1.14
VS 2116-81	49.15	16.53	(0.13)	18.87	7.71	1.07	.	1.34	.	.	0.98	6.56	0.164	3.74	0.40	1.65
SRM 688	48.4	17.36	.	(12.17)	7.64	10.35	.	.	.	.	0.187	(8.4)	.	2.15	0.134	1.17
CGL 014	48.34	13.03	.	8.88	(7.91)	.	12.66	(0.13)	(0.37)	.	1.72	8.03	0.15	3.63	0.70	2.68
US BIR-1a	47.96	15.5	.	13.3	8.34	2.06	11.3	.	.	.	0.030	9.70	0.175	1.82	0.021	0.96
VS M014	46.85	17.06	0.0	9.60	6.83	3.26	10.85	0.81	1.73	2.54	(0.46)	8.05	0.15	3.00	0.37	1.62

Olivine

continued analysis listed in mg/kg except % which is mass % and * which is ppb

Number	Ag	Al%	As	Au*	B	Ba	Be	Bi	C	Ca%	Cd	Ce	Cl	Co	Cr	Cs	Cu
US BCR-2	.	7.14	.	.	.	683	.	.	.	5.09	.	53	.	37	18	(1.1)	(19)
JB-2a	.	.	.	.	.	(222)	.	.	.	.	.	.	.	(39)	(28)	.	(272)
USZ 46-2008	.	.	.	.	.	772	2.81	.	.	.	.	103	.	36.3	222	1.15	32.21
JB-1b	.	.	1.24	.	.	.	1.3	.	419	.	.	.	.	40.3	439	1.21	55.5
JB-3	0.075	9.10	1.84	1.99	18.0	245	0.81	.	(120)	7.00	0.081	21.5	(259)	34.3	58.1	0.94	194
JB-3a	.	.	.	.	.	(244)	(0.69)	.	.	.	.	.	.	(35.5)	(57)	.	(195)
US BHVO-2	.	7.16	.	.	.	130	.	.	.	0.17	.	38	.	45	200	.	127
VS M015	.	.	.	.	9.9	225	2.2	.	.	.	.	.	.	34	136	1.4	28
GUW BM	(0.8)	.	13	.	(12)	250	1.3	.	.	.	.	.	.	36	121	2.0	43
VS 2116-81	.	.	.	.	.	300	2.3	.	.	.	.	.	.	37	99	.	61
SRM 688	.	.	.	.	.	.	.	.	.	.	.	.	.	.	332	.	.
CGL 014	.	.	.	.	.	474	.	.	.	.	.	67.51	.	46.50	188	(0.6)	64.00
US BIR-1a	.	.	(0.44)	.	(0.33)	(6)	(0.58)	.	.	.	.	1.9	(26)	52	370	125	.
VS M014	.	.	.	.	8.7	172	1.9	.	.	.	.	.	.	50	152	1.5	66

Number	Dy	Er	Eu	F%	Fe	Ga	Gd	Ge	Hf	Hg	Ho	In	K%	La	Li	Lu	Mg%
US BCR-2	.	.	2.0	(0.0440)	9.65	23	6.8	.	(4.8)	.	(1.33)	.	1.49	25	(9)	(0.51)	2.16
JB-2a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	(7.9)	.	.
USZ 46-2008	4.67	1.84	2.62	.	.	22.63	7.17	1.29	6.63	.	0.78	.	.	55.99	11.08	0.19	.
JB-1b	.	.	.	.	.	.	.	.	.	.	.	.	.	.	10.8	.	.
JB-3	4.54	2.49	1.32	0.0253	8.27	19.8	4.67	1.12	2.67	(0.0024)	0.80	.	0.65	8.81	7.21	0.39	3.13
JB-3a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	(7.3)	.	.
US BHVO-2	.	.	.	(0.0370)	0.63	21.7	(6.3)	.	4.1	.	(1.04)	.	0.43	15	(5)	(0.20)	4.36
VS M015	.	.	.	0.1600	.	20	.	.	.	.	.	.	.	69	16	.	.
GUW BM	(4.6)	(2.7)	1.12	0.028	.	16	(5.8)	(1.3)	3.0	.	(1.4)	.	.	9	72	0.41	.
VS 2116-81	.	.	.	0.0480	.	22	.	1.1	.	.	.	.	.	4.0	9.3	.	.
SRM 688	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CGL 014	(5.23)	(2.21)	(2.48)	(0.08)	.	21.20	(7.3)	.	(5.25)	.	(0.91)	.	.	35.11	(9.33)	(0.22)	.
US BIR-1a	.	.	0.55	(0.0044)	.	(16)	2	.	0.6	.	.	.	.	0.63	3.6	(0.3)	.
VS M014	.	.	.	0.0470	.	15	.	.	.	.	.	.	.	34	7.5	.	.

Number	Mn%	Mo	Na%	Nb	Nd	Ni	P%	Pb	Pr	Rb	S	Sb	Sc	Se	Si%	Sm	Sn
US BCR-2	0.1520	240	2.34	.	20	.	0.15	(11)	(6.0)	40	.	.	33	.	25.3	(6.7)	.
JB-2a	.	.	.	.	.	(15.5)	.	.	.	(7.2)	.	.	.	.	.	.	.
USZ 46-2008	.	5.20	.	52.21	46.62	162	.	8.70	11.90	63.05	.	0.28	10.10	.	.	8.72	2.66
JB-1b	.	.	.	.	.	148	.	6.8	.	39.1	10	0.2	.	.	.	.	.
JB-3	0.137	1.09	2.03	2.47	15.6	36.2	0.128	5.58	3.11	15.1	9.86	0.12	33.8	(0.069)	23.82	4.27	0.94
JB-3a	.	.	.	.	.	(39)	.	.	.	(15.1)	.	.	.	.	.	.	.
US BHVO-2	0.1290	.	1.64	(18)	25.0	110	0.12	.	.	9.8	.	.	32	.	23.3	(6.2)	(1.9)
VS M015	.	3.4	.	13	.	99	.	8.8	.	50	160	.	29	.	.	.	4.2
GUW BM	.	(0.8)	.	.	15	57	.	13	(3.0)	10	.	2.3	34	.	.	3.6	.
VS 2116-81	.	1.8	.	.	.	86	.	12	.	14	(90)	.	22	.	.	.	7.0
SRM 688	0.167	.	.	.	.	.	.	.	.	1.91	.	.	.	.	.	.	.
CGL 014	.	(2.92)	.	56.50	36.33	163	.	5.66	(8.19)	28.60	SO ₃	(0.10)	19.33	.	.	(7.74)	.
US BIR-1a	.	.	0.55	(0.06)	2.5	170	.	(3)	.	.	.	(0.58)	44	.	.	(1.1)	.
VS M014	.	2.5	.	11	.	111	.	8.6	.	4.0	60	.	25	.	.	.	2.4

Number	Sr	Ta	Tb	Th	Ti%	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	LOI	Units
US BCR-2	346	.	(1.07)	6.2	1.35	.	(0.54)	1.69	416	.	37	3.5	127	180	.	50 g
JB-2a	(179)	.	.	.	.	.	.	.	(574)	.	(25.4)	.	(108)	(61.8)	.	100 g
USZ 46-2008	927	3.20	0.95	6.95	.	0.12	0.23	1.64	105	1.15	20.48	1.34	114	287	.	100 g
JB-1b	439	.	.	.	.	.	.	.	214	.	.	.	80	.	.	100 g
JB-3	403	0.15	0.73	1.27	0.86	0.048	0.42	0.48	372	(1.06)	26.9	2.55	100	97.8	.	20 g
JB-3a	(405)	.	.	.	.	.	.	.	(377)	.	(27.7)	.	(102)	(100)	.	100 g
US BHVO-2	389	(1.4)	(0.9)	(1.2)	1.63	.	.	.	317	.	26	(20)	103	172	.	50 g
VS M015	554	.	.	.	.	.	.	.	234	.	39	2.6	33	152	.	40 g
GUW BM	220	(0.3)	0.9	(3.0)	.	.	.	(1.1)	190	0.9	27	3.0	120	100	.	50 g
VS 2116-81	500	.	.	.	.	.	.	.	150	.	29	2.6	82	190	.	40 g
SRM 688	169.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	60 g
CGL 014	741	(3.24)	(1.02)	(4.76)	.	.	(0.27)	(0.93)	197	(3.41)	23.60	(1.69)	133	201	(0.17)	100 g
US BIR-1a	110	.	.	.	.	.	.	.	310	.	16	1.7	70	110	.	25 g
VS M014	468	.	.	.	.	.	.	.	181	.	39	3.0	108	162	.	40 g

BAUXITE

= class, 1=CRM and 2=RM

BCS: 100g

CERAM: 25 or 100g

CETEM: 90-120g

GBAP: 10g

NCS: 50-100g

SRM 600: 90g

other SRM: 60g

#	Number	Al ₂ O ₃	A.Al ₂ O ₃	CaO	Cr ₂ O ₃	Fe	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SiO ₂	R.SiO ₂	TiO ₂	V ₂ O ₅	ZrO ₂	LOI
1	BCS 394/1	88.88	.	0.0173	.	.	1.372	.	0.0047	.	0.0574	6.47	.	2.969	.	.	.
1	NCS HC28815	88.55	.	0.15	.	.	1.75	0.11	0.073	0.017	0.23	4.88	.	3.69	.	.	.
1	JCRM R301	87.5	.	0.03	.	.	1.40	0.04	0.02	0.03	0.07	7.24	.	2.90	.	0.13*	0.35
1	NCS DC61105	85.07	.	0.24	.	.	1.18	0.44	0.21	0.080	.	8.17	.	3.76	.	.	0.29
1	NCS HC28814	83.07	.	0.22	.	.	2.71	0.17	0.088	0.022	0.18	9.69	.	3.64	.	.	0.15
1	NCS DC91017	71.14	.	0.75	.	.	2.01	0.477	0.090	0.022	0.221	3.16	.	3.04	.	.	.
1	SRM 696	70.28	.	0.37	.	.	6.64	0.20	0.18	0.051	0.25	14.20	.	2.85	.	.	4.57
1	NCS DC91018	64.53	.	0.26	.	.	6.06	0.22	0.246	0.030	0.185	8.02	.	2.59	.	.	.
1	NCS HC28812	60.41	.	0.51	.	.	9.69	0.22	0.26	0.070	0.30	17.82	.	2.22	.	.	7.96
1	DSZU 123.62-13	57.4	.	0.12	0.035	.	0.88	.	0.075	.	0.073	8.73	.	2.51	0.044	.	.
1	NCS DC91019	57.15	.	0.089	.	.	16.11	1.00	0.235	0.31	0.077	6.31	.	2.65	.	.	.
1	SRM 696	54.5	.	0.018	0.047	.	8.70	0.009	0.012	(0.007)	0.050	3.79	.	2.64	0.072	0.14	29.9
1	IPT 131	54.1	.	.	.	.	11.5	0.022	.	.	0.15	0.78	.	1.77	0.042	0.35	30.0
1	BCS 395	52.4	.	0.05	(0.07)	.	16.3	(0.02)	0.02	(0.02)	.	1.24	.	1.93	.	.	27.8
1	CETEM BXSP-1	50.1	40.0	(0.03)	0.003	.	6.7	0.53	(0.06)	(0.02)	0.203	14.7	7.8	1.24	0.016	0.15	26.1
1	SRM 69b	48.8	.	0.13	0.011	.	7.14	0.068	0.085	(0.025)	0.118	13.43	.	1.90	0.028	0.29	27.2
1	SRM 698	48.2	.	0.62	0.080	.	19.6	0.010	0.058	.	0.37	0.69	.	2.38	0.064	0.061	27.3
1	NCS HC28811	46.52	.	0.69	.	.	14.01	0.25	0.37	0.10	0.35	22.96	.	1.36	.	.	12.75
1	SRM 697	45.8	.	0.71	0.100	.	20.0	0.062	0.18	.	0.97	6.81	.	2.52	0.063	0.065	22.1
1	DSZU 123.61-13	42.8	.	0.13	0.22	.	27.2	.	0.046	.	0.086	3.36	.	2.15	0.071	.	.
1	GBAP-16	42.60	.	0.11	0.047	.	16.52	0.126	0.146	0.057	0.034	21.56	.	3.587	0.081	0.107	14.94
1	SRM 600	40.0	.	0.22	0.024	.	17.0	0.23	0.05	0.022	0.039	20.3	.	1.31	0.060	0.060	20.5
1	GBAP-14	35.07	.	0.03	0.122	.	40.67	0.073	0.042	0.024	0.042	6.74	.	2.502	0.177	0.062	14.32

#	Number	Al ₂ O ₃	A.Al ₂ O ₃	CaO	Cr ₂ O ₃	Fe	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SiO ₂	R.SiO ₂	TiO ₂	V ₂ O ₅	ZrO ₂	LOI
A.Al ₂ O ₃ : Available Alumina												R.SiO ₂ : Reactive Silica			* Includes HfO ₂		

Number	BaO	MnO	MnO ₂	SO ₃	ZnO
BCS 394/1	.	.	.	.	.
NCS HC28815	.	.	.	.	.
JCRM R301	.	.	.	.	.
NCS DC61105	.	.	.	.	.
NCS HC28814	.	0.011	.	.	.
NCS DC91017	.	0.036	.	S:0.031	0.0018
NCS HC28813	.	0.053	.	.	Ga2O3: 0.0114
NCS DC91018	.	0.012	.	S:0.040	C: 0.099
NCS HC28812	.	0.082	.	.	Ga2O3: 0.0106
DSZU 123.62-13	.	0.009	.	S:0.030	C: 0.14
NCS DC91019	.	0.021	.	S:0.033	C: 0.10
SRM 696	.	0.004	.	0.150	C02: 0.09 Ga2O3: 0.013 100 g unit
IPT 131	.	0.31	.	.	Ga2O3: 0.008
BCS 395	.	.	.	.	.
CETEM BXSP-1	.	.	0.070	(0.07)	0.009
SRM 69b	.	0.110	.	0.551	0.0035
SRM 698	.	0.38	.	0.143	0.029
NCS HC28811	.	0.13	.	.	C: 0.20
SRM 697	.	0.41	.	0.0770	0.037
DSZU 123.61-13	.	0.023	.	S:0.045	C: 0.22 C02: 0.19 Ga2O3: 0.009 100 g unit
GBAP-16	(0.011)	0.022	.	0.068	.
SRM 600	.	0.013	.	0.155	0.003 last of stock
GBAP-14	(0.006)	0.017	.	0.145	.

Number	BaO	MnO	MnO ₂	SO ₃	ZnO
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RM	BAUXITE			Al ₂ O ₃ : Available Alumina				C.Org: Organic Carbon				BXT-04, BXT-06 500 g units					others 100 g	
Number	Al ₂ O ₃	C.Org	CaO	Cr ₂ O ₃	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SO ₃	SiO ₂	TiO ₂	V ₂ O ₅	ZnO	ZrO ₂	A.Al ₂ O ₃	LOI
ALC-BXT-10	54	(0.08)	(<0.01)	(0.03)	12.4	(<0.01)	.	(0.01)	.	(0.05)	.	2.7	2.01	(0.06)	.	(0.07)	.	28.6
ALC-BXT-09	53.4	(0.2)	(0.01)	0.037	14.5	(0.01)	(0.03)	(0.04)	(0.01)	(0.07)	(0.06)	7.57	2.98	(0.06)	(0.002)	(0.12)	.	20.8
ALC-BXT-13	53.4	0.051	(0.02)	0.016	11.44	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.09)	4.82	1.54	(0.04)	(0.002)	(0.08)	53.3	28.52
ALC-BXT-08	51.5	(0.082)	(0.02)	(0.049)	9.6	(0.018)	(0.03)	(0.021)	(0.02)	(0.26)	.	3.2	9.5	(0.17)	(0.006)	(0.089)	.	25.6
ALC-BXT-14	51.2	0.162	(0.01)	(0.01)	13.17	(0.01)	(0.01)	(0.02)	(0.01)	(0.062)	(0.11)	5.86	1.11	(0.01)	(0.005)	0.131	50.4	28.35

CRM BERYLLIUM ORE

analysis listed in mass %

Number	BeO	Al ₂ O ₃	CaO	F	FeO	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI	Units
NCS DC86313	3.02	15.55	0.52	0.0088 (F-)	0.15	0.47	(0.63)	3.28	0.083	0.020	3.63	(0.018)	71.97	0.010	0.86	70 g
NCS DC86302	0.365	14.86	0.584	0.041	(0.18)	0.593	0.59	3.89	0.069	0.036	4.67	0.013	73.99	0.016	0.73	70 g
NCS DC86301	0.060	14.86	0.582	0.019	(0.18)	0.513	0.60	4.10	0.071	0.030	4.79	(0.012)	73.97	0.015	0.68	70 g

continued analysis listed in mg/kg

Number	CeO ₂	Dy ₂ O ₃	Er ₂ O ₃	Eu ₂ O ₃	Gd ₂ O ₃	Ho ₂ O ₃	La ₂ O ₃	Lu ₂ O ₃	Mo	Nd ₂ O ₃	Pr ₆ O ₁₁	RE _x O _y *	Sc ₂ O ₃	Sm ₂ O ₃	Tb ₄ O ₇	Tm ₂ O ₃	W	Y ₂ O ₃	Yb ₂ O ₃
NCS DC86313	13.1	3.62	1.95	0.11	2.83	0.67	6.08	0.25	3.37	5.96	1.58	63.6	1.91	1.99	0.57	0.29	.	23.0	1.88
NCS DC86302	14.8	4.6	2.2	0.15	3.8	0.87	7.7	0.36	1.2	7.6	2.0	78.6	3.1	2.7	0.80	0.36	5.5	28.9	2.5
NCS DC86301	14.3	4.5	2.1	0.14	3.6	0.82	7.0	0.31	0.41	6.6	1.7	75.6	1.7	2.5	0.80	0.32	1.3	29.2	2.2

* RE_xO_y: Rare Earth Oxide

BORATE ORE

= class, 1=CRM and 2=RM

analysis listed in mass %

BCS: 100 g units

SRM: 60 g units

#	Number	B ₂ O ₃	Al ₂ O ₃	BaO	CaO	F	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	SO ₃	SiO ₂	SrO	TiO ₂	LOI+H ₂ O
1	SRM 1835	18.739	3.474	0.0497	21.622	0.348	1.141	1.261	3.411	0.0333	3.484	1.477	18.408	0.9418	0.1332	25.724
2	BCS 205a	18.46	5.38	.	12.58	.	0.15	1.04	0.62	.	8.53	.	52.0	.	0.04	.

CRM BRUCITE T = total 50 g units

Number	Al ₂ O ₃	CaO	CO ₂	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂
NCS DC60129	0.053	2.51	8.08	0.49	(25.24)	0.0041	61.43	0.036	0.0066	0.12	2.69
NCS DC60130	0.067	6.18	9.95	0.40	(23.22)	0.0066	56.21	0.033	0.013	0.12	4.47

RM CALCINED BONE

25 or 100 g

Number	Al ₂ O ₃	BaO	CaO	F	Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SiO ₂	SO ₃	SrO	TiO ₂	LOI
CERAM CCB1	0.05	0.031	53.4	0.13	0.04	(0.12)	0.011	1.14	0.52	40.5	1.28	0.114	0.049	<0.01	2.60

CRM CARBONATITE analysis listed in mass % T = Total 25 g units

Number	Al ₂ O ₃	CaO	T.Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	Ba	Ce	La	Nb	Sr
US C00-1	0.37	40.3	2.94	0.16	1.25	0.43	0.04	2.6	3.47	0.15	0.1000	0.1700	0.0750	0.3900	1.2000

analysis listed in mg/kg

FOR ALTERNATES SEE LIMESTONE IN THIS CATALOG

Number	Be	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Ho	Nd	Ni	Pr	Sc	Sm	Tb	Th	U	V	Y	Yb	Zn	Zr
US C00-1	1.2	<5	<10	0.2	<10	10	7	15	6	50	3	400	13	150	3	56	4	10	11	110	01	6	07	65

CRM CHROME MAGNESITE

analysis listed in mass %

BCS, NCS DC25x: 100 g

GCR: 10 g

NCS DC28x: 50 g

NH: 75 g

VS: 125 g

Number	MgO	Cr ₂ O ₃	Al ₂ O ₃	B ₂ O ₃	CaO	Fe	Fe ₂ O ₃	K ₂ O	Li ₂ O	MnO	Na ₂ O	P ₂ O ₅	SO ₃	SiO ₂	TiO ₂	LOI
BCS 396	64.6	15.6	5.73	0.09	1.12	.	10.9	(0.03)	(0.05)	0.17	(0.06)	.	.	1.37	0.26	.
NH 95	63.93	18.30	3.50	.	1.23	.	6.77	.	.	.	.	.	.	4.05	.	.
BCS 370	61.8	13.4	12.3	.	1.54	.	7.23	0.03	0.03	0.11	0.06	.	.	3.01	0.13	.
BCS 369	53.5	17.2	14.7	.	1.17	.	10.3	0.03	0.03	0.11	0.05	.	.	2.59	0.14	.
VS K5/2	54.8	22.6	4.28	.	1.15	.	8.47	.	.	.	.	.	.	8.64	.	.
NH 96	46.98	22.37	12.92	.	1.59	.	11.90	.	.	.	.	.	.	2.71	.	.
GCR-04	36.29	0.701	0.42	.	0.039	.	12.288	(0.02)	.	0.0422	.	0.0182	0.093	39.22	0.115	10.666
NH 97	21.26	40.00	16.12	.	0.52	.	14.73	.	.	.	.	.	.	5.94	.	.
NCS DC25002	20.59	36.31	10.97	.	0.82	9.71	.	.	.	.	.	P: (0.0072) S: (0.017)	.	11.71	.	100g
GCR-01	14.59	44.95	11.31	.	0.052	.	19.63	0.448	.	0.4448	.	(0.0098)	0.048	6.63	0.311	1.286
GCR-05	13.21	38.04	11.53	.	0.039	.	25.49	(0.015)	.	0.811	.	(0.0089)	0.018	7.53	0.258	2.848
GCR-02	12.84	43.97	6.87	.	0.107	.	27.13	(0.03)	.	0.716	.	(0.0071)	0.019	5.83	0.317	1.883
GCR-06	9.01	47.92	8.72	.	0.087	.	28.8	0.0198	.	0.716	.	(0.0096)	0.033	3.21	0.343	0.795

CRM CHROMITE

Number	Origin	Cr	Fe	MgO	Ti	Units
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IGS 30 Phillipines 23.95 11.21 (16.62) 0.14 55 g

CHROMIUM ORE

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Cr ₂ O ₃	Al ₂ O ₃	CaO	MgO	Fe	FeO	Fe ₂ O ₃	Mn	MnO	Mn ₃ O ₄	P	P ₂ O ₅	S	SO ₃	SiO ₂	Ti	TiO ₂
1	NCS HC26617	96.19	.	.	.	.	.	0.054	.	.	.	.	.	0.002	.	0.26	.	.
1	NCS DC73013	57.80	10.53	(0.13)	16.45	.	(8.3)	13.70T	0.097	.	.	(0.0012)	.	(0.005)	.	1.10	0.122	.
1	USZ 36-2002	54.37	8.24	0.24	16.09	.	.	14.73T	.	0.15	.	.	0.02	.	0.07	4.73	.	0.11
1	VS R27/1	50.8	8.08	0.131	19.7	9.45	11.2	.	.	.	.	0.0019	.	0.019	.	7.10	.	.
1	VS R14/5	47.0	7.2	0.13	21.6	9.32	10.8	.	.	.	.	0.0017	.	0.037	.	8.79	.	.
1	SARM 146	46.91	14.54	0.10	10.62	.	25.58	.	.	0.22	.	.	.	.	.	0.616	.	0.57
1	NCS DC28130	46.74	14.53	0.053	9.79	20.34	.	.	0.156	.	.	0.0027	.	0.003	.	0.79	0.373	.
1	NCS DC73012	46.56	11.60	0.46	17.92	.	(12.0)	15.34T	0.135	.	.	(0.0013)	.	0.076	.	5.06	0.070	.
1	BCS 308/1	44.91	15.10	0.65	9.15	.	26.58	.	.	0.230	.	.	.	.	.	1.194	.	0.74
1	NCS DC28131	45.10	13.70	0.18	10.37	19.66	.	.	0.150	.	.	0.0033	.	0.0029	.	2.93	0.344	.
1	SARM 131	41.83	14.60	(0.24)	9.15	.	.	30.7	.	0.243	.	.	.	.	.	3.13	.	0.944
1	NCS DC28133	40.20	15.97	0.46	13.41	16.74	.	.	0.142	.	.	0.0037	.	0.017	.	4.73	0.294	.
1	NCS DC28132	36.50	16.22	0.69	15.32	14.83	.	.	0.133	.	.	0.0028	.	0.022	.	7.70	0.244	.
1	NCS DC73011	34.44	11.37	0.32	23.32	.	(8.5)	11.84T	0.090	.	.	0.0020	.	0.024	.	12.24	0.100	.
1	NCS DC28129	33.00	13.94	1.00	17.27	12.90	.	.	0.180	.	.	0.0030	.	0.021	.	12.19	0.136	.
1	NCS DC28128	27.55	18.94	1.27	20.48	9.76	.	.	0.114	.	.	0.0029	.	0.035	.	12.55	0.145	.
2	CERAM AN100	26.60	24.7	1.16	22.38	.	.	12.88	.	.	0.13	.	.	.	.	11.1	.	0.21
1	NCS DC73010	17.59	11.86	0.44	28.12	.	(8.68)	10.51T	0.088	.	.	0.0031	.	0.037	.	20.30	0.085	.
1	FLX CRM111	11.48	4.66	2.07	70.20	.	.	9.54	.	.	0.370	.	0.088	.	(0.13)	1.40	.	0.160

continued

Number	Au*	C	CO ₂	Co	H ₂ O-	H ₂ O+	HfO ₂	K ₂ O	Na ₂ O	Ni	NiO	V	WO ₃	Zn	ZrO ₂	LOI	Units
NCS HC26617	.	0.006	soluble Cr:	1.34%	.	.	.	.	.	.	.	.	.	.	.	.	20 g
NCS DC73013	.	.	(0.14)	0.016	.	(0.59)	.	(0.004)	(0.016)	0.16	.	0.048	.	.	.	.	50 g
USZ 36-2002	0.03	.	0.47	0.01	0.11	.	.	.	.	0.09	.	0.04	.	0.023	.	1.07	200 g
VS R27/1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g
VS R14/5	.	(0.113)	.	.	.	.	.	.	.	.	.	0.044	.	.	.	.	100 g
SARM 146	.	.	.	0.025	.	.	.	0.014	.	0.092	.	V ₂ O ₅ : 0.32	.	.	.	.	100 g
NCS DC28130	.	.	.	0.016	.	2.5	.	(0.010)	0.018	0.134	.	0.215	.	0.071	.	.	50 g
NCS DC73012	.	.	(1.2)	.	.	.	.	.	.	.	.	0.064	.	.	.	.	50 g
BCS 308/1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g
NCS DC28131	.	.	.	0.025	.	.	.	0.015	.	0.094	.	0.207	.	0.065	.	.	50 g
SARM 131	.	.	.	.	.	.	.	.	.	.	.	V ₂ O ₅ : 0.414	.	.	.	.	100 g
NCS DC28133	.	.	.	0.022	.	.	.	0.023	.	0.121	.	0.162	.	0.065	.	.	50 g
NCS DC28132	.	.	.	0.022	.	.	.	0.033	.	0.134	.	0.143	.	0.058	.	.	50 g
NCS DC73011	.	.	(0.46)	0.014	.	(6.4)	.	0.026	0.073	0.175	.	0.044	.	.	.	.	50 g
NCS DC28129	.	.	.	0.027	.	.	.	0.035	.	0.162	.	0.089	.	0.102	.	.	50 g
NCS DC28128	.	.	.	0.016	.	.	.	0.043	.	0.169	.	0.077	.	0.049	.	.	50 g
CERAM AN100	.	.	.	CuO: 0.02	.	.	.	0.01	0.04	.	.	.	.	ZnO: 0.04	.	(5.03)	25 or 100 g
NCS DC73010	.	.	(0.6)	0.0124	.	(10.7)	.	0.046	(0.13)	0.188	.	0.043	.	.	.	.	50 g
FLX CRM111	.	.	.	Co304: 0.012	.	.	<0.01	0.010	<0.1	.	0.031	.	<0.02	.	0.057	(0.58)	80 g

CRM

CLAY

analysis listed in mass %

Number	Al	B	Ba	Ca	Ce	Co	Cr	Fe	K	Li	Mg	Mn	Na	P	Si	Sr
SRM 97b	20.76	.	(0.018)	0.0249	.	(0.00038)	0.0227	0.831	0.513	0.0550	0.113	0.0047	0.0492	(0.02)	19.81	0.0084
SRM 98b	14.30	.	(0.07)	0.0759	.	(0.00163)	0.0119	1.18	2.81	0.0215	0.358	0.0116	0.1496	(0.03)	26.65	0.0189
SRM 679	11.01	.	0.0432	0.1628	(0.0105)	(0.0026)	0.01097	9.05	2.433	0.00717	0.7552	(0.1730)	0.1304	(0.075)	24.34	0.00734

continued

analysis listed in mass %

analysis listed in mg/kg

Number	Ti	Zn	Zr	LOI	Cs	Eu	Hf	Rb	Sb	Sc	Th	Units
SRM 97b	1.43	(0.0087)	(0.05)	(13.3)	(3.4)	(0.84)	(13)	(33)	(2.2)	(22)	(36)	60 g powder
SRM 98b	0.809	(0.0110)	(0.022)	(7.5)	(16.5)	(1.3)	(7.2)	(180)	(1.6)	(22)	(21)	60 g powder
SRM 679	0.577	(0.0150)	.	.	(9.6)	(1.9)	(4.6)	(190)	.	(22.5)	(14)	75 g powder

CLAYS and FIRECLAYS

= class, where 1 = CRM and 2 = RM

analysis listed in mass %

* CERAM AN41 lists Mn_3O_4 as MnO

#	Number	SiO ₂	Al ₂ O ₃	CaO	Cl-	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SO ₃	TiO ₂	LOI	Units	Other
1	NH 138	68.90	26.01	0.23	.	1.47	0.98	0.22	.	0.10	.	.	0.92	.	75 g	
1	NCS DC62108d	68.59	14.12	1.21	.	5.29	2.33	1.58	.	1.24	.	0.03	0.76	4.22	20 g	
1	GBW 03103	66.64	13.28	3.23	0.011	4.64	2.50	1.84	0.088	1.81	0.106	0.027	.	5.10	60 g	CO ₂ : 1.66
1	VS K11	62.2	16.8	1.2	.	(6.3)	.	2.01	0.064	.	S:0.05	0.98	.	.	50 g	
1	NH 137	61.46	32.43	0.28	.	1.63	1.31	0.28	.	0.126	.	.	1.13	.	75 g	
1	GBW 03115	55.90	28.57	0.70	.	0.87	1.54	0.30	.	1.74	.	.	1.21	8.72	50 g	
1	GBW 03102a	53.67	31.32	1.80	0.0029	0.33	1.15	0.083	0.020	2.55	0.053	0.023	0.030	8.81	50 g	CO ₂ : (0.051)
1	IPT 42	51.9	32.2	0.05	.	1.09	0.47	0.19	.	0.02	0.07	.	0.96	12.9	50 g	
1	IPT 32	51.8	28.5	0.17	.	3.46	0.80	0.39	.	0.16	0.13	.	1.49	12.6	50 g	
1	BCS 348	51.13	31.59	0.173	.	1.04	2.23	0.305	.	0.344	0.071	.	1.08	11.75	100 g	
1	GBW 03101a	49.98	26.27	0.13	0.0041	10.55	0.79	0.46	0.052	0.060	0.14	0.49	0.70	10.62	50 g	CO ₂ : (0.041)
2	FLX 134	F: 0.0678	Fluorine in Ball Clay, single element						.	.	.	.	.	.	30 g	

CRM

CLAY - SYNTHETIC MULLITE

80 g units

Number	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	P	SiO ₂	TiO ₂
NCS HC14809	72.39	0.19	0.93	0.24	0.42	0.16	0.043	21.81	3.64
NCS HC14808	57.47	0.15	0.46	1.69	0.14	0.46	0.022	37.41	1.45
NCS HC14807	43.62	0.23	1.14	1.62	0.21	0.46	0.062	51.43	0.65

CRM

COPPER ORE WITH EXTENSIVE ANALYSIS - CONTINUED ON THE NEXT PAGE

analysis listed in mass % except * which is mg/kg # = provisional analysis OREAS samples list multiple methods, more information upon request

Number	Cu	Ag*	Au*	C	F	Fe	Fe ₂ O ₃	Mo	Ni	Pb	Pd*	Pt*	S	Zn	LOI
VS 2891-84	40.4	707.7	.	.	.	(5.78)	.	.	.	2.25	.	.	(15.98)	2.89	.
CGL 203	31.80	(66)	.	.	.	(21.0)	.	0.1399	.	0.01366	.	.	(33.94)	0.1526	.
CAN CCU-1e	23.07	205.2	20.27	0.100	(0.0255)	30.7	(0.00161)	(0.000727)	0.703	.	.	.	35.28	3.02	(17.14)
JCu-1 #	3.73	.	.	(3.06T)	.	17.5T	.	(0.0425)	(0.0004)	.	.	.	(7.00)	0.0679	(15.37)
GBW 07233	1.15	3.9	.	.	0.079	.	55.58	0.00014	0.00096	0.00091	.	.	0.72	0.059	.
CETEM CBPA-1	0.98	.	(0.17)	(0.16 org)	(0.0708)	.	16.5	(0.0010)	0.0276	(0.0033)	.	.	(0.16)	0.0126	(3.8)
SRM 330a	0.845	.	.	.	.	(1.06)	.	(0.00045)	0.002895	(0.0027)	.	.	.	0.00949	.
CGL 103	0.8080	2.05	.	.	.	2.75	.	0.0160	(0.000950)	(0.00727)	.	.	2.12	0.0096	(4.27)
OREAS 904	0.519	.	0.045	.	.	.	.	.	.	(<0.002)	(<0.010)	.	.	.	.
OREAS 904 4	0.612	0.551	.	.	.	6.68	0.000212	0.00401	0.00106	.	.	.	0.063	0.00263	.
OREAS 904 A	0.630	0.366	(0.02)	.	.	6.40	0.000202	0.00366	0.000849	.	.	.	0.034	0.00224	.
CAN HV-2a	0.3808	1.448	.	(0.4)	.	2.044	0.01254	0.000647	0.00069	.	.	.	0.344	0.00565	(3.01)
GBW 07234	0.19	0.7	.	.	0.080	.	12.25	0.00024	0.00056	0.00130	.	.	0.14	0.013	.
USZ 4-85	0.115	(1.1)	.	.	.	.	3.9T	0.007	(0.00165)	(0.00510)	.	.	2.03	(0.00680)	(4.26)
OREAS 901	0.083	.	0.363	.	.	.	.	.	.	(0.002)	.	.	.	.	.
OREAS 901 4	0.141	0.439	.	.	.	4.03	0.000336	0.00399	0.00174	.	.	.	0.036	0.00240	.
OREAS 901 A	0.144	0.276	0.34	.	.	3.70	0.000323	0.00347	0.00146	.	.	.	0.033	0.00202	.

continued analysis listed in mass %

Number	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	P ₂ O ₅	SiO ₂	Ti	TiO ₂
VS 2891-84	.	.	.	.	.	.	.	.	.	.	.	.	.	.	(21.74)	.	.
CGL 203	.	.	.	.	.	.	.	.	.	.	.	.	.	.	(6)	.	.
CAN CCU-1e	0.1385	.	0.129	.	(0.0133)	.	0.706	.	0.0096	.	(0.0147)	.	.	.	3.134	(0.00549)	.
JCu-1 #	.	0.29	.	23.5	.	0.015	2.13	.	0.59	0.052	.	.	(<0.005)	.	(28.68)	.	0.013
GBW 07233	.	1.73	.	9.61	.	0.071	3.91	.	0.60	0.044	.	.	.	.	9.27	.	0.079
CETEM CBPA-1	.	10.1	.	2.97	.	1.85	3.29	0.058	.	.	1.42	.	1.00	(56.4)	(0.35)	.	.
SRM 330a	7.053	.	0.323	5.47	.	0.868	.	.	.	0.657	(0.0326)	.	Si: 33.4	.	(0.1223)	.	.
CGL 103	.	16.19	.	0.285	.	3.71	0.69	.	(0.0160)	.	1.48	.	0.139	67.07	.	.	0.463
OREAS 904	.	.	0.046	.	3.31	.	0.556	.	0.041	.	0.034	.	0.098	.	.	(0.19)	.
OREAS 904 4	6.30	.	0.0404	.	0.603	.	0.143	.	0.041	.	(0.01)	.	0.095	.	.	(0.007)	.
OREAS 904 A	1.25	.	0.0404	.	0.603	.	0.143	.	0.041	.	(0.01)	.	0.095	.	.	(0.007)	.
CAN HV-2a	7.96	.	1.891	.	2.31	.	0.329	.	0.0545	.	2.335	.	0.0427	.	Si:31.34	0.128*	.
GBW 07234	.	15.18	.	4.95	.	2.71	1.30	.	0.12	.	3.21	.	.	.	53.36	.	0.50
USZ 4-85	.	.	.	.	.	(3.38)	.	.	.	.	(1.74)	.	.	(0.15)	.	.	.
OREAS 901	.	.	0.092	.	3.67	.	0.600	.	0.0290	.	0.042	.	0.062	.	.	(0.23)	.
OREAS 901 4	6.81	.	0.092	.	3.67	.	0.600	.	0.0290	.	0.042	.	0.062	.	.	(0.23)	.
OREAS 901 A	0.992	.	0.091	.	0.512	.	0.124	.	0.030	.	(0.01)	.	0.059	.	.	(0.01)	.

continued analysis listed in mg/kg

Number	As	Ba	Be	Bi	Cd	Ce	Co	Cr	Cs	Dy	Er	Eu	Ga	Gd	Ge	Hf
VS 2891-84	.	.	.	.	290	.	.	.	.	.	.	.	.	.	.	.
CGL 203	.	.	.	.	(9.31)	.	(86.87)	(42.97)	.	.	.	.	.	.	.	.
CAN CCU-1e	101	(6)	.	(3)	74.2	(2)	301	.	.	.	.	(3)	.	.	(1)	.
JCu-1 #	(173)	(3.5)	.	.	(3.6)	.	(324)	(10)	.	.	.	.	.	.	.	.
GBW 07233	4.2	.	.	1.5	0.42	13.2	.	(7)	.	1.1	0.78	0.28	22.6	1.1	0.89	.
CETEM CBPA-1	(9)	(478)	.	.	(3)	(427)	78	26	.	.	.	.	(22.2)	.	.	.
SRM 330a	.	1560	.	.	3.391	22.32	4.542	77.0	.	.	.	.	17.4	.	.	.
CGL 103	167	958	(1.04)	.	(0.57)	(40.35)	12	(18)	(2.27)	.	.	.	(18.92)	.	.	.
OREAS 904	.	.	7.86	4.05	(0.07)	86	83	54	3.79	(5.6)	(3.4)	(1.4)	16.7	(6.6)	0.18	5.0
OREAS 904 4	91	68	6.54	3.74	0.058	70	82	17.5	0.62	(3.0)	(1.6)	(1.0)	3.40	(4.9)	(0.1)	(0.6)
CAN HV-2a	12.1	869	(1.02)	(1.58)	(0.2)	19.1	3.40	100	2.70	1.126	0.646	(0.502)	19.56	1.40	.	(2)
GBW 07234	1.5	(800)	.	0.43	0.14	72.6	.	(10)	(10)	2.4	1.3	1.3	22.6	3.6	0.93	.
USZ 4-85	(47)	.	(4.5)	(21.7)	.	.	(12)	(22)	.	.	.	.	.	.	.	.
OREAS 901	.	.	6.17	4.75	(0.05)	95	73	57	5.12	(6.4)	(3.7)	(1.7)	18.7	(8.2)	(0.2)	5.27
OREAS 901 4	71	229	6.17	4.75	(0.05)	95	73	57	5.12	(6.4)	(3.7)	(1.7)	18.7	(8.2)	(0.2)	5.27
OREAS 901 A	66	86	4.49	4.35	(0.05)	78	73	23.0	0.97	(3.5)	(1.8)	(1.1)	3.15	(5.6)	0.11	(0.8)

CRM COPPER ORE WITH EXTENSIVE ANALYSIS - CONTINUED FROM THE PREVIOUS PAGE

analysis listed in mg/kg # = provisional analysis OREAS samples list multiple methods, more information upon request																
Number	Hg	Ho	In	La	Li	Lu	Nb	Nd	Pr	Rb	Re	Sb	Sc	Se	Sm	Sn
VS 2891-84	.	.	.	.	.	.	.	.	.	.	28.2	.	.	.	.	.
CGL 203	.	.	.	.	.	.	.	.	.	.	.	(400)	.	(77)	.	.
CAN CCU-1e	10.4	.	(6)	(1)	(0.5)	.	(0.2)	(1)	.	(0.5)	(0.004)	104	(1)	(304)	(0.3)	(15)
JCU-1 #	.	.	.	.	(2.9)	.	.	.	.	(1.9)	.	(3.8)	.	.	.	.
GBW 07233	.	0.26	1.4	7.5	(9)	0.16	.	4.7	1.4	.	.	0.36	1.8	5.1	1	11.1
CETEM CBPA-1	.	.	.	(267)	.	.	(10)	(143)	.	(101)	.	.	(16)	.	(20)	(7)
SRM 330a	.	.	.	.	22.19	.	(5.7)	.	.	.	.	.	5.693	.	.	.
CGL 103	.	.	.	(19.38)	.	.	.	.	.	(83.76)	.	23	.	.	.	.
OREAS 904	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 904 4	.	(1.1)	0.22	43.2	16.7	0.47	(6.3)	(36)	(9.7)	130	(<0.002)	1.48	11.2	3.30	(7.1)	2.83
OREAS 904 A	(0.04)	(0.6)	0.17	33.9	(3.5)	0.21	(0.09)	(32)	(7.7)	22.4	(<0.001)	0.78	3.83	2.81	(5.4)	0.58
CAN HV-2a	.	(0.2)	.	9.1	(11)	(0.109)	(2)	8.77	(2.32)	48.3	(0.1)	0.689	(3)	(0.7)	1.69	(1.2)
GBW 07234	.	0.48	0.25	40.3	(15)	0.2	.	29.4	8.1	(94)	.	0.23	5.4	0.89	5.1	3.8
USZ 4-85	.	.	.	.	.	.	.	.	.	(80)	.	.	.	(5.4)	.	.
OREAS 901	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 901 4	.	(1.3)	0.26	47.0	17.9	0.53	(8.0)	(46)	(13)	161	(0.002)	2.61	14.0	(3.2)	(9.0)	3.33
OREAS 901 A	(0.02)	(0.7)	0.21	38.1	(3.1)	0.22	(0.1)	(35)	(8.9)	23.9	(0.002)	1.47	5.55	2.68	(6.4)	0.58

Number	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zr	Units	Other
VS 2891-84	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g	
CGL 203	.	.	.	.	.	.	.	.	.	.	.	.	.	100 or 250 g	
CAN CCU-1e	(2)	.	.	61.8	(0.2)	2.69	.	(1)	(4)	(0.4)	(1)	.	(5)	200 g	H ₂ O%:(0.150)
JCU-1 #	(75)	.	.	.	.	.	.	.	(9)	.	.	.	.	100 g	H ₂ O%:(0.54-, 1.00+)
GBW 07233	.	.	0.21	0.62	0.9	0.06	0.11	.	.	4.1	7.3	0.28	.	50 g	
CETEM CBPA-1	(67)	(5)	.	.	(25)	.	.	(41)	(168)	.	(69)	.	(149)	135 g	
SRM 330a	218.1	.	.	.	(7.6)	.	.	.	(43)	.	20.01	.	80.5	90 g	
CGL 103	181	.	.	.	.	.	.	(0.96)	(59.43)	(13.55)	.	.	(102.76)	100 g	
OREAS 502b 4	350	1.17	0.74	0.15	15.8	0.80	0.33	4.28	126	3.43	23.3	2.30	71	10 or 60 g	4-Acid except FA Au Pd Pt
OREAS 502b A	63	(0.73)	0.52	0.16	15.0	0.60	(0.22)	3.93	114	2.29	15.2	1.39	10.9	10 or 60 g	Aqua Regia
OREAS 904	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g or 60 g	
OREAS 904 4	27.2	0.54	1.00	(0.04)	14.3	0.52	(0.5)	8.43	76	2.12	31.5	3.14	171	" 4 acid digestion	
OREAS 904 A	16.5	(<0.01)	0.70	(0.03)	7.56	0.15	(0.2)	5.20	21.7	(0.6)	17.2	1.41	(17)	" aqua regia	B: (12ppm)
CAN HV-2a	472	(0.2)	(0.19)	.	1.28	(0.1)	(0.10)	1.08	(52.2)	(7.89)	(5.96)	(0.680)	(65.8)	200 g	H ₂ O%:(0.3)
GBW 07234	.	.	0.48	0.13	8.8	0.36	0.18	.	.	3.9	11.8	1.2	.	50 g	
USZ 4-85	.	.	.	(6.8)	.	.	.	.	.	(16)	.	.	(149)	100 g	
OREAS 901	.	.	.	.	.	.	.	.	.	.	.	.	.	10 g or 60 g, various methods	
OREAS 901 4	31.0	0.76	1.18	0.090	16.1	0.78	(0.5)	10.3	81	(3.5)	37.4	3.58	176	" 4 acid digestion	
OREAS 901 A	21.0	(0.02)	0.77	0.076	9.13	0.34	(0.3)	5.84	(21)	(1.1)	18.8	1.49	28.1	" aqua regia	B: (13ppm)

CRM COPPER ORE

analysis listed in mass %			F = Sodium Peroxide Fusion ICP				A = Four Fcid Digestion ICP-OES/MS values							10 g	
Number		Cu	Ag	Al ₂ O ₃	As	CaO	Cd	Co	Fe	MgO	Pb	S	Sb	SiO ₂	Zn
OREAS 113 4		13.5	0.00226	.	0.0234	.	0.00155	0.0766	28.2	.	0.0230	.	0.0008	.	0.4178
OREAS 113 F		13.3	(0.0025)	.	0.0238	.	(0.0016)	0.0754	28.0	.	0.0248	.	0.00076	.	0.4158
OREAS 166 4		8.82	0.00108	1.38	.	0.98	.	0.1970	11.38	1.67	0.0140	11.6	.	.	0.0037
OREAS 166 F		8.75	0.0012	1.34	.	0.98	.	0.2077	11.45	1.67	0.0128	11.29	.	61.4	0.0037
OREAS 112 F		5.13	0.0017	.	0.0240	.	0.0015	0.0547	33.3	.	0.0349	.	0.0017	.	0.4302
OREAS 112 4		5.10	0.00132	.	0.0222	.	0.00146	0.0551	34.1	.	0.0360	.	0.0016	.	0.4351
OREAS 165 F		3.21	0.00031	2.61	.	0.11	.	0.2485	8.86	3.48	0.0434	8.28	.	72.0	0.0044
OREAS 165 4		3.20	0.000302	2.59	.	0.081	.	0.2445	8.86	3.53	0.0443	8.5	.	.	0.0037
OREAS 111b 4		2.47	0.00101	.	0.0220	.	0.00143	0.0490	36.1	.	0.0393	.	0.0021	.	0.4334
OREAS 111b F		2.44	<0.0020	.	0.0212	.	0.00148	0.0488	35.5	.	0.0397	.	0.0019	.	0.4370
OREAS 111 4		2.37	0.00101	.	0.0215	.	0.00120	0.0452	35.2	.	0.0377	.	0.0018	.	0.4196
OREAS 111 F		2.30	<0.0020	.	0.0217	.	0.0014	0.0457	34.1	.	0.0375	.	0.0019	.	0.4099
OREAS 164 4		2.25	0.000294	2.07	.	0.393	.	0.0168	6.80	3.07	0.0214	6.2	.	.	0.0045
OREAS 164 F		2.22	<0.0005	2.05	.	0.401	.	0.0167	6.88	3.07	0.0199	5.98	.	77.9	0.0047
OREAS 163 4		1.76	0.00043	3.24	.	0.860	.	0.0230	11.07	5.42	0.0492	10.4	.	.	0.0108
OREAS 163 F		1.71	0.0005	3.16	.	0.92	.	0.0230	11.1	5.34	0.0461	9.98	.	.	0.0102
OREAS 162 4		0.772	0.00035	1.70	.	13.2	.	0.0631	8.57	9.17	0.0340	4.38	.	.	0.0026
OREAS 162 F		0.761	0.000358	1.64	.	13.1	.	0.0660	8.63	9.04	0.0320	4.40	.	.	0.002755
Number		Cu	Ag	Al ₂ O ₃	As	CaO	Cd	Co	Fe	MgO	Pb	S	Sb	SiO ₂	Zn

CRM COPPER ORE - EXTENSIVE ANALYSIS NOT SHOWN

analysis listed in mass % except * which is mg/kg

10g, 60g, or 1 kg

Number	Cu	Ag*	Au*	Bi	Co	Ni	Pb	Rb	Se	Sn	Zn	Zr
OREAS 98 4	14.8	45.1	.	0.00972	0.0121	(0.00353)	0.0345	(0.00817)	0.0158	0.0206	0.1355	(0.00667)
OREAS 98 A	14.7	42.8	.	0.00928	0.0111	.	0.0343	.	0.0143	0.0171	0.1302	.
OREAS 935 I	12.43	43.73	.	0.0679	0.0085	(0.0156)	0.0233	(0.0089)	0.0105	0.0119	0.0721	(0.0074)
OREAS 935 4	12.55	43.87	(<0.1)	0.0709	0.0077	0.00297	0.0225	(0.0080)	0.0088	0.0108	0.0692	0.00474
OREAS 935 A	12.48	43.67	(0.04)	0.0680	0.0077	0.00262	0.0222	(0.00136)	0.0086	0.0096	0.0666	(0.00133)
OREAS 935 F	12.54	.	.	.	<0.0100	(0.00158)	(0.0255)	.	.	(0.0138)	0.0688	(0.0050)
OREAS 934 I	9.50	34.67	.	0.0517	0.0075	(0.00320)	0.0262	(0.0106)	0.0096	0.0095	0.0744	(0.0093)
OREAS 934 4	9.59	36.46	(<0.1)	0.0527	0.0071	0.00282	0.0240	(0.0097)	0.0085	0.0083	0.0724	0.0058
OREAS 934 A	9.58	34.40	(0.022)	0.0515	0.0067	0.00257	0.0242	(0.00145)	0.0080	0.0076	0.0692	(0.00162)
OREAS 934 F	9.51	.	.	.	<0.0100	(0.000917)	0.0242	.	.	(0.0116)	0.0718	(0.0073)
OREAS 933 I	8.34	29.32	.	0.0466	0.0063	(0.0108)	0.0197	(0.0103)	0.0079	0.0086	0.0617	(0.0101)
OREAS 933 4	8.37	31.05	(<0.1)	0.0451	0.0060	0.00281	0.0189	(0.0095)	0.0068	0.0073	0.0602	0.0063
OREAS 933 A	8.27	29.62	(0.027)	0.0449	0.0061	0.00281	0.0187	(0.00126)	0.0066	0.0066	0.0596	(0.00164)
OREAS 933 F	8.38	.	.	.	<0.0100	(0.000800)	0.0210	.	.	(0.0106)	0.0606	(0.0090)
OREAS 97 4	6.31	19.6	.	0.00401	0.00629	(0.00370)	0.0147	(0.0126)	0.00714	0.00957	0.0646	(0.00965)
OREAS 97 A	6.28	19.5	.	0.00403	0.00625	.	0.0142	.	0.00673	0.00838	0.0635	.
OREAS 932 I	6.17	23.00	.	0.0337	0.0062	(0.00303)	0.0195	(0.0122)	0.0073	0.0067	0.0590	(0.0114)
OREAS 932 4	6.13	22.41	(<0.1)	0.0324	0.0060	0.00274	0.0184	(0.0112)	0.0067	0.0058	0.0591	0.0073
OREAS 932 A	6.11	21.96	(0.012)	0.0322	0.0061	0.00282	0.0182	(0.00162)	0.0063	0.0051	0.0579	(0.00191)
OREAS 932 F	6.19	.	.	.	<0.0100	(0.00133)	0.0200	.	.	(0.0092)	0.0599	(0.0093)
OREAS 96 4	3.93	11.5	.	0.00263	0.00499	(0.00393)	0.0101	(0.0141)	0.00407	0.00656	0.0457	(0.0109)
OREAS 96 A	3.91	11.5	.	0.00279	0.00492	.	0.0100	.	0.00410	0.00528	0.0448	.
OREAS 931 I	3.83	13.62	.	0.0205	0.00466	(0.00362)	0.0155	(0.0134)	0.0050	<0.0060	0.0490	(0.0132)
OREAS 931 4	3.82	14.04	(<0.1)	0.0204	0.00469	0.00288	0.0147	(0.0128)	0.00435	0.00421	0.0480	(0.0085)
OREAS 931 A	3.81	14.18	(0.006)	0.0206	0.00453	0.00287	0.0146	(0.00153)	0.00422	0.00330	0.0472	(0.00199)
OREAS 931 F	3.82	.	.	.	<0.0050	(0.0010)	(0.0159)	.	.	(0.0064)	0.0495	(0.0097)
OREAS 930 I	2.51	8.63	.	0.0138	0.00391	(<0.0050)	<0.0150	(0.0150)	0.00336	0.00351	0.0499	(0.0147)
OREAS 930 4	2.52	9.00	(<0.1)	0.0136	0.00374	0.00311	0.0141	(0.0136)	0.00301	0.00311	0.0492	0.0089
OREAS 930 A	2.51	9.13	(0.004)	0.0139	0.00364	0.00306	0.0142	(0.00181)	0.00286	0.00234	0.0488	(0.00220)
OREAS 930 F	2.51	.	.	.	<0.0100	(0.00217)	<0.0160	.	.	(0.0059)	0.0504	(0.0112)
OREAS 929 I	2.00	<8	.	0.0114	0.00362	(<0.0020)	0.0116	(0.0141)	0.00243	0.00311	0.0492	(0.0141)
OREAS 929 4	2.00	7.18	(<0.1)	0.0111	0.00336	0.00307	0.0130	(0.0129)	0.00241	0.00291	0.0477	0.0088
OREAS 929 A	2.02	7.03	(0.004)	0.0114	0.00336	0.00297	0.0131	(0.00175)	0.00240	0.00201	0.0468	(0.00211)
OREAS 929 F	2.02	.	.	.	(<0.0100)	(0.00275)	0.0143	.	.	(0.00458)	0.0486	(0.0127)
Number	Cu	Ag*	Au*	Bi	Co	Ni	Pb	Rb	Se	Sn	Zn	Zr
OREAS 928 I	1.52	<8	.	0.0083	0.00335	(0.00376)	0.0112	(0.0127)	<0.0020	0.00278	0.0432	(0.0141)
OREAS 928 4	1.53	5.39	(<0.100)	0.0079	0.00313	0.00296	0.0122	(0.0116)	0.00188	0.00262	0.0436	(0.0094)
OREAS 928 A	1.52	5.11	(0.006)	0.0080	0.00306	0.00281	0.0122	(0.00148)	0.00179	0.00157	0.0429	(0.00199)
OREAS 928 F	1.52	.	.	.	<0.0050	(0.00208)	(0.0133)	.	.	(0.00300)	0.0435	(0.0108)
OREAS 504b 4	1.11	3.07	1.61	0.000492	0.00209	0.00345	0.00262	0.0106	0.00124	0.00114	0.0108	0.0060
OREAS 504b A	1.10	2.98	1.56	0.000513	0.00187	0.00300	0.00201	0.0051	0.00116	0.00104	0.0096	0.00142
OREAS 927 I	1.09	.	.	0.0062	0.00310	0.00302	0.0214	0.0122	.	0.00238	0.0750	.
OREAS 927 4	1.08	4.08	.	0.0057	0.00287	0.00297	0.0209	0.0119	0.00157	0.00207	0.0716	0.0097
OREAS 927 A	1.06	3.90	<0.010	0.0059	0.00286	0.00280	0.0203	0.00147	0.00153	0.00122	0.0717	0.00201
OREAS 502c	0.783	0.779	0.488	0.000067	0.00144	0.00381	0.00235	0.0187	0.000340	0.000340	0.0109	0.0078
OREAS 903 4 **	0.652	0.432	(<0.050)	0.00089	0.0131	0.0054	0.00113	0.00137	0.000606	0.000263	0.00243	0.0152
OREAS 903 A	0.671	0.349	(<0.005)	0.00088	0.0131	0.00487	0.000895	0.00126	0.000534	(0.00004)	0.00213	0.00182
OREAS 925 I	0.621	.	.	0.00336	0.00254	0.00355	0.0115	0.0166	.	0.00179	0.0459	.
OREAS 925 4	0.615	2.36	.	0.00313	0.00246	0.00348	0.0110	0.0163	0.000907	0.00149	0.0446	0.0106
OREAS 925 A	0.629	2.41	<0.005	0.00324	0.00238	0.00317	0.0111	0.00189	0.000891	0.000777	0.0437	0.00218
OREAS 503c	0.538	0.830	0.698	0.000060	0.00146	0.00386	0.00206	0.0178	0.000331	0.000338	0.0087	0.0075
OREAS 503d	0.524	1.34	0.666	0.000141	0.00167	0.00335	0.00206	0.0181	0.000329	0.000347	0.0075	0.0089
OREAS 924 I	0.520	.	.	0.00293	0.00244	0.00385	0.0096	0.0173	.	0.00167	0.0389	.
OREAS 924 4	0.512	1.99	.	0.00273	0.00234	0.00360	0.0092	0.0172	0.000786	0.00136	0.0380	0.0109
OREAS 924 A	0.516	1.92	<0.005	0.00257	0.00227	0.00326	0.0092	0.00203	0.000732	0.000672	0.0370	0.00222
OREAS 923 I	0.4328	.	.	0.00212	0.00239	0.00407	0.0086	0.0169	.	0.00161	0.0358	.
OREAS 923 4	0.4230	1.60	.	0.00214	0.00231	0.00358	0.0083	0.0166	0.000654	0.00133	0.0345	0.0116
OREAS 923 A	0.4248	1.62	<0.005	0.00218	0.00222	0.00327	0.0081	0.00196	0.000599	0.000599	0.0335	0.00225
OREAS 501c	0.276	0.461	0.221	0.000069	0.00151	0.0060	0.00215	0.0196	0.000207	0.000338	0.0081	0.0081
OREAS 922 I	0.2215	.	.	0.00108	0.00209	0.00434	0.0064	0.0167	.	0.00100	0.0277	.
OREAS 922 4	0.2122	0.888	.	0.00101	0.00204	0.00379	0.0059	0.0164	0.000376	0.000995	0.0267	0.0127
OREAS 922 A	0.2176	0.851	<0.005	0.00103	0.00194	0.00343	0.0060	0.00227	0.000344	0.000383	0.0256	0.00223
OREAS 921 I	0.0293	.	.	<0.0002	0.00173	0.00419	0.00271	0.0178	.	<0.0010	0.0139	.
OREAS 921 4	0.0274	0.152	.	0.000120	0.00165	0.00411	0.00280	0.0176	<0.0002	0.000582	0.0132	0.0147
OREAS 921 A	0.0278	0.164	<0.005	0.000125	0.00155	0.00380	0.00260	0.00242	0.000104	0.000145	0.0124	0.00214
OREAS 501b 4	0.260	0.778	0.248	0.000154	0.00158	0.00415	0.00230	0.0184	(0.000363)	0.000558	0.0089	0.0077
OREAS 501b A	0.258	0.721	0.243	0.000160	0.00149	0.00375	0.000942	0.0126	0.000278	0.000465	0.0080	0.00109
OREAS 920 I	0.0113	.	.	<0.00008	0.00161	0.00440	0.00229	0.0179	.	<0.0006	0.0122	.
OREAS 920 4	0.0112	<0.2	.	0.000069	0.00156	0.00418	0.00235	0.0176	<0.0002	0.000504	0.0116	0.0151
OREAS 920 A	0.0110	0.099	<0.010	0.000068	0.00150	0.00384	0.00215	0.00248	0.000087	0.000121	0.0106	0.00213
Number	Cu	Ag*	Au*	Bi	Co	Ni	Pb	Rb	Se	Sn	Zn	Zr

** OREAS 903 also certifies Cu at 0.434% using acid leach

These samples also detail up to 74 additional elements, certificates available upon request.
 Each sample is certified for a variety of methods: 4 = 4 ACID DIGESTION, A = AQUA REGIA, F = FUSION, I = ICP

COPPER ORE

= class, where 1=CRM and 2=RM; analysis in mass % except * = mg/kg; GBM: 10 or 250g IMN: 200g NCS: 50g OREAS: see below VS: 100g

#	Number	Cu	Ag*	As	Ni	Pb	Tot.S	Zn	Au*	Bi*	Co*	Cd*	Fe	Hg*	Mo*	Sb*	SiO ₂
1	OREAS 992	43.90	(33.50)	.	(1.50)	(0.0470)	36.97	(17.8*)	(7.92)	.	(790)	.	.	.	(2.00)	.	10 g units
1	GBM914-12	27.0618	61.5	.	0.0020	0.1256	29.74	0.824	.	.	.	.	.	.	.	.	.
1	GBM315-15	25.0264	334.2	.	0.0842	0.7680	26.74	1.2523	.	.	.	.	.	.	.	.	.
1	GBM313-16	24.2702	109.3	.	0.0153	0.0035	3.64	0.0043	.	.	.	.	.	.	.	.	.
1	GBM316-12	23.8210	86.0	.	0.0009	0.0236	25.43	0.0480	.	.	.	.	.	.	.	.	.
1	GBM310-15	23.7854	78.8	.	0.0293	0.3327	27.6	1.1931	.	.	.	.	.	.	.	.	.
1	GBM913-14	22.7577	200.3	.	0.0053	0.0029	6.22	0.0107	.	.	.	.	.	.	.	.	.
1	GBM314-15	21.2876	176.2	.	0.0037	0.0145	6.54	0.02	.	.	.	.	.	.	.	.	.
1	OREAS 991	20.66	48.14	(0.0170)	(0.00320)	(0.0123)	(30.77)	.	47.04	(<50)	(122)	.	(26.92)	.	(490)	.	50 g units
1	GBM319-12	19.5549	112.9	.	0.2069	0.2128	13.42	0.8434	.	.	.	.	.	.	.	.	.
1	GBM319-11	18.0603	108.0	.	0.0914	1.1393	22.96	1.5795	.	.	.	.	.	.	.	.	.
1	VS R34/1	17.21	81	0.35	.	0.17	38.6	2.45	4.7	60	.	32.9	.	.	97	680	1.92
1	GBM905-14	17.3667	.	.	0.0531	0.0334	.	0.0074	.	.	.	.	.	.	.	.	.
1	GBM314-16	16.0964	89.4	.	0.0661	0.0884	22.79	0.2898	.	.	.	.	.	.	.	.	.
1	GBM317-11	16.0746	225.6	.	0.3227	0.4270	24.41	3.4916	.	.	.	.	.	.	.	.	.
1	GBM913-13	12.1059	74.1	.	0.0084	0.0125	2.43	0.0386	.	.	.	.	.	.	.	.	.
1	GBM317-13	10.3409	19.0	.	3.9436	0.7361	15.52	2.4779	.	.	.	.	.	.	.	.	.
1	NCS DC29110	8.53	120	0.020	.	0.027	(15.42)	0.19	.	.	.	13.5	.	(0.039)	.	35.3	.
1	GBM908-16	7.0180	22.5	.	.	0.0735	7.54	.	.	.	.	.	.	.	.	.	.
1	GBM319-16	6.9993	8.8	.	0.0055	0.0012	0.04	0.0023	.	.	.	.	.	.	.	.	.
1	GBM319-8	6.9613	8.8	0.0115	0.0057	0.0005	.	0.0023	.	.	53	.	.	.	.	.	.
1	GBM319-7	4.3368	51.8	0.1241	0.0008	0.0061	.	0.0669	.	.	45	.	.	.	.	.	.
1	GBM319-15	4.3324	51.3	.	0.0009	0.0069	0.07	0.0681	.	.	.	.	.	.	.	.	.
1	NCS DC29109	3.84	59.9	0.046	.	0.024	(8.58)	0.083	.	.	.	5.68	.	(0.043)	.	71	.
1	GBM916-14	3.6746	26.8	.	0.0023	0.0515	23.66	0.7103	.	.	.	.	.	.	.	.	.
1	GBM905-11	3.1758	.	.	0.0038	0.0042	.	0.0084	.	.	.	.	.	.	.	.	.
1	GBM319-14	2.9546	36.4	.	0.0299	0.7331	4.92	2.2491	.	.	.	.	.	.	.	.	.
1	GBM916-12	2.6105	17.0	.	0.0023	0.0566	19.10	0.5018	.	.	.	.	.	.	.	.	.
1	GBM911-16	2.4774	7.9	.	0.0229	0.0325	3.6	0.1210	.	.	.	.	.	.	.	.	.
1	GBM317-12	2.4309	16.3	.	0.0021	0.0544	18.72	0.5049	.	.	.	.	.	.	.	.	.
1	GBM318-4	2.4208	20.5	0.0545	0.0077	0.0023	.	0.0407	.	.	40	.	.	.	.	.	.
1	GBM915-16	2.2960	51.2	.	0.0197	0.9698	3.88	1.9551	.	.	.	.	.	.	.	.	.
1	GBM916-13	2.0136	12.5	.	0.0023	0.0390	17.60	0.3795	.	.	.	.	.	.	.	.	.
1	GBM915-9	2.2767	50.0	0.1265	0.0198	0.9502	.	1.9314	.	.	106	.	.	.	.	.	.
1	GBM316-11	2.2288	21.7	.	0.0021	0.1065	18.11	1.0133	.	.	.	.	.	.	.	.	.
1	GBM905-12	2.1853	.	.	0.0062	0.0033	.	0.0100	.	.	.	.	.	.	.	.	.
1	GBM319-13	1.5964	7.4	.	0.0075	0.0066	2.18	0.0454	.	.	.	.	.	.	.	.	.
1	GBM319-1	1.5759	7.2	0.0052	0.0080	0.0061	.	0.0450	.	.	73	.	.	.	.	.	.
1	GBM915-4	1.1835	25.7	0.0663	0.0118	0.4921	.	1.0035	.	.	69	.	.	.	.	.	.
1	GBM311-14	1.7501	04.5	.	0.0045	0.0508	2.0	0.0872	.	.	.	.	.	.	.	.	.
1	GBM311-10	1.7334	3.8	0.0040	0.0031	0.0505	.	0.0841	.	.	65	.	.	.	.	.	.
1	VS R35	1.65	17.4	0.067	.	0.036	26.7	0.74	1.23	.	.	.	.	.	.	.	35.2
2	IMN MR2	1.61	29	0.013	.	0.085	.	0.025	.	.	.	.	0.88	.	.	.	.
2	IMN MR1	1.23	58	0.028	.	0.15	.	0.040	.	.	.	.	1.41	.	.	.	.
1	GBM915-15	1.0954	11.9	.	0.7954	0.0066	1.29	0.0050	.	.	.	.	.	.	.	.	.
1	GBM910-6	1.0084	3.6	0.0117	0.0044	0.0173	.	0.0907	.	.	131	.	.	.	.	.	.
1	GBM910-16	1.0069	3.7	.	0.0048	0.0180	1.5	0.0943	.	.	.	.	.	.	.	.	.
1	NCS DC29108	0.90	14.9	0.00766	.	0.0080	(1.65)	0.020	.	.	.	.	(0.028)	.	.	11.7	.
1	NCS DC29107	0.29	6.1	0.00414	.	0.00345	(0.68)	0.010	.	.	.	.	(0.15)	.	.	23.4	.

CRM COPPER ORE

analysis listed in mass % except * which is mg/kg

Number	Cu	As	Bi	Cd	F	Fe	MgO	Mn	Ni	Pb	S	Sb	Zn	Ag*	Au*	Units
NCS DC28058	20.56	0.012	.	<0.001	0.056	24.70	7.63	0.013	0.093	0.015	22.87	.	0.194	17.1	4.68	20 g
NCS DC28055	12.79	4.68	0.023	0.0067	0.028	3.22	0.18	0.110	0.017	0.037	1.54	0.25	0.64	85.9	0.04	50 g
NCS DC28057	10.71	0.034	.	<0.001	0.036	29.34	4.01	0.084	0.072	0.019	25.05	.	0.052	12.0	6.16	20 g
NCS DC28056	8.46	2.14	0.19	0.0064	0.53	10.44	7.04	0.169	0.011	0.087	0.86	0.22	0.503	109.9	0.05	50 g
NCS DC28054	6.78	0.209	0.283	0.0021	1.15	15.39	12.51	0.124	<0.005	0.106	0.082	.	0.456	126.1	0.05	50 g

CRM COPPER ORE

analysis listed in mass % except * which is mg/kg

20 g units

Number	Cu	Ag*	Au*	Al ₂ O ₃	As	Bi	CaO	Cd*	Co	F	Fe	MgO	Mn	Ni	Pb	S	SiO ₂	Zn
NCS DC28059a	18.04	157.0	2.48	2.89	0.104	0.897	14.71	64	0.026	0.162	19.80	1.12	0.085	0.045	0.031	9.53	6.22	0.59

CRM CRYOLITE

analysis listed in mass %

Number	Al	CaO	F	Fe ₂ O ₃	Na	P ₂ O ₅	SO ₄ ²⁻	SiO ₂	LOI	Units
NCS DC91001	17.34	(0.606)	55.45	0.053	21.75	0.0034	0.233	0.087	4.53	100 g
NCS DC91002	15.18	(0.597)	54.66	0.032	26.32	0.025	0.199	0.211	2.97	100 g
NCS DC91003	13.65	(0.719)	53.89	0.036	29.29	0.013	0.205	0.363	2.25	100 g
NCS DC91004	13.16	(0.508)	53.2	0.033	30.26	0.037	0.293	0.389	2.12	100 g
NCS DC91005	12.69	(0.0062)	52.14	0.0098	32.01	0.065	0.45	0.485	1.4	100 g
NCS DC91006	11.75	0.112	51.21	0.04	33.24	0.051	0.683	0.238	1.6	100 g

CRM DIABASE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

US: 25 g units

NCS: 70 g units

Number	Al ₂ O ₃	CO ₂	CaO	F	FeO	Fe ₂ O ₃	Fe ₂ O ₃ T	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	SO ₃	SiO ₂	TiO ₂	LOI
US W-2b	15.45	.	10.86	(0.0205)	8.34	1.53	10.83	.	0.626	6.37	0.167	2.20	0.14	(0.0079)	.	52.68	1.06	.
NCS DC71311	13.21	(0.11)	7.83	(0.07)	7.24	.	(13.40)	(2.44)	1.49	5.08	.	3.17	0.55	.	0.44	49.88	2.94	2.30

continued analysis listed in mg/kg except % which is mass %

Number	Ag	As	B	Ba	Be	Bi	Cd	Ce	Cl%	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd
US W-2b	.	(1.2)	(12)	170	(1.3)	.	.	23	(0.0190)	43	92	(0.99)	110	3.6	(2.5)	(1.0)	17	.
NCS DC71311	0.33	5.1	17.0	614	1.5	0.39	0.39	78.1	(0.04)	37.5	111	1.7	82.6	5.5	(2.6)	3.5	21.2	7.2

Number	Ge	Hf	Hg	Ho	La	Li	Lu	Mn%	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc	Se	Sm
US W-2b	.	2.6	.	(0.76)	10	9.6	(0.33)	.	.	(7.9)	13	70	(9.3)	.	21	(0.79)	36	.	3.3
NCS DC71311	1.5	9.2	0.017	1.2	38.1	20.8	0.34	(0.16)	1.4	25.3	42.8	56.8	33.0	10.6	47.4	2.3	27.1	(0.19)	8.6

Number	Sn	Sr	Ta	Tb	Th	Tm	U	V	W	Y	Yb	Zn	Zr
US W-2b	.	190	(0.5)	(0.63)	2.4	(0.38)	(0.53)	260	.	23	2.1	80	100
NCS DC71311	2.0	470	1.8	1.1	4.9	0.36	1.2	268	1.4	24.5	2.2	(160)	359

DIORITE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

T = Total

IAG: RM, ~35 g units

all others: CRM, 100 g units

Number	Al ₂ O ₃	CaO	CO ₂	Fe	FeO	Fe ₂ O ₃	H ₂ O+	H ₂ O-	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI	Type
CAN SY-4	20.69	0.05	3.5	4.2	2.06	6.21	(1.0)	(0.15)	1.66	0.54	0.100	7.10	0.131	49.9	0.207	4.56	Diorite Gneiss
VS 6103-91	16.56	4.84	(0.18)	.	3.79	5.55	(1.6)	(0.14)	2.98	3.05	0.086	3.57	0.17	60.45	0.86	1.59	Quartz
USZ 50-2009	15.97	6.99	.	.	4.82	8.10T	0.35	(0.11)	1.55	3.81	0.12	3.33	(0.39)	57.75	1.34	0.51	Diorite
IAG OU-4	14.83	4.48	.	.	4.52	5.82T	.	.	2.70	2.30	0.14	3.61	0.173	63.34	0.77	1.72	Microdiorite

continued analysis listed in mg/kg

Number	B	Ba	Be	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	F	Ga	Gd	Hf	Ho
CAN SY-4	.	340	2.6	122	2.0	12	1.5	7	10.2	14.2	2.00	.	335	14.0	10.6	4.3
VS 6103-91	46	720	2.4	46	17	58	2.9	39	.	1.3	710	18	.	.	.	.
USZ 50-2009	.	425	.	50.8	84.9	100	(5.24)	100	(4.29)	(2.29)	(1.41)	.	419.58	(5.21)	(3.69)	(0.85)
IAG OU-4	.	360.8	1.79	55.7	13.5	54.7	2.07	27.3	7.81	4.83	1.64	.	17.4	7.39	5.54	1.63

Number	La	Li	Lu	Mn	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc	Sm	Sn	Sr
CAN SY-4	50	37	2.1	0.19	13	57	9	10	15.0	55	.	1.1	12.7	.	1191
VS 6103-91	27	30	0.30	.	12	24	33	24	.	83	.	15	4.8	.	410
USZ 50-2009	24.40	(13.9)	(0.30)	.	6.92	30.48	40.94	8.97	(6.45)	48.5	.	20.46	(5.61)	.	454
IAG OU-4	24.96	35.0	0.71	.	12.8	27.9	21.0	14.1	6.85	98.5	0.30	19.1	6.94	2.42	99.9

Number	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
CAN SY-4	0.9	2.6	1.4	.	2.3	0.8	0	.	119	14.0	93	517
VS 6103-91	.	.	6.8	.	.	.	96	.	21	2.1	71	173
USZ 50-2009	(0.48)	(0.76)	3.88	.	(0.32)	(1.09)	213	266	23.62	2.05	92.77	191
IAG OU-4	1.00	1.25	8.42	0.46	0.72	2.19	82.7	.	47.1	4.70	69.5	195.1

DOLERITE WITH EXTENSIVE ANALYSIS

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	SiO ₂	Al ₂ O ₃	CaO	F	FeO	Fe ₂ O ₃	Fe ₂ O ₃ T	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂	LOI	Units
1	SARM 50	51.56	15.28	10.80	.	8.49	11.0	.	.	0.61	7.57	0.17	2.30	0.15	.	0.86	.	100 g
2	IAG OU-2	51.095	13.801	8.994	.	8.404	.	13.253	.	0.990	5.585	0.170	2.480	0.300	.	2.425	.	~35 g
2	IAG OU-5	49.10	13.62	6.63	.	8.74	14.60	.	.	0.826	5.17	0.310	4.29	0.440	.	2.718	2.08	~35 g
1	VS 8671-2005	47.99	14.63	10.42	(0.021)	10.33	.	14.62	(0.88)	0.46	7.51	0.21	2.32	0.17	(0.026)	1.59	(0.42)	100 g
1	US DNC-1a	47.15	10.34	11.49	(0.0066)	7.32	1.79	9.97	.	0.234	10.13	0.15	1.09	0.07	.	0.40	.	25 g

continued

analysis listed in mg/kg

Number	Ag	As	Au	B	Ba	Be	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu
SARM 50	.	.	.	.	220	.	.	(30)	.	40	357	.	84	.	.	.
IAG OU-2	.	.	.	.	341.1	1.11	.	60.2	.	44.8	97.0	0.495	63.0	6.09	3.06	2.23
IAG OU-5	.	(2.45)	.	.	309.2	1.31	(0.20)	44.17	.	38.60	38.40	0.555	27.32	9.04	5.49	2.35
VS 8671-2005	(0.05)	.	(0.0026)	(3.8)	227	0.8	.	22	.	52	213	(0.45)	180	5.1	2.9	1.4
US DNC-1a	.	(0.12)	.	(0.9)	110	(1)	.	.	(60)	57	270	.	100	(3)	.	0.59

Number	Ga	Gd	Ge	Hf	Ho	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb
SARM 50	.	.	.	.	.	.	.	.	.	(10)	.	(85)	25	.	14
IAG OU-2	23.05	7.26	.	5.29	1.21	27.71	12.79	0.372	3.05	17.25	33.35	51.77	13.12	7.92	25.44
IAG OU-5	21.2	8.64	(2.03)	5.59	1.92	18.10	21.74	0.767	.	9.58	28.47	15.00	4.66	6.29	19.29
VS 8671-2005	17	4.5	1.5	2.7	(1)	8	8.6	0.44	0.98	6	13.2	126	(3)	2.6	11
US DNC-1a	(15)	(2)	.	.	(0.62)	3.6	5.2	.	.	(3)	5.2	247	(6.3)	.	(4.5)

Number	Sb	Sc	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
SARM 50	.	.	.	.	195	.	.	(6)	.	.	.	216	.	23	.	81	86
IAG OU-2	.	28.21	8.70	17.73	403.7	1.20	1.11	3.02	.	0.427	0.63	339.3	.	30.93	2.52	113.0	200.5
IAG OU-5	0.42	42.4	7.64	2.00	226.8	(0.546)	1.46	2.25	(0.125)	0.789	0.500	447.8	(0.865)	51.8	5.10	133.6	219.9
VS 8671-2005	.	41	4	2.64	197	0.35	0.8	1.0	.	0.44	0.45	315	(0.4)	29	3.3	112	125
US DNC-1a	0.96	31	.	.	144	.	.	.	.	.	.	140	.	10	2	70	30

CRM	DOLOMITE WITH EXTENSIVE ANALYSIS										analysis listed in mass %								
Number	CaO	MgO	Al ₂ O ₃	CO ₂	Cl	F	FeO	Fe ₂ O ₃	H ₂ O	K ₂ O	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI	Units		
UL DWA1 GBW 07114	30.84 30.02	21.40 21.8	(0.05) 0.10	. 46.77	0.012	0.014	. 0.15	0.27 0.04	. (0.34)	0.010 0.038	(0.06) 0.010	0.042 (0.03)	(0.023) 0.006	(0.06) 0.62	(0.010) 0.015	47.29 .	50 g 50 g		
continued	analysis listed in mg/kg except % which is mass %																		
Number	Ag	As	B	Ba	Be	Bi	Br	Tot.C%	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd
UL DWA1 GBW 07114	. 0.04	(1.3) 0.23	. 20.5	24 44.3	(0.22)	0.03	0.84	(12.88)	0.07	2.2 3.58	(0.2) 3.88	(4) 2.6	. 0.07	(4) 30.2	0.82 0.19	0.50 0.09	0.16 0.05	. (0.21)	0.81 0.18
Number	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	S%	Sb	
UL DWA1 GBW 07114	. 0.15	(0.03) (0.10)	(0.004)	0.18 0.04	0.23	(0.066)	3.6 1.34	2.30	0.05 0.019	(0.24)	(2.77)	3 1.39	241	(35) (4.44)	0.67 (0.44)	(1.42)	0.011	0.04	
Number	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	
UL DWA1 GBW 07114	0.24 0.098	. 0.08	0.62 0.25	. 0.53	284 49	(0.18)	0.12 0.05	(0.012)	0.08 0.11	(0.070)	0.06 (0.040)	1.4 0.16	6.9 2.10	. 0.11	9.4 (1.40)	0.39 0.09	83 11.7	. 3.0	

DOLOMITE

= class, where 1 = CRM and 2 = RM analysis listed in mass %

#	Number	CaO	MgO	SiO ₂	Al ₂ O ₃	Cr ₂ O ₃	Fe ₂ O ₃	K ₂ O	MnO	Na ₂ O	P	P ₂ O ₅	PbO
1	NCS DC28009a	45.90	6.65	2.56	0.47	.	0.235	0.272	0.0049	0.012	0.0033	.	.
1	NCS DC28206	41.66	11.31	4.64	0.16	.	0.112	.	0.0050	.	0.0032	.	.
1	NCS DC14020a	37.59	15.38	0.25	0.11	.	0.459	0.019	0.020	0.015	0.0012	.	.
1	NCS DC14021b	34.82	17.34	1.30	0.18	.	0.447	0.027	0.0072	0.019	0.0057	.	.
1	NCS DC28203	34.74	17.16	1.45	0.286	.	0.404	.	0.012	.	0.016	.	.
1	NCS DC28015a	33.60	15.50	4.89	1.40	.	0.641	0.35	0.0085	0.019	0.011	.	.
1	NCS DC14018b	31.96	19.92	0.77	0.23	.	0.269	0.030	0.031	0.033	0.0023	.	.
1	NCS DC11003a	31.49	21.06	0.098	0.083	.	0.024	0.0030	0.0061	0.017	0.0016	.	.
1	NCS DC28014a	31.46	18.60	2.97	0.81	.	0.472	0.29	0.012	0.021	0.0061	.	.
1	NCS DC28013a	31.12	19.10	2.65	0.73	.	0.504	0.13	0.011	0.034	0.0034	.	.
1	NCS DC28012a	30.94	20.92	1.48	0.23	.	0.26	0.085	0.011	0.012	0.014	.	.
1	NCS DC28208	30.80	20.79	0.99	0.23	.	0.32	.	0.019	.	0.0013	.	.
1	NCS DC28202	30.79	20.73	2.12	0.203	.	0.275	.	0.026	.	0.0013	.	.
1	NCS DC28201	30.62	20.53	6.75	0.048	.	0.085	.	0.0072	.	0.0012	.	.
1	BCS 512	30.61	21.59	0.379	0.055	(<0.001)	0.030	(<0.02)	0.0036	.	.	(<0.02)	(<0.001)
1	CGL 021	30.59	21.40	0.267	0.200	.	0.228	0.062	0.047	(0.040)	.	0.044	.
2	DH 0915	30.59	21.21	0.035	0.019	.	0.191	0.007	0.050	0.026	.	0.008	.
1	ECRM 782-1	30.34	21.29	0.266	0.104	0.0009	0.450	0.0260	0.081	.	.	0.0128	0.0029
1	NCS DC28207	30.33	20.88	1.26	0.27	.	0.44	.	0.013	.	0.018	.	.
2	FLX 135	30.00	21.24	0.969	0.276	.	0.162	0.063	Mn ₂ O ₃ : 0.052	.	.	.	.

Number	S	Sr	SrO	Ti	TiO ₂	ZnO	LOI	Units
NCS DC28009a	0.021	.	0.020	.	0.024	.	43.48	50 g
NCS DC28206	0.0093	.	0.015	.	0.0056	.	41.70	50 g
NCS DC14020a	0.046	.	.	.	.	.	45.88	50 g
NCS DC14021b	0.009	0.021	.	0.085	.	.	45.37	50 g
NCS DC28203	0.028	.	.	.	.	.	45.58	50 g
NCS DC28015a	0.013	.	0.0060	.	0.074	.	43.24	50 g
NCS DC14018b	0.010	0.0081	.	0.011	.	.	46.24	70 g
NCS DC11003a	0.011	0.021	.	0.0043	.	.	46.71	70 g
NCS DC28014a	0.019	.	0.0058	.	0.041	.	44.94	50 g
NCS DC28013a	0.007	.	0.0064	.	0.034	.	45.49	50 g
NCS DC28012a	0.003	.	0.0070	.	0.0080	.	45.58	50 g
NCS DC28208	0.022	.	.	.	.	.	46.20	50 g
NCS DC28202	0.016	.	.	.	.	.	45.22	50 or 100 g
NCS DC28201	0.0019	.	.	.	.	.	41.00	50 g
BCS 512	.	.	0.024	.	0.0020	(<0.01)	46.80	100 g
CGL 021	.	(0.0057)	.	.	(0.013)	.	(46.63)	50 g C:(12.925)
DH 0915	.	.	.	.	.	.	.	100 g
ECRM 782-1	.	.	.	.	0.0042	0.0082	47.25	100 g
NCS DC28207	0.033	.	.	.	.	.	46.11	50 g
FLX 135	.	.	.	.	.	.	.	30 g

RM DOLOMITE SUBSTITUTE

typical analysis in mass % * DH 0710 also contains 0.015 CuO ** DH 0712 also contains 0.167 Na₂O and 0.012 Nb₂O₅ 100 g units

Number	CaO	MgO	Al ₂ O ₃	Cr ₂ O ₃	Fe	K ₂ O	Mn ₃ O ₄	NiO	P ₂ O ₅	PbO	S	SiO ₂	SrO	TiO ₂	V ₂ O ₅	ZnO	ZrO ₂
DH 0710 *	35.36	35.30	8.28	0.591	5.14	0.077	1.079	0.013	0.107	0.011	0.265	10.23	0.028	0.301	0.032	0.159	0.051
DH 0711	32.46	28.57	9.49	0.84	8.81	0.092	1.745	0.020	0.262	0.015	0.314	12.07	0.029	0.370	0.056	0.183	0.068
DH 0709	23.45	63.07	5.62	0.071	1.96	0.053	0.444	0.010	0.133	0.029	0.097	3.69	0.011	0.131	0.021	0.014	0.057
DH 0712 **	20.16	32.62	20.79	0.560	6.72	0.146	0.906	0.050	0.141	0.008	0.129	13.30	0.016	0.671	0.039	0.052	0.383

DUNITE

= class, where 1 = CRM and 2 = RM analysis listed in mass % DH, SARM: 100 g US: 25 g VS 2112: 40 g VS 4233: 100 g

#	Number	MgO	SiO ₂	Si	Al ₂ O ₃	Al	CO ₂	Tot.C	CaO	Ca	Co	Cr	Cr ₂ O ₃	T.Fe	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃
1	US-DTS-2B	49.4	39.4	18.4	0.45	0.24	.	.	0.12	0.09	0.0120	1.5500	.	5.43	(4.27 FeII)	.	7.76
1	SARM 6	43.51	38.96	.	(0.3)	.	.	.	0.28	.	.	.	0.42	.	14.63	0.71	.
1	VS 2112-81	42.40	35.07	.	.	.	0.46	.	.	.	0.0129	.	.	.	.	.	10.06
1	VS 4233-88	41.86	39.58	.	0.97	.	(1.61)	.	1.52	.	0.012	0.41	.	.	(5.54)	.	8.91

continued analysis listed in mass %

Number	H ₂ O	K ₂ O	Mg	MnO	Na	Na ₂ O	Ni	P ₂ O ₅	S	TiO ₂	V	LOI @ 900 °C
US-DTS-2B	.	.	29.0	.	(0.02)	.	0.3780	.	.	.	0.0022	.
SARM 6	.	(0.01)	.	0.22	.	(0.04)	.	.	.	(0.02)	.	.
VS 2112-81	11.35	.	.	0.176	.	.	0.133	.	.	.	0.00069	.
VS 4233-88	(+4.82 -0.4)	0.010	.	0.13	.	0.035	0.22	(0.01)	(0.041)	0.018	0.0033	6.31

continued analysis listed in mg/kg except % which is mass %

Number	Ba	Cu	Ge	Li	Mn	Mo	Pb	Rb	Sb	Sc	Sn	Sr	Zn
US-DTS-2B	(16)	(3)	(0.7)	.	830	.	(4)	(2)	(0.6)	(3)	.	.	45
SARM 6	.	.	.	.	.	.	.	.	.	.	2.2	.	82
VS 2112-81	.	27	.	.	.	1.4	.	.	.	.	.	18	30
VS 4233-88	.	33	1.1	2.0	.	.	.	.	.	9	.	.	30

H₂O+: (4.82)

FELDSPAR

= class, where 1 = CRM and 2 = RM analysis listed in mass %

#	Number	SiO ₂	Al ₂ O ₃	BaO	CaO	F	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	PbO	Rb ₂ O	SrO	TiO ₂	LOI	Units
1	BCS 532	77.07	13.46	.	0.212	.	0.181	3.80	0.159	4.35	.	.	.	.	.	0.56	100 g
1	FLX CRM129	69.84	16.44	0.130	0.374	.	(0.104)	10.78	.	2.11	0.068	.	.	(0.014)	(0.036)	(0.428)	40 g
1	BCS 375/1	69.24	17.88	.	0.78	.	0.291	1.47	0.180	8.89	0.226	.	.	.	0.312	0.72	100 g
1	FLX CRM128	67.88	19.95	(0.007)	1.08	.	0.021	0.206	.	10.74	(0.008)	.	.	0.049	(0.017)	(0.171)	40 g
2	DH X1602	66.93	17.16	0.323	0.032	0.047	.	14.19	0.001	.	0.087	0.012	.	0.036	0.038	.	100 g
1	GBW 03116	66.26	18.63	.	0.76	.	0.19	9.60	0.054	3.69	.	.	.	.	0.048	0.86	50 g
1	IPT 72	66.2	20.26	.	0.18	.	0.09	1.47	(0.022)	10.0	1.03	.	.	.	0.005	0.66	80 g
1	IPT 53	65.8	18.3	.	0.27	.	0.13	12.1	0.05	2.5	0.072	.	.	.	0.013	0.51	80 g
1	BCS 376/1	65.77	18.63	0.0210	0.421	.	0.085	11.59	(0.03)	3.00	(0.02)	0.0090	.	.	(0.01)	0.203	100 g
1	BCS 529	56.24	26.84	.	9.58	.	0.273	0.421	0.045	5.58	.	.	.	.	.	0.550	100 g
	Number	Si	Al	Ba	Ca		Fe	K		Na	P	Pb	Rb	Sr			
1	SRM 99b	(32.07)	10.36	0.1409	(1.18)	.	0.02787	3.09	.	5.25	(0.0044)	0.00712	0.00726	0.0444	.	.	40 g

CRM FELDSPAR WITH EXTENSIVE ANALYSIS

analysis listed in mass %

Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O	K ₂ O	Li ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	Rb ₂ O	TiO ₂	LOI	Units
GUW FK	88.2	6.18	.	0.110	.	0.261	.	.	4.23	.	0.15	0.0037	0.25	0.077	.	0.058	.	50 g
UNS ZK	74.38	14.19	.	0.43	0.73	0.88	.	.	4.06	0.06	0.067	0.025	4.50	.	0.094	0.039	0.54	100 g
JF-1	66.69	18.08	.	0.93	.	0.06	0.08	+0.23	-0.13	9.99	.	0.006	0.001	3.37	0.01	.	0.005	100 g
JF-2	65.30	18.52	.	0.09	.	0.06	0.06	+0.24	-0.18	12.94	.	0.001	2.39	.	.	0.005	20 or	100 g
VS 811-89	60.67	18.20	0.20	0.51	4.8	7.20	.	4.0	3.43	.	2.22	0.042	2.31	0.19	.	0.94	.	100 g
SRM 70b	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	40 g

analysis listed in mg/kg except % indicating mass %, * indicating ppb, and ! indicating scientific notation

Number	Al%	As	B%	Ba%	Be	Ca%	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	F%	Fe%	Ga	Ge
GUW FK UNS ZK	.	4.8	.	0.0700	.	.	5.7	7.0	.	2.6 38.7	11 12.2	.	.	.	.	.	6 33.3	.
JF-1	9.57	.	.	0.1750	.	0.66	4.19	0.12	5.48	2.09	0.82	0.39	0.31	0.87	.	0.06	17.4	.
JF-2	9.80	.	.	0.0298	.	0.06	0.84	0.68	.	1.06	0.78	.	.	0.59	.	0.04	17.9	.
VS 811-89 SRM 70b	.	.	0.008	0.09 0.00282	3.0 .	.	0.007*	21 .	96 (0.7)	6.3 .	41 .	.	.	.	0.06 .	(0.13)	22 .	1.7 .

Number	Hf	Ho	K%	La	Li%	Mg%	Mn%	Mo	Na%	Nb	Nd	Ni	P%	Pb	Pr	Ra!	Rb%	S%
GUW FK UNS ZK	1.4	.	.	.	0.0008	.	.	21.0	.	33.5	.	29.4	0.004	18	.	.	0.0132	.
JF-1	1.18	0.11	8.29	2.80	0.000981	0.004	0.001	2.50	0.74	1.46	.	.	.	33.4	0.48	.	0.0266	.
JF-2	0.19	.	10.74	0.63	0.000219	.	0.001	1.77	0.70	0.70	.	.	.	48.7	.	.	0.0218	.
VS 811-89 SRM 70b	.	.	6.33	.	0.006	(0.0298)	0.00630	2.0 .	14 2.36	14 .	59 .	.	0.0790	20 (57)	.	3e-10	0.012 (0.0495)	0.087 .

Number	Sc	Si%	Sm	Sr%	Ta	Tb	Th	Ti%	Tl	U	V	Y	Yb	Zn%	Zr%
GUW FK UNS ZK	3.6	.	16.8	0.0072	19.4	.	4.7	.	.	.	.	8.4	.	0.0014 0.00194	.
JF-1	0.23	31.17	0.41	0.0172	0.079	0.076	1.17	0.003	1.18	0.33	5.43	2.84	0.35	0.000441	0.00386
JF-2	0.089	30.52	0.11	0.0200	.	.	0.31	0.003	1.10	.	4.86	2.67	.	0.000140	0.000673
VS 811-89 SRM 70b	19	(34.4)	3.2	0.017 (0.0027)	1.3	.	11	(0.0032)	.	2.5	0.016% (0.93)	32	3.4	0.012 (0.00077)	0.021

CRM TRACE ELEMENTS IN FELDSPAR

analysis listed in mg/kg

Number	Rb	Uncertainty	Sr	Uncertainty	⁸⁷ Sr/ ⁸⁶ Sr	⁸⁶ Sr/ ⁸⁸ Sr	Units
SRM 607	523.90	1.01	65.485	0.320	1.20039	0.1194	5 g

CRM FLUORSPAR (FLUORITE)

analysis listed in mass % NCS DC62003a: 20g NCS DC14046-8, NCS DC282x, RH03: 50g other NCS, CMSI, GBW: 65g SRM: 120g all others: 100g

Number	CaF ₂	F	Al ₂ O ₃	BaO	CaCO ₃	CaO	Fe	Fe ₂ O ₃	K ₂ O	Na ₂ O	P	S	SiO ₂	Others
SRM 180	98.80	.	.	.	.	.	.	.	.	.	.	.	.	
SARM 15	97.84	.	.	.	0.95	.	.	(0.23)	.	.	0.007	.	(0.26)	MgCO ₃ : 0.55 Mn: 0.0213
SARM 14	97.32	.	.	.	(0.3)	.	.	(0.06)	.	.	(0.079)	.	(0.57)	
BCS 392	97.2	.	.	.	.	0.52	.	.	.	.	.	0.12	0.67	CO ₂ : 0.48 Pb: 0.18
JK D	97.07	47.24	0.04	0.37	.	.	.	0.20	.	.	0.035	0.004	(1.5)	
NCS DC28088	96.87	.	0.14	.	0.14	.	.	0.173	0.036	0.019	0.015	0.092	1.76	MgO: 0.015 Mn: 0.040
GBW 07250	94.91	.	.	.	(0.02)	.	.	0.096	0.019	0.005	0.0025	0.029	4.72	
NCS DC28228	94.81	.	.	.	0.99	.	0.26	.	.	.	0.076	0.107	2.76	Mn: 0.010
NCS DC14022a	93.68	.	.	.	0.30	.	0.166	.	0.026	0.006	0.014	0.35	3.06	
NCS DC14024a	93.28	.	.	.	0.62	.	0.22	.	0.040	0.006	0.0014	0.009	5.44	
VS 3383-86	91.84	.	0.53	.	.	.	0.612	.	.	.	0.063	0.095	5.03	
GBW 07251	90.87	.	.	.	(0.02)	.	.	0.124	0.026	0.005	0.0031	0.090	8.35	
NCS DC28230	90.72	.	.	.	0.87	.	0.25	.	.	.	0.063	0.084	7.68	Mn: 0.012
CGL 132	88.65	.	.	.	(0.78)	.	.	.	.	.	(0.012)	(0.019)	10.15	
NCS DC28229	85.56	.	.	.	0.58	.	0.28	.	.	.	0.045	0.079	10.62	Mn: 0.013
IPT 95	85.4	.	.	.	.	.	.	0.36	.	.	.	.	8.3	
GBW 07253	85.21	.	.	.	(0.02)	.	.	0.209	0.044	0.005	0.0013	0.045	14.15	
VS SH13	84.7	.	.	.	0.51	.	0.353	.	.	.	0.012	0.103	13.0	
NCS DC28087	83.12	.	0.69	.	1.06	.	.	0.36	0.28	0.031	0.018	0.050	13.74	MgO: 0.14 Mn: 0.0099
NCS DC28227	78.75	.	.	.	0.33	.	0.28	.	.	.	.	0.028	19.36	Mn: 0.012
NCS DC28226	77.33	.	.	.	0.20	.	0.31	.	.	.	.	0.068	18.04	Mn: 0.014
NCS DC28086	73.73	.	1.07	.	2.06	.	.	0.87	0.38	0.054	0.023	0.28	19.27	MgO: 0.73 Mn: 0.027
NCS DC14047	65.80	.	.	.	0.060	.	0.49	.	0.093	0.009	0.0027	0.26	31.04	
NCS DC62003a	60.98	.	3.69	.	.	1.17	.	2.35	1.44	0.52	SO ₃ : 0.12	0.12	26.20	MgO: 0.18 TiO ₂ : 0.15 LOI: 1.38
NCS DC28085	60.16	.	1.29	.	3.73	.	.	1.32	0.41	0.067	0.021	0.52	27.17	MgO: 1.99 Mn: 0.034
NCS DC28084	46.59	.	0.99	.	9.08	.	.	0.52	0.34	0.061	0.0071	0.071	28.89	MgO: 5.51 Mn: 0.051
CGL 135	35.00	.	.	.	(0.68)	.	.	.	.	.	0.037	0.41	47.67	
VS 4182-87	32.75	.	.	.	1.70	.	.	.	.	.	0.114	0.038	47.52	
VS 5132-89	32.69	.	.	.	11.75	.	.	.	.	.	.	.	(27.68)	
VS 2666-83	32.02	.	.	.	0.70	.	.	.	.	.	0.055	1.24	47.73	
VS 5133-89	4.17	.	.	.	1.10	.	.	.	.	.	.	.	.	
Number	CaF ₂	F	Al ₂ O ₃	BaO	CaCO ₃	CaO	Fe	Fe ₂ O ₃	K ₂ O	Na ₂ O	P	S	SiO ₂	Others

FLUORSPAR (FLUORITE)

= class where 1 = CRM and 2 = RM analysis listed in mass % except * which is mg/kg IGS: 55 g all others: 100 g

#	Number	Ca	F	Al ₂ O ₃	BaO	CO ₂	CuO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	SiO ₂	SO ₄	TiO ₂	ZnO	LOI 900°C
1	IGS 39	.	46.69	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	DH 2712	44.18	40.6	1.01	.	2.11	0.199	0.373	0.125	0.739	0.237	.	8.91	0.103	0.069	0.103	0.370
2	DH 2709	39.98	38.10	0.310	.	0.027	0.052	15.72	0.029	0.017	0.077	0.030	3.93	0.027	.	0.004	0.929
1	USZ HJ	37.32	34.92	2.35	.	.	.	0.34	0.99	.	.	.	23.01	.	0.047	.	.
1	UNS FM **	35.89	34.03	(0.329)	3.89	(0.13)	.	0.496	0.097	(0.036)	.	(0.087)	22.59	.	0.018	.	.

Number	Bi*	Ce*	Cr*	Cr ₂ O ₃ %	Cu*	Eu*	La*	Mo*	Pb*	S	Sb*	Sc*	Sm*	Sr%	Y*
IGS 39	.	.	.	.	.	.	.	.	.	.	.	.	.	(0.014)	.
DH 2712	.	.	.	0.106	.	.	NiO:0.153	.	PbO:0.102	.	.	.	SnO ₂ :0.054	.	.
DH 2709	.	.	.	0.004	.	.	.	.	.	.	.	.	.	.	.
USZ HJ	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
UNS FM **	(58.8)	28.3	272	.	60.7	1.16	14.1	44.6	72.2	0.91	2.1	0.67	5.6	(0.0580)	154

** UNS FM also contains Co: 2.6*, Cs: 0.81*, Mn: 64*, U: 2.9*, Yb: 3* and trace informational values for 19 other elements

CRM GABBRO

analysis listed in mass %

40 g units

Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	F	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O	H ₂ O+	T.H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂
VS M08	51.98	16.39	0.43	9.02	0.0390	9.61	0.85	11.55	0.088	0.22	0.31	0.46	6.39	0.16	3.27	0.21	0.1700	1.15
VS M07	40.79	17.60	0.03	14.62	0.1300	7.76	3.73	12.35	0.12	0.70	0.82	0.75	6.46	0.15	2.05	1.08	0.1800	3.39

continued

analysis listed in mg/kg except % which is mass %

VS M08: Gabbro

VS M07: Orthoclase Gabbro

Number	B	Ba	Be	Co	Cr	Cs	Cu	Ga	La	Li	Mo	Nb	Ni	Pb	Rb	Sc	Sn	Sr	V	Y	Yb	Zn	Zr
VS M08	7.5	272	0.8	48	126	1.1	40	18	26	5.5	3.2	3.7	18	7.3	4.0	31	2.7	477	199	18	2.0	84	48
VS M07	4.5	7480	(1.2)	49	76	1.1	59	(18)	37	5.4	(2.4)	12	45	7.6	12	(25)	(3.8)	1745	270	.	.	65	53

CRM GABBRO WITH EXTENSIVE ANALYSIS

analysis listed in mass % except * which is mg/kg

CAN WMG-1A: 350 g

CGL: 100 or 250 g

GBW: 50 g

JGb-1: 20 g

others: 100 g

Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	F	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂	LOI
VS 2118-81	52.04	16.94	0.37	7.36	(0.0690)	5.43	9.93	.	1.67	2.25	3.74	0.187	4.20	0.476	1.02	.
USZ 51-2009	48.00	26.26	.	13.61	(0.085)	2.00	.	4.22	(+0.61 -0.13)	0.31	2.85	0.080	2.42	0.078	0.37	1.40
VS 8670-2005	46.63	14.93	.	10.68	0.13	6.23	.	11.33	(+0.93)	3.09	6.81	0.167	2.72	1.03	1.72	(0.77)
JGb-2	46.47	23.48	.	14.10	.	5.41	0.62	6.69	-0.14	0.059	6.18	0.13	0.92	0.017	0.56	.
JGb-1 *	43.66	17.49	.	11.90	0.0133	9.43	4.79	15.06	+1.28 -0.13	0.24	7.85	0.189	1.20	0.056	1.60	.
CGL 013	43.15	22.57	.	14.99	(0.099)	4.57	.	10.99	(+0.46 -0.21)	0.11	4.51	0.10	1.41	(0.038)	0.94	(1.03)
VS 2119-81	37.66	13.35	0.33	7.81	0.16	14.98	4.33	20.98	1.25	0.80	7.48	0.198	2.35	2.21	6.99	.
VS 2117-81	37.62	13.67	(0.16)	15.75	0.0720	9.05	18.54	.	(0.12)	0.204	8.66	0.222	0.72	2.15	1.46	.
GBW 07112	35.69	14.14	0.12	9.86	0.006	13.36	9.90	.	1.09	0.15	5.25	0.193	2.11	0.028	7.69	.
Number	Si	Al	.	Ca	.	Fe	.	.	.	K	Mg	Mn	Na	P	Ti	.
JGb-1 *	20.41	9.26	.	8.50	.	10.53	4.79	15.05	+1.28 -0.13	0.20	4.73	0.146	0.89	0.024	0.96	.
CAN WMG-1A	18.27	4.75	.	10.06	.	12.71	.	.	.	0.1021	7.41	(0.1141)	0.1119	0.0731	0.419*	(4.31)

* JGb-1 is certified for major elements and their oxides

continued

analysis listed in mg/kg except % which is mass %

Number	Ag	As	B	Ba%	Be	Bi	Cd	Ce	Cl%	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd
VS 2118-81	.	.	.	0.1300	2.9	.	.	.	.	24	21	.	100	.	.	.	24	.
USZ 51-2009	.	.	.	0.0119	.	.	.	7.90	.	14.93	69.97	.	45.32	.	.	.	18.87	.
VS 8670-2005	(0.09)	.	(15)	0.152	1.9	.	.	163	.	40	58	3.3	58	6.2	2.8	3.9	17	11.5
JGb-2	.	.	.	0.00365	.	.	.	3.0	.	25.8	125	0.51	11.4	.	.	0.59	15.9	.
JGb-1 *	.	1.09	4.03	0.00643	.	.	0.087	8.17	.	60.1	57.8	0.26	85.7	1.56	1.04	0.62	17.9	1.61
CGL 013	.	.	.	0.004994	.	.	.	(3.43)	.	35.21	35.72	.	608	(0.79)	(0.44)	(0.37)	17.94	(0.8)
VS 2119-81	.	.	.	0.0440	0.82	.	.	.	.	69	56	.	69	.	.	.	13	.
VS 2117-81	.	.	.	0.0110	.	.	.	.	.	65	14	.	3600	.	.	.	21	.
GBW 07112	0.05	.	1.84	0.00862	.	0.04	0.09	4.2	0.006	93.0	14.5	.	28.3	1.11	0.47	0.74	23.7	1.31
CAN WMG-1A	3.03	5.99	.	0.0216	.	(0.251)	(0.818)	(17.18)	.	191	804	.	7120	2.291	(1.34)	(0.733)	(12.4)	(2.351)

Number	Ge	Hf	Ho	I	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pd	Pb	Pr	Pt	Rb	S%
VS 2118-81	1.1	.	.	.	.	46	13	.	2.0	.	.	14	.	20	.	.	42	.
USZ 51-2009	.	.	.	.	.	.	.	.	.	.	.	23.94	.	6.00	.	.	6.58	.
VS 8670-2005	1.3	5.3	1.1	.	.	82	12	0.3	1.4	8.4	89	47	.	15	20.7	.	80	(0.015)
JGb-2	.	0.25	.	.	.	1.5	.	0.062	0.42	1.9	1.8	13.6	.	1.5	.	.	2.9	.
JGb-1 *	1.01	0.88	0.33	.	.	3.60	4.59	0.15	0.59	3.34	5.47	25.4	.	1.92	1.13	.	6.87	0.1910
CGL 013	.	(0.32)	(0.16)	.	.	(1.31)	(4.89)	(0.06)	(0.5)	(0.36)	(2.33)	23.34	.	4.68	(0.5)	.	(1.96)	.
VS 2119-81	.	.	.	.	.	.	.	.	.	.	.	63	.	11	.	.	.	0.082
VS 2117-81	2.1	.	.	.	.	3.3	.	.	2.0	.	.	28	.	6	.	.	.	0.1240
GBW 07112	1.06	0.65	0.20	0.08	0.12	1.71	1.94	0.06	.	9.3	4.10	69	.	.	0.84	.	.	0.37
CAN WMG-1A	.	.	.	.	.	8.47	(44.7)	(0.196)	2.49	(5.26)	9.41	2480	0.484	(9.2)	(2.220)	0.899	(2.53)	3.43

Number	Sc	Se	Sm	Sn	Sr%	Ta	Tb	Te	Th	Tl	Tm	U	V	Y	Yb	Zn	Zr
VS 2118-81	24	.	.	5.5	0.0810	.	.	.	.	.	.	.	220	38	2.8	77	160
USZ 51-2009	12.33	.	.	.	0.1196	.	.	.	.	.	.	.	85.28	5.14	.	59.87	(33.49)
VS 8670-2005	26	.	17	3.2	0.224	0.5	1.5	.	8	.	(0.35)	1.8	250	30	2.5	120	219
JGb-2	27	.	0.51	.	0.0438	0.29	0.15	.	0.19	.	.	.	174	4.5	0.39	48.5	11.6
JGb-1 *	35.8	.	1.49	0.48	0.0327	0.18	0.29	.	0.48	.	0.16	0.13	635	10.4	1.06	109	32.8
CGL 013	39.66	.	(0.72)	.	0.0778	.	(0.13)	.	.	.	(0.05)	.	420	4.30	(0.39)	98.00	(12)
VS 2119-81	17	.	.	4.4	.	.	.	.	.	.	.	.	120	.	.	120	100
VS 2117-81	37	.	.	6.5	0.1040	.	.	.	.	.	.	.	960	.	2.6	136	.
GBW 07112	22.5	0.26	1.22	0.89	0.0612	.	0.20	0.010	.	0.07	0.09	.	768	4.9	0.36	118	29
CAN WMG-1A	21.33	14.1	2.211	(1.91)	0.00390	(0.355)	.	(1.19)	1.07	.	(0.192)	(0.65)	158	12.67	(1.220)	112	35.7

CRM GOLD ORE

ng/g (ppb) 10g or 1kg

Number	Au
GLG914-4	369.36
GLG318-1	259.04
GLG319-3	238.19
GLG313-3	227.70
GLG912-5	224.34
GLG917-3	222.13
GLG318-3	214.41
GLG911-5	209.21
GLG914-3	205.93
GLG904-4	204.08
GLG914-5	195.97
GLG315-5	194.82
GLG917-2	190.30
GLG317-2	189.86
GLG313-4	183.83
GLG303-1	164.48
GLG317-1	151.88
GLG316-2	150.84
GLG304-4	121.43
GLG310-3	119.30
GLG314-3	103.11
GLG314-5	95.23
GLG319-4	99.13
GLG317-3	94.60
GLG913-5	84.83
GLG313-5	83.36
GLG310-5	79.83
GLG316-1	76.74
GLG908-4	66.63
GLG917-1	59.71
GLG305-3	55.48
GLG908-5	52.56
GLG319-5	44.93
GLG908-3	34.86
GLG910-3	32.02
GLG319-1	25.63
GLG910-2	24.31
GLG913-2	22.75
GLG904-2	21.55
GLG312-1	20.65
GLG901-1	18.99
GLG302-2	16.67
GLG915-1	14.01
GLG913-1	11.13
GLG902-2	10.66
GLG901-2	9.92
GLG912-1	6.86
GLG910-4	6.36
GLG916-1	5.06
GLG911-4	4.65
GLG910-1	4.89
GLG907-1	4.18
GLG912-3	3.98
GLG307-2	3.83
GLG904-1	3.82
GLG911-3	3.74
GLG914-2	3.68
GLG314-1	3.63
GLG316-5	3.50
GLG916-2	3.48
GLG916-3	3.45
GLG911-1	3.35
GLG916-4	3.27
GLG302-4	3.23
GLG913-4	3.10
GLG318-2	3.03
GLG314-2	2.98
GLG913-3	2.81
GLG312-2	2.78
GLG316-3	2.75
GLG910-5	2.58
GLG912-2	2.54
GLG316-4	2.52
GLG319-2	2.50

CRM GOLD ORE

analysis listed in grams per Ton

Number	Ag	Au	Units
NCS DC93008a	58.5	18.6	500 g
NCS DC93006b	35.5	42.8	1 kg
NCS DC93007b	23.7	31.8	750 g
NCS DC93009a	7.9	2.5	500 g
NCS DC93009	7.8	2.5	500 g

CRM GOLD ORE

analysis listed in mg/kg (ppm) except % which is mass 10g or 200g units

Number	Au Fire	Au Aqua	Ag	As	Co	Cu	Ni	Pb	S%	Zn
GBMS911-4	6.78	6.73	1.79	36	54	900	32	35	0.79	115
GBMS304-4	5.67	5.29	3.4	535	.	9786	732	271	6.27	149
GBMS304-1	3.06	2.96	1.4	168	.	3156	380	197	1.33	120
GBMS911-2	2.88	2.82	1.24	62	78	1417	34	47	1.30	122
GBMS304-3	2.68	2.51	1.5	263	137	3637	376	159	2.35	143
GBMS911-3	1.33	1.31	0.17	13	31	7652	27	37	0.99	196
GBMS911-1	1.04	1.04	1.19	335	31	10028	23	5844	1.40	1221

Fire = Fire Assay, Aqua = Aqua Regia

CRM GOLD ASSAY PILLS

25 x 1g pressed powder

Number	Au mg/kg (ppm)
GAP-06	2.2202
GAP-03	1.0000
GAP-05	0.5249
GAP-01	0.3237
GAP-04	0.2117
GAP-02	0.1025
GAP-07	0.0304

RM GOLD ORE

g/t = mg/kg = ppm 100 g or 1 kg

Number	Au	Pd*	Pt*
CDN GS-50	50.5	.	.
CDN GS-40	39.95	.	.
CDN GS-22	22.94	.	.
CDN GS-20A	21.12	.	.
CDN GS-20B	20.23	.	.
CDN GS-14A	14.90	.	.
CDN GS-13A	13.20	.	.
CDN GS-12A	12.31	.	.
CDN GS-10D	9.50	.	.
CDN GS-9A	9.31	.	.
CDN GS-7F	6.90	.	.
CDN GS-4E	4.19	.	.
CDN GS-3K	3.19	.	.
CDN GS-3L	3.18	.	.
CDN GS-2P	1.99	.	.
CDN GS-P7H	0.799	.	.
CDN GS-P8C	0.784	.	.
CDN GS-P5C	0.571	.	.
CDN BL-10	<0.01	<0.01	<0.01

RM GOLD AND SILVER ORE

data in mg/kg (ppm) 100 g or 1 kg units

Number	Au	Ag
CDN GS-3M	3.10	95.4
CDN GS-2Q	2.37	73.2
CDN GS-1Q	1.24	40.7

RM GOLD AND SILVER ORE

analysis listed in mg/kg (ppm) 100 g or 1 kg

Number	Ag	Au	Au
CDN GS-8C	.	8.59 FA/Inst	8.62 FA/Grav
CDN GS-5Q	60.3	5.59 FA/Inst	5.64 FA/Grav
CDN GS-5P	119	4.78 FA/Inst	4.80 FA/Grav
CDN GS-5L	.	4.68 FA/ICP	4.74 FA/Grav

CRM GOLD ORE

mg/kg (ppm) 10g or 1kg

Number	Au Fire	Au Aqua
G310-10	48.53	47.74 last
G917-1	48.52	47.79
G916-6	30.94	30.47
G312-10	24.94	24.67
G915-8	24.72	24.58
G916-5	19.92	19.63
G915-5	17.95	17.29
G914-9	16.77	16.62
G915-7	12.38	12.35
G301-9	10.47	.
G914-10	10.26	10.17
G311-9	10.01	7.45
G315-8	9.93	9.83
G915-9	9.82	9.83
G914-7	9.81	9.68
G915-3	9.39	9.22
G915-4	9.16	9.00
G306-3	8.66	8.60
G315-7	7.87	7.75
G311-10	7.32	5.54
G912-1	7.29	7.33
G913-10	7.09	7.10
G313-5	7.07	7.05
G313-7	6.93	6.97
G314-3	6.70	6.68
G316-8	6.11	6.06
G316-7	5.85	5.79
G312-9	5.84	5.69
G315-6	5.68	5.26
G315-1	5.64	5.38
G904-8	5.53	5.51
G314-5	5.29	5.30
G915-2	4.98	4.96
G913-9	4.91	4.88
G913-8	4.87	4.93
G396-8	4.82	4.75
G316-10	4.65	4.56
G915-1	4.56	4.51
G916-7	4.51	4.48
G998-4	4.36	4.27
G912-6	4.08	4.05
G316-10	4.07	3.99
G397-6	3.95	3.82
G905-7	3.92	3.89
G913-5	3.70	3.21
G911-8	3.65	2.68
G310-9	3.29	3.25 last
G900-7	3.22	3.19
G916-8	3.20	3.15
G914-6	3.21	3.16
G305-8	3.14	2.80
G916-9	3.13	2.88
G910-6	3.09	3.05
G398-6	2.94	2.86
G916-10	2.81	2.73
G914-1	2.57	2.55
G912-2	2.51	2.51
G308-3	2.50	2.47
G914-2	2.48	2.44
G906-2	2.46	2.40
G314-7	2.45	2.43
G303-4	2.43	2.45
G911-4	2.43	2.45
G313-8	2.43	2.41
G913-2	2.40	2.42
G913-3	2.36	2.21
G913-7	2.31	2.26
G913-6	2.19	2.16
G912-3	2.09	2.10
G313-2	2.04	2.07
G313-4	2.00	2.00
G307-8	1.99	1.97
G314-6	1.98	1.98
G916-2	1.98	1.96
G315-3	1.97	1.97

Number Au Fire Au Aqua

CRM GOLD ORE

mg/kg (ppm) 10g or 1kg

Number	Au Fire	Au Aqua
G912-4	1.91	1.95
G316-9	1.75	1.71
G916-1	1.72	1.70
G906-1	1.67	1.64
G901-5	1.65	1.61
G312-5	1.60	1.56
G904-7	1.58	1.54
G311-8	1.57	1.54
G300-9	1.53	1.51
G314-9	1.52	1.49
G910-9	1.51	1.48
G312-2	1.51	1.47
G910-1	1.42	1.40
G307-4	1.40	1.36
G316-6	1.40	1.39
G911-3	1.37	1.37
G913-4	1.37	1.35
G907-5	1.34	1.31
G311-5	1.32	1.28
G911-10	1.30	1.30
G914-3	1.24	1.20
G301-8	1.19	.
G905-1	1.16	1.14
G308-2	1.11	1.08
G316-2	1.04	1.03
G314-8	1.03	1.02
G315-9	1.02	1.00
G916-3	1.01	1.00
G314-2	0.99	0.98
G315-2	0.98	0.98
G910-10	0.97	0.95
G908-4	0.96	0.93
G999-3	0.95	0.90
G910-2	0.90	0.89
G399-5	0.87	0.85
G913-1	0.82	0.82
G998-3	0.81	0.80
G314-1	0.75	0.74
G912-8	0.53	0.52
G916-4	0.51	0.51
G313-3	0.51	0.49
G316-5	0.50	0.50
G398-2	0.50	0.42
G912-7	0.42	0.41
G912-5	0.38	0.38
G314-10	0.38	0.38
G315-4	0.32	0.31
G316-1	0.31	0.31
G315-7	0.30	0.29
G311-3	0.27	0.27
G316-4	0.24	0.24
G307-3	0.24	0.23
G312-7	0.22	0.22
G311-6	0.22	0.21
G903-10	0.21	0.22
G908-2	0.21	0.21
G316-3	0.21	0.21
G310-2	0.20	0.20
G914-4	0.20	0.20
G914-5	0.20	0.20
G911-5	0.20	0.19
G302-10	0.18	0.16
G911-6	0.17	0.16
G314-4	0.14	0.13
G315-5	0.10	0.10
G310-3	0.07	0.06
G908-1	0.06	0.06

Number Au Fire Au Aqua

CRM

GOLD ORE

analysis listed in mass % except * which is mg/kg

for U, M = /ICP and X = XRF

D = Densitu/Specific Gravity

Number	Au*	Al ₂ O ₃	CaO	Cr ₂ O ₃	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	S	SiO ₂	TiO ₂	U M	LOI	D	Units
AMIS 0429	22.93	.	0.48	(0.11)	4.97	0.54	.	(0.04)	.	1.57	87.70	.	0.0722	(1.87)	.	100 g
AMIS 0430	2.68	2.80	0.19	0.12	2.03	0.32	(0.11)	0.030	(0.06)	0.33	92.3	(0.14)	0.0113	(1.66)	2.71	100 g

CRM

GOLD AND SILVER ORE

analysis listed in mg/kg (ppm) * and mass percent %

Number	Ag*	Au*	As%	S%	Sb%	Units
NCS DC28104	62.2	63.4	.	.	.	250 g
USZ 29-2000	6.05	42.26	.	.	.	100 or 200 g
VS 5938-91	6.5	36	8.45	28.73	0.021	100 g
VS 5937-91	6.4	33	7.78	25.83	0.019	100 g
VS 2739-83	5.7	34	8.0	26.0	0.020	100 g
NCS DC28107	20.4	20.0	.	.	.	250 g
NCS DC29103	18.0	20.0	.	.	.	500 g
CAN MA-1b	(4)	17.0	.	.	.	200 g
VS 5936-91	3.5	20	4.72	15.26	0.012	100 g
VS 5935-91	23	13	.	15.10	0.044	100 g
NCS DC28106	11.0	11.0	.	.	.	500 g
USZ 39-2005	49.33	10.92	.	.	.	250 g
VS 5934-91	1.8	8.9	2.11	6.77	0.0057	100 g
CAN MA-3a	(2.4)	8.56	.	.	.	200 g
USZ 40-2005	27.06	7.38	.	.	.	100 or 250 g
USZ 30-2000	1.18	5.92	.	.	.	250 g
NCS DC28105	5.8	5.0	.	.	.	500 g
VS 5933-91	1.1	4.6	1.08	3.35	0.0039	100 g
NCS DC29102	37.4	4.30	.	.	.	500 g
VS 8815-2006	0.75	4.25	1.000	3.27	0.00260	100 g
USZ 31-2000	1.07	3.28	.	.	.	250 g
CAN MA-2c	(0.51)	3.02	.	.	.	400 g
VS 5932-91	0.9	3.0	0.54	1.77	0.0021	100 g
NCS DC28102	2.2	2.5	.	.	.	500 g
VS 8816-2006	0.360	2.13	0.500	1.64	0.00135	100 g
NCS DC28103	3.1	1.8	.	.	.	500 g
NCS DC28101	4.2	1.7	.	.	.	500 g
USZ 21-98	.	1.06	.	.	.	250 g
VS 2740-83	0.31	0.9	0.17	0.38	0.0019	100 g
NCS DC29101	.	0.64	.	.	.	500 g
VS 5940-91	0.9	0.55	0.063	0.34	0.0075	100 g
VS 5939-91	0.7	0.37	.	0.24	0.0025	100 g
KZ 63-86	.	0.023	.	.	.	100 g
KZ 64-86	.	0.0076	.	.	.	100 g
KZ 65-86	.	0.0067	.	.	.	100 g
NCS DC90006	732	.	.	.	.	50 g
NCS DC90005	559	.	.	.	.	50 g
NCS DC90004	446	.	.	.	.	50 g
NCS DC90003	298	.	.	.	.	50 g
NCS DC29106	199	.	.	.	.	50 g
NCS DC29105	138.1	.	.	.	.	50 g
NCS DC90002	112	.	.	.	.	50 g
NCS DC29104	50.3	.	.	.	.	50 g
NCS DC90001	46.9	.	.	.	.	50 g

Number	Ag*	Au*	As%	S%	Sb%	Units
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CRM GOLD AND SILVER ORE

minesite carbon material

data listed in mg/kg (ppm) 10 g units

Number	Au	Ag	
GLC302-3	7467	1248	last of stock
GLC918-2	6577	3188	
GLC318-2	5429	2542	
GLC319-1	3556	387	
GLC318-3	3186	422	
GLC918-3	3160	475	
GLC917-2	2460	175	
GLC919-1	2367	148	
GLC314-1	2031	947	last of stock
GLC320-1	2011	1002	
GLC320-2	1623	802	
GLC616-1	1330	601	
GLC919-2	1199	519	
GLC916-2	1174	209	
GLC315-4	974	360	
GBC916-1	933	265	
GLC915-2	829	27	
GBC319-4	808	225	
GBC917-2	770	219	
GBC317-2	779	228	
GBC319-2	716	214	
GBC319-3	712	205	
GBC615-1	701	338	
GBC917-3	628	195	
GBC319-1	550	224	
GBC318-2	484	281	
GBC911-3	470	596	last of stock
GBC615-2	467	(57)	
GBC916-2	465	102	
GBC616-2	454	233	
GBC316-2	319	508	
GBC912-2	301	528	
GBC902-3	285	83	last of stock
GBC919-2	167	87	
GBC919-4	138	70	
GBC919-1	114	60	
GBC919-3	85	44	
GBC314-1	51	38	last of stock
GBC918-2	19	31	
GBC616-1	12	46	
GBC915-2	6	21	

Number	Au	Ag
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CRM GOLD AND SILVER ORE - CONTINUED ON THE NEXT PAGES

analysis listed in mass % except * which is mg/kg

OREAS samples list multiple methods, more information upon request

Number	Au*	Ag*	As	Ba	Cu	Fe	Fe ₂ O ₃	Pb	S	SO ₃	Sb	Zn	LOI
CAN DS-1	32.59	0.47	0.6960	0.0221	0.00271	(3.0)	.	0.00138	(2.609)	.	(0.0107)	0.0206	(13)
USZ 38-2005	31.28	.	.	0.02	0.43	.	14.71	.	.	.	.	0.006529	2.59
KZ 3594-86	12.1	107	0.18	10.7	4.16	.	.	0.34	.	.	.	2.25	.
OREAS 12a	11.79	(3)	(0.6795)	(0.0646)	(0.0262)	.	(20.9)	(0.0015)	(5.34)	.	(0.00152)	(0.0129)	(8.91)
OREAS 62d	10.50	8.37	(0.0028)	(0.0210)	(0.0042)	.	(2.88)	(0.0015)	(0.47)	(1.49)	(0.00019)	(0.0029)	(11.24)
USZ 20-98	10.05	3.05	.	.	.	.	1.92	.	.	.	.	.	0.95
KZ 3597-86	8.8	.	3.96	.	.	.	.	.	.	.	.	.	.
KZ 16-2004	8.57	1.35	.	.	0.02	.	.	.	.	.	.	.	.
KZ 62-86	5.7	2.3	.	.	.	.	.	.	.	.	.	.	.
OREAS 19a	5.49	(1.5)	(0.3410)	(0.0469)	(0.0163)	.	(15.9)	(0.00105)	(2.54)	.	(0.00075)	(0.0128)	(4.70)
KZ 61-86	4.4	14.7	0.32	.	0.00044	.	.	.	.	.	0.076	.	.
OREAS 61e 4	4.43	5.27	(0.00173)	(0.0272)	(0.0060)	(2.66)	.	(0.00133)	0.790	.	(<0.0005)	(0.0051)	(7.74)
OREAS 61e A	4.51	5.37	(0.00159)	(0.00344)	(0.0058)	(2.37)	.	(0.00120)	(0.824)	.	(<0.0002)	(0.00469)	.
OREAS 61e F	.	.	.	(0.0277)	.	(2.56)	.	.	(0.760)	.	.	.	.
OREAS 17c	3.04	(0.5)	(0.2055)	(0.0398)	(0.0130)	.	(14.1)	(0.00105)	(1.59)	.	(0.00045)	(0.0139)	(2.72)
OREAS 23a	3	0.1	0.0037	0.1092	0.00421	.	.	0.00213	.	.	0.000045	0.0069	.
OREAS 7Ca	2.54	.	(0.1917)	(0.0683)	.	.	(4.06)	.	.	(0.04)	(0.0161)	(0.0030)	.
UNS AuM	2.5	.	0.08765	BaO:0.066	0.00359	.	5.55	.	.	.	.	.	.
OREAS 16a	1.81	(0.5)	(0.0625)	(0.0365)	(0.0084)	.	(13.9)	(0.0006)	(1.24)	.	(0.0001)	(0.0136)	(1.22)
OREAS 15d	1.559	(0.5)	(0.2445)	(0.0252)	(0.0068)	.	(12.17)	(0.0012)	(0.62)	.	(0.00023)	(0.0107)	(1.28)
KZ 15-2004	1.48	17.4	.	.	0.02	.	.	0.18	.	.	.	0.055	.
OREAS 66a	1.237	18.9	(0.0282)	(0.08085)	0.0121	.	(6.745)	(0.0260)	(1.075)	.	(0.0064)	(0.0091)	(4.16)
USZ 41-2006	0.91	.	.	0.0249	0.75	.	.	0.0027	.	3.87	.	0.0136	5.43
CAN CH-4	0.88	2.1	0.00088	(0.0425)	0.20	5.42	.	.	0.63	.	0.77	0.020	(0.9)
USZ 34-2002	0.79	1.7	0.12	.	0.001484	2.18T	.	0.002	.	.	0.14	0.0025	2.84
US DGPM-1	0.73	.	0.0180	.	.	.	1.92	.	.	.	0.0014	.	.
USZ 35-2002	0.57	1.25	.	.	.	.	.	.	.	.	.	.	.
KZ 17-2004	0.49	1.78	.	.	1.59	3.91	.	.	1.73	.	.	.	.
OREAS 15f	0.334	(<0.5)	(0.0127)	(0.0328)	(0.0061)	.	(12)	(0.0005)	(0.24)	.	(0.00004)	(0.0113)	(0.44)
KZ 6585-93	0.28	11.6	0.075	.	0.064	.	.	0.12	.	.	.	0.60	.
CAN GTS-2a	0.272	(0.64)	0.0124	0.0186	0.00886	7.56	.	.	0.348	.	(0.000133)	0.0208	(9.87)
OREAS H5	0.047	.	.	.	.	.	.	.	.	.	.	.	.
OREAS H5 A	0.057	1.92	0.0000008	(0.0052)	0.0099	0.813	.	0.00361	(0.017)	.	(0.000485)	0.000658	.
OREAS H5 N	(0.053)	.	(0.0000014)	(0.0173)	.	(1.24)	.	.	.	.	(0.000510)	(0.00460)	.
OREAS 24b	<0.003	.	(0.00100)	BaO:0.0819	.	.	6.35	.	0.190	.	.	(0.0113)	2.46
OREAS 24b 4	.	(0.127)	(0.000835)	0.0716	0.00380	4.39	.	0.00231	0.198	.	0.000100	0.0105	.
OREAS 24b A	(0.002)	(0.058)	0.000796	0.0146	0.00364	3.93	.	0.000923	0.200	.	(0.000048)	0.0093	.
OREAS 24b F	.	(2.17)	(0.000974)	0.0739	(0.00351)	4.45	.	(0.00229)	0.203	.	(0.000133)	(0.0103)	.
OREAS 25a	<0.002	.	.	BaO:(0.0151)	.	.	9.77	.	0.044	.	.	(0.00467)	11.70
OREAS 25a 4	.	(0.168)	(0.000994)	0.0147	0.00339	6.60	.	0.00252	0.051	.	0.000067	0.00444	.
OREAS 25a A	(0.001)	(0.035)	(0.000284)	0.0056	0.00249	5.99	.	0.00210	(0.050)	.	(0.000018)	0.00301	.
OREAS 25a F	.	(0.570)	(0.000983)	0.0151	(0.00391)	6.72	.	(0.00244)	(0.046)	.	(0.000102)	0.00468	.
OREAS 24c	<0.001	<0.2	<0.00002	0.0269	0.00486	7.62	.	0.000290	(<0.01)	.	<0.00001	0.0108	.
OREAS 22d	<0.001	<0.1	<0.0001	0.000617	0.000923	0.468	.	0.000072	(<0.01)	.	0.000021	0.000670	.
Number	Au*	Ag*	As	Ba	Cu	Fe	Fe ₂ O ₃	Pb	S	SO ₃	Sb	Zn	LOI

CRM GOLD AND SILVER ORE - CONTINUED FROM THE PREVIOUS AND ON TO THE NEXT PAGE

analysis listed in mass % except * which is mg/kg

OREAS samples list multiple methods, more information upon request

Number	Al	Al ₂ O ₃	C	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	P ₂ O ₅	Si	SiO ₂	Ti	TiO ₂
CAN DS-1	4.48	.	(3.126)	(6.248)	.	(1.1)	.	2.76	.	0.0437	.	.	.	0.0340	.	(25.68)	.	.	.
USZ 38-2005	.	2.03	.	.	0.56	.	0.64	.	1.01	.	0.03	.	0.17	.	0.05	.	77.37	.	0.15
KZ 3594-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 12a	.	(9.3)	(1.51)	.	(7.95)	.	(0.64)	.	(4.22)	.	(0.78)	.	(0.89)	.	(0.63)	.	(43.0)	.	(0.56)
OREAS 62d	.	(6.75)	(2.61)	.	(12.27)	.	(1.97)	.	(0.95)	.	(0.08)	.	(0.36)	.	(0.102)	.	(62.48)	.	(0.29)
USZ 20-98	.	1.70	.	.	0.77	.	0.37	.	.	.	0.025	.	0.07	.	0.037	.	92.57	.	0.08
KZ 3597-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 16-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 62-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 19a	.	(11.9)	(0.81)	.	(8.29)	.	(0.68)	.	(5.94)	.	(0.45)	.	(1.96)	.	(0.47)	.	(47.4)	.	(1.17)
KZ 61-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 61e 4	(4.50)	.	.	(4.93)	.	(2.00)	.	(0.818)	.	(0.061)	.	(0.656)	.	(0.051)	.	.	.	(0.220)	.
OREAS 61e A	(1.25)	.	.	(4.61)	.	(0.203)	.	(0.723)	.	(0.059)	.	(0.064)	.	(0.048)	.	.	.	(0.042)	.
OREAS 61e F	(4.45)	.	(1.61)	(4.88)	.	(1.99)	.	(0.820)	.	(0.062)	.	(0.705)	.	(0.048)	.	(31.90)	.	(0.231)	.
OREAS 17c	.	(12.8)	(0.56)	.	(8.40)	.	(0.71)	.	(6.63)	.	(0.33)	.	(2.40)	.	(0.41)	.	(49.1)	.	(1.41)
OREAS 23a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 76a	.	(15.2)	.	.	(0.01)	.	(4.23)	.	(0.72)	.	(0.01)	.	(0.05)	.	(0.08)	.	(71.1)	.	(0.68)
UNS AUM	.	14.06	.	.	4.09	.	1.92	.	1.81	.	0.082	.	3.08	.	.	.	66.15	.	0.39
OREAS 16a	.	(13.15)	(0.28)	.	(8.09)	.	(0.817)	.	(6.79)	.	(0.26)	.	(2.81)	.	(0.4)	.	(49.88)	.	(1.67)
OREAS 15d	.	(13.25)	(0.20)	.	(7.95)	.	(0.743)	.	(6.47)	.	(0.188)	.	(2.74)	.	(0.326)	.	(52.86)	.	(1.61)
KZ 15-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 66a	.	(8.49)	(0.03)	.	(2.32)	.	(0.355)	.	(1.82)	.	(0.04)	.	(0.85)	.	(0.1635)	.	(73.6)	.	(0.83)
USZ 41-2006	.	14.58	.	.	3.14	.	2.81	.	5.52	.	0.12	.	2.36	.	0.27	.	52.09	.	0.93
CAN CH-4	7.73	.	0.12	1.96	.	1.81	.	1.43	.	0.043	.	3.26	.	0.061	.	.	63.10	0.31	.
USZ 34-2002	.	4.79	.	.	2.53	.	1.48	.	0.37	.	0.017	.	0.055	.	0.125	.	84.70	.	0.17
US DGPM-1	.	9.56	.	.	(0.22)	.	2.74	.	(0.56)	.	.	.	.	.	.	.	79.82	.	.
USZ 35-2002	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 17-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 15f	.	(14.2)	(0.16)	.	(8.59)	.	(0.82)	.	(7.13)	.	(0.18)	.	(3.02)	.	(0.336)	.	(51.0)	.	(1.78)
KZ 6585-93	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CAN GTS-2a	6.96	.	2.011	4.01	.	2.021	.	2.412	.	0.1510	.	0.617	.	0.0892	.	23.65	.	(0.5*)	.
OREAS H5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS H5 A	(2.31)	.	.	(0.014)	.	(0.059)	.	(0.073)	.	0.007	.	(0.135)	.	0.010	.	.	.	(0.040)	.
OREAS H5 N	.	.	.	.	.	(0.500)	.	.	.	.	.	(0.215)	.	.	.	.	.	.	.
OREAS 24b	.	15.15	0.189	.	1.47	.	3.39	.	2.75	.	0.059	.	1.15	.	0.161	.	66.0	.	0.798
OREAS 24b 4	8.02	.	.	1.08	.	2.81	.	1.65	.	0.044	.	0.846	.	0.069	.	.	.	0.468	.
OREAS 24b A	3.15	.	.	0.461	.	1.17	.	1.36	.	0.035	.	0.108	.	(0.062)	.	.	.	0.198	.
OREAS 24b F	7.81	.	.	1.06	.	2.74	.	1.62	.	0.046	.	0.824	.	(0.073)	.	31.12	.	0.481	.
OREAS 25a	.	18.24	1.56	.	0.438	.	0.599	.	(0.579)	.	0.063	.	0.191	.	0.117	.	56.7	.	1.93
OREAS 25a 4	8.87	.	.	0.309	.	0.482	.	0.327	.	0.047	.	0.134	.	0.048	.	.	.	0.977	.
OREAS 25a A	5.85	.	.	0.150	.	0.131	.	(0.193)	.	0.042	.	(0.040)	.	0.037	.	.	.	(0.036)	.
OREAS 25a F	9.25	.	.	0.302	.	0.493	.	0.324	.	0.049	.	(0.126)	.	0.049	.	25.85	.	1.14	.
OREAS 24c	7.45	.	.	5.86	.	0.735	.	3.93	.	0.108	.	2.42	.	0.156	.	.	.	1.06	.
OREAS 22d	0.132	.	.	(0.010)	.	(0.008)	.	(0.009)	.	0.011	.	(0.009)	.	(0.001)	.	.	.	0.021	.
Number	Al	Al ₂ O ₃	C	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	P ₂ O ₅	Si	SiO ₂	Ti	TiO ₂

CRM GOLD AND SILVER ORE - CONTINUED FROM THE PREVIOUS AND ON TO THE NEXT PAGE

analysis listed in mg/kg except % which is mass %

OREAS samples list multiple methods, more information upon request

Number	B	Be	Bi	Cd	Ce	Co	Cr	Cr ₂ O ₃	Cs	Dy	Er	Eu	Ga	Gd	Ge	Hf	Hg
CAN DS-1	.	(0.819)	(0.1)	(0.98)	(40)	9.5	(59)	.	(7)	.	.	(1)	(10)	.	.	(4)	82
USZ 38-2005	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 3594-86	.	.	.	75	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 12a	.	(0.8)	(0.3)	.	(21.7)	(31)	.	.	(4)	(4)	(2.0)	(1.1)	(13.3)	(4.4)	.	(1)	.
OREAS 62d	.	(0.5)	.	.	(16.2)	(6.0)	.	.	(5.2)	(1.2)	(0.7)	(0.5)	(7.1)	(1.4)	.	(1.0)	.
USZ 20-98	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 3597-86	1.08%	.	.	.	.	0.17%	.	.	.	.	.	.	.	.	.	.	.
KZ 16-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 62-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 19a	.	(1.0)	(0.2)	.	(29.6)	(40.5)	.	.	(2)	(4)	(2.1)	(1.5)	(17)	(4.8)	.	(2.5)	.
KZ 61-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 61e 4	.	(0.89)	(<2)	(<0.5)	.	(9.29)	(24.4)	.	.	.	.	.	(10.0)	.	.	.	.
OREAS 61e A	(<10)	(0.58)	(<2)	(1.15)	.	(8.83)	(21.6)	.	.	.	.	.	(<10)	.	.	.	.
OREAS 61e F	.	.	.	.	(18.7)	.	(<70)	.	(5.58)	(1.48)	(0.89)	(0.58)	(9.75)	(1.74)	.	(1.5)	(0.70)
OREAS 17c	.	(1.0)	(0.1)	.	(32.7)	(44)	.	.	(2)	(5)	(2.3)	(1.6)	(18.5)	(5)	.	(3)	.
OREAS 23a	.	.	0.15	0.15	.	14.8	.	.	.	.	.	.	.	.	.	.	.
OREAS 7Ca	.	.	.	.	(90)	.	(502)	.	(10)	.	.	(1.4)	.	.	.	(4.4)	.
UNS AUM	.	.	.	.	.	.	47	.	.	.	.	.	12.9	.	.	.	.
OREAS 16a	.	(0.7)	.	.	(36.4)	(44)	.	.	(1.6)	(4.6)	(2.20)	(1.72)	(18.1)	(5.2)	.	(3.6)	.
OREAS 15d	.	(0.9)	(0.4)	.	(34.1)	(43)	.	.	(0.8)	(4.3)	(2.1)	(1.6)	(17.9)	(4.9)	.	(3.2)	.
KZ 15-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 66a	.	(0.6)	(10.2)	(1)	(33.6)	(18)	.	.	(0.5)	(2.15)	(1.23)	(0.98)	(17.4)	(2.9)	.	(1.9)	.
USZ 41-2006	.	.	.	.	.	24.3	99.3	.	.	.	.	.	.	.	.	.	.
CAN CH-4	.	.	.	1.14	.	26	114	.	.	.	.	.	.	.	.	.	.
USZ 34-2002	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
US DGPM-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USZ 35-2002	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 17-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 15f	.	(1.3)	.	.	(38.8)	(47)	.	.	(1.1)	(5.18)	(2.48)	(1.98)	(18.8)	(5.9)	.	(4.5)	.
KZ 6585-93	.	.	.	96	.	.	.	.	.	.	.	.	.	.	.	.	.
CAN GTS-2a	.	.	.	(0.58)	.	22.1	(270)	.	.	.	.	.	.	.	.	.	.
OREAS H5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS H5 A	(23.0)	(<1)	5.44	1.28	.	3.68	31.1	.	.	.	.	.	(11.4)	.	(<0.1)	.	(0.14)
OREAS H5 N	.	Br:(4.99)	.	.	(76)	(4.64)	(108)	.	(1.94)	.	.	(0.93)	.	.	(57)	.	(<1)
OREAS 24b	.	.	.	.	.	(28.3)	.	201	.	.	.	.	.	.	.	.	.
OREAS 24b 4	.	2.92	0.68	(0.049)	84	16.9	118	.	10.7	(4.47)	(2.54)	(1.36)	20.1	(6.02)	(0.83)	3.90	.
OREAS 24b A	(6.23)	(1.65)	0.73	(0.046)	(61)	15.7	106	.	9.15	(2.65)	(1.21)	(0.66)	10.8	(3.96)	(0.26)	(0.52)	.
OREAS 24b F	(69)	2.95	(1.03)	.	86	16.9	142	.	10.5	5.83	3.41	1.39	20.2	6.27	(1.64)	6.15	.
OREAS 25a	.	.	.	.	.	(10.0)	.	(167)	.	.	.	.	.	.	.	.	.
OREAS 25a 4	.	1.02	0.35	(0.041)	48.9	8.20	115	.	6.46	(2.67)	(1.50)	(0.64)	25.9	(2.91)	(0.22)	4.53	.
OREAS 25a A	(5.92)	(0.65)	0.30	(0.041)	33.1	5.72	73	.	4.45	(1.15)	(0.50)	(0.43)	20.6	(1.74)	(0.13)	(0.47)	(0.053)
OREAS 25a F	(39.2)	(0.94)	(0.40)	.	51	8.05	125	.	6.36	4.31	2.76	0.80	25.4	3.79	(2.02)	11.1	.
OREAS 24c	.	1.05	<0.1	<0.1	(40.2)	42.7	193	.	(0.80)	(4.82)	(2.35)	(1.94)	(20.7)	(5.95)	(0.43)	3.75	.
OREAS 22d	.	(0.066)	<0.1	<0.1	(2.43)	0.85	(11.9)	.	(0.10)	(0.15)	(<0.1)	(<0.05)	(0.26)	(0.20)	(0.065)	0.22	.
Number	B	Be	Bi	Cd	Ce	Co	Cr	Cr ₂ O ₃	Cs	Dy	Er	Eu	Ga	Gd	Ge	Hf	Hg

CRM GOLD AND SILVER ORE - CONTINUED FROM THE PREVIOUS AND ON TO THE NEXT PAGE

analysis listed in mg/kg except % which is mass %

OREAS samples list multiple methods, more information upon request

Number	Ho	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pd	Pr	Pt	Rb	Re	Sc	Se	Sm
CAN DS-1	.	(0.5)	(20)	(20)	.	.	.	.	48.7	.	.	.	.	.	.	.	.
USZ 38-2005	.	.	.	.	.	0.11%	.	.	28.27	.	.	.	.	.	.	.	.
KZ 3594-86	.	9.7	.	.	.	.	.	.	.	.	.	.	.	.	.	50.9	.
OREAS 12a	(0.73)	(0.05)	(17.7)	(19.5)	(0.28)	(5.5)	(3.25)	(19.5)	(71.5)	.	(4.56)	.	(20.5)	.	(20)	.	(4.18)
OREAS 62d	(0.24)	(0.02)	(7.6)	(39)	(0.1)	(6.7)	(1.2)	(7.8)	(7.0)	.	(1.9)	.	(72)	.	(7.0)	.	(1.7)
USZ 20-98	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 3597-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 16-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 62-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 19a	(0.8)	(0.05)	(17.7)	(13.0)	(0.27)	(4.0)	(10)	(19.8)	(106)	.	(4.78)	.	(19.5)	.	(20)	.	(4.68)
KZ 61-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 61e 4	.	.	(10.0)	(50)	.	(5.67)	.	.	(8.37)	.	.	(0.004)	.	.	(10.0)	.	.
OREAS 61e A	.	.	(15.0)	.	.	(5.67)	.	.	(9.14)	.	.	.	.	.	(6.00)	(0.60)	.
OREAS 61e F	(0.33)	.	(8.95)	.	(0.14)	.	(1.80)	(9.75)	.	.	(2.33)	.	(91)	.	.	.	(2.03)
OREAS 17c	(0.82)	(0.05)	(18.1)	(10.3)	(0.26)	(4.3)	(13)	(19.7)	(136)	.	(4.84)	.	(21.5)	.	(20.5)	.	(4.83)
OREAS 23a	.	.	.	.	.	9.6	.	.	40.5	.	.	.	.	.	.	.	.
OREAS 7Ca	.	.	(50)	.	.	.	.	.	.	.	.	.	(168)	.	(14)	.	(10)
UNS AUM	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 16a	(0.86)	(0.05)	(19.3)	(8.0)	(0.25)	(3.2)	(18.8)	(20.6)	(157)	.	(5.19)	.	(26.1)	.	(18.3)	.	(5.2)
OREAS 15d	(0.81)	(0.06)	(16.9)	(8.3)	(0.23)	(2)	(17.8)	(18.2)	(147)	.	(4.29)	.	(21.1)	.	(21)	.	(4.7)
KZ 15-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 66a	(0.4)	(0.48)	(17.6)	(14.8)	(0.21)	(5.5)	(6.8)	(16.0)	(59)	.	(4)	.	(8)	.	(9)	.	(3.35)
USZ 41-2006	.	.	.	.	.	51.8	.	.	25.4	.	.	.	.	.	.	.	.
CAN CH-4	.	.	.	.	.	.	.	.	51	.	.	.	.	.	.	2.1	.
USZ 34-2002	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
US DGPM-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USZ 35-2002	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 17-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS 15f	(0.91)	(0.06)	(17.9)	(8.8)	(0.24)	(4.5)	(20.8)	(21.6)	(157)	.	(4.82)	.	(22.4)	.	(18.5)	.	(5.28)
KZ 6585-93	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CAN GTS-2a	.	.	.	.	.	.	.	.	77.1	.	.	.	.	.	.	.	.
OREAS H5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OREAS H5 A	.	.	(27.5)	(2.00)	.	7.22	(0.75)	.	11.9	.	.	.	.	.	(2.50)	(1.86)	.
OREAS H5 N	.	Ir: (<0.005)	(52)	.	(0.69)	(13.7)	.	(32.4)	(28.1)	.	.	.	(58)	.	(9.11)	(12.4)	(5.28)
OREAS 24b	.	.	.	.	.	.	.	.	(59)	<0.001	.	<0.001	.	.	.	.	.
OREAS 24b 4	(0.80)	(0.077)	42.4	52	(0.32)	4.03	14.6	(36.2)	60	.	(9.86)	.	164	(0.002)	15.3	(0.66)	(7.06)
OREAS 24b A	(0.46)	(0.048)	(29.2)	45.6	(0.20)	3.86	(0.31)	(24.6)	57	(<0.01)	(6.87)	(0.001)	114	(<0.001)	9.51	(0.42)	(4.68)
OREAS 24b F	1.17	.	44.0	52	0.49	(4.91)	16.0	38.7	61	.	10.2	.	161	(<0.1)	14.1	.	7.17
OREAS 25a	.	.	.	.	.	.	.	.	(31.2)	<0.001	.	<0.001	.	.	.	.	.
OREAS 25a 4	(0.46)	(0.091)	21.8	36.7	(0.23)	2.55	22.4	(17.0)	45.8	.	(4.71)	.	61	.	13.7	(2.86)	(3.41)
OREAS 25a A	(0.20)	(0.081)	(13.0)	(23.7)	(0.057)	(1.36)	(0.52)	(11.7)	26.9	(<0.01)	(3.35)	(0.004)	(31.4)	(<0.05)	8.64	(0.87)	(2.26)
OREAS 25a F	0.92	.	23.3	(35.1)	0.45	(2.99)	26.5	20.0	(55)	.	5.33	.	60	(<0.1)	13.5	.	3.90
OREAS 24c	(0.90)	(0.056)	(19.7)	8.32	(0.27)	2.49	23.8	(20.7)	138	(<0.005)	(5.28)	(<0.005)	21.9	(<0.002)	21.6	(1.00)	(5.55)
OREAS 22d	(<0.05)	(<0.005)	(1.20)	14.2	(0.013)	2.36	0.88	(1.03)	4.38	(<0.005)	(0.32)	(<0.005)	0.54	(<0.002)	(0.20)	(<1)	(0.22)
Number	Ho	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pd	Pr	Pt	Rb	Re	Sc	Se	Sm

CRM

GOLD AND SILVER ORE - CONTINUED FROM THE PREVIOUS PAGES

analysis listed in mg/kg except % which is mass %

OREAS samples list multiple methods, more information upon request

Number	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	W	Y	Yb	Zr	Units	Other
CAN DS-1	.	.	.	.	.	.	20	.	.	.	.	.	.	400 g	
USZ 38-2005	.	88.71	.	.	.	.	.	.	.	0.01%	.	.	.	250 g	
KZ 3594-86	.	.	.	.	210.4	.	.	.	.	.	.	.	.	100 g	
OREAS 12a	(1)	(136)	(0.3)	(0.64)	(0.4)	(4.4)	.	.	(1.85)	(6.5)	(20.2)	(1.88)	(40.5)	60 g	
OREAS 62d	.	(217)	.	(0.2)	(3.5)	(1.5)	.	.	(0.4)	(6.7)	(6.5)	(0.7)	(34)	60 g	
USZ 20-98	.	.	.	.	.	.	.	.	.	.	.	.	.	250 g	last of stock
KZ 3597-86	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	last of stock
KZ 16-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
KZ 62-86	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
OREAS 19a	(1)	(279)	(0.65)	(0.7)	(0.2)	(3.7)	.	.	(1.3)	(3.5)	(19.9)	(1.75)	(99)	60 g	
KZ 61-86	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
OREAS 61e 4	.	(245)	.	.	.	(<20)	(<10)	.	(<10)	(<10)	.	.	.	Au/Pd/Pt FA, others 4-acid 60 or 500g, Aqua Regia Borate Fusion, C/S combust	
OREAS 61e A	.	(113)	.	.	(2.21)	(<20)	(<10)	.	(<10)	(<10)	.	.	.		
OREAS 61e F	(<1)	(245)	(0.10)	(0.27)	.	(2.31)	(0.85)	(0.14)	(0.61)	(3)	(8.70)	(0.83)	(54)		
OREAS 17c	(1)	(333)	(0.85)	(0.76)	.	(3.5)	.	.	(1.05)	(3.8)	(20.5)	(1.8)	(123)	60 g	
OREAS 23a	3.1	.	.	.	.	20.9	.	.	6.2	3.7	.	.	.	10 g or 60 g, GRANITE	
OREAS 7Ca	.	.	.	.	.	(16)	.	.	.	(18)	.	(2.8)	.	chips 500g Br:(5ppm) H ₂ O:(3.44+)	
UNS AuM	.	187.7	.	.	.	.	.	.	.	.	14.2	.	81	200 g	
OREAS 16a	(3)	(369)	(1.1)	(0.8)	.	(3.2)	.	.	(0.9)	(1)	(22.8)	(1.82)	(161)	60 g	
OREAS 15d	(1)	(357)	(1)	(0.75)	(0.3)	(2.9)	.	.	(0.8)	(1.5)	(20.2)	(1.73)	(120)	60 g	
KZ 15-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
OREAS 66a	(3.50)	(488)	(0.4)	(0.40)	(9.6)	(4.1)	.	.	(1.4)	(10.5)	(10.3)	(1.3)	(75)	60 g	
USZ 41-2006	.	259	.	.	.	.	.	.	.	.	.	.	78.3	100 or 250 g	
CAN CH-4	.	(209)	.	.	.	.	.	.	.	.	.	.	.	200 g	
USZ 34-2002	.	.	.	.	.	.	.	.	.	.	.	.	.	250 g	H ₂ O: 0.10-
US DGPM-1	.	.	.	.	.	.	.	.	.	(76)	.	.	.	200 g	last of stock
USZ 35-2002	.	.	.	.	.	.	.	.	.	.	.	.	.	250 g	
KZ 17-2004	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
OREAS 15f	(2)	(382)	(1.1)	(0.88)	.	(3.05)	.	.	(0.9)	(0.5)	(23.2)	(1.9)	(166)	60 g	
KZ 6585-93	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
CAN GTS-2a	.	92.8	.	.	.	1.244	.	.	.	.	.	.	.	350 g	
OREAS H5	.	.	.	.	.	.	.	.	.	.	.	.	.	60 g	fire assay
OREAS H5 A (<10)	.	(6.89)	(<10)	.	(2.37)	(19.1)	(0.71)	.	.	(<5)	(5.00)	.	(47.8)	Aqua regia	V: 0.00350%
OREAS H5 N (<100)	.	.	(2.83)	(0.72)	.	(29.0)	.	.	(7.60)	(8.35)	.	(4.33)	(2085)	Neutron activation analysis	
OREAS 24b	.	(134)	.	.	.	.	.	.	.	.	.	.	.	60 g	last of stock Cl:(<10 ppm)
OREAS 24b 4	4.25	124	1.23	(0.87)	.	16.4	0.86	(0.31)	3.06	3.64	19.9	(2.17)	134	" 4 acid digestion, GRANODIORITE	
OREAS 24b A	2.26	(29.0)	.	(0.54)	.	14.3	0.66	(0.17)	1.74	(1.19)	12.3	(1.15)	24.5	" aqua regia	
OREAS 24b F	4.65	125	1.32	0.98	.	16.5	0.91	0.50	3.31	4.13	32.5	3.24	213	" fusion ICP-OES/MS	
OREAS 25a	.	(56)	.	.	.	.	.	.	.	.	.	.	(135)	10 g 60 g or 1 kg Cl:(<10 ppm)	
OREAS 25a 4	4.06	48.5	1.60	(0.41)	(0.10)	15.8	0.35	(0.3)	2.94	2.10	12.3	(1.48)	(159)	" 4 acid digestion, SOIL	
OREAS 25a A	2.70	17.3	(0.099)	(0.24)	.	10.7	0.20	(0.062)	1.49	.	4.56	(0.41)	(19.0)	" aqua regia	
OREAS 25a F	4.83	49.4	1.99	0.66	.	16.4	(0.30)	0.43	3.51	2.89	25.1	2.89	398	" fusion ICP-OES/MS	
OREAS 24c	1.51	442	1.48	(0.90)	(<0.05)	3.08	(0.064)	(0.31)	0.76	0.53	22.3	(1.88)	143	10 g 60 g or 1 kg Basalt V: 161	
OREAS 22d	0.61	(1.14)	(0.036)	(<0.05)	(<0.05)	0.67	(<0.02)	(<0.05)	0.18	0.21	0.69	(<0.1)	7.02	10 g V: 2.63 last then 22e	
Number	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	W	Y	Yb	Zr	Units	Other

GRANITE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

IAG: RM all others: CRM

Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	F	FeO	Fe ₂ O ₃	TiFe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂	LOI
JG-2	76.83	12.47	.	0.70	(0.0972)	0.57	0.33	0.97	0.33-0.12	4.71	0.037	0.016	3.54	0.002	0.044	.
VS 3333-85	74.76	10.64	(0.1)	0.32	0.062	1.61	4.50	.	(0.30)	4.64	0.10	0.120	4.24	0.024	0.26	.
IAG OU-3	74.09	11.10	1.913	0.2	0.1100	3.255	.	3.8341	.	4.55	.	0.090	3.678	.	0.224	1.815
GUW GM	73.42	13.55	0.28	1.07	0.067	1.13	2.01	.	0.35	4.76	0.37	0.043	3.78	0.062	2.12	.
USZ 47-2008	72.37	14.07	.	1.15	.	1.81	2.44	.	.	4.68	0.38	0.06	3.63	0.13	0.30	0.64
USZ 28-99	71.61	16.13	.	0.39	1.25	0.29	.	0.51	-(0.05)	3.52	(0.29)	0.13	5.25	0.028	(0.03)	1.14
SARM 48	67.11	11.24	.	8.90	.	(0.2)	0.58	.	.	4.26	0.18	0.02	3.22	(0.09)	0.10	.
NCS DC73376	66.27	16.33	0.35	2.66	0.0670	(1.6)	.	3.12	(1.0)	2.60	1.63	.	5.3	.	.	1.28

continued

analysis listed in mg/kg except % which is mass % and * which is ng/g

Number	Ag	Al%	As	B	Ba	Be	Bi	Ca%	Cd	Ce	Cl	Co	Cr	Cs	Cs ₂ O%	Cu	Dy
JG-2	(0.019)	6.60	(0.60)	(1.70)	81.0	3.26	(0.64)	0.50	(0.004)	48.3	.	3.62	6.37	6.79	.	0.49	10.5
VS 3333-85	(0.06)	.	(4)	11	90	5	.	.	.	90	.	1.3	3.1	4.5	.	12	(10)
IAG OU-3	.	.	3.3793	.	28	10.94	.	.	0.38	196.3	.	.	18.61	0.66	.	3.3	18.87
GUW GM	(0.09)	.	4.1	11	340	(4.8)	.	.	.	65	.	3.7	11	8.1	.	13	(5.4)
USZ 47-2008	.	.	2.28	.	350	8.63	1.03	.	.	64.38	.	2.71	182	17.02	.	7.36	4.42
USZ 28-99	.	.	(3)	.	.	.	.	.	.	(25)	.	.	(130)	.	0.012	8	.
SARM 48	.	.	.	.	(290)	.	.	.	.	(850)	.	.	23	.	.	(10)	.
NCS DC73376	0.03	.	(0.25)	15	1140	1.7	0.096	.	(0.06)	48	(120)	7.8	24	2.6	.	(3.1)	1.52

Number	Er	Eu	Fe%	Ga	Gd	Ge	Hf	Hg	Ho	In	K%	La	Li	Li ₂ O%	Lu	Mg%	Mn%
JG-2	6.04	0.10	0.60	18.6	0.01	(1.70)	4.73	(0.0033)	1.67	.	3.91	19.9	42.2	.	1.22	0.02	0.012
VS 3333-85	(6)	0.4	.	27	.	2.2	12	.	.	.	.	45	52	.	0.9	.	.
IAG OU-3	11.44	1.152	.	32.1	18.073	1.5	22.631	.	4.011	.	.	94.64	1.41	.	1.628	.	.
GUW GM	(2.2)	0.60	.	15	(5.2)	(1.6)	5.1	(0.0033)	(1.0)	.	.	41	50	.	0.40	.	.
USZ 47-2008	2.37	0.58	.	22.80	4.95	1.50	4.75	.	0.85	.	.	29.59	124	.	0.35	.	.
USZ 28-99	.	.	.	.	.	.	.	.	.	.	.	(15)	.	0.37	.	.	.
SARM 48	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NCS DC73376	0.76	1.0	.	18.2	2.4	0.93	3.3	0.0035	0.27	(0.03)	.	25	24.7	.	0.11	.	0.0430

Number	Mo	Na%	Nb	Nd	Ni	P%	Pb	Pr	Rb	Rb ₂ O%	S	Sb	Sc	Se	Si%	Sm	Sn	Sr
JG-2	0.37	2.63	14.7	26.4	(4.35)	0.001	31.5	6.20	301	.	(7.0)	(0.057)	2.42	.	35.91	7.70	3.00	17.9
VS 3333-85	1.7	.	17	50	6	.	10	.	140	.	(160)	(0.5)	4.6	.	.	10	5	8
IAG OU-3	1.975	.	80.2	87	.	.	36	22.7	171	.	.	0.3	.	.	.	18.71	11.45	11.2
GUW GM	1.1	.	18	30	6.8	.	30	(7.2)	260	.	.	(0.51)	4.8	.	.	4.9	4.4	133
USZ 47-2008	3.06	.	15.22	27.10	5.76	.	24.81	7.27	275	.	.	0.19	4.36	.	.	5.54	13.30	111
USZ 28-99	.	.	71	.	10	.	64	.	.	0.24	.	.	(7)	.	.	.	.	.
SARM 48	(5)	.	202	.	.	.	135	.	.	.	.	.	.	.	.	.	.	29
NCS DC73376	(0.27)	.	4.5	21	13	0.0570	7.6	5.8	57	.	(50)	0.063	5.0	0.019	.	3.3	0.8	690

Number	Ta	Tb	Te	Th	Ti%	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	Units
JG-2	2.76	1.62	.	1.62	0.026	1.55	1.16	11.3	3.78	23.0	86.5	6.85	13.6	97.6	20 g
VS 3333-85	1.1	0.4	.	80	.	.	.	1.8	6	(1.1)	60	7	140	470	100 g
IAG OU-3	5.748	3.081	.	22.845	.	0.735	1.731	5.5396	.	.	113.1	11.3	149.22	942	~35 g
GUW GM	1.7	0.7	.	36	.	.	.	6.4	11	1.6	26	3.1	34	149	50 g
USZ 47-2008	2.56	0.79	.	19.35	.	1.72	0.37	5.44	14.03	0.56	25.19	2.36	54.59	169	100 g
USZ 28-99	54	.	.	.	.	.	.	.	.	.	.	.	0.086%	46	100 g
SARM 48	.	.	.	113	.	.	.	.	(8)	.	436	.	53	300	100 g
NCS DC73376	(0.34)	0.29	.	1.9	0.1800	(0.20)	0.11	(0.4)	45	0.38	7.3	0.69	47	(100)	70 g

CRM

GRANODIORITE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

Number	SiO ₂	Al ₂ O ₃	Al	CO ₂	CaO	Fe	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	Si	TiO ₂
JG-1a	72.30	14.30	7.57	.	2.13	1.40	1.36	0.51	2.00	+0.59 -0.12	3.96	0.69	0.057	3.39	0.083	33.80	0.25
JG-1	72.30	14.24	7.54	.	2.20	1.52	1.61	0.38	2.18	+0.54 -0.07	3.98	0.74	0.063	3.38	0.099	33.80	0.26
JG-3	67.29	15.48	8.19	.	3.69	2.58	1.83	1.62	3.69	+0.67 -0.17	2.64	1.79	0.071	3.96	0.122	31.45	0.48
US GSP-2	66.6	14.9	7.00	.	2.10	3.43	.	.	4.90	.	5.30	0.96	.	2.70	0.29	31.1	0.66
VS 2125-81	64.08	15.35	.	0.14	3.93	.	2.87	5.23	.	.	3.98	1.87	0.160	3.25	0.228	.	0.517
GBW 07111	59.68	16.56	.	0.15	4.72	.	3.08	2.64	.	0.88	3.50	2.81	0.094	4.05	0.34	.	0.77

continued

analysis listed in mg/kg except % which is mass % and * which is ppb

Number	Ag	As	Au*	B	Ba%	Be	Bi	Br	C%	Ca%	Cd	Ce	Cl%	Co	Cr	Cs	Cu
JG-1a	(0.023)	(0.43)	0.21	3.95	0.0470	3.16	(0.43)	.	(0.0295)	1.52	(0.026)	45.0	(0.0065)	5.90	17.6	10.6	1.67
JG-1	0.034	0.33	0.11	6.87	0.0466	3.15	0.50	(0.068)	(0.0216)	1.57	0.040	45.8	0.00581	4.06	53.2	10.1	2.52
JG-3	(0.029)	(0.37)	0.17	(2.15)	0.0466	(1.60)	.	(0.05)	(0.0120)	2.64	(0.054)	40.3	(0.0156)	11.7	22.4	1.78	6.81
US GSP-2	.	.	.	.	0.1340	(1.5)	.	.	.	1.50	.	410	.	7.3	20	(1.2)	43
VS 2125-81	.	.	.	27	0.14	3.7	.	.	.	.	.	.	.	13	37	57	.
GBW 07111	0.066	0.4	.	3.92	0.1900	2.11	0.05	(0.34)	(0.057 Org)	.	0.08	112	0.023	15.6	37.6	0.97	8.8

Number	Dy	Er	Eu	F%	Ga	Gd	Ge	Hf	Hg*	Ho	I*	In	Ir*	K%	La	Li	Lu
JG-1a	4.44	2.57	0.70	0.0439	16.5	4.08	(1.5)	3.59	(4.1)	0.82	.	(0.025)	.	3.29	21.3	79.5	0.44
JG-1	4.14	2.16	0.73	0.0498	17.8	4.28	1.44	3.56	16.5	0.81	(0.012)	(0.044)	.	3.30	22.4	86.6	0.39
JG-3	2.59	1.52	0.90	(0.0317)	17.1	2.92	(1.06)	4.29	(2.4)	0.38	.	.	(0.0016)	2.19	20.6	20.9	0.26
US GSP-2	(6.1)	(2.2)	2.3	(0.3000)	22	(12)	.	(14)	.	(1.0)	.	.	.	4.40	100	(36)	(0.23)
VS 2125-81	.	.	.	.	22	.	1.8	.	.	.	.	.	.	.	20	.	.
GBW 07111	3.20	1.57	1.91	0.084	20.8	5.09	1.00	5.2	35	0.60	(78)	0.08	.	.	60.5	16.2	0.24

Number	Mg%	Mn%	Mo	Na%	Nb	Nd	Ni	P%	Pb%	Pd*	Pr	Rb%	S%	Sb	Sc	Se	Sm
JG-1a	0.42	0.044	0.45	2.51	11.4	20.4	6.91	0.036	0.00264	(<0.2)	5.63	0.0178	(0.0011)	(0.048)	6.21	.	4.53
JG-1	0.45	0.049	1.75	2.51	12.4	19.3	7.47	0.043	0.00254	(<0.2)	4.83	0.0182	0.00109	0.13	6.53	0.0030	4.62
JG-3	1.08	0.055	0.45	2.94	5.88	17.2	14.3	0.053	0.00117	(<0.2)	4.70	0.00673	(0.0055)	(0.08)	8.76	.	3.39
US GSP-2	0.50	0.0320	(2.1)	2.06	27	200	17	0.13	0.0042	.	(51)	0.0245	.	.	6.3	.	27
VS 2125-81	.	.	3.22	.	8.8	.	15	.	0.016	.	.	0.016	0.019	.	13	.	.
GBW 07111	.	.	0.47	.	10.6	48.1	24.4	.	0.00198	.	13.2	0.00701	0.011	0.06	10.3	0.03	7.74

Number	Sn	Sr%	Ta	Tb	Te	Th	Ti%	Tl	Tm	U	V	W	Y	Yb	Zn%	Zr%	Units
JG-1a	4.47	0.0187	1.90	0.81	.	12.8	0.15	0.98	0.38	4.69	22.7	12.4	32.1	2.70	0.00365	0.0118	20 g
JG-1	3.60	0.0184	1.79	0.78	.	13.2	0.16	1.03	0.41	3.47	25.2	(1.58)	30.6	2.47	0.00411	0.0111	20 g
JG-3	1.40	0.0379	0.70	0.46	.	8.28	0.29	(0.40)	0.24	2.21	70.1	(14.1)	17.3	1.77	0.00465	0.0144	100 g
US GSP-2	.	0.0240	.	.	.	105	0.40	(1.1)	(0.29)	2.40	52	.	20	1.6	0.0120	0.0550	50 g
VS 2125-81	8.0	0.048	.	.	.	.	.	.	.	90	.	.	.	.	0.012	0.021	40 g
GBW 07111	1.44	0.1198	0.62	0.68	0.011	10.9	.	0.39	0.26	1.40	104	0.19	15.5	1.56	0.00854	0.0224	50 g

GRAPHITE

analysis listed in mass %

Graph = Graphitic, T = Total

CDN: RM, all others: CRM

CDN: 10 g

GGC: 10 g

NCS: 50 g

USZ: 100 g

Number	Al ₂ O ₃	C.Graph	T.C	CO ₂	CaO	Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	Ni	P ₂ O ₅	Rb	S	SiO ₂	TiO ₂	Zn	Zr	LOI
NCS DC60121	5.60	76.50	.	0.28	0.74	1.48T	1.98	0.99	0.50	0.022	0.23	.	0.16	.	0.14	10.34	0.55	Volatile:2.72	Ash:20.78	.
GGC-02	.	27.04	28.25	.	.	.	.	.	.	.	.	.	.	.	0.04	.	.	.	.	.
GGC-01	.	24.97	26.68	.	.	.	.	.	.	.	.	.	.	.	0.04	.	.	.	.	.
USZ 32-2000	9.33	(12.0)	14.43	4.10	7.05	3.48	.	2.54	1.94	0.03	0.47	0.007	.	0.014	.	52.20	0.57	0.018	0.012	22.21
USZ 33-2000	8.46	(11.34)	13.38	2.45	.	3.61	.	2.09	.	0.07	0.51	.	.	.	.	52.84	0.49	.	.	17.0
NCS DC60120	13.03	9.91	.	0.67	5.34	6.99T	2.80	2.17	5.35	0.054	1.56	.	0.14	.	2.59	49.34	0.64	.	.	.
GGC-14	.	9.23	9.24	.	.	.	.	.	.	.	.	.	.	.	1.33	.	.	.	.	.
GGC-13	.	7.99	8.02	.	.	.	.	.	.	.	.	.	.	.	2.73	.	.	.	.	.
GGC-12	.	5.27	5.30	.	.	.	.	.	.	.	.	.	.	.	1.45	.	.	.	.	.
GGC-11	.	4.98	5.06	.	.	.	.	.	.	.	.	.	.	.	3.73	.	.	.	.	.
GGC-10	.	4.79	5.22	.	.	.	.	.	.	.	.	.	.	.	4.40	.	.	.	.	.
CDN GR-1	(8.6)	3.12	.	.	(6.3)	(4.2)	.	(3.0)	(2.4)	(<0.1)	(0.3)	.	.	.	(1.0)	(65.3)	(0.4)	.	.	last (6.8)
NCS DC60119	12.93	2.91	.	3.60	9.37	6.73T	2.60	2.54	6.10	0.084	1.60	.	0.13	.	1.18	49.84	0.57	.	.	.
GGC-09	.	2.41	2.95	.	.	.	.	.	.	.	.	.	.	.	4.59	.	.	.	.	.
CDN GR-3	(9.3)	2.39	.	.	(6.2)	(4.3)	.	(3.1)	(2.5)	(<0.1)	(0.4)	.	.	.	(1.0)	(66.2)	(0.4)	.	.	(4.9)
CDN GR-2	(7.9)	1.93	.	.	(11.6)	(3.3)	.	(2.9)	(1.9)	(<0.1)	(0.2)	.	.	.	(1.0)	(57.5)	(0.3)	.	.	(10.9)
CDN GR-4	(12.9)	1.01	.	.	(6.6)	(6.3)	.	(2.3)	(2.4)	(0.2)	(1.8)	.	.	.	(1.0)	(61.8)	(0.5)	.	.	(2.7)
GGC-08	.	0.39	1.03	.	.	.	.	.	.	.	.	.	.	.	1.57	.	.	.	.	.
GGC-07	.	0.13	0.56	.	.	.	.	.	.	.	.	.	.	.	0.51	.	.	.	.	.

CRM		GRAPHITE ORE										analysis listed in mass %		50 g units		
Number		Al ₂ O ₃	Ash	CaO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	SiO ₂	TiO ₂	Volatile		
NCS DC28120	10.93	95.62	11.81	5.34	2.39	8.79	0.048	1.50	0.083	1.06	52.73	0.39	2.22			
NCS DC28121	10.72	90.65	11.12	5.00	2.32	8.43	0.047	1.38	0.083	0.99	50.28	0.36	2.48			
NCS DC28119	8.13	29.00	0.23	2.09	1.33	0.55	0.032	0.28	0.087	0.02	15.66	0.44	2.88			
NCS DC28118	1.92	11.45	0.91	1.98	0.19	1.00	0.021	0.088	0.007	0.49	5.00	0.085	1.87			
NCS DC28117	0.63	3.47	0.19	0.46	0.17	0.18	0.005	0.009	0.004	0.17	1.76	0.014	1.33			

CRM GRAPHITE - SYNTHETIC

available as a set or individually		analysis listed in mg/kg												50 g units		
Number	Al	As	Ca	Cl	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	NO ₃	Na	Ni	Pb
CIBA KD-2	35	(0.05)	98	(4.1)	(0.10)	1.3	1.0	100	(41)	(21)	23	(0.22)	(0.5)	(20)	3.9	(1.6)
CIBA LD-4	33	(0.06)	126	(3.3)	(0.11)	3.4	1.3	149	(25)	(7.5)	3.5	(0.62)	(0.5)	(13)	5.5	(1.1)
CIBA KD-3	15	(0.04)	62	(4.4)	(0.07)	0.69	0.81	111	(39)	(22)	13	(0.44)	(0.5)	(17)	4.2	(0.90)
CIBA KD-6	8.4	(0.04)	79	(3.3)	(0.03)	0.44	0.62	37	(17)	.	4.3	(0.39)	(0.5)	(7)	2.0	(1.2)
CIBA PD-7	5.5	(0.03)	22	(6.4)	(0.03)	2.2	0.51	59	(17)	.	1.1	(0.25)	(0.5)	(2)	1.1	(1.0)

continued

Number		S	SO ₄	Sb	Si	Sn	Sr	Ta	Ti	V	W	Zn	Zr
CIBA KD-2	(44)	(88)	(0.05)	(145)	(<0.2)	(2.8)	(0.005)	(46)	(3.6)	(<0.00)	(4.4)	(3.7)	
CIBA LD-4	(68)	(98)	(0.03)	(404)	.	(2.7)	(0.011)	(49)	(4.3)	(<0.06)	(2.9)	(8.6)	
CIBA KD-3	(43)	(85)	(0.02)	(147)	.	(1.9)	(0.006)	(38)	(3.8)	(<0.00)	(1.2)	(4.5)	
CIBA KD-6	(44)	(73)	(0.03)	(66)	.	(1.9)	(0.006)	(51)	(4.9)	(0.03)	(1.7)	(6.0)	
CIBA PD-7	(23)	(25)	(0.02)	(50)	.	(1.3)	(0.005)	(29)	(2.0)	(0.03)	(0.9)	(4.5)	

CRM GREISEN

analysis listed in mass%				T = Total										CGL: <u>17025</u> , 100 g units				GUW: 50 g units		
Number	SiO ₂	Al ₂ O ₃	CaO	F	Fe ₂ O ₃	FeO	K ₂ O	MgO	MnO	Na ₂ O	Li	P ₂ O ₅	Rb	Sn	TiO ₂	Zn	Zr	LOI		
CGL 022	80.93	10.26	0.836	(1.48)	3.25T	.	(1.47)	0.044	0.102	(0.038)	.	0.018	(0.0463)	0.1884	0.086	0.0273	0.0148	1.46		
GUW GNA	71.47	14.7	0.62	3.32	5.92	3.81	2.63	0.168	0.034	0.08	0.49	.	0.202	0.19	0.022	0.0078	0.0070	.		
continued				analysis listed in mg/kg																
Number	As	Ba	Bi	Cr	Cs	Cu	Dy	Ga	Mo	Nb	Sr	Ta	Th	U						
CGL 022	63.6	(25.6)	(29.6)	271	(29.7)	563	(14.1)	26.1	.	28.4	16.6	(4.01)	32.9	(6.12)	also 19 more informational elements					
GUW GNA	7	51	220	.	45	.	3	.	100	.	.	29	.	22						

CRM GYPSUM ROCK

analysis listed in mass %														100 g units		
Number	SO ₃	CaO	Al ₂ O ₃	CO ₂	Fe ₂ O ₃ *	H ₂ O+G	H ₂ O+C	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SiO ₂	SrO	%Total	L.O.I.**	
DOMTAR GYP A	46.2	32.9	0.10	0.47	0.05	19.4	.	0.021	0.18	0.009	0.011	0.45	0.11	99.90	20.06	
DOMTAR GYP D	36.7	28.2	2.03	3.6	1.08	16.39	0.37	0.54	1.73	0.07	0.025	8.7	0.18	99.62	20.82	
* Total iron calculated as Fe ₂ O ₃							** Loss on ignition at 1000°C									
H ₂ O+C Water from clay between 450-550°C.							H ₂ O+G Water from CaSO ₄ 2H ₂ O and some CaSO ₄ 1/2H ₂ O between 80-300°C.									
continued		analysis listed in mg/kg														
Number	As	Ba	Br	Cd	Ce	Cl	Co	Cr	Cs	Eu	Hf	La				
DOMTAR GYP A	0.19	(28)	(0.5)	0.51	(0.70)	12	(0.2)	(2)	(0.15)	0.060	0.26	0.24				
DOMTAR GYP D	3	106	1.3	.	9	234	2.4	9	1.3	0.17	0.6	5				
continued																
Number	Lu	Mn	Rb	Sb	Sc	Sm	Ta	Th	Ti	U	V	Yb	Zn	Zr		
DOMTAR GYP A	(0.006)	19	(0.8)	0.04	0.09	0.041	.	(0.1)	(78)	0.10	.	0.020	7	(9)		
DOMTAR GYP D	0.067	200	25	0.28	2	0.83	0.15	1.3	473	0.65	17	0.44	16	29		

CRM GYPSUM ROCK

analysis listed in mass %

Number	SO ₃	CaO	Al ₂ O ₃	CO ₂	Cl-	Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	Na ₂ O	SiO ₂	SrO	TiO ₂	LOI	Units
GBW 03109a	51.91	39.24	0.34	(4.02)	0.033	0.16	0.39	0.094	1.74	0.065	1.68	(0.27)	0.016	4.55	50 g
GBW 03111a	40.72	32.30	0.14	(5.44)	0.0032	0.11	17.95	0.026	2.47	0.014	0.63	(0.096)	0.010	23.60	50 g
NCS DC62106c *	38.66	29.83	1.85	.	.	0.58	.	0.35	1.61	0.09	5.45	.	0.09	21.11	20 g
GBW 03111	37.64	30.28	1.14	(5.80)	0.013	0.38	16.62	0.23	3.19	0.014	4.16	(0.077)	0.058	(22.88)	50 g

* NCS DC62106c also contains 0.21% adhered water and 17.09% crystallized water.

RM GYPSUM BYPRODUCT

analysis listed in mass % based on a dry (40°C) sample

100 g units

Number	SO ₃	CaO	Al ₂ O ₃	CO ₂	Cr ₂ O ₃	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SiO ₂	SrO	TiO ₂	V ₂ O ₅	%Total	LOI*
DOMTAR FGD-1	46.4	32.7	0.023	0.02	0.0002	0.014	20.70	0.007	0.007	0.005	0.03	0.13	0.012	.	0.0003	100.05	21.04
DOMTAR FGD-2	45.6	32.8	0.033	0.62	0.0015	0.043	20.38	0.01	0.019	0.02	0.05	0.21	0.024	.	0.0009	98.81	21.33
DOMTAR TIG-1	43.4	32.3	0.57	1.41	0.036	0.26	20.3	0.008	0.12	0.036	0.04	0.11	0.42	0.82	0.10	99.93	22.03

H₂O+ combined water at 250°C * Loss on ignition at 1000°C (1 hr)

continued analysis listed in mg/kg

Number	As	Ce	Cl	Co	Cr	Dy	Eu	F	Hf	La	Mn	Sb
DOMTAR FGD-1	0.10	0.5	(100)	0.02	1.2	.	0.02	95	.	0.35	2.0	0.03
DOMTAR FGD-2	0.48	1.7	(115)	0.07	10.2	0.48	0.09	320	0.06	2.18	2.5	0.024
DOMTAR TIG-1	0.22	6	400	0.26	246	0.42	0.08	230	3.0	2.7	36	0.05

Number	Sc	Se	Sm	Ta	Tb	Th	Ti	U	V	Yb	Zn	Zr
DOMTAR FGD-1	0.023	0.8	0.07	.	.	0.03	75	.	1.5	.	1.7	.
DOMTAR FGD-2	0.166	3.0	0.52	.	0.07	0.38	75	1.10	5.1	0.27	2.3	(10)
DOMTAR TIG-1	17.1	.	0.65	3.1	(2)	2.14	6154	2.5	560	0.31	(32)	(80)

CRM HORNBLENDITE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

Number	Al ₂ O ₃	CO ₂	CaO	FeO	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	Mn	MnO	Na ₂ O	P ₂ O ₅	S	SiO ₂	Ti	TiO ₂	LOI
VS 2113-81	14.24	.	11.04	9.72	18.26	.	0.382	12.70	.	0.144	2.14	.	.	37.95	.	1.91	.
NCS DC73377	13.76	(0.16)	9.6	10.8	14.8	(1.7)	0.48	7.2	0.1600	.	2.07	.	(0.0060)	49.62	0.5510	0.67	1.06
JH-1	5.66	.	15.02	(8.09)	10.27	.	0.53	16.73	.	0.19	0.71	0.099	.	48.18	.	.	.

continued analysis listed in mg/kg except * which is ng/g

Number	Ag	As	B	Ba	Be	Bi	Cd	Ce	Cl	Co	Cr	Cs	Cu%	Dy	Er	Eu	F	Ga	Gd
VS 2113-81	.	.	.	99	.	.	.	74	.	15	.	0.074	.	.	.	.	.	25	.
NCS DC73377	(0.05)	26	12	62	0.34	(0.06)	(0.14)	7.7	(116)	52	137	1.8	0.0084	3.5	2.3	0.91	200	17.2	2.8
JH-1	.	.	.	106	.	.	.	17.6	.	51.5	616	0.87	0.00086	2.5	1.2	0.86	.	7.9	.

Number	Ge	Hf	Hg*	Ho	In	La	Li	Lu	Mo	Nb	Nd	Ni	P	Pb	Pr	Rb	Sb	Sc
VS 2113-81	.	.	.	0.85	(0.06)	2.9	11.2	0.39	1.3	.	6.5	57	.	4.9	.	.	.	58
NCS DC73377	1.46	1.5	3.3	0.53	.	7.9	.	0.17	0.15	2.7	11.6	117	360	(8)	1.25	29	0.63	43
JH-1	.	1.4	.	.	.	.	.	.	0.77	4.2	.	58.2	.	2.6	.	14.4	.	77.6

Number	Se	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	Units
VS 2113-81	.	.	2.9	.	.	.	.	.	39	.	.	.	.	1.5	1370	21	40 g
NCS DC73377	0.083	2.1	(0.8)	142	(0.18)	0.57	(0.4)	(0.11)	0.37	(0.14)	296	0.34	20	2.4	100	(57)	70 g
JH-1	.	3.1	.	153	0.23	0.52	1.4	.	.	0.58	228	.	13.7	1.2	61.8	48.3	100 g

AMPHIBOLITE

IRON PELLETS (supplied in homogeneous powder form)

= class, where 1 = CRM and 2 = RM analysis listed in mass % except * which is mg/kg

#	Number	Fe	Fe(met)	FeO	Al	Al ₂ O ₃	Ca	CaO	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
1	VS R10/4	90.9	87.3	.	.	0.29	.	1.65	.	0.30	.	.	.	0.094	0.0104	0.0062	.	4.11	.	.
1	SRM 691	90.5	.	.	.	1.21	.	0.64	.	0.51	.	0.042	.	0.177	0.005	(0.009)	.	3.6	.	0.27
1	NCS DC28240a	66.18	.	0.78	.	0.43	.	0.51	.	0.79	.	0.040	.	.	0.010	0.0066	.	3.81	.	0.048
1	VS R29	64.95	.	0.48	.	0.38	.	0.45	.	0.149	.	.	.	.	0.0123	0.0118	.	6.13	.	.
1	NCS DC28239b	63.78	.	0.77	.	0.98	.	0.85	.	1.59	.	0.065	.	.	0.016	0.0086	.	5.29	.	0.18
1	NCS DC28020a	63.07	.	(0.04)	.	1.47	.	1.34	.	0.96	.	0.303	.	0.103	0.028	0.0084	.	5.22	.	0.258
1	VS R28	63.01	.	1.16	.	0.37	.	4.09	.	0.194	.	.	.	.	0.0121	0.087	.	5.11	.	.
1	NCS DC14004b	62.79	.	0.72	.	1.32	.	1.16	.	1.58	0.130	.	.	0.112	0.016	0.012	.	5.31	.	0.113
1	NCS DC28239a	62.14	.	0.77	.	1.36	.	1.09	.	2.13	.	0.082	.	.	0.020	0.010	.	6.32	.	0.267
1	NCS DC28020b	61.81	.	(0.18)	.	1.48	.	1.30	.	1.00	.	0.310	.	0.099	0.032	0.0055	.	6.88	.	0.251
1	NCS DC11025	61.37	.	(1.92)	.	1.35	.	1.04	.	0.80	.	0.120	.	0.105	0.093	0.021	.	6.59	.	1.61
1	NCS DC28020c	60.46	.	0.33	.	0.76	.	0.75	.	5.15	.	0.130	.	0.036	0.013	0.029	.	6.12	.	0.154
1	VS R3/2	58.72	.	2.53	.	2.50	.	4.47	.	2.48	.	0.232	.	.	0.0027	0.005	.	3.74	.	2.49
1	VS R23/1	58.7	.	.	.	.	.	4.45	.	.	.	.	.	.	.	.	.	3.75	.	.
1	NCS DC28021a	57.88	.	6.53	.	2.54	.	3.15	.	3.11	.	0.126	.	0.105	0.016	0.115	.	7.92	.	0.207

Number	As*	C	Cd*	Co	Cr	Cu	K	K ₂ O	Mo*	N*	Ni	Pb*	Sn	V	V ₂ O ₅	Zn	Units
VS R10/4	.	1.72	.	.	.	0.0019	.	0.055	.	.	.	1.8	.	.	.	0.0018	100 g
SRM 691	(14)	(0.12T)	(<5)	0.031	0.025	0.030	0.065	.	(<20)	(50)	(0.269)	(<20)	(<0.001)	0.015	.	(0.004)	100 g
NCS DC28240a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g
VS R29	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g
NCS DC28239b	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g
NCS DC28020a	.	.	.	.	.	0.0089	.	0.078	.	.	.	.	.	.	.	0.012	50 g
VS R28	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g
NCS DC14004b	.	.	.	.	.	0.071	.	0.250	.	.	.	.	.	.	.	0.042	50 g
NCS DC28239a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g
NCS DC28020b	.	.	.	.	.	0.0089	.	0.066	.	.	.	.	.	0.155	.	0.012	50 g
NCS DC11025	.	.	.	.	.	.	.	0.111	.	.	.	.	.	.	.	0.012	70 g
NCS DC28020c	.	.	.	.	.	0.010	.	0.081	.	.	.	.	.	.	.	0.012	50 g
VS R3/2	.	.	.	0.020	.	.	.	.	.	.	.	.	.	.	.	.	100 g
VS R23/1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	150 g
NCS DC28021a	12	.	.	.	.	0.018	.	0.265	.	.	.	47	.	.	.	0.039	50 g

CRM IRON SULPHIDE CONCENTRATE

analysis listed in mass %

25 g units

Number	Al	Ca	Co	Cr	Cu	Fe	K	Mg	Mn	Na	Ni	P	Pb	S	SiO ₂	Ti	Zn
CAN TP0-1	(3.51)	(2.17)	0.021	(0.03)	0.118	34.85	(0.56)	(1.66)	(0.08)	(0.85)	0.617	(0.03)	(0.02)	18.03	25.52	(0.35)	(0.02)

CRM

IRON ORE, chart 1 of 9

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	P ₂ O ₅	S	Si	SiO ₂	Ti	TiO ₂
1	VS R21/2	99.0	.	.	.	.	.	.	.	.	.	0.3	.	.	.	0.01	.	0.02	0.06	.	.	.
1	VS R16/3	98.2	.	.	.	.	.	.	.	.	.	0.380	.	.	.	0.0110	.	0.0198	0.073	.	.	.
1	ECRM 685-1	91.103	.	0.3197	.	0.1395	.	0.0418	.	0.2394	.	0.0415	.	0.0773	.	0.0170	.	0.0031	0.7950	.	0.2199	.
2	VS R40	90.95	.	.	0.82	0.90	.	.	0.05129	.	0.299	.	.	.	0.084	0.0094	.	0.0057	.	4.13	.	0.292
1	NCS DC28039	72.02	28.78	.	0.095	.	0.026	.	0.0064	.	0.043	0.043	.	.	0.0008	0.0016	.	0.0030	.	0.14	0.029	.
1	NCS DC28029	72.01	28.63	.	0.095	.	0.025	.	0.0068	.	0.042	0.043	.	.	0.0008	0.0013	.	0.0028	.	0.158	0.028	.
1	NCS DC16002	71.79	28.69	.	0.069	.	0.038	.	0.038	.	0.053	0.053	.	.	0.0022	.	0.0055	.	0.36	.	.	.
1	GIOP-118	71.51	34.86	.	(<0.01)	.	0.0493	.	(<0.01)	.	0.0576	0.0491	.	(0.019)	.	0.0058	.	0.0026	.	0.763	.	(<0.01)
1	JK 29A	71.36	.	.	0.232	.	0.082	.	0.0087	.	0.223	.	0.0632	.	0.015	0.0059	.	0.0059	.	0.33	.	0.292
1	JK 42A	70.66	.	.	0.278	.	0.199	.	0.0157	.	0.382	.	0.0506	.	0.043	0.0247	.	0.0082	.	0.800	.	0.385
1	IMZ 350	70.20	30.06	.	0.077	.	0.084	.	0.015	.	0.19	0.030	.	.	0.033	0.007	.	0.097	.	2.51	.	0.021
1	ECRM 687-1	69.66	.	0.0356	.	0.0113	.	0.0011	.	0.0018	.	0.1658	.	0.0030	.	0.0120	.	.	0.0157	.	0.0303	.
1	GIOP-117	69.631	.	.	0.06	(0.01)	.	.	(0.0026)	.	(0.013)	0.008	.	0.011	.	0.00325	.	0.0026	.	0.203	.	0.0902
1	NCS DC28220	69.05	23.8	.	0.50	.	0.20	.	.	.	0.17	.	0.079	.	.	0.010	.	0.011	.	2.45	.	0.313
1	NCS DC13019c	68.96	28.98	.	0.174	.	0.196	.	0.0068	.	0.268	.	0.049	.	0.0060	0.010	.	0.0277	.	3.98	.	0.0174
1	IMZ 324	68.93	28.27	.	0.11	.	0.107	.	0.026	.	0.24	0.026	.	.	(0.04)	0.014	.	0.044	.	3.96	.	0.028
1	NCS DC28219	68.55	23.0	.	0.54	.	0.21	.	.	.	0.20	.	0.052	.	.	0.0054	.	0.027	.	3.21	.	0.116
1	VS R38	68.55	.	.	0.212	.	0.118	.	0.087	.	0.131	.	0.035	.	0.036	0.0122	.	0.334	.	4.56	.	0.022
1	NCS DC28005c	68.38	28.80	.	0.58	.	0.78	.	0.050	.	1.15	.	0.086	.	0.026	0.0035	.	0.034	.	2.25	.	0.057
1	IMZ 323	68.35	27.65	.	0.23	.	0.109	.	0.027	.	0.28	0.043	.	.	0.035	0.018	.	0.052	.	4.31	.	0.017
1	NCS DC28115	68.29	28.25	.	0.43	.	0.70	.	0.060	.	1.25	0.061	.	.	0.021	0.0047	.	0.041	.	2.08	0.034	0.057
1	NCS DC28032	68.29	0.24	.	0.74	.	0.074	.	0.0063	.	0.025	0.096	.	.	0.015	0.028	.	0.0028	.	0.85	0.050	.
1	NCS DC93024	68.02	30.50	.	0.34	.	0.35	.	0.018	.	0.19	0.017	.	.	0.012	0.017	.	0.301	.	4.58	.	0.056
1	IMZ 352	67.84	29.09	.	0.206	.	0.295	.	0.020	.	0.55	0.032	.	.	0.030	0.018	.	0.061	.	4.56	.	0.015
1	NCS DC28005b	67.84	29.72	.	0.45	.	0.155	.	0.055	.	0.202	.	0.030	.	0.018	0.0025	.	0.106	.	5.32	.	0.097
1	NCS DC28221	67.84	28.8	.	0.60	.	0.63	.	.	.	1.40	.	0.070	.	.	0.0046	.	0.041	.	2.34	.	0.061
1	IMZ 320	67.76	27.37	.	0.12	.	0.13	.	0.049	.	0.30	0.029	.	.	0.037	0.022	.	0.012	.	5.30	.	0.016
1	IMZ 325	67.73	28.03	.	0.20	.	0.17	.	0.027	.	0.27	0.031	.	.	(0.03)	0.016	.	0.077	.	5.01	.	0.018
1	IMZ 351	67.55	28.52	.	0.132	.	0.095	.	0.019	.	0.25	0.0121	.	.	0.037	0.008	.	0.023	.	5.71	.	0.010
1	IMZ 261/1	67.54	.	.	0.59	.	0.30	.	.	.	1.37	.	0.16	.	.	(0.019)	.	0.080	.	3.16	.	.
1	VS R25/1	67.3	.	.	.	.	0.14	.	.	.	0.25	.	.	.	.	.	.	.	.	3.37	.	.
1	VS R22/2	67.0	.	.	0.3	.	0.1	.	.	.	0.2	.	.	.	.	0.008	.	.	.	3.3	.	.
1	NCS DC73009	66.87	23.14	.	0.99	.	0.14	.	0.030	.	0.22	0.071	.	.	0.012	(0.011)	.	0.0055	.	5.05	0.059	.
1	SRM 690	66.8	.	.	0.17	.	0.20	.	0.0030	.	0.177	.	0.230	.	0.0027	0.009	.	(0.004)	.	3.70	.	0.021
1	OREAS 40	66.72	1.76	.	0.130	.	0.015	.	0.018	.	0.017	.	0.020	.	.	0.004	.	0.008	.	4.64	.	0.050
1	ECRM 690-1	66.70	.	0.198	.	0.269	.	0.0158	.	0.815	.	0.0337	.	0.0312	.	0.0085	.	.	0.881	.	0.229	0.070
1	NCS DC28222	66.64	27.9	.	0.76	.	0.86	.	.	.	1.62	0.091	.	.	.	0.0051	.	0.096	.	2.96	.	0.070
1	NCS DC14028c	66.56	26.01	.	0.28	.	0.11	.	0.009	.	0.11	0.135	.	.	(0.006)	0.015	.	0.0045	.	6.09	0.283	.
1	NCS DC14208	66.56	26.01	.	0.28	.	0.11	.	0.009	.	0.11	0.135	.	.	(0.006)	0.015	.	0.0045	.	6.09	0.283	.
1	NCS DC28037	66.54	0.21	.	1.43	.	0.031	.	0.012	.	0.054	0.482	.	.	0.015	0.034	.	0.0071	.	0.962	0.051	.
1	NCS DC28109	66.52	27.91	.	0.62	.	1.10	.	0.091	.	1.96	0.070	.	.	0.032	0.0062	.	0.064	.	3.26	0.037	0.061

Number	As	Ba	C	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	Pb	V	V ₂ O ₅	Zn	LOI	Units	Other
VS R21/2	.	.	0.02	.				.	.	.	.	.	.	.	100 g	0: 0.3
VS R16/3	.	.	0.108	.			Insoluble Residue: 0.155	.	.	.	.	.	.	.	100 g	0: 1.15
ECRM 685-1	.	.	1.487	.			0.0133	.	0.0175	.	0.1436	.	.	.	100 g	
VS R40	.	.	1.393	.			Metallic Iron: 85.7%	.	.	.	.	.	.	.	100 g	
NCS DC28039	.	.	.	.				.	.	.	.	.	.	.	70 g	
NCS DC28029	0.00012	.	.	.	0.0008	0.0062	.	0.0007	0.0022	0.0002	.	.	0.0026	.	50 g	
NCS DC16002	.	.	.	.				.	.	.	.	.	.	.	100 g	
GIOP-118	(0.011)	(0.0055)	.	(0.0071)	(0.0026)	0.2681	.	0.0071	0.1539	(0.0078)	(0.0021)	.	(0.0034)	-3.857	10 g	
JK 29A	.	.	.	.	0.0106	0.0057	.	0.0007	0.0167	.	.	0.266	0.0016	.	100 g	
JK 42A	.	.	.	.	0.0105	0.0010	.	0.0007	0.0129	.	.	0.251	0.0015	.	100 g	
IMZ 350	.	(0.0019)	0.024	.	(0.0024)	0.0031	.	(0.0006)	.	.	0.0020	.	(0.0017)	.	100 g	
ECRM 687-1	.	Mo: 0.0020	0.0173	.		0.0227	.	0.0030	0.0122	.	Sn: 0.0006	.	0.0051	.	100 g	
GIOP-117	(0.0038)	(0.0038)	.	0.012	(0.001)	(0.0031)	.	(0.0037)	(0.0026)	(0.0048)	(0.0013)	.	(0.0014)	0.085	10 g	
NCS DC28220	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g	
NCS DC13019c	.	.	.	.	.	.	.	.	.	0.0052	.	.	0.0030	.	50 g	
IMZ 324	.	0.0024	0.052	.	0.003	0.0025	.	0.0014	0.0013	0.0002	.	.	(0.003)	2.91	100 g	
NCS DC28219	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g	
VS R38	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
NCS DC28005c	.	.	.	.	.	.	.	0.0037	.	.	.	.	0.0055	.	50 g	
IMZ 323	.	0.0020	0.027	.	0.0026	0.0020	.	0.0007	0.0002	0.0015	(0.002)	.	0.0021	2.49	100 g	Fe ₂ O ₃ : 30.6
NCS DC28115	.	.	.	.	.	.	.	0.0065	.	.	.	.	0.0037	.	70 g	
NCS DC28032	.	.	.	.	.	.	.	.	.	.	.	.	.	.	70 g	
NCS DC93024	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
IMZ 352	.	(0.0019)	0.124	0.013	.	0.0011	.	(0.0005)	.	(0.0012)	0.0009	.	(0.0013)	.	100 g	
NCS DC28005b	.	.	.	.	.	0.0075	.	.	.	.	.	.	0.0020	.	50 g	
NCS DC28221	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g	
IMZ 320	0.0015	0.0019	0.033	.	(0.003)	0.003	.	0.0015	0.0013	0.0015	0.0015	.	0.002	2.87	100 g	
IMZ 325	.	0.0021	0.094	.	0.002	0.0023	.	0.0010	.	0.0017	0.0018	.	(0.003)	2.53	100 g	
IMZ 351	(0.0009)	(0.0019)	0.103	0.043	(0.0027)	0.0014	.	0.0012	.	(0.0009)	0.0009	.	(0.0016)	.	100 g	
IMZ 261/1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
VS R25/1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	150 g	
VS R22/2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	150 g	
NCS DC73009	.	.	.	.	.	.	.	(0.0015)	.	.	.	.	.	.	50 g	
SRM 690	.	.	.	.	.	(0.003)	.	.	.	.	(0.0045)	.	.	.	100 g	
OREAS 40	.	.	.	.	.	.	.	.	.	.	0.0013	.	.	-0.248	10 g	Fe ₂ O ₃ : [64.96]
ECRM 690-1	.	.	.	.	0.0089	0.0113	.	0.0006	0.0200	.	0.1417	.	.	.	100 g	
NCS DC28222	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g	
NCS DC14028c	.	.	.	.	.	.	.	0.0010	.	.	.	.	.	.	50 g	
NCS DC14208	.	.	.	.	.	.	.	0.0010	.	.	.	.	.	.	50 g	
NCS DC28037	.	.	.	.	.	.	.	.	.	.	.	.	.	.	70 g	
NCS DC28109	.	.	.	.	.	.	.	0.010	.	.	.	.	0.0052	.	70 g	
Number	As	Ba	C	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	Pb	V	V ₂ O ₅	Zn	LOI	Units	Other

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	P ₂ O ₅	S	Si	SiO ₂	Ti	TiO ₂
	Number	As	Ba	C	CO ₂	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	NiO	Pb	V	V ₂ O ₅	Zn	ZnO	LOI	Units	Other		
	NCS DC28028	0.0012					0.0008	0.003		0.0014	0.0019		0.0013			0.0044				50 g		
	IMZ 353	(0.0007)		0.011		(0.0039)	(0.0018)	0.0045		0.0008	(0.0017)		(0.0011)	0.005		(0.0010)		(0.086)		100 g		
	SARM 145		BaO: (0.046)															0.36		100 g		
	NCS DC28027	0.0004					0.0009	0.0015		0.0085	0.0008		0.0013			0.0032				50 g		
	NCS DC28223																			50 g		
	BCS 517			0.061		0.00075				0.0088			0.0028	0.0040		0.0047		1.898		100 g		
	JSS 805-2									0.0094				0.0039		0.0047		1.72		100 g		
	GIOP-116					0.0346												0.404		10 g	Zr: 0.0104	
	NCS DC28005a									0.0050						0.0070				50 g		
	NCS DC28033																			70 g	last	
	DH 1137			0.101					0.017									0.080		100 g	CO ₂ : 0.089	
	ECRM 682-2									0.0005			0.0004	0.0015						100 g		
	IMZ 358	(0.0008)		0.030			(0.0016)	0.0034		0.0008	(0.0016)		(0.0011)	0.0015		(0.0013)		0.051		100 g		
	VS R1/4																			100 g		
	NCS DC28214																			50 g		
	BS 105	(0.001)					(0.0005)	0.012		(0.001)	0.0036		(0.002)	0.0024		(0.001)				100 g	Sn: (0.002)	
	NCS DC18014																			100 g		
	JK 28																			150 g	Fe ₂ O ₃ : 91.5	
	IMZ 362		(0.003)	(0.016)			(0.0005)	0.0020		0.0011	0.0010		0.0017			0.0010		0.13		100 g		
	VS R37																			100 g		
	DH 1136			0.016	0.030				0.025						0.006		0.003	0.057		100 g		
	NCS DC28114									0.016						0.0080				70 g		
	ECRM 604-1																			100 g		
	JSS 850-4							(0.003)		0.000	(0.006)			0.025		(0.007)				100 g		
	NCS DC28035																			70 g		
	BAM 630-1																			100 g		
	CAN TOC-1		(0.0030)	(0.9)	(3)	(0.003)	(0.001999)		0.0224	(0.0008)			(0.0002)	(0.00408)		(0.0011)		0.863		200 g		
	DH 1114			0.125					0.006						0.002					100 g		
	IMZ 322		0.0013	0.047			0.0008	0.0019			0.0014		0.0011	0.0002		0.0029		2.25		100 g		
	IMZ 310	0.005	0.003	0.158		0.07	0.003	0.005		0.0011	0.002		0.0013	0.0015		0.0019		-1.20		100 g		
	SRM 693	(0.0012)						(0.0048)			(0.0009)			(0.0043)						100 g		
	JSS 804-3	0.0030	FeII:0.22%		Combined Waters:	0.39%	0.0024	0.0028			0.0028			0.0025						100 g		
	IMZ 363		(0.0011)	(0.013)		(0.0007)	0.0032		(0.0011)	0.0012			(0.0016)			0.0011		(0.073)		100 g		
	NCS DC28217																			50 g		
	NCS DC28218																			50 g		
	DH 1123			0.058											0.005		0.0009			100 g		
	DH 1118			0.085	0.033										0.017		0.005	2.51		100 g		
	DH 1135			0.069	0.007													2.31		100 g		
	DH 1116			0.016	0.026				0.038			0.011			0.009		0.0010	0.059		100 g		
	NCS DC28052																			70 g		
	Number	As	Ba	C	CO ₂	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	NiO	Pb	V	V ₂ O ₅	Zn	ZnO	LOI	Units	Other		

IRON ORE, chart 3 of 9

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	P ₂ O ₅	S	Si	SiO ₂	Ti	TiO ₂
1	GIOP-127	64.499	.	.	2.815	.	0.1522	.	0.0195	.	0.0644	0.0633	.	0.0184	.	0.0457	.	0.0133	.	2.578	.	0.0581
1	NCS DC14001b	64.48	0.34	.	1.26	.	0.15	.	0.096	.	0.041	0.087	.	.	0.013	0.049	.	0.018	.	3.40	.	0.057
1	NCS DC28113	64.42	27.00	.	0.90	.	1.06	.	0.099	.	3.28	0.109	.	.	0.034	0.011	.	0.381	.	3.56	0.315	0.522
1	IMZ 356	64.41	(0.47)	.	1.63	.	0.035	.	0.021	.	0.057	0.765	.	.	0.011	0.040	.	0.0084	.	2.85	.	0.101
1	ECRM 691-1	64.39	.	0.475	.	0.999	.	0.0504	.	2.022	.	0.1734	.	0.0164	.	0.0877	.	0.0632	0.556	.	0.966	.
1	NCS DC14028d	64.37	20.96	.	1.10	.	1.17	.	0.036	.	1.30	0.147	.	.	0.017	0.013	.	0.371	.	2.95	0.294	.
1	NCS DC93025	64.17	31.34	.	0.29	.	0.56	.	0.012	.	0.49	0.032	.	.	0.011	0.033	.	0.624	.	9.43	.	0.049
1	NM 613C	64.03	.	.	3.11	.	0.24	.	.	.	0.35	0.025	.	.	.	0.023	.	0.013	3.63	.	.	.
1	VS R15/2	64.0	28.0	.	.	.	0.9	.	.	.	.	.	.	.	.	.	.	.	.	2.3	.	.
1	NCS DC28215	63.93	26.9	.	1.09	.	2.06	.	.	.	0.79	.	0.136	.	.	0.017	.	0.282	.	5.90	0.444	.
1	NCS DC14049	63.86	0.25	.	2.04	.	0.084	.	0.33	.	0.056	0.170	.	.	0.027	0.037	.	0.020	.	4.62	.	0.12
1	NCS DC28051	63.56	0.35	.	0.926	.	1.12	.	0.13	.	1.48	0.134	.	.	0.070	0.018	.	0.015	.	4.57	0.071	.
1	ASCRM 032	63.53	.	0.97	.	0.040	.	0.006	.	0.039	.	0.071	.	0.0085	.	0.074	.	0.011	1.81	.	0.043	.
1	NCS DC11005a	63.34	(0.07)	.	0.52	.	0.12	.	0.070	.	0.146	.	0.84	.	0.020	0.016	.	0.107	.	3.36	.	0.034
1	IMZ 360	63.36	25.3	.	0.356	.	2.77	.	0.039	.	0.63	0.098	.	.	0.027	0.019	.	0.074	.	5.4	.	0.023
1	NCS DC11017	63.33	1.76	.	1.13	.	1.05	.	0.115	.	1.30	.	0.086	.	0.070	0.011	.	0.0630	.	5.56	.	0.151
1	GIOP-141	63.226	.	.	1.8	.	0.036	.	0.0189	.	0.1003	0.0691	.	0.024	.	0.0665	.	0.0281	.	3.548	.	0.0574
1	NCS DC28224	63.20	1.4	.	1.02	.	0.86	.	.	.	0.50	.	0.083	.	.	0.020	.	0.015	.	6.55	0.319	.
1	NM 161.6	63.18	.	.	2.85	.	.	.	.	.	.	.	.	.	.	0.067	.	0.009	.	2.37	.	0.10
1	KZ 181-89	63.18	.	.	1.18	.	2.19	.	0.10	.	0.74	.	.	.	0.20	0.035	.	4.16	.	6.11	.	0.070
2	DH 1115	63.17	.	.	2.68	.	0.494	.	0.008	.	0.244	0.074	.	.	0.020	.	0.101	.	.	5.79	.	0.128
1	IMZ 330	63.09	1.19	.	0.13	.	1.04	.	0.18	.	0.23	0.012	.	.	0.073	0.013	.	0.003	.	8.26	.	0.01
1	NCS DC28003b	63.07	23.93	.	0.64	.	0.71	.	0.025	.	4.82	.	1.08	.	0.016	0.016	.	0.024	.	3.38	.	0.224
1	IMZ 331	63.05	1.55	.	0.24	.	3.78	.	0.092	.	0.21	0.028	.	.	0.037	0.015	.	0.107	.	5.11	.	0.017
1	GIOP-143	62.97	.	.	1.49	.	0.0348	.	0.00942	.	0.0475	0.1353	.	0.0121	.	0.064	.	0.01731	.	3.086	.	0.0531
1	IMZ 357	62.79	0.95	.	1.07	.	0.060	.	0.012	.	0.047	0.173	.	.	0.0098	0.058	.	0.0064	.	7.08	.	0.081
1	JSS 806-1	62.77	.	0.96	.	0.0197	.	0.0091	.	0.034	.	0.125	.	0.0115	.	0.083	.	0.019	1.55	.	0.044	.
1	IMZ 354	62.76	1.41	.	1.48	.	1.31	.	0.15	.	0.49	0.390	.	.	0.096	0.028	.	0.0149	.	4.78	.	0.68
1	GIOP-44	62.75	.	.	2.216	.	0.0255	.	0.0127	.	0.0571	0.0709	.	(0.02)	.	0.06267	.	0.0199	.	4.55	.	0.1064
1	VS 5403-90	62.74	25.74	.	0.73	.	0.89	.	.	.	0.65	0.162	.	.	.	.	.	3.89	.	7.14	.	0.055
1	NCS DC28003a	62.65	24.53	.	0.39	.	0.71	.	0.040	.	4.73	.	0.113	.	0.013	0.011	.	0.114	.	4.20	.	0.117
1	NCS DC28110	62.63	23.21	.	1.19	.	1.09	.	0.068	.	5.21	0.170	.	.	0.028	0.017	.	0.255	.	3.15	0.096	0.160
1	ASCRM 031	62.53	.	0.80	.	0.011	.	0.005	.	0.035	.	0.110	.	0.0010	.	0.062	.	0.025	1.29	.	0.032	.
1	GIOP-37	62.53	.	.	2.037	.	0.0341	.	0.0146	.	0.0446	0.0959	.	0.015	.	0.1097	.	0.0159	.	3.877	.	0.0615
1	NCS DC73007	62.51	21.54	.	1.02	.	0.18	.	0.037	.	0.28	0.061	.	.	0.016	0.11	.	0.0058	.	10.93	0.059	.

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	P ₂ O ₅	S	Si	SiO ₂	Ti	TiO ₂
Number	As	Ba	C	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other					
GIOP-127	0.0066	0.0072	.	.	0.0066 (0.0034)	0.007	.	0.0024	0.0042	0.0065	0.01274	.	0.0023	(0.0028)	1.834	10 g	Sr: 0.0036					
NCS DC14001b	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g						
NCS DC28113	0.013	.	.	.	.	.	.	0.047	.	.	.	.	0.0096	.	.	70 g						
IMZ 356	.	0.028	0.043	(0.0087)(0.0023)	.	0.0028	.	0.0109	.	0.0015	0.0052	.	0.0066	.	2.37	100 g						
ECRM 691-1	Fe II: 20.71	.	0.307	.	.	0.0095	.	0.0768	0.0299	0.0008	0.0603	.	0.0195	.	.	100 g						
NCS DC14028d	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g						
NCS DC93025	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g						
NM 613C	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g						
VS R15/2	.	.	.	.	.	.	.	.	.	.	.	0.6	.	.	.	100 g						
NCS DC28215	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g						
NCS DC14049	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	65 g						
NCS DC28051	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	70 g						
ASCRM 032	0.0018	0.0037	.	.	0.0080	0.0008	0.0022	.	0.0009	0.0011	0.0008	0.0022	.	0.0022	0.0019	2.90	10x10 g	Sn: 0.0013	Sr: 0.0008			
NCS DC11005a	0.0044	(0.62 BaO)	0.119	.	0.0031	.	.	0.034	.	0.035	.	.	0.026	.	.	50 g						
IMZ 360	.	0.0033	0.69	.	(0.0011)	0.0077	.	0.007	0.0041	0.011	(0.0013)	.	0.28	.	(-0.30)	100 g						
NCS DC11017	(0.0006)	.	.	.	.	.	.	0.0045	.	(0.0006)	.	.	0.0058	.	.	70 g						
GIOP-141	0.00195	(0.004)	.	0.0103	0.00159	0.0154	.	0.0043	0.0055	(0.0034)	0.0022	.	0.00282	0.0027	3.687	10 g	Sr: 0.0027					
NCS DC28224	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g						
NM 161.6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g						
KZ 181-89	.	.	.	.	0.0080	.	.	0.046	.	.	.	.	.	.	.	100 g						
DH 1115	.	.	.	.	.	0.005	.	.	.	.	.	0.010	.	.	.	100 g						
IMZ 330	.	(0.003)	0.016	.	.	0.003	.	0.0017	(0.002)	0.0016	.	.	0.002	.	-0.04	100 g						
NCS DC28003b	.	.	.	.	.	.	.	.	.	.	.	.	0.055	.	.	50 g						
IMZ 331	(0.0004)	0.0025	.	.	0.001	0.0051	.	0.0016	0.002	0.002	0.003	.	0.003	.	0.22	100 g	Sn: 11*					
GIOP-143	(0.0016)	(0.0059)	.	0.009	0.00187	(0.0016)	.	(0.0021)	(0.0028)	(0.004)	0.0016	.	0.00168	(0.0018)	4.898	10 g	Sr: 0.0029					
IMZ 357	(0.0006)	(0.0064)	0.054	.	.	0.0039	.	0.0014	(0.0019)	(0.0014)	0.0047	.	0.0019	.	2.14	100 g						
JSS 806-1	.	.	.	.	.	0.0033	.	0.0012	0.0013	.	0.0018	.	0.0020	.	4.4	150 g	FeII: 0.15					
IMZ 354	.	(0.0042)	0.251	(0.0046)(0.0023)	.	0.0064	.	0.0016	(0.0017)	(0.0009)	0.013	.	0.0017	.	0.97	100 g						
GIOP-44	.	.	.	0.0082	.	0.0033	.	0.0026	.	.	.	.	.	.	2.929	10 g						
VS 5403-90	.	.	.	.	.	.	.	0.32	.	.	.	.	0.029	.	.	50 g	Ag: 5.9* CO2: 0.39					
NCS DC28003a	.	.	.	.	.	.	.	0.0071	.	.	.	.	0.0085	.	.	50 g						
NCS DC28110	.	.	.	.	.	.	.	0.018	.	.	.	.	0.010	.	.	70 g						
ASCRM 031	0.0011	0.0029	.	0.0106	0.0012	0.0026	.	0.0011	0.0013	0.0006	0.0013	.	0.0018	0.0014	5.80	10x10 g	Sn: 0.0013	Sr: 0.0001				
GIOP-37	.	.	.	0.0109	.	.	.	.	.	.	.	.	.	.	.	4.021	10 g					
NCS DC73007	.	.	.	.	.	.	.	(0.0015	.	.	.	.	.	.	.	50 g						
Number	As	Ba	C	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other					

CRM

IRON ORE, chart 4 of 9

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	P ₂ O ₅	S	Si	SiO ₂	Ti	TiO ₂
1	GIOP-56	62.41	.	.	1.969	.	0.0369	.	0.0184	.	0.0513	0.2196	.	0.0174	.	0.0902	.	0.0164	.	3.594	.	0.06
1	GIOP-43	62.39	.	.	2.368	.	0.028	.	0.0134	.	0.0623	0.0821	.	(0.012)	.	0.0587	.	0.024	.	4.707	.	0.1213
1	NCS DC15005	62.36	0.48	.	2.56	.	0.050	.	0.015	.	0.062	.	0.112	.	0.015	0.073	.	0.022	.	4.69	.	0.113
1	ASCRM 035	62.35	.	0.72	.	0.117	.	0.022	.	0.150	.	0.152	.	0.0565	.	0.078	.	0.057	1.99	.	0.046	.
1	NCS DC28026	62.27	0.59	.	2.39	.	0.144	.	0.023	.	0.156	0.17	.	.	0.024	0.078	.	0.02	.	4.2	0.055	.
1	IRSID 611-1	62.22	.	0.69	.	2.85	.	.	.	0.32	.	1.97	.	.	.	0.030	.	(0.068)	2.07	.	0.033	.
1	USZ 27-99	62.2	21.06	.	1.37	.	0.56	.	0.07	.	2.78	.	0.105	.	(0.04)	(0.016)	.	.	.	3.37	.	0.101
1	SARM 132	62.2	.	.	1.84	.	(0.086)	.	0.219	.	.	.	(0.0200)	.	(0.031)	0.054	.	.	.	7.82	.	(0.094)
1	GIOP-38	62.15	.	.	2.008	.	0.0407	.	0.023	.	0.07	0.5627	.	0.0195	.	0.0515	.	0.0256	.	3.101	.	0.0687
1	NCS DC28025	62.11	0.58	.	2.06	.	0.021	.	0.023	.	0.101	0.65	.	.	0.013	0.067	.	0.013	.	2.92	0.051	.
1	IMZ 332	62.10	1.61	.	0.32	.	0.39	.	0.117	.	0.71	0.026	.	.	0.050	0.010	.	0.003	.	9.63	.	0.027
1	NCS DC28216	62.01	26.9	.	1.46	.	3.65	.	.	.	1.10	.	0.176	.	.	0.020	.	0.258	.	6.74	0.388	.
1	NCS DC11009a	61.96	15.13	.	0.914	.	0.375	.	0.093	.	0.364	.	0.947	.	0.024	0.027	.	0.212	.	4.92	.	0.447
1	GIOP-47	61.9	.	.	1.88	.	0.0151	.	0.0064	.	0.041	0.0782	.	(0.015)	.	0.0688	.	0.0199	.	2.809	.	0.0614
1	IMZ 333	61.87	1.65	.	0.33	.	0.34	.	0.11	.	0.73	0.034	.	.	0.057	0.008	.	0.001	.	10.07	.	0.026
1	GIOP-41	61.85	.	.	1.978	.	0.0368	.	0.0113	.	0.053	0.1078	.	0.018	.	0.1109	.	0.0335	.	3.043	.	0.0762
1	NCS DC28031	61.82	0.55	.	2.26	.	0.024	.	0.024	.	0.085	0.61	.	.	0.012	0.073	.	0.012	.	2.94	0.054	.
1	NCS DC18011	61.80	0.30	.	3.05	.	0.051	.	.	.	0.102	.	0.170	.	.	0.076	.	0.022	.	4.52	.	0.134
1	JSS 801-6	61.75	.	1.09	.	(0.014)	.	.	.	(0.032)	.	0.707	.	.	.	0.060	.	0.0093	1.95	.	0.051	.
1	IMZ 359	61.74	3.17	.	0.25	.	2.93	.	0.061	.	0.86	0.028	.	.	0.079	0.0078	.	0.017	.	7.75	.	0.021
1	NCS DC14033	61.73	1.51	.	0.48	.	0.11	.	0.056	.	0.055	0.027	.	.	0.0056	0.024	.	0.036	.	9.82	0.041	.
1	GIOP-42	61.7	.	.	1.896	.	0.0172	.	(0.0049)	.	0.045	0.0541	.	0.018	.	0.0618	.	0.0137	.	2.743	.	0.0674
1	GIOP-46	61.699	.	.	1.854	.	0.0159	.	(0.0056)	.	0.045	0.0685	.	(0.012)	.	0.0684	.	0.0152	.	3.064	.	0.0656
1	NCS DC28053	61.68	0.24	.	0.84	.	0.33	.	0.071	.	0.38	0.042	.	.	0.046	0.017	.	0.020	.	10.32	0.063	.
1	GIOP-121	61.609	.	.	2.174	.	0.0207	.	0.0093	.	0.049	0.1915	.	0.011	.	0.0629	.	0.0168	.	2.986	.	0.0588
1	ASCRM 034	61.59	.	1.19	.	0.029	.	0.012	.	0.040	.	0.141	.	0.0117	.	0.082	.	0.024	2.00	.	0.054	.
1	GIOP-82	61.58	.	.	1.255	.	0.02	.	0.0097	.	0.04	0.2102	.	0.0172	.	0.0524	.	0.0155	.	3.079	.	0.697
1	NCS DC28024	61.53	0.24	.	2.12	.	0.118	.	0.026	.	0.109	0.276	.	.	0.034	0.068	.	0.038	.	3.43	0.052	.
1	GIOP-25	61.5	.	.	3.58	.	(-0.05)	.	0.028	.	0.055	0.023	.	.	.	0.023	.	0.017	.	5.28	.	0.135
1	NCS DC73006	61.46	(0.35)	.	1.68	.	0.52	.	0.098	.	0.77	0.072	.	.	0.080	0.019	.	(0.0067)	.	6.65	1.12	.
1	IMZ 340	61.45	3.40	.	2.37	.	1.22	.	(0.020)	.	2.40	0.15	.	.	0.066	(0.002)	.	.	.	4.20	.	2.45
1	OREAS 406	61.44	.	.	1.14	.	0.157	.	0.019	.	(0.037)	.	0.039	.	(0.017)	0.005	.	(0.006)	.	7.96	.	0.047
1	ECRM 688-1	61.38	.	0.679	.	1.449	.	0.180	.	1.061	.	0.0457	.	0.333	.	0.337	.	(0.0468)	3.383	.	0.408	.
1	GIOP-14	61.36	.	.	3.6	.	.	.	.	.	.	.	.	.	.	0.039	.	.	.	5.27	.	0.07
1	NCS DC93023	61.34	29.68	.	0.45	.	0.64	.	0.018	.	(0.60)	0.056	.	.	0.012	0.036	.	0.494	.	12.36	.	0.064
1	GIOP-62	61.3	.	.	2.254	.	0.0628	.	0.0476	.	0.085	0.308	.	0.0209	.	0.0537	.	0.0348	.	4.282	.	0.1592
1	GIOP-115	61.28	.	.	1.748	.	0.2298	.	0.0205	.	0.1622	0.0166	.	0.0595	.	0.00882	.	0.0073	.	9.046	.	0.199
1	IMZ 361	61.16	3.4	.	2.60	.	0.074	.	0.0059	.	0.027	0.054	.	.	0.005	0.082	.	0.015	.	5.6	.	0.072
1	GIOP-51	61.126	.	.	2.096	.	0.0287	.	0.0114	.	0.049	0.274	.	0.0134	.	0.0665	.	0.0196	.	3.133	.	0.063
1	BAM 631-1	61.09	.	.	1.06	.	0.75	.	(0.04)	.	0.54	0.044	.	.	(0.04)	0.114	.	0.033	.	3.20	.	0.109
1	GIOP-124	61.051	.	.	2.529	.	0.0148	.	0.012	.	0.0679	0.0769	.	0.0193	.	0.0667	.	0.0178	.	3.535	.	0.0735
1	NCS DC28030	60.82	0.21	.	2.27	.	0.035	.	0.022	.	0.112	0.298	.	.	0.026	0.073	.	0.041	.	3.45	0.056	.
1	GIOP-18	60.64	.	.	2.4	.	.	.	.	.	.	.	.	.	.	0.056	.	.	.	4.74	.	0.04

Number	As	Ba	C	CO ₂	Cl	Co	Cr	Cr ₂ O ₂	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other
GIOP-56	.	.	.	.	0.014	0.007	0.0038	.	.	.	.	.	.	0.00237	.	4.076	10 g	Sn: 0.0011 Sr: 0.0009
GIOP-43	.	.	.	.	0.0088	.	0.0038	.	0.0027	.	.	.	.	.	.	3.167	10 g	
NCS DC15005	.	.	.	.	.	.	.	.	0.0019	.	.	.	.	.	.	.	100 g	
ASCRM 035	0.0079	0.0017	.	.	0.0398	0.0018	0.0048	.	0.0087	0.0033	0.0005	0.0024	.	0.0029	0.0023	4.02	10x10 g	
NCS DC28026	0.0013	.	.	.	.	0.001	0.0027	.	0.0015	0.0024	0.0004	.	.	0.0026	.	.	50 g	
IRSID 611-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	BaO: (0.71)
USZ 27-99	.	.	.	.	.	0.013	.	.	0.030	0.008	.	.	.	(0.013)	.	(1.46)	100 g	
SARM 132	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
GIOP-38	.	.	.	.	0.0124	.	0.0078	.	.	.	.	.	.	.	.	4.87	10 g	
NCS DC28025	0.0011	.	.	.	.	0.0015	0.0038	.	0.0018	0.0033	0.0008	.	.	0.0026	.	.	50 g	
IMZ 332	.	0.0036	0.012	.	.	.	0.005	.	0.0021	0.002	0.0016	(0.001)	.	0.0023	.	0.11	100 g	BaO: (0.71)
NCS DC28216	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g	
NCS DC11009a	0.011	.	0.128	.	.	0.0061	.	.	0.063	.	0.042	.	.	0.054	.	.	50 g	
GIOP-47	.	.	.	.	.	.	0.00263	.	.	.	.	.	.	.	.	6.309	10 g	
IMZ 333	.	0.003	0.011	.	.	.	0.006	.	0.002	0.002	0.0015	0.001	.	0.0014	.	0.13	100 g	
GIOP-41	.	.	.	.	0.0125	.	.	.	.	.	.	.	.	.	.	5.784	10 g	BaO: (0.71)
NCS DC28031	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	70 g	
NCS DC18011	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
JSS 801-6	.	.	.	.	.	.	(0.005)	.	(0.002)	0.0033	.	(0.003)	.	.	.	.	100 g	
IMZ 359	.	(0.0016)	0.036	.	0.018	(0.0014)	0.0023	.	(0.0006)	.	(0.0010)	0.0009	.	0.0018	.	-0.13	100 g	
NCS DC14033	.	.	.	.	.	0.0048	.	.	0.061	0.0023	.	.	.	.	.	.	50 g	BaO: (0.71)
GIOP-42	.	.	.	.	.	.	0.00222	.	0.0032	.	.	.	.	.	.	6.76	10 g	
GIOP-46	.	.	.	.	.	.	0.0023	.	0.0027	.	.	.	.	.	.	6.385	10 g	
NCS DC28053	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	70 g	
GIOP-121	(0.0014)	(0.0056)	.	.	0.0088	(0.0015)	(0.0017)	.	(0.0016)	(0.0026)	(0.0012)	(0.001)	.	(0.0017)	(0.0021)	6.237	10 g	
ASCRM 034	0.0011	0.0055	.	.	0.0110	0.0009	0.0022	.	0.0009	0.0015	0.0012	0.0021	.	0.0016	0.0021	4.76	10x10 g	Sn: 0.0005 Sr: 0.0013
GIOP-82	.	.	.	.	0.0118	.	.	.	.	.	0.013	.	.	.	.	6.411	10 g	
NCS DC28024	0.0011	.	.	.	.	0.0009	0.0054	.	0.0014	0.0027	0.0008	.	.	0.002	.	.	50 g	
GIOP-25	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.72	10 g	
NCS DC73006	.	.	.	.	.	.	.	.	0.0028	.	.	.	.	.	.	.	50 g	
IMZ 340	.	.	.	.	.	.	(0.068)	.	.	.	.	0.30	.	.	.	.	100 g	BaO: (0.71)
OREAS 406	(0.001)	(0.00374)	.	.	(0.006)	(0.0009)	(0.002)	(0.002)	(0.0019)	(0.0058)	(0.00196)	(0.00114)	.	(0.00174)	(0.003)	2.69	10 g	
ECRM 688-1	(0.0011)	.	.	.	.	0.0096	(0.002)	.	0.0023	0.0136	0.00025	0.135	.	0.0015	(0.0015)	.	100 g	
GIOP-14	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.4	10 g	
NCS DC93023	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
GIOP-62	0.0068	0.0075	.	.	0.0184	.	0.0143	.	.	.	.	0.02073	.	0.0064	.	4.71	10 g	BaO: (0.71)
GIOP-115	.	.	.	.	0.0536	.	.	.	.	.	.	0.00314	.	.	0.0187	0.817	10 g	
IMZ 361	.	0.003	0.288	.	.	(0.0005)	0.0031	.	(0.0013)	0.0013	0.0015	(0.0013)	.	0.0031	.	4.37	100 g	
GIOP-51	.	.	.	.	0.016	.	.	.	.	.	.	.	.	.	.	6.629	10 g	
BAM 631-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g	
GIOP-124	(0.0014)	(0.0036)	.	.	0.0136	(0.0027)	0.00166	.	(0.0021)	0.0022	(0.0025)	(0.00096)	.	0.0028	(0.0028)	6.203	10 g	Sr: 0.0034
NCS DC28030	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	70 g	
GIOP-18	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	5.5	10 g	
Number	As	Ba	C	CO ₂	Cl	Co	Cr	Cr ₂ O ₂	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other

CRM

IRON ORE, chart 5 of 9

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
1	GIOP-161	60.48	.	.	2.116	.	0.0234	.	0.00935	.	0.174	0.2674	.	(0.01)	.	0.0622	0.0189	.	2.911	.	1.63
1	GIOP-89	60.42	.	.	1.702	.	0.0606	.	0.0106	.	0.086	0.1927	.	0.0178	.	0.048	0.0155	.	3.922	.	0.344
1	NCS DC28002a	60.37	21.03	.	3.54	.	1.49	.	0.090	.	1.23	0.236	.	0.102	.	0.043	0.016	.	7.40	.	0.751
1	IMZ 342	60.32	20.1	.	0.48	.	4.51	.	0.058	.	0.86	0.080	.	0.042	.	0.017	0.15	.	5.93	.	0.045
1	GIOP-122	60.31	.	.	2.498	.	0.0337	.	0.0298	.	0.067	0.2252	.	0.0254	.	0.0637	0.0814	.	3.937	.	0.0848
1	GIOP-145	60.21	.	.	2.017	.	0.0291	.	0.00923	.	0.0654	0.2292	.	0.0131	.	0.05915	0.01967	.	3.571	.	0.0787
1	GIOP-87	60.16	.	.	2.247	.	0.0298	.	(0.0094)	.	0.0482	0.0344	.	(0.014)	.	0.0976	0.0114	.	3.147	.	0.096
1	ECRM 680-1	59.98	.	0.66	.	0.45	.	0.078	.	0.14	.	0.025	.	0.128	.	0.018	0.544	4.20	.	0.045	.
1	GIOP-45	59.93	.	.	2.024	.	0.0486	.	0.0123	.	0.0789	0.1189	.	0.0185	.	0.0505	0.0248	.	4.991	.	0.1078
1	GIOP-67	59.91	.	.	2.107	.	0.0528	.	(0.009)	.	0.112	0.1811	.	0.0165	.	0.0346	0.0198	.	4.849	.	0.0914
1	IMZ 262/1	59.73	.	.	0.71	.	0.42	.	.	.	0.83	(0.04)	0.044	.	.	(0.016)	(0.005)	.	12.28	.	.
1	NCS DC28036	59.71	0.62	.	2.76	.	0.317	.	0.042	.	0.233	0.192	.	0.086	.	0.078	0.090	.	5.18	0.066	.
1	GIOP-85	59.66	.	.	1.581	.	0.0496	.	0.00962	.	0.1054	0.2429	.	0.0168	.	0.044	0.0131	.	3.614	.	0.054
1	IRSID 606-1	59.66	.	0.34	.	1.04	.	.	.	0.32	.	2.59	.	.	.	0.026	0.033	1.04	.	0.019	.
1	GIOP-70	59.62	.	.	1.741	.	0.0834	.	0.0104	.	0.071	0.1706	.	0.0139	.	0.0413	0.0225	.	4.311	.	0.0588
1	SRM 692	59.6	.	.	1.42	.	0.022	.	0.039	.	0.036	.	0.458	.	0.007	0.038	(0.005)	.	10.17	.	0.044
1	NCS DC19003b	59.51	20.53	.	3.36	.	0.055	.	.	.	1.34	.	0.43	.	.	0.0049	0.013	.	1.40	.	10.21
1	GIOP-69	59.49	.	.	1.574	.	0.337	.	0.0162	.	0.089	0.2574	.	0.0301	.	0.0407	0.0598	.	3.346	.	0.0484
1	GIOP-66	59.49	.	.	1.553	.	0.0926	.	0.0107	.	0.052	0.1609	.	(0.013)	.	0.0439	0.0232	.	4.099	.	0.0454
1	GIOP-71	59.48	.	.	1.591	.	0.2672	.	0.0151	.	0.075	0.234	.	0.0223	.	0.0415	0.0474	.	3.571	.	0.0486
1	KZ 184-89	59.44	20.34	.	1.01	.	1.35	.	0.16	.	0.22	0.36	.	.	.	0.031	1.08	.	7.99	.	0.052
1	GIOP-144	59.43	.	.	1.81	.	0.0917	.	0.0109	.	0.0598	0.1963	.	0.0123	.	0.0475	0.0274	.	4.247	.	0.0627
1	GIOP-147	59.17	.	.	2.108	.	0.0295	.	0.0119	.	0.0659	0.1211	.	(0.0092)	.	0.0816	0.0217	.	4.449	.	0.2036
1	GIOP-76	59.2	.	.	2.435	.	0.0324	.	(0.0092)	.	0.051	0.0577	.	(0.013)	.	0.1237	0.0092	.	4.02	.	0.1096
1	GIOP-74	59.19	.	.	2.331	.	0.429	.	0.0184	.	0.108	0.0809	.	0.0227	.	0.0503	0.0371	.	4.565	.	0.113
1	GIOP-84	59.13	.	.	2.435	.	0.0504	.	0.0195	.	0.0602	0.354	.	0.0164	.	0.04696	0.0274	.	5.428	.	0.2216
1	IMZ 355	59.11	3.86	.	1.92	.	0.071	.	0.007	(0.030)	.	0.083	.	.	0.011	0.090	0.013	.	10.06	.	0.057
1	GIOP-88	59.11	.	.	2.081	.	0.097	.	0.010	.	0.1264	0.125	.	0.0185	.	0.04453	0.0146	.	4.593	.	0.399
1	GIOP-148	58.9	.	.	2.324	.	0.1025	.	0.0117	.	0.0594	0.1869	.	0.0131	.	0.0807	0.0302	.	4.452	.	0.1091
1	GIOP-138	58.89	.	.	3.261	.	0.0311	.	0.0123	.	0.0606	0.1264	.	0.0128	.	0.0535	0.287	.	4.487	.	0.1628
1	NCS DC14010b	58.84	18.69	.	2.30	.	1.82	.	0.214	.	1.18	0.60	.	.	0.057	0.022	0.088	.	7.73	.	0.460
1	NCS DC13034	58.79	26.09	.	0.54	.	1.77	.	.	.	0.30	.	0.061	.	.	0.584	0.047	.	14.47	.	0.014
1	IMZ 311	58.65	0.78	.	1.03	.	0.048	.	0.065	.	0.06	0.018	.	.	0.23	0.048	0.015	.	13.58	.	0.039
1	GIOP-17	58.48	.	.	3.3	.	.	.	.	.	.	.	.	.	.	0.060	.	.	6.13	.	0.06
1	ASCRM 033	58.45	.	0.80	.	0.047	.	0.002	.	0.058	.	0.029	.	0.0068	.	0.052	0.007	2.28	.	0.041	.
1	NCS DC28040	58.40	3.11	.	2.04	.	4.41	.	0.048	.	1.17	0.269	.	.	0.039	0.063	0.038	.	5.06	0.084	.
1	GIOP-125	58.292	.	.	3.916	.	0.0115	.	0.0304	.	0.0996	0.1876	.	0.0125	.	0.068	0.009	.	4.37	.	0.146
1	GIOP-81	58.21	.	.	2.559	.	0.095	.	0.01014	.	0.1224	0.0728	.	0.0166	.	0.0784	0.012	.	4.947	.	0.1288
1	GIOP-79	58.06	.	.	2.231	.	0.035	.	0.01039	.	0.067	0.0731	.	(0.019)	.	0.1131	0.0088	.	5.592	.	0.0927
1	OREAS 405	58.02	.	.	2.26	.	0.196	.	0.020	.	(0.062)	.	0.030	.	(0.014)	0.111	0.018	.	8.37	.	0.214
1	GIOP-78	57.83	.	.	2.484	.	0.2818	.	(0.0083)	.	0.165	0.0792	.	0.0167	.	0.0401	0.0146	.	5.017	.	0.1272
1	NCS DC14043	57.78	1.48	.	1.52	.	0.56	.	0.22	.	0.54	0.104	.	0.023	.	0.046	0.187	.	11.18	0.070	.
1	GIOP-73	57.77	.	.	3.548	.	0.1806	.	0.018	.	0.078	0.0967	.	0.0183	.	0.0538	0.0326	.	5.251	.	0.1846
1	IMZ 312	57.69	(0.72)	.	1.00	.	0.057	.	0.032	.	0.21	0.025	.	0.27	.	0.027	0.011	.	14.67	.	0.039
1	GIOP-146	57.65	.	.	3.716	.	0.0486	.	0.0179	.	0.102	0.1401	.	0.015	.	0.0457	0.02603	.	5.777	.	0.2016

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
	Number	As	Ba	C	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other			
	GIOP-161	(0.0016)	0.0086	.		0.0092	0.00259	0.0319	.	(0.0024)	0.0037	(0.0049)	0.0382	.	0.00369	0.00283	6.017	10 g	Sr: 0.0108		
	GIOP-89	.	.	.		0.0093	.	.	.	.	.	.	.	.	0.0045	.	7.118	10 g			
	NCS DC28002a	0.0012	.	.		.	.	0.068	.	0.0080	.	.	.	.	0.016	.	50 g				
	IMZ 342	.	.	.		.	.	(0.008)	.	.	.	(0.03)	(0.003)	.	0.89	.	(0.46)	100 g			
	GIOP-122	0.00497	(0.0071)	.		0.0078	(0.0018)	(0.0025)	.	0.0335	(0.0028)	(0.002)	(0.0012)	.	0.0034	(0.0027)	6.543	10 g	Sr: 0.0105		
	GIOP-145	(0.0016)	0.006	.		0.0083	0.00183	(0.0013)	.	(0.0018)	(0.0018)	(0.0051)	0.00203	.	0.00384	(0.0026)	7.658	10 g	Sr: 0.0204		
	GIOP-87	.	.	.		.	.	.	.	.	.	.	.	.	.	.	8.034	10 g			
	ECRM 680-1	0.057	.	.		0.013	0.005	.	.	0.063	0.007	0.317	.	.	0.165	.	100 g				
	GIOP-45	.	.	.		0.0149	0.0023	.	.	0.0025	.	.	.	.	.	.	6.615	10 g			
	GIOP-67	.	.	.		0.0087	0.0037	.	.	.	.	.	.	.	0.0052	.	6.774	10 g			
	IMZ 262/1	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	100 g			
	NCS DC28036	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	70 g			
	GIOP-85	.	.	.		0.0059	0.0053	.	.	.	.	.	0.00604	.	.	.	8.808	10 g			
	IRSID 606-1	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	100 g			
	GIOP-70	.	.	.		0.0081	.	.	.	.	.	.	.	.	.	.	8.069	10 g			
	SRM 692	(0.0045)	.	.		.	(0.0010)	(0.0019)	.	(0.0045)	(0.0007)	.	(0.0049)	.	.	.	.	100 g			
	NCS DC19003b	.	.	.		.	0.015	.	0.042	0.014	.	.	.	0.78	0.028	.	.	70 g			
	GIOP-69	.	.	.		0.0251	.	.	.	.	.	.	.	.	.	.	8.933	10 g			
	GIOP-66	.	.	.		.	.	.	.	.	.	.	.	.	.	.	8.691	10 g			
	GIOP-71	.	.	.		0.0187	.	.	.	.	.	.	.	.	.	.	8.855	10 g			
	KZ 184-89	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	100 g	CO ₂ : 4.14		
	GIOP-144	(0.0015)	(0.0048)	.		0.0072	(0.0019)	(0.0012)	.	0.0025	(0.0021)	(0.0044)	(0.0013)	.	0.00346	0.0017	8.272	10 g	Sr: 0.0043		
	GIOP-76	.	.	.		.	.	.	.	.	.	.	.	.	.	.	8.236	10 g			
	GIOP-147	(0.0022)	(0.0049)	.		0.0056	0.00179	(0.0018)	.	(0.0021)	(0.0019)	(0.0048)	0.00277	.	0.00419	0.004	8.078	10 g	Sr:(0.0028)		
	GIOP-74	.	.	.		0.0093	.	0.0042	.	.	.	.	.	.	.	.	7.434	10 g			
	GIOP-84	.	0.0111	.		0.008	.	.	.	.	.	.	.	.	.	.	6.597	10 g			
	IMZ 355	.	.	0.079		(0.0043)	.	0.0062	.	(0.0012)	.	0.0013	0.0013	.	0.0020	.	3.20	100 g			
	GIOP-88	.	.	.		0.0082	.	.	.	.	.	.	.	.	0.0063	0.005	7.877	10 g			
	GIOP-148	(0.0016)	(0.0041)	.		0.0073	(0.001)	0.00185	.	(0.0021)	(0.0021)	(0.0042)	0.00193	.	0.0027	0.0031	8.2	10 g	Sr: 0.0051		
	GIOP-138	0.0019	(0.0032)	.		0.0098	(0.0017)	0.0029	.	(0.0023)	0.00174	(0.0031)	0.00304	.	(0.002)	0.0035	7.363	10 g	Sr: 0.00226		
	NCS DC14010b	.	.	.		.	.	.	0.048	.	.	.	.	0.149	.	.	50 g				
	NCS DC13034	.	.	.		.	.	.	.	.	.	.	.	.	.	.	50 g				
	IMZ 311	0.0006	0.004	0.015		0.25	(0.0006)	0.004	.	0.0012	0.003	0.0014	0.0014	.	0.0017	.	-0.98	100 g			
	GIOP-17	.	.	.		.	.	.	.	.	.	.	.	.	.	.	6.2	10 g			
	ASCRM 033	0.0019	0.0011	.		0.0045	0.0005	0.0012	.	0.0008	0.0011	0.0001	0.0031	.	0.0008	0.0022	9.52	10x10 g	Sr: 0.0004		
	NCS DC28040	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	70 g			
	GIOP-125	(0.0027)	(0.0036)	.		(0.0021)	(0.0031)	0.0061	.	(0.0028)	0.0032	(0.002)	0.00212	.	0.0039	(0.0042)	7.644	10 g	Sr: 0.0105		
	GIOP-81	.	.	.		.	.	.	.	.	.	.	0.00316	.	0.0065	.	8.618	10 g			
	GIOP-79	.	.	.		.	.	.	.	.	.	.	.	.	.	.	8.55	10 g			
	OREAS 405	(0.001)	(0.003)	.		(0.005)	(0.000750)	.	102*	(0.002)	(0.004)	(0.0015)	(0.00289)	.	(0.0017)	(0.007)	5.61	10 g	Sr:(21.5*)		
	GIOP-78	.	.	.		0.0073	.	.	.	.	.	.	0.00281	.	0.0076	.	8.967	10 g			
	NCS DC14043	.	.	.		.	.	.	0.066	.	.	.	.	.	.	.	50 g				
	GIOP-73	.	.	.		0.0105	0.0049	.	.	.	.	.	.	.	.	.	7.766	10 g			
	IMZ 312	(0.0007)	0.0022	0.024		0.31	0.0003	0.006	.	0.0014	0.0022	0.0011	0.0019	.	0.0022	.	-1.20	100 g			
	GIOP-146	(0.0016)	(0.0036)	.		0.0105	0.0017	0.00388	.	(0.0023)	(0.0013)	(0.0044)	0.0039	.	0.00308	0.00397	7.347	10 g	Sr: 0.0034		
	Number	As	Ba	C	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other			

CRM

IRON ORE, chart 6 of 9

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
1	VS R36	57.47	0.73	.	0.71	.	0.037	.	0.015	.	0.39	.	0.024	.	0.076	0.0138	0.0064	.	16.28	.	0.031
1	NCS DC28081	57.41	1.89	.	5.11	.	0.34	.	0.150	.	0.142	.	0.228	.	0.045	0.054	0.018	.	7.31	.	0.230
1	GIOP-86	57.26	.	.	2.657	.	0.1514	.	0.0107	.	0.1758	0.085	.	0.0184	.	0.03934	0.0139	.	5.752	.	0.1434
1	GIOP-75	57.23	.	.	2.649	.	0.1564	.	0.01048	.	0.1778	0.0875	.	0.0182	.	0.0394	0.014	.	5.761	.	0.143
1	GIOP-68	57.18	.	.	4.126	.	0.0414	.	0.0173	.	0.063	0.1027	.	0.0163	.	0.0555	0.0293	.	5.51	.	0.2228
1	GIOP-61	57.14	.	.	2.523	.	0.1735	.	0.0194	.	0.068	0.228	.	0.0199	.	0.0426	0.0388	.	5.946	.	0.115
1	JSS 821-1	57.05	.	1.24	.	0.159	.	0.0055	.	0.113	.	0.085	.	0.0095	.	0.0415	0.0108	2.28	.	0.0718	.
1	ECRM 689-1	57.05	.	1.185	.	1.183	.	0.462	.	0.980	.	0.1196	.	0.638	.	0.0706	.	(5.4)	.	0.3264	.
1	ASCRM 030	56.76	.	1.42	.	0.245	.	0.009	.	0.108	.	0.079	.	0.0170	.	0.038	0.021	2.71	.	0.089	.
1	JSS 831-2	56.64	1.97	FeII: 21.82	.	1.05	.	0.061	.	2.09	.	0.501	.	0.082	.	0.153	0.0049	1.93	.	4.51	.
1	NCS DC73005	56.60	20.50	.	0.99	.	1.36	.	0.071	.	3.62	0.076	.	.	0.058	0.017	2.44	.	11.48	0.043	.
1	GIOP-142	56.58	.	.	3.032	.	0.2678	.	0.0109	.	0.218	0.0892	.	0.0126	.	0.0412	0.01404	.	6.704	.	0.1782
1	NCS DC28212	56.29	26.9	.	2.53	.	8.04	.	.	.	1.96	.	0.289	.	.	0.032	0.197	.	8.86	.	0.208
1	GIOP-137	56.285	.	.	6.029	.	0.966	.	0.0691	.	0.5292	0.04	.	0.2205	.	0.0579	0.0209	.	7.946	.	0.3815
1	NCS DC28112	56.23	24.15	.	1.39	.	2.73	.	0.133	.	4.89	0.132	.	.	0.070	0.023	0.369	.	7.81	0.620	1.03
1	NCS DC11018	56.02	7.78	.	2.20	.	9.89	.	0.038	.	2.87	.	0.355	.	0.057	0.058	0.023	.	4.50	.	0.108
1	IMZ 313	55.85	0.68	.	1.13	.	0.079	.	0.030	.	0.31	0.03	.	.	0.23	0.031	0.0085	.	17.29	.	0.044
1	NCS DC15002a	55.81	1.86	.	1.93	.	1.10	.	0.433	.	0.36	.	0.026	.	0.33	0.011	0.469	.	13.00	.	0.083
1	VS R5/6	55.8	9.81	.	2.57	.	9.30	.	.	.	1.95	0.86	.	.	.	0.029	0.035	.	5.71	.	0.29
1	NCS DC18012	55.51	9.04	.	5.54	.	0.42	.	0.069	.	0.67	.	0.455	.	.	0.376	0.023	.	7.62	.	0.129
1	NCS DC19016	55.23	1.01	.	3.07	.	1.08	.	0.123	.	1.88	.	0.199	.	0.173	0.037	0.0087	.	6.43	.	7.69
1	GIOP-136	55.22	.	.	6.493	.	1.055	.	0.0757	.	0.5767	0.0402	.	0.241	.	0.0578	0.0241	.	8.632	.	0.4166
1	OREAS 404	55.14	.	.	2.97	.	0.102	.	(0.008)	.	(0.074)	.	(0.007)	.	(0.014)	0.151	0.032	.	7.88	.	0.385
1	IMZ 343	55.09	6.37	.	0.74	.	10.93	.	0.037	.	1.21	0.0200	.	.	(0.040)	0.030	0.021	.	9.31	.	0.032
1	NCS DC28225	54.96	10.7	.	2.93	.	11.49	.	.	.	0.98	.	0.171	.	.	0.050	0.032	.	5.89	.	0.152
1	NCS DC18018	54.90	7.87	.	2.34	.	10.36	.	.	.	2.41	.	0.29	.	.	0.064	0.036	.	5.81	.	0.50
1	NCS DC11004a	54.86	1.17	.	2.85	.	0.630	.	0.26	.	0.524	.	1.04	.	0.047	0.119	0.258	.	8.27	.	0.120
1	VS 5405-90	54.83	.	.	2.04	.	.	.	0.33	.	0.29	0.62	.	.	.	0.034	0.018	.	16.23	.	0.092
1	NCS DC11006a	54.74	3.90	.	1.48	.	1.02	.	0.214	.	0.657	.	1.31	.	0.048	0.036	0.439	.	8.53	.	0.154
1	NCS DC18019	54.03	7.98	.	2.57	.	10.50	.	.	.	2.71	.	0.70	.	.	0.073	0.027	.	6.11	.	0.24
1	NM 161.5	53.85	.	.	7.53	.	.	.	.	.	.	.	.	.	.	0.071	0.008	.	7.13	.	0.29
1	IRSID 603-1	53.65	.	4.20	(0.91)	.	.	.	.	(0.2)	.	0.440	.	.	.	0.084	0.097	1.28	.	0.137	.
1	GIOP-135	53.505	.	.	7.322	.	1.184	.	0.0825	.	0.655	0.0588	.	0.2743	.	0.05917	0.0191	.	9.633	.	0.4731
1	NCS DC28034	53.42	15.27	.	0.57	.	0.31	.	0.086	.	11.21	0.065	.	.	0.25	0.018	0.192	.	5.22	0.044	.

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
	Number	As	Ba	C	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other			
	VS R36	.	.	.	.	.	.	.	.	.	.	.	.	Insoluble Residue:		16.5	100 g				
	NCS DC28081	0.0014	.	.	.	.	0.032	.	0.0038	.	.	.	.	0.0027	.	.	50 g				
	GIOP-86	.	.	.	.	.	.	.	.	.	.	0.00336	.	0.0094	.	8.94	10 g				
	GIOP-75	.	.	.	.	.	.	.	.	.	.	0.00312	.	0.0092	.	8.954	10 g				
	GIOP-68	.	.	.	0.011	.	0.0051	.	.	.	.	0.00353	.	.	.	7.876	10 g				
	GIOP-61	.	.	.	0.0094	.	.	.	.	.	.	.	.	0.0042	.	8.961	10 g				
	JSS 821-1	.	.	.	.	.	0.0027	.	0.0007	0.0035	0.0006	0.0040	.	0.0074	.	9.16	70 g				
	ECRM 689-1	.	.	.	.	0.0103	.	.	0.0068	0.0195	.	0.1020	.	0.0042	.	.	100 g				
	ASCRM 030	0.0014	0.0034	.	0.0101	0.0014	0.0020	.	0.0016	0.0019	0.0008	0.0042	.	0.0096	0.0037	9.24	10x10 g	Sr: 0.0010			
	JSS 831-2	.	.	.	.	.	0.028	.	0.0068	0.0077	.	0.299	.	0.074	.	(0.11)	100 g				
	NCS DC73005	.	.	.	.	.	.	.	0.068	.	.	.	.	.	.	.	50 g				
	GIOP-142	(0.0015)	(0.0052)	.	(0.0035)	0.00182	0.00206	.	(0.0019)	0.002	(0.0038)	0.00499	.	0.00871	0.0054	8.368	10 g	Sr:0.004			
	NCS DC28212	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g				
	GIOP-137	(0.001)	0.0053	.	(0.0032)	(0.0017)	0.0051	.	(0.0019)	0.00175	(0.0026)	0.00726	.	0.00233	0.0079	3.111	10 g	Sr: 0.0056			
	NCS DC28112	0.167	.	.	.	.	.	.	0.527	.	.	.	.	0.037	.	.	70 g				
	NCS DC11018	0.0014	.	.	.	.	.	.	0.0044	.	0.0031	.	.	0.065	.	.	70 g				
	IMZ 313	(0.0008)	0.0017	0.031	(0.29)	0.0002	0.0067	.	0.0015	0.0024	0.0009	(0.001)	.	0.0028	.	-1.31	100 g				
	NCS DC15002a	0.23	.	.	.	.	.	.	0.134	.	0.319	.	.	0.161	.	.	50 g				
	VS R5/6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	150 g				
	NCS DC18012	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g				
	NCS DC19016	.	.	.	.	0.010	.	0.34	.	0.021	.	.	0.51	0.033	.	.	100 g				
	GIOP-136	(0.001)	0.0056	.	0.0036	(0.0018)	0.00537	.	(0.0016)	0.00194	(0.003)	0.00768	.	0.00257	0.0087	3.266	10 g	Sr: 0.0053			
	OREAS 404	(0.00176)	(0.00312)	.	(0.00379)	.	0.004	0.0124	(0.0018)	(0.0031)	(0.0006)	(0.00422)	.	(0.0018)	(0.0107)	9.40	10 g	Sr:(23.6*)			
	IMZ 343	.	.	.	.	.	.	.	.	.	.	.	.	0.005	.	.	100 g				
	NCS DC28225	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g				
	NCS DC18018	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g				
	NCS DC11004a	0.096	(BaO:0.86)	0.310	.	0.0054	.	.	0.066	.	0.101	.	.	0.144	.	.	50 g				
	VS 5405-90	.	.	.	.	.	.	.	.	.	0.23	.	.	0.089	.	.	50 g	Ge: 5.1*			
	NCS DC11006a	0.215	(BaO:1.08)	0.227	.	0.0086	.	.	0.102	.	0.182	.	.	0.30	.	.	50 g				
	NCS DC18019	0.021	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g				
	NM 161.5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g				
	IRSID 603-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g				
	GIOP-135	(0.001)	0.0088	.	0.0034	(0.0017)	0.00614	.	(0.0013)	0.00248	(0.0023)	0.00914	.	0.00233	0.0095	3.562	10 g	Sr: 0.0058			
	NCS DC28034	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	70 g	B ₂ O ₃ : 3.62			
	Number	As	Ba	C	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other			

CRM

IRON ORE, chart 7 of 9

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
1	SARM 147	52.67	.	.	0.96	.	7.05	.	(0.21)	.	5.28	.	0.23	.	.	.	0.13	.	3.35	.	1.72
1	OREAS 403	52.31	.	.	2.63	.	0.106	.	0.011	.	0.077	.	(0.007)	.	(0.015)	0.123	0.026	.	13.67	.	0.289
1	NCS DC11007a	52.24	4.21	.	6.84	.	0.561	.	0.61	.	0.606	.	0.194	.	0.093	0.346	0.094	.	10.20	.	0.237
1	IMZ 263/1	52.10	.	.	1.14	.	0.17	.	.	.	0.17	(0.04)	0.045	.	.	(0.026)	0.036	.	22.78	.	.
1	ECRM 677-1	51.54	.	0.32	.	0.038	.	0.008	.	0.012	.	0.016	.	0.007	.	0.0170	(0.005)	11.78	.	0.013	.
1	NCS DC28064	51.48	0.25	.	5.65	.	0.014	.	.	.	0.70	0.70	.	.	.	0.0045	0.17	.	2.30	.	0.15
1	NCS DC28067	51.36	0.26	.	4.16	.	0.022	.	.	.	1.05	0.80	.	.	.	0.0055	0.095	.	3.11	.	0.091
1	NCS DC28083	50.98	8.92	.	5.03	.	3.44	.	.	.	1.05	.	0.306	.	.	0.963	0.112	.	9.40	.	0.125
1	NCS DC28111	50.94	20.67	.	1.42	.	4.85	.	0.204	.	3.95	0.098	.	.	0.14	0.033	0.430	.	13.83	0.065	0.108
1	NCS DC28213	50.92	19.9	.	3.28	.	6.90	.	.	.	3.40	.	0.943	.	.	0.050	0.130	.	13.68	.	0.241
1	CGL 206	50.87	Sr:0.002238	.	1.25	.	5.87	.	0.24	.	4.93	.	0.11	.	(0.10)	.	(2.60)	.	5.86	.	0.08
1	GIOP-15	50.68	.	.	4.1	.	.	.	.	.	.	.	.	.	.	0.032	.	.	20.10	.	0.04
1	VS R33	50.42	.	.	.	.	8.35	.	.	.	1.33	.	.	.	.	0.039	3.10	.	10.62	.	.
1	NCS DC28082	49.53	0.05	.	7.45	.	0.032	.	.	.	0.107	.	3.39	.	.	0.083	0.029	.	7.44	.	0.370
1	NCS DC73004	49.50	7.66	.	2.58	.	0.91	.	0.91	.	0.98	0.198	.	.	0.035	0.138	0.005	.	16.30	0.083	.
1	GIOP-36	49.5	.	.	5.51	.	0.011	.	.	.	2.657	0.200	.	.	.	0.008	0.014	.	0.85	.	20.10
1	GIOP-35	49.4	.	.	5.53	.	.	.	.	.	2.569	0.200	.	.	.	0.008	0.014	.	0.85	.	20.20
1	GIOP-33	49.3	.	.	5.51	.	.	.	.	.	2.665	0.213	.	.	.	0.008	0.015	.	0.92	.	20.35
1	NCS DC18017	48.44	11.17	.	2.98	.	15.52	.	.	.	2.32	.	0.81	.	.	0.065	0.155	.	8.40	.	0.23
1	OREAS 402	48.41	.	.	2.49	.	0.090	.	0.010	.	0.072	.	(0.007)	.	(0.016)	0.119	0.024	.	19.77	.	0.288
1	NCS DC28082a	48.00	0.05	.	3.44	.	0.15	.	.	.	0.268	.	3.40	.	.	0.076	0.111	.	12.74	.	0.146
1	NCS DC15004	47.86	21.99	.	1.12	.	1.72	.	0.062	.	0.96	.	0.082	.	0.043	0.032	0.235	.	28.01	.	0.070
1	NCS DC26706	47.72	.	.	4.65	.	0.13	.	.	.	2.34	0.89	.	.	.	0.0027	0.12	.	5.16	.	.
1	GIOP-134	47.52	.	.	9.953	.	1.688	.	0.1171	.	0.934	0.05982	.	0.3921	.	0.0577	0.0258	.	13.474	.	0.6576
1	IMZ 341	47.52	.	.	1.22	.	0.52	.	0.11	.	0.35	0.021	.	.	(0.09)	0.164	0.006	.	28.49	.	0.041
1	NCS DC28108	46.93	19.95	.	2.05	.	7.12	.	0.33	.	5.54	0.058	.	.	0.220	0.039	0.637	.	14.75	0.067	0.112
1	OREAS 401	45.63	.	.	2.36	.	0.094	.	0.010	.	0.061	.	(0.007)	.	(0.016)	0.105	0.022	.	24.88	.	0.247
1	GIOP-133	45.481	.	.	10.86	.	1.863	.	0.1277	.	1.029	0.06048	.	0.4342	.	0.0573	0.0277	.	14.796	.	0.7211
1	NCS DC11001	44.73	12.91	.	0.75	.	7.14	.	.	.	4.18	.	0.20	.	.	0.013	1.50	.	18.22	.	.
1	NM 161.4	44.58	.	.	12.40	.	0.41	.	.	.	0.24	.	.	.	.	0.092	0.008	.	12.23	.	0.50
1	AMIS 0346	44.34	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	15.02	.	.
1	IMZ 264/1	44.25	.	.	1.14	.	0.23	.	.	.	0.22	(0.04)	0.043	.	.	0.025	0.055	.	33.56	.	.
1	NCS DC62001c	43.41=Fe ₂ O ₃	.	.	5.37	.	1.11	.	0.85	.	0.76	.	.	.	0.10	.	0.45 S03	.	42.15	.	0.33
1	GIOP-132	43.12	.	.	11.89	.	2.062	.	0.1405	.	1.141	0.0608	.	0.4797	.	0.0567	0.0302	.	16.33	.	0.7943
1	NCS DC19013	42.89	.	.	4.10	.	0.124	.	.	.	0.517	.	1.67	.	.	0.099	.	.	22.06	.	0.26

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
	Number	As	Ba	CO ₂	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	NiO	Pb	V	V ₂ O ₅	Zn	ZnO	Zr	LOI	Units	Other	
	SARM 147			C:1.36				CuO:(0.13)		(0.04)				0.104				3.37	100 g	P ₂ O ₅ : 1.17	
	OREAS 403	(0.00137)			(0.00366)			0.0109	(0.0016)	(0.0020)		(0.0018)		0.00345	(0.0020)		(0.0085)	8.00	10 g	BaO: (0.028)	
	NCS DC11007a	0.051		C:0.549		0.0043			0.015			0.034			0.066				50 g		
	IMZ 263/1																		100 g		
	ECRM 677-1									(0.0015)									100 g		
	NCS DC28064					0.10	1.80			0.72									50 g		
	NCS DC28067					0.098	2.00			0.94									50 g		
	NCS DC28083			C:0.89															50 g		
	NCS DC28111	0.083							0.305						0.017				70 g		
	NCS DC28213																		50 g		
	CGL 206	(0.00270)	(0.00251)			0.00905	(0.00202)		0.04181	0.01143		0.004446	0.02655		0.07032			(4.59)	100 g	P ₂ O ₅ : 0.048	
	GIOP-15																	1.3	10 g		
	VS R33																		100 g		
	NCS DC28082																		50 g	C: 0.071	
	NCS DC73004								0.0014										50 g		
	GIOP-36				0.008	0.022	0.067			0.038			0.313		0.063			-0.64	10 g		
	GIOP-35				0.008	0.022	0.068			0.038			0.313		0.062			-0.51	10 g	Sn: 0.003	
	GIOP-33	0.003			0.009	0.021	0.067			0.038			0.319		0.080			-0.74	10 g		
	NCS DC18017	0.030										0.061		0.319		0.13			100 g		
	OREAS 402	(0.00114)			(0.00343)			0.0109	(0.0018)	(0.00148)		(0.00090)	(0.00351)		(0.00193)		(0.0083)	7.64	10 g		
	NCS DC28082a											0.283			0.49				50 g	C: 0.072	
	NCS DC15004								0.0023										100 g		
	NCS DC26706					0.14	2.34			1.05									25 g	C: 0.25	
	GIOP-134	(0.001)	0.008		0.0036	(0.0015)	0.0077		(0.002)	0.00227		(0.0027)	0.0122		0.00251		0.0125	4.452	10 g	Sr: 0.007	
	IMZ 341			C:(0.037)														(1.1)	100 g		
	NCS DC28108								0.119						0.0038				70 g		
	OREAS 401	(0.00109)			(0.00328)			0.0107	(0.0018)	(0.00289)		(0.00112)	(0.00322)		(0.00211)		(0.0074)	6.71	10 g		
	GIOP-133	(0.001)	0.0081		0.00357	(0.0014)	0.00784		(0.0013)	0.00233		(0.0021)	0.129		0.00297		0.136	4.762	10 g	Sr: 0.0075	
	NCS DC11001																		60 g		
	NM 161.4																		100 g		
	AMIS 0346												0.27				Density: 4.39		100 g	or 1kg	
	IMZ 264/1																		100 g		
	NCS DC62001c																	4.68	20 g		
	GIOP-132	(0.001)	0.0083		0.00413	(0.0016)	0.0089		0.0021	0.00263		(0.003)	0.0155		0.00319		0.0156	5.101	10 g	Sr: 0.0086	
	NCS DC19013																		50 g		

Number	As	Ba	CO ₂	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	NiO	Pb	V	V ₂ O ₅	Zn	ZnO	Zr	LOI	Units	Other
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CRM

IRON ORE, chart 8 of 9

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
1	IRSID 612-1	42.4	.	3.00	.	12.06	.	.	.	1.20	.	0.363	.	.	.	0.885	0.053	5.94	.	0.151	.
1	NCS DC18020	41.81	21.87	.	3.23	.	18.30	.	.	.	4.85	.	1.80	.	.	0.159	0.302	.	10.21	.	0.50
1	GIOP-131	41.08	.	.	12.77	.	2.23	.	0.151	.	1.231	0.0612	.	0.5184	.	0.0561	0.0329	.	17.619	.	0.8557
1	NCS DC73003	40.51	(14.5)	.	2.27	.	2.00	.	0.27	.	2.22	0.122	.	.	0.16	0.032	0.94	.	33.93	0.067	.
1	NCS DC28006	40.24	.	.	0.65	.	11.95	.	0.20	.	1.17	1.32	.	.	(0.006)	0.042	0.087	.	8.40	.	0.031
1	NCS DC28065	39.68	0.10	.	9.98	.	0.30	.	.	.	2.54	0.59	.	.	.	0.010	0.23	.	10.00	.	0.14
1	KZ 182-89	38.63	1.61	.	1.04	.	0.14	.	0.11	.	.	0.044	.	.	.	0.065	.	.	42.64	.	0.144
1	IMZ 265/1	37.74	.	.	3.10	.	1.50	.	.	.	0.53	0.056	.	.	.	0.039	0.047	.	37.02	.	.
1	GIOP-129	37.56	.	.	14.34	.	2.534	.	0.1711	.	1.397	0.0618	.	0.5898	.	0.05535	0.0382	.	19.931	.	0.968
1	IRSID 601-1	36.76	.	2.33	.	4.05	.	.	.	1.21	.	0.370	.	.	.	0.590	0.065	8.95	.	0.114	.
1	NCS DC13033	35.36	5.18	.	(0.11)	.	(0.13)	.	.	.	0.20	.	0.125	.	.	0.022	0.0064	.	48.50	.	0.007
1	KZ 183-89	35.16	1.32	.	1.66	.	.	.	0.35	.	.	0.046	.	.	.	0.019	0.7	.	41.56	.	0.073
1	VS R20/3	34.7	.	.	0.67	.	2.54	Magnetic Iron: 27.6%				3.42	.	.	.	.	0.073	.	37.6	.	.
1	NCS DC28069	34.18	0.11	.	2.39	.	0.12	.	.	.	12.12	0.78	.	.	.	0.0015	0.082	.	18.28	.	0.030
1	NCS DC11013	34.07	20.15	.	0.74	.	0.99	.	0.165	.	2.86	.	0.093	.	0.065	0.054	0.118	.	48.27	.	0.043
1	VS R24/2	33.73	.	.	1.52	.	2.12	.	.	.	8.29	.	.	.	.	0.0055	0.065	.	5.46	.	.
1	GIOP-110	33.21	.	.	0.0893	.	1.417	.	0.0159	.	1.778	0.021	.	0.0152	.	0.0928	0.0042	.	50.09	.	0.0141
1	GIOP-98	32.63	.	.	0.1008	.	1.409	.	0.0121	.	1.875	0.0179	.	0.0163	.	0.1103	0.0273	.	50.88	.	0.138
1	GIOP-107	32.23	.	.	0.246	.	3.523	.	0.0135	.	1.257	0.037	.	0.0279	.	0.0497	0.1871	.	49.76	.	0.014
1	GIOP-113	32.11	.	.	0.5359	.	2.403	.	0.0218	.	2.343	0.1712	.	0.0276	.	0.0793	0.453	.	48.98	.	0.0298
1	GIOP-99	31.7	.	.	0.2553	.	1.5672	.	0.039	.	1.967	0.0248	.	0.0197	.	0.1006	0.003	.	51.54	.	0.0278
1	GIOP-105	31.04	.	.	0.438	.	1.841	.	0.075	.	2.289	0.0446	.	0.0238	.	0.0876	0.1507	.	51.51	.	0.0374
1	IRSID 607-1	30.89	.	2.48	.	13.74	.	.	.	0.77	.	0.254	.	.	.	0.529	0.050	3.07	.	0.123	.
1	GIOP-93	30.04	.	.	0.512	.	2.964	.	0.0228	.	3.394	0.0507	.	0.0431	.	0.0848	0.2003	.	50.32	.	0.0857

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
	Number	As	Ba	CO ₂	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	NiO	Pb	V	V ₂ O ₅	Zn	ZnO	Zr	LOI	Units	Other	
	IRSID 612-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g		
	NCS DC18020	0.051	.	.	.	.	.	.	.	.	.	0.208	.	.	0.223	.	.	.	100 g		
	GIOP-131	(0.001)	0.0081	.	0.004	(0.0015)	0.009	.	(0.0017)	0.00236	.	(0.0016)	0.0166	.	0.00326	.	0.0173	5.405	10 g	Sr: 0.0086	
	NCS DC73003	.	.	.	.	.	.	.	0.028	.	.	.	.	.	.	.	.	.	50 g		
	NCS DC28006	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g		
	NCS DC28065	.	.	.	.	0.085	1.71	.	.	1.30	.	.	.	.	.	.	.	.	50 g		
	KZ 182-89	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g		
	IMZ 265/1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g		
	GIOP-129	(0.001)	0.0074	.	0.0043	0.00113	0.01	.	0.0026	0.0026	.	(0.0027)	0.0187	.	0.0033	.	0.01952	5.916	10 g	Sr: 0.0112	
	IRSID 601-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g		
	NCS DC13033	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g		
	KZ 183-89	.	3.10	.	.	.	.	.	.	.	.	0.026	.	.	.	.	.	.	100 g	Ge: 36.6*	
	VS R20/3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g		
	NCS DC28069	.	.	.	.	0.13	1.48	.	.	1.50	.	.	.	.	.	.	.	.	50 g		
	NCS DC11013	0.0003	.	.	.	.	.	.	0.0031	.	.	0.028	.	.	0.0045	.	.	.	70 g		
	VS R24/2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 or 125 g		
	GIOP-110	(0.0032)	(0.0046)	.	(0.0047)	(0.0032)	(0.0048)	.	(0.0055)	(0.0064)	.	(0.0022)	(0.001)	.	0.0031	.	(0.0015)	-1.17	10 g		
	GIOP-98	(0.0044)	0.0067	.	(0.0045)	(0.0037)	(0.0048)	.	(0.0047)	(0.004)	.	(0.0062)	(0.001)	.	(0.0041)	.	(0.002)	-1.217	10 g		
	GIOP-107	(0.0044)	(0.0047)	.	0.0058	(0.0028)	(0.0026)	.	(0.0045)	(0.0032)	.	(0.0032)	(0.0017)	.	0.0047	.	(0.0022)	-1.224	10 g		
	GIOP-113	(0.0033)	(0.0042)	.	0.0117	0.0034	(0.0019)	.	(0.0048)	(0.0048)	.	(0.0042)	(0.0021)	.	0.0107	.	(0.0021)	-0.719	10 g		
	GIOP-99	(0.0055)	(0.0041)	.	(0.0045)	(0.0032)	(0.0046)	.	(0.0051)	(0.003)	.	(0.0032)	(0.0016)	.	(0.0036)	.	(0.0023)	-0.984	10 g		
	GIOP-105	(0.004)	0.0077	.	0.0078	(0.0032)	(0.0036)	.	(0.004)	(0.003)	.	(0.0026)	(0.0023)	.	(0.0049)	.	(0.0021)	-0.997	10 g		
	IRSID 607-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g		
	GIOP-93	.	.	.	0.0096	0.0063	0.0144	.	0.0098	0.0153	.	.	.	.	0.019	.	.	-0.686	10 g		
	Number	As	Ba	CO ₂	Cl	Co	Cr	Cr ₂ O ₃	Cu	Ni	NiO	Pb	V	V ₂ O ₅	Zn	ZnO	Zr	LOI	Units	Other	

CRM

IRON ORE, chart 9 of 9

= class, where 1 = CRM and 2 = RM

analysis listed in mass % except * which is mg/kg

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
1	IMZ 266/1	29.04	.	.	3.13	.	3.42	.	.	.	0.95	.	0.078	.	.	0.030	0.10	.	44.94	.	.
1	GIOP-104	29.83	.	.	0.526	.	2.168	.	0.0409	.	2.535	0.0762	.	0.0235	.	0.1065	0.2414	.	52.59	.	0.0283
1	GIOP-112	29.46	.	.	0.405	.	2.047	.	0.0267	.	2.323	0.0678	.	0.0248	.	0.0876	0.3007	.	53.57	.	0.0207
1	GIOP-97	28.234	.	.	0.746	.	3.028	.	0.0522	.	2.093	0.0742	.	0.0552	.	0.0396	0.554	.	54.4	.	0.0279
1	VS R39	28.03	.	.	3.92	.	1.69	.	1.29	.	1.97	.	0.069	.	0.083	0.073	0.245	.	49.1	.	0.155
1	GIOP-96	27.442	.	.	0.723	.	2.884	.	0.051	.	2.819	0.107	.	0.038	.	0.0507	0.94	.	54.38	.	0.0289
1	NCS DC28071	25.15	20.15	.	6.68	.	11.80	.	.	.	12.48	0.54	.	.	.	0.017	0.22	.	52.18	.	0.17
1	GIOP-95	24.215	34.86	.	1.259	.	4.804	.	0.0806	.	4.374	0.2045	.	0.049	.	0.066	0.497	.	54.85	.	0.0584
1	ECRM 651-1	23.85	.	2.25	.	16.15	.	0.27	.	1.04	.	0.97	.	0.05	.	0.35	0.40	3.46	.	0.10	.
1	GIOP-139	22.43	.	.	4.974	.	1.316	.	2.617	.	1.978	0.068	.	0.5068	.	0.0995	0.39	.	53.76	.	0.1922
1	NCS DC73001	20.17	(7.5)	.	3.57	.	2.84	.	0.53	.	1.68	0.168	.	.	0.28	0.045	0.051	.	60.86	0.085	.
1	IMZ 267/1	19.75	.	.	4.05	.	4.73	.	.	.	1.22	(0.16)	0.16	.	.	0.030	0.17	.	53.72	.	.
1	NCS DC28070	19.43	10.20	.	7.10	.	20.02	.	.	.	11.58	0.50	.	.	.	0.024	0.35	.	28.78	.	0.24
1	NCS DC28068	16.83	0.10	.	2.06	.	0.16	.	.	.	21.32	0.40	.	.	.	0.0018	0.025	.	34.93	.	0.043
1	GIOP-128	16.494	.	.	34.64	.	0.0207	.	0.1797	.	0.035	0.0336	.	0.0194	.	0.012	0.0518	.	21.726	.	1.581
1	NCS DC28066	12.97	0.33	.	1.40	.	0.41	.	.	.	19.98	0.23	.	.	.	0.0017	0.012	.	46.34	.	0.024

#	Number	Fe	FeO	Al	Al ₂ O ₃	Ca	CaO	K	K ₂ O	Mg	MgO	Mn	MnO	Na	Na ₂ O	P	S	Si	SiO ₂	Ti	TiO ₂
	Number	As	Ba	Cl	Co	Cr	Cu	Ni	Pb	V	V ₂ O ₅	Zn	Zr	LOI	Units	Other					
	IMZ 266/1	(0.006)	(0.0047)	0.0099	(0.0031)	(0.0013)	(0.0043)	(0.0045)	(0.0042)	(0.0016)	.	0.006	(0.0017)	-0.992	100 g						
	GIOP-104	(0.0063)	(0.0038)	0.0104	(0.0033)	(0.0016)	(0.0045)	(0.0031)	(0.0045)	(0.0013)	.	0.0061	(0.002)	-0.922	10 g						
	GIOP-112	(0.0063)	(0.0038)	0.0104	(0.0033)	(0.0016)	(0.0045)	(0.0031)	(0.0045)	(0.0013)	.	0.0061	(0.002)	-0.922	10 g						
	GIOP-97	(0.0085)	(0.0037)	0.0095	(0.003)	(0.0011)	0.0062	(0.004)	(0.0041)	(0.0012)	.	0.006	(0.0021)	-0.92	10 g						
	VS R39	23.1% Iron Magnetite	.	.	.	.	.	.	.	.	.	.	.	.	100 g	Fe ₂ O ₃ : 14.96					
	GIOP-96	(0.0081)	(0.0059)	0.0201	(0.0032)	(0.0034)	(0.0064)	(0.0046)	(0.004)	(0.0018)	.	0.0076	(0.0027)	-0.454	10 g						
	NCS DC28071	(0.0081)	(0.0059)	0.0201	(0.0032)	(0.0034)	(0.0064)	(0.0046)	(0.004)	(0.0018)	.	0.0076	(0.0027)	-0.454	10 g						
	GIOP-95	(0.0084)	(0.002)	0.0184	(0.0031)	(0.0031)	0.005	(0.0055)	(0.0056)	(0.003)	.	0.0087	(0.002)	-0.546	10 g	last					
	ECRM 651-1	(0.0085)	(0.0037)	0.0095	(0.003)	(0.0011)	0.0062	(0.004)	(0.0041)	(0.0012)	.	0.006	(0.0021)	-0.92	10 g						
	GIOP-139	0.0075	0.0183	(0.006)	(0.0017)	(0.0023)	0.0041	(0.0019)	0.0054	0.00332	.	0.155	0.0081	1.63	10 g	Sr: 0.0101					
	NCS DC73001	.	.	.	.	.	0.0028	.	.	.	.	.	.	.	50 g						
	IMZ 267/1	.	.	.	.	.	.	.	.	.	.	.	.	.	100 g						
	NCS DC28070	.	.	.	0.055	0.81	.	1.07	.	.	.	.	.	.	50 g						
	NCS DC28068	.	.	.	0.064	0.81	.	1.74	.	.	.	.	.	.	50 g						
	GIOP-128	0.0034	(0.0063)	0.0085	(0.0095)	0.0151	(0.004)	(0.0038)	(0.0066)	0.0424	.	(0.0033)	0.049	17.964	10 g	Sr: 0.0047					
	NCS DC28066	.	.	.	0.037	0.58	.	2.00	.	.	.	.	.	.	50 g						

CRM

COARSE AND RAW IRON ORE

2kg of raw, coarse material

Number	Fe	Al ₂ O ₃	CaO	K ₂ O	MgO	Mn	Na	P	S	SiO ₂	Sr	TiO ₂	LOI
GI0C-10	61.30	2.12	0.023	0.009	0.052	0.262	(0.012)	0.066	0.021	3.04	(0.002)	0.068	6.52
GI0C-6	61.26	2.17	0.021	(0.008)	0.050	0.263	(0.015)	0.068	(0.020)	3.10	(0.003)	0.067	6.50
GI0C-11	60.13	2.03	0.046	0.010	0.089	0.259	(0.011)	0.070	0.026	3.48	0.009	0.089	7.67
GI0C-14	60.10	1.21	0.027	0.009	0.076	0.154	(0.012)	0.074	0.041	5.78	(0.002)	0.081	6.38
GI0C-12	58.59	1.94	0.037	0.020	0.089	0.113	(0.015)	0.054	0.031	3.90	(0.002)	0.170	9.70
GI0C-16	57.72	2.69	0.041	0.040	0.096	0.537	(0.016)	0.069	0.026	5.13	(0.002)	0.183	8.30
GI0C-9	57.48	2.39	0.131	0.010	0.138	0.150	(0.012)	0.044	0.016	5.43	0.041	0.146	9.22
GI0C-15	57.43	3.40	0.047	0.021	0.080	0.361	(0.011)	0.117	0.068	4.24	(0.002)	0.166	9.01
GI0C-13	57.38	4.15	0.017	0.021	0.098	0.245	(0.010)	0.068	0.016	4.42	(0.002)	0.153	8.57
GI0C-8	57.28	2.42	0.120	0.006	0.145	0.072	(0.011)	0.040	0.014	5.38	0.051	0.147	9.66

Number	As	Ba	Cl	Co	Cr	Cu	Ni	Pb	Sn	V	Zn	Zr
GI0C-10	(0.001)	(0.007)	0.010	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.001)	(0.001)	(0.002)	(0.002)
GI0C-6	(0.008)	(0.012)	(0.013)	(0.003)	(0.006)	(0.015)	(0.013)	(0.002)	(0.002)	(0.001)	(0.004)	(0.003)
GI0C-11	0.007	(0.006)	0.008	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.003)	(0.003)
GI0C-14	0.022	(0.005)	(0.005)	(0.002)	0.004	(0.003)	(0.003)	(0.003)	(0.002)	0.004	(0.003)	(0.002)
GI0C-12	0.011	(0.004)	(0.005)	(0.005)	0.007	(0.004)	(0.005)	(0.003)	(0.001)	0.007	(0.002)	(0.004)
GI0C-16	(0.002)	(0.007)	0.007	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	0.004	(0.004)	(0.005)
GI0C-9	0.002	(0.003)	(0.004)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	0.004	0.007	(0.005)
GI0C-15	0.007	(0.005)	0.008	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.001)	0.003	(0.003)	0.007
GI0C-13	0.005	(0.003)	(0.004)	(0.002)	0.008	(0.003)	(0.003)	(0.003)	(0.001)	(0.003)	0.004	(0.004)
GI0C-8	0.002	(0.002)	(0.004)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.006)	(0.003)	0.007	(0.005)

IRON ORE SINTER

= class, where 1 = CRM and 2 = RM analysis listed in mass %

# Number	Fe	FeO	Al	Al ₂ O ₃	C	CO ₂	Ca	CaO	Cr ₂ O ₃	Cu	CuO	F	K	K ₂ O	Mg	MgO	LOI 900°C
2 DH 5630	60.62	4.86	.	1.134	.	.	.	6.99	.	.	.	.	.	0.040	.	0.654	.
2 DH 5635	59.22	5.27	.	1.392	.	.	.	6.11	0.031	.	.	.	.	0.066	.	0.882	1.27
2 DH 5631	58.54	5.41	.	1.43	.	.	.	6.28	.	.	.	.	.	0.247	.	2.01	.
1 NCS DC14203	57.63	10.80	.	1.37	.	.	.	8.17	.	0.0063	.	.	.	0.065	.	1.65	.
2 DH 5616	57.29	6.58	.	1.331	.	.	.	9.51	0.045	.	.	.	.	0.045	.	1.491	.
1 JSS 851-5	56.67	.	0.89	.	.	.	7.94	Cr:0.0163	0.0034	.	.	Fe II: 5.99	.	.	0.48	.	0.041
1 NCS DC28046	56.14	9.17	.	2.07	.	.	.	10.35	.	.	.	.	.	0.125	.	2.21	.
1 NCS DC14009a	55.58	20.06	.	2.38	.	.	.	3.62	.	0.017	.	.	.	0.316	.	5.99	.
1 NCS DC28046a	55.49	7.93	.	1.84	.	.	.	11.66	.	0.0034	.	.	.	0.045	.	2.83	.
1 NCS DC11024	55.37	(8.20)	.	2.19	.	.	.	10.76	.	.	.	.	.	0.082	.	2.14	.
2 BS 104	55.32	.	.	1.26	.	.	.	8.72	.	.	.	.	.	(0.15)	.	3.06	.
1 NCS DC28038	55.19	6.23	.	1.83	.	.	.	9.19	.	.	.	.	.	0.070	.	2.22	.
1 NCS DC28023a	53.10	7.49	.	2.76	.	.	.	11.78	.	.	.	.	.	0.079	.	2.69	.
2 DH 5632	55.03	4.06	.	1.281	.	.	.	10.79	.	.	.	.	.	0.174	.	2.070	.
1 BS 104A	54.8	.	.	1.04	0.22	.	.	10.5	.	.	.	.	.	0.14	.	1.24	.
1 BCS 377/6	54.78	.	0.783	.	.	.	5.74	Cr:0.0154	.	.	.	.	.	.	0.907	.	.
1 NCS DC14204	54.62	9.26	.	1.49	.	.	.	9.29	.	0.014	.	.	.	0.046	.	1.74	.
1 NCS DC28023b	53.74	8.52	.	3.05	As:0.020	.	Cr:0.021	9.67	.	0.017	.	.	.	0.145	.	3.45	.
1 NCS DC28050	53.26	9.53	.	2.24	.	.	.	11.31	.	.	.	.	.	0.084	.	2.70	.
1 NCS DC14202	52.77	6.55	.	2.54	.	.	.	11.33	.	0.012	.	.	.	0.078	.	2.02	.
1 NCS DC28049	52.16	8.06	.	2.17	.	.	.	13.05	.	.	.	.	.	0.082	.	1.63	.
1 NCS DC14206	51.13	9.22	.	2.44	.	.	.	9.46	.	(0.007)	.	.	.	0.080	.	4.40	.
1 NCS DC28047	50.04	8.07	.	2.11	.	.	.	13.72	.	.	.	.	.	0.091	.	2.08	.
1 ECRM 676-1	39.76	.	3.40	.	.	.	12.78	.	.	.	.	0.10	0.43	.	1.16	.	.

continued analysis listed in mass % except * which is mg/kg

Number	Mn	MnO	Na	Na ₂ O	Ni*	NiO	P	P ₂ O ₅	PbO	S	Si	SiO ₂	SrO	Ti	TiO ₂	V	V ₂ O ₅	ZnO	Units
DH 5630	0.298	.	.	0.032	.	.	.	0.112	.	0.011	.	3.98	.	.	0.085	.	.	0.016	100 g
DH 5635	0.368	.	.	0.047	.	.	.	0.120	.	0.013	.	4.81	.	.	0.224	.	.	0.010	100 g
DH 5631	0.945	.	.	.	.	.	.	0.107	.	.	.	5.08	.	.	0.076	.	.	0.040	100 g
NCS DC14203	0.174	.	.	0.046	.	.	0.102	.	.	0.025	.	5.38	.	0.113	.	.	.	50 g	
DH 5616	0.477	.	.	0.025	.	.	.	0.140	.	.	.	5.18	.	.	0.101	.	0.018	0.013	100 g
JSS 851-5	0.241	.	.	.	58	.	0.060	.	.	0.016	2.48	.	.	0.065	.	0.0084	.	Zn:0.0075	100 g
NCS DC28046	0.227	.	.	0.048	.	.	0.064	.	.	0.032	.	5.54	.	0.076	.	.	.	70 g	
NCS DC14009a	.	0.097	.	0.068	.	.	0.017	.	.	0.106	.	9.95	.	.	0.266	.	.	0.011	50 g
NCS DC28046a	.	0.289	.	0.034	.	.	0.045	.	.	0.040	.	4.85	.	.	0.109	.	.	0.0078	50 g
NCS DC11024	.	0.36	.	0.045	.	.	0.056	.	.	0.017	.	5.64	.	.	0.125	.	.	0.0062	70 g
BS 104	.	0.79	.	(0.06)	.	.	.	0.127	.	0.011	.	7.70	.	.	0.08	.	.	.	100 g
NCS DC28038	0.222	.	.	0.057	.	.	0.057	.	.	0.028	.	6.79	.	0.123	.	.	.	70 g	
NCS DC28023a	.	0.740	.	0.049	.	.	0.059	.	.	0.042	.	6.49	.	.	0.144	.	.	50 g	
DH 5632	0.708	.	.	.	.	.	.	0.104	.	0.059	.	5.55	.	.	0.068	.	.	0.026	100 g
BS 104A	.	1.06	.	0.022	.	.	.	0.101	.	0.015	.	7.97	.	.	0.094	.	.	17025	100 g
BCS 377/6	0.604	.	.	.	.	.	0.0586	.	Pb:0.1485	.	2.982	.	.	0.1001	.	0.0178	.	Zn:1.002	100 g
NCS DC14204	0.193	.	.	0.019	.	.	0.039	.	.	0.024	.	7.94	.	0.092	.	.	.	50 g	
NCS DC28023b	.	0.185	.	0.090	.	.	0.036	.	Pb:0.012	0.022	.	7.11	.	.	0.290	.	.	0.018	50 g
NCS DC28050	0.286	.	.	0.44	.	.	0.049	.	.	0.075	.	6.24	.	0.082	.	.	.	70 g	
NCS DC14202	0.199	.	.	0.033	.	.	0.060	.	.	0.033	.	7.51	.	0.062	.	.	.	50 g	
NCS DC28049	0.440	.	.	0.38	.	.	0.024	.	.	0.096	.	6.92	.	0.067	.	.	.	70 g	
NCS DC14206	0.179	.	.	0.040	.	.	0.066	.	.	0.059	.	8.58	.	0.094	.	.	.	50 g	
NCS DC28047	0.390	.	.	0.53	.	.	0.028	.	.	0.125	.	7.60	.	0.067	.	.	.	70 g	
ECRM 676-1	0.83	.	0.095	.	.	.	0.59	.	.	0.12	6.40	.	.	0.19	.	0.070	.	100 g	

CRM

KAOLIN

NCS: 50 g units

UNS: 100 g units

Number	SiO ₂	Al ₂ O ₃	CaO	Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SO ₃	TiO ₂	LOI
UNS KK	47.06	36.77	0.236	0.982	12.75	1.063	0.192	0.015	0.032	.	.	0.166	.
NCS DC60123a	45.30	37.70	0.064	0.35	15.26	0.042	0.021	0.0018	0.045	0.16	0.76	0.060	14.81
NCS DC60122a	43.41	34.77	0.038	1.50	13.24	0.78	0.069	0.0020	0.045	0.21	5.51	0.25	17.31

CRM

KIMBERLITE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

70 g units

Number	Al ₂ O ₃	CO ₂	CaO	FeO	Fe ₂ O ₃ T	H ₂ O+	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SO ₃	SiO ₂	TiO ₂	LOI
NCS DC71312	3.73	(16.78)	12.64	3.71	(6.53)	(4.47)	0.49	17.56	(0.1)	0.30	0.68	35.88	0.71	20.73

continued analysis listed in mg/kg except % which is mass %

Number	Ag	As	B	Ba	Be	Bi	Cd	Ce	Cl%	Co	Cr	Cs	Cu	Dy	Er	Eu	F%	Ga	Gd
NCS DC71312	(0.06)	3.5	(31.8)	(0.177)	1.3	(0.1)	0.46	127	(0.04)	40.0	795	5.2	26.2	2.6	(1.2)	1.6	(0.11)	7.1	4.7

Number	Ge	Hf	Hg	Ho	La	Li	Lu	Mn%	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc	Se	Sm
NCS DC71312	0.89	4.9	0.010	0.49	69.8	75.7	0.16	(0.09)	1.4	60.4	49.0	516	20.7	13.8	28.4	(0.22)	10.9	0.10	6.5

Number	Sn	Sr	Ta	Tb	Th	Tm	U	V	W	Y	Yb	Zn	Zr
NCS DC71312	1.7	262	3.9	0.54	10.8	0.17	2.2	86	2.4	11.6	1.1	190	182

CRM

LATERITE - NICKEL ORE

analysis listed in mass %, ICP values by fusion ICP, C and S: <0.01% from IR combustion furnace, all others fusion XRF including Cl: <50 ppm

10g or 1kg

Number	Ni	Co	Al ₂ O ₃	C	CaO	Cr ₂ O ₃	Cu	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SO ₃	SiO ₂	TiO ₂	Zn	LOI
OREAS 195	2.94	0.0477	3.13	0.08	0.390	0.958	<0.0050	18.29	<0.01	19.01	0.288	0.034	<0.01	<0.01	44.00	0.037	0.0300	9.71
OREAS 195 ICP	2.89	0.0465	3.07	.	0.397	0.938	(0.0050)	18.16	<0.1	18.88	0.285	(0.03)	<0.01	<0.05	43.30	0.037	0.0293	.
OREAS 194	2.13	0.0428	2.74	0.07	0.311	0.819	(0.0040)	16.47	<0.01	22.83	0.261	(0.03)	<0.01	<0.01	43.02	0.035	0.0174	10.53
OREAS 194 ICP	2.10	0.0424	2.73	.	0.32	0.814	0.0041	16.42	<0.01	22.77	0.262	0.027	<0.01	<0.05	42.90	0.033	0.0184	.
OREAS 193	1.93	0.0495	3.08	0.07	0.362	0.962	<0.0050	19.51	<0.01	20.25	0.317	(0.03)	0.012	<0.01	42.72	0.053	0.0219	9.87
OREAS 193 ICP	1.91	0.0483	3.05	.	0.373	0.956	(0.0040)	19.49	(0.08)	20.26	0.316	0.030	<0.02	<0.05	42.49	0.051	0.0199	.
OREAS 192	1.77	0.0404	2.76	0.07	0.313	0.913	<0.0050	18.10	<0.01	21.32	0.277	0.028	<0.01	(0.004)	43.58	0.036	0.0176	10.17
OREAS 192 ICP	1.75	0.0398	2.75	.	0.316	0.910	(0.0038)	18.14	<0.1	21.26	0.278	0.022	<0.02	<0.02	43.45	0.033	0.0193	.
OREAS 191	1.75	0.0665	4.27	0.09	0.276	1.22	(0.0050)	24.86	<0.01	10.06	0.397	(0.02)	<0.01	<0.01	47.97	0.052	0.0302	8.10
OREAS 191 ICP	1.73	0.0652	4.19	.	0.287	1.21	(0.0050)	24.63	(0.1)	9.95	0.397	0.018	<0.02	<0.05	47.67	0.050	0.0297	.
OREAS 190	1.64	0.0889	6.00	0.07	0.133	1.73	(0.0070)	35.48	<0.01	6.91	0.577	(0.02)	<0.01	<0.01	38.22	0.064	0.0353	8.38
OREAS 190 ICP	1.62	0.0875	5.86	.	0.133	1.71	0.0068	35.40	<0.01	6.85	0.574	(0.01)	<0.02	<0.02	38.06	0.062	0.0327	.
OREAS 189	1.48	0.0326	2.09	0.10	0.326	0.765	<0.0050	15.04	<0.01	23.09	0.227	(0.03)	<0.01	<0.01	46.20	0.029	0.0125	10.13
OREAS 189 ICP	1.47	0.0327	2.08	.	0.328	0.764	(0.0030)	14.94	(0.08)	23.06	0.228	0.021	<0.02	<0.05	46.08	0.026	0.0103	.
OREAS 187	1.37	0.0636	2.80	0.11	0.341	0.987	(0.0040)	19.45	<0.01	17.99	0.356	<0.03	<0.01	<0.01	46.66	0.033	0.0196	9.27
OREAS 187 ICP	1.37	0.0629	2.77	.	0.352	0.987	<0.0050	19.40	<0.1	17.96	0.358	<0.03	<0.02	<0.05	46.37	(0.03)	0.0190	.
OREAS 186	1.23	0.0692	5.19	0.07	0.562	1.42	0.0061	32.04	<0.01	4.89	0.522	(0.02)	(0.01)	<0.01	46.29	0.069	0.0265	6.83
OREAS 186 ICP	1.22	0.0680	5.11	.	0.564	1.41	0.0057	31.72	<0.1	4.82	0.519	<0.01	<0.02	<0.05	46.24	0.070	0.0276	.
OREAS 185	1.14	0.0388	2.48	0.10	0.385	0.914	<0.0050	18.42	<0.01	20.22	0.297	0.027	<0.01	<0.01	45.93	0.033	0.0143	9.61
OREAS 185 ICP	1.12	0.0385	2.47	.	0.39	0.91	<0.0050	18.27	<0.01	20.17	0.295	0.024	<0.02	<0.05	45.58	0.031	0.0128	.
OREAS 184	1.02	0.0903	4.62	0.07	0.216	1.75	0.0070	39.30	<0.01	3.05	0.676	<0.01	0.017	<0.01	42.25	0.060	0.0278	6.24
OREAS 184 ICP	1.02	0.0899	4.58	.	0.231	1.75	0.0060	39.42	<0.1	3.00	0.678	<0.01	(0.02)	<0.05	42.19	0.058	0.0287	.
OREAS 183	0.995	0.0225	1.60	0.22	0.710	0.653	<0.0030	12.73	<0.01	27.31	0.180	(0.03)	0.005	<0.01	44.49	0.023	0.0078	10.90
OREAS 183 ICP	0.983	0.0222	1.60	.	0.72	0.651	0.0021	12.72	<0.1	27.43	0.181	0.030	<0.01	<0.02	44.13	0.020	0.0082	.
OREAS 182	0.707	0.0728	4.07	0.09	0.251	1.29	0.0052	29.40	<0.01	9.16	0.580	0.019	0.010	0.006	46.77	0.053	0.0181	7.14
OREAS 182 ICP	0.706	0.0723	4.02	.	0.253	1.28	0.0049	29.62	<0.1	9.12	0.587	0.014	<0.02	<0.05	46.54	0.051	0.0189	.

RM LEAD BASILICATE

analysis listed in mass %								25 or 100 g units		
Number	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	PbO	SiO ₂	TiO ₂	LOI
CERAM AN28	2.46	0.05	0.018	0.05	<0.01	0.05	64.33	32.76	<0.01	0.15

CRM LEAD ORE TAILINGS WITH EXTENSIVE ANALYSIS

analysis listed mass %				* BCS 362 lists AQUA REGIA results where indicated										GBW: 50 g units			BCS: 100 g units		
Number	Al ₂ O ₃	CaO	Cu	F	Fe ₂ O ₃	K ₂ O	MgO	MnO	Mn ₃ O ₄	Na ₂ O	Pb	PbO	S	SiO ₂	SrO	TiO ₂	Zn	ZnO	LOI
GBW 07235	12.88	19.51	0.20	0.27	4.37	1.42	1.62	1.40	.	1.61	4.17	.	0.86	43.63	.	0.53	0.062	.	.
BCS 362 *	0.667	44.21	0.0056*	.	0.483	0.14	0.068	.	0.829	0.084	2.30*	2.63	1.48	9.03	0.034	0.047	2.03*	2.59	32.81
continued analysis listed in mg/kg																			
Number	Ag	As	Bi	Cd	Ce	Cr	Cs	Dy	Eu	Er	Ga	Gd	Ge	Ho	In	La	Li	Lu	
GBW 07235	14.7	85.1	15.6	3.2	78.3	(29)	(6)	3.0	1.2	1.5	16.7	3.7	0.90	0.61	0.12	40.5	(19)	0.24	.
BCS 362 *	.	30*	.	200*	.	11*	.	.	.	.	.	.	.	.	.	.	.	.	.
Number	Mo	Nd	Ni	Pr	Rb	Sb	Sc	Se	Sm	Sn	Tb	Te	Th	Tl	Tm	W	Y	Yb	pH
GBW 07235	1.6	28.2	27.7	8.1	(55)	39.3	7.5	1.7	5.1	3.0	0.58	3.9	10.2	0.43	0.23	17.6	15.4	1.5	.
BCS 362 *	.	.	12*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	8.14*

CRM LEAD ORE analysis listed in mass %

Number	Pb	Ag	Cu	Fe	Ba	Ni	S	Zn	Zr	Units
KZ 6586-93	3.5	0.0019	0.013	2.03	0.38	.	0.55	0.045	0.019	100 g
GBM919-16	1.7662	0.01541	0.0164	.	.	0.0134	0.29	0.3397	.	10 or 250 g
KZ 5177-90	1.84	0.00181	.	.	10.3	.	2.96	.	.	100 g

CRM LEAD ORE analysis listed in mass % 25 g units

Number	Ag	Al ₂ O ₃	As	Bi	CaO	Cd	Cu	Fe	MgO	Mn	Pb	S	Sb	SiO ₂	Zn
NCS DC28116	0.022	2.56	0.068	0.085	17.16	0.0097	0.85	6.78	1.28	0.029	15.09	19.26	0.0084	7.92	1.44

CRM LEAD ORE analysis listed in mass % except* which is mg/kg

Number	Pb	S	Zn	Ag	Al	As	Au*	Ba*	C	Ca	Cd	Co*	Cr	Cu	Fe
CAN CPB-3	58.02	(17.03)	5.96	0.2790	0.203	(0.0391)	(0.119)	(60)	1.03	0.059	0.065	13.6	0.0102	0.240	8.45

Number	Hg*	K	La*	Mg	Mn	Na	Ni*	Sb	SiO ₂	Sn*	Sr*	Th*	Y*	LOI	Units
CAN CPB-3	40.8	(0.09)	(2)	0.106	(0.421)	(0.01)	16.8	0.58	2.62	(6)	(3)	(0.4)	(2)	(0.15)	100g

CRM LIMESTONE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

50 g units

Number	CaO	MgO	CO ₂	SiO ₂	LOI	Al ₂ O ₃	Org.C	FeO	T.Fe ₂ O ₃	H ₂ O-	H ₂ O+	K ₂ O	MnO	Na ₂ O	P ₂ O ₅	SO ₃	Ti%	TiO ₂
NCS DC70301	47.89	6.76	44.39	0.55	43.92	0.17	(0.03)	0.15	0.193	(0.20)	0.37	0.043	0.009	0.022	0.008	0.017	0.0066	0.011
NCS DC70302	41.95	11.62	44.89	0.72	44.75	0.22	(0.03)	0.16	0.205	(0.20)	0.31	0.052	0.009	0.029	0.014	0.013	0.0132	0.022
NCS DC70308	38.08	14.96	45.62	1.17	44.61	0.18	(0.04)	0.05	0.448	(0.17)	0.42	0.026	0.027	0.030	0.009	0.041	0.0054	0.009
NCS DC70305	30.93	20.14	45.58	1.15	45.73	0.29	(0.07)	0.07	0.17	(0.07)	0.39	0.16	0.012	0.036	0.035	0.33	0.0078	0.013

analysis listed in mg/kg except % which is mass %

Number	Ag	As	B	Ba	Be	Bi	Br	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	F	Ga	Gd
NCS DC70301	0.020	0.50	(1.9)	9.7	0.08	0.015	(0.2)	0.10	1.4	34	0.45	4.8	0.07	2.2	0.12	0.09	0.037	76	0.3	0.13
NCS DC70302	0.021	0.29	(2.2)	11.6	0.12	0.020	(0.3)	0.09	1.9	34	0.5	5.6	0.09	2.2	0.15	0.12	0.052	91	0.33	0.16
NCS DC70308	0.035	5.5	(2.3)	10.6	0.15	0.012	0.9	0.39	1.5	123	0.5	9.7	0.10	2.9	0.20	0.15	0.049	179	0.4	0.19
NCS DC70305	(0.016)	0.96	(6.4)	0.52%	0.08	0.025	6.1	0.02	2.5	343	0.52	3.4	0.13	2.8	0.17	0.10	0.14	459	0.31	0.22

Number	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mn	Mo	Nb	Nd	Ni	P	Pb	Pr	Rb	Sb
NCS DC70301	0.11	1.4	0.004	0.034	(0.5)	(0.03)	0.9	2.9	0.019	70	0.35	0.3	0.66	5.8	35	2.9	0.22	1.2	0.08
NCS DC70302	0.12	2.1	0.015	0.034	(0.3)	(0.02)	1.2	3.1	0.022	70	0.26	0.46	0.86	4.3	62	3.9	0.24	1.6	0.09
NCS DC70308	0.11	3.1	0.031	0.046	(0.2)	(0.02)	0.9	3.0	0.035	209	0.80	0.4	0.89	5.6	40	7.8	0.21	1.1	0.59
NCS DC70305	0.12	0.13	0.006	0.034	(0.2)	(0.02)	1.3	3.1	0.015	93	0.19	0.4	1.10	2.9	155	2.9	0.28	2.6	0.06

Number	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W%	Y	Yb	Zn	Zr%
NCS DC70301	0.40	0.014	0.15	(0.7)	227	(0.06)	0.022	0.008	0.25	0.022	0.018	0.59	4.8	0.17	1.2	0.11	8.1	0.00537
NCS DC70302	0.5	0.015	0.19	(0.6)	191	0.05	0.031	0.008	0.25	0.023	0.020	0.39	5.0	0.18	1.4	0.13	9.5	0.00768
NCS DC70308	0.5	0.10	0.21	(0.9)	85	0.030	0.035	0.016	0.29	0.02	0.030	1.13	7.5	0.13	1.8	0.19	35.7	0.0113
NCS DC70305	0.4	0.013	0.26	(0.7)	158	0.06	0.032	0.008	0.45	0.04	0.017	0.70	5.1	0.17	1.1	0.10	3.6	0.00049

CRM LIMESTONE

Number	Al	Ca	Fe	Mg	Mn	P	S	Si	Ti	Units
IRSID 702-1	0.21	21.48	0.440	12.37	0.098	0.024	0.027	1.04	0.013	100 g

LIMESTONE AND DOLOMITE

analysis listed in mass %

FLX: RM, 30g

NCS: CRM, 50g

Number	CaO	MgO	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	K ₂ O	Mn ₂ O ₃	MnO	Na ₂ O	P	S	SO ₃	SrO	TiO ₂	LOI
FLX 136	55.0	0.37	0.54	0.181	0.12	0.05	0.03	.	.	.	.	0.03	0.02	.	.
NCS DC28246	54.92	0.37	0.47	0.203	0.107	.	.	0.0081	.	.	0.0017	0.010	.	0.017	43.54
NCS DC28160	54.20	0.82	0.960	0.328	0.146	0.084	.	0.0049	0.006	0.0019	0.019	.	0.018	0.016	43.27
NCS DC28157	53.79	1.17	1.32	0.225	0.151	0.066	.	0.0037	0.0058	0.0027	0.020	.	0.018	0.014	43.22
NCS DC28161	53.76	1.50	0.835	0.242	0.143	0.048	.	0.0058	0.006	0.0012	0.018	.	0.017	0.011	43.37
NCS DC28245	53.40	1.90	0.37	0.17	0.125	.	.	0.0092	.	0.0015	0.014	.	0.024	0.0085	43.93
NCS DC28159	51.95	1.23	2.36	0.811	0.296	0.165	.	0.0077	0.009	0.0017	0.016	.	0.020	0.036	42.39
NCS DC28244	51.32	2.94	1.49	0.39	0.171	.	.	0.0026	.	0.0022	0.0082	.	0.018	0.018	43.47
NCS DC28156	51.22	2.43	3.32	0.340	0.181	0.094	.	0.0042	0.0074	0.0019	0.030	.	0.021	0.020	42.26
NCS DC28154	50.61	2.88	3.02	0.622	0.289	0.164	.	0.0054	0.026	0.0028	0.055	.	0.024	0.032	41.92
NCS DC28158	48.56	4.31	3.99	0.657	0.302	0.184	.	0.0055	0.028	0.0044	0.044	.	0.022	0.051	41.70
NCS DC28247	47.82	6.13	0.70	0.222	0.201	.	.	0.0095	.	0.0066	0.014	.	0.018	0.013	44.46
NCS DC28152	46.71	6.55	2.42	0.374	0.25	0.050	.	0.0046	0.011	0.0017	0.042	.	0.016	0.023	43.22
NCS DC28155	46.09	5.98	4.60	0.283	0.187	0.038	.	0.0046	0.010	0.0016	0.033	.	0.020	0.015	42.55
NCS DC28248	45.88	7.68	0.76	0.240	0.229	.	.	0.010	.	0.0078	0.016	.	0.018	0.014	44.51
NCS DC28153	41.81	10.37	2.35	0.543	0.417	0.074	.	0.0070	0.011	0.0032	0.050	.	0.014	0.031	43.81
NCS DC28163	30.22	20.85	1.87	0.205	0.244	0.018	.	0.015	0.012	0.0015	0.038	.	0.013	0.0079	45.31
NCS DC28164	30.15	20.91	2.16	0.250	0.248	0.027	.	0.016	0.011	0.0013	0.039	.	0.013	0.012	45.04
NCS DC28165	29.50	20.43	5.22	0.706	0.357	0.033	.	0.018	0.023	0.0020	0.056	.	0.016	0.021	43.07
NCS DC28162	28.73	19.76	8.42	1.20	0.475	0.039	.	0.020	0.033	0.0028	0.072	.	0.019	0.036	40.56

Number	CaO	MgO	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	K ₂ O	Mn ₂ O ₃	MnO	Na ₂ O	P	S	SO ₃	SrO	TiO ₂	LOI
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LIMESTONE AND DOLOMITE

analysis listed in mass %

GUW, UL: 50 g

GBW, NCS: 70 g

others: 100 g

Number	CaO	Al ₂ O ₃	CO ₂	FeO	Fe ₂ O ₃	T. Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI
SRM 1d	52.85	0.526	.	.	0.3191	.	.	0.1358	0.301	.	0.0109	0.0413	4.080	0.0306	41.57
UL CCH1	52.05	0.32	.	.	0.18	.	.	0.08	2.71	0.01	0.05	0.05	0.95	0.02	43.20
NCS DC73375	51.1	0.68	39.8	(0.06)	0.21	.	(0.4)	0.15	0.71	.	0.03	.	6.65	.	40.2
GUW KH	47.8	2.39	37.6	0.33	0.92	.	.	0.41	0.74	0.088	.	0.121	8.60	(0.130)	.
GUW KH2	47.64	2.365	37.51	(0.31)	0.855	.	(1.26)	0.437	0.656	0.0848	0.106	0.117	8.66	0.130	.
GUW KH3	47.6	2.40	37.6	0.32	0.87	.	(1.4)	0.43	0.65	0.080	0.10	0.117	8.59	0.130	38.6
VS 3193-85	38.5	1.87	.	1.89	.	2.48	.	0.49	6.04	0.28	0.48	0.027	12.35	0.09	.
VS 3193-89	38.46	1.89	.	1.8	.	2.43	.	0.49	5.97	0.28	0.46	0.030	12.40	0.093	.
GBW 07108	35.67	5.03	32.4	1.64	2.52	.	+(2.12)	0.78	5.19	.	(0.08)	.	15.60	.	34.1
JBO-1	33.96	0.0174	46.50	(0.071)	0.0222	0.0200	+0.395 -0.145	0.00232	10.47	0.00657	0.0129	0.0343	0.216	.	.
VS 813-89	29.48	0.43	45.6	0.36	0.47	.	0.4	0.35	20.75	0.050	0.07	0.011	2.69	0.025	.
VS 3192-89	21.56	5.48	.	1.8	.	3.15	.	2.75	12.89	0.30	1.38	0.060	19.92	0.28	.

analysis listed in mg/kg except % which is mass % and * which is ng/g

Number	Ag	As	Au*	B	Ba	Be	Bi	Br	Carbon%	Cd	Ce	Cl	Co	Cr	Cs	Cu
SRM 1d	.	.	.	BaO: 33	(0.1)	.	.	.	11.50	(0.3)	(4)	(130)	.	.	(0.4)	.
UL CCH1	(<u><1</u>)	(1.3)	.	(10) 26	(<u><4</u>)	(<u><5</u>)	.	.	.	.	3.7	(370)	0.23	(5.4)	(0.13)	(<u><10</u>)
NCS DC73375	(0.025)	0.66	.	(12) 9	0.14	0.032	(0.3)	.	(0.15 Org)	0.016	4.6	(24)	0.8	3.4	(0.10)	2.2
GUW KH	.	.	.	50	.	.	.	.	.	.	.	.	5.3	15	1.4	10
GUW KH2	.	.	.	46.3	.	.	.	.	.	.	18.1	(10)	.	14.2	12.2	8
GUW KH3	.	.	.	.	.	.	.	.	(0.14 Org)	.	.	.	.	.	.	.
VS 3193-85	.	.	.	(10) 60	(1)	.	.	.	.	.	18	.	2.2	13	(0.7)	4
VS 3193-89	.	.	.	50	.	.	.	.	.	.	16	.	2.3	9	.	4
GBW 07108	0.043	4.7	(0.94)	16	120	0.8	0.16	.	9.0 tot (0.11 org)	0.07	25	78	9	32	3.2	23
JBO-1	(0.0019)	(0.114)	trace	6.14	.	.	.	(0.79)	(12.760)	0.644	2.49	.	0.160	7.93	.	1.41
VS 813-89	.	.	.	5	30	1.3	.	.	.	.	.	.	3.0	6	.	8
VS 3192-89	.	.	.	400	.	.	.	.	.	.	27	.	12	30	.	29

Number	Dy	Er	Eu	F	Ga	Gd	Ge	Hf	Hg	Ho	I	In	La	Li	Li ₂ O	Lu	Mn	Mo
SRM 1d	(0.6)	(0.4)	(0.1)	(160)	(1)	(0.5)	.	.	.	(0.1)	.	.	(4)	.	.	.	209	.
UL CCH1	(0.27)	.	0.17	(367)	(<u><4</u>)	(0.38)	(<u><10</u>)	0.11	.	(0.4)	.	(<u><5</u>)	5.0	0.03	.	.	.	(<u><5</u>)
NCS DC73375	0.28	(0.17)	0.082	249	0.87	0.36	0.14	0.22	0.005	(0.045)	(0.1)	(0.02)	2.3	4.8	.	0.023	28	0.18
GUW KH	.	.	0.5	570	.	.	.	0.78	.	.	.	.	.	8.6	.	0.12	.	.
GUW KH2	.	.	0.47	610	.	.	.	.	.	.	.	.	.	(7)	.	0.127	.	.
GUW KH3	.	.	.	(610)	.	.	.	.	.	.	.	.	.	.	(21)	.	.	.
VS 3193-85	.	.	.	.	other impurities: 37.46%	.	.	.	.	.	.	.	(7)	.	.	(0.1)	.	.
VS 3193-89	.	.	.	.	.	.	.	.	.	.	.	.	8	.	.	.	.	.
GBW 07108	1.6	1.0	0.51	406	7.1	1.9	0.67	1.8	0.016	0.33	0.23	(0.04)	15	20	.	0.14	434	0.38
JBO-1	0.014	.	0.176	246	.	(1.3)	.	(0.0097)	(0.0095)	(0.42)	.	.	7.93	(0.4)	.	0.0494	.	(0.70)
VS 813-89	.	.	.	200	.	.	.	.	.	.	.	.	.	.	.	.	.	.
VS 3192-89	.	.	.	.	.	.	.	.	.	.	.	.	13	40	.	.	.	0.08

Number	Nb	Nd	Ni	P	Pd	Pb	Pr	Pt	Ra	Rb	S	SO ₃ %	Sb	Sc	Se	Sm	Sn
SRM 1d	(0.7)	(3)	(4)	.	.	.	(0.6)	.	.	(6)	1028	.	.	.	.	(0.5)	(1)
UL CCH1	.	4.2	11	.	.	6	.	.	.	(2.6)	1283	.	(0.25)	0.45	.	0.77	(<u><5</u>)
NCS DC73375	0.8	1.96	(4)	57	N:(68)	5	0.60	.	.	4.0	36	.	0.072	(0.7)	0.021	0.40	(0.5)
GUW KH	.	.	20	.	.	.	.	.	.	25	.	.	.	3	.	2.2	.
GUW KH2	.	.	20.3	.	.	(6)	.	.	.	22	.	.	.	2.83	.	.	.
GUW KH3	.	.	.	.	.	.	.	.	.	.	900	(0.2)	.	.	.	.	.
VS 3193-85	(8)	.	7	.	.	16	.	.	.	15	.	.	.	(2)	.	.	.
VS 3193-89	7	.	5	.	.	10	.	.	.	15	.	.	.	2.2	.	.	.
GBW 07108	6.6	12.0	18	226	.	18	3.4	.	.	32	(370)	.	0.43	6.0	0.09	2.4	(0.98)
JBO-1	(0.4)	5.25	2.90	trace	.	(0.95)	0.956	trace	.	(1.75)	(90.5)	.	(0.036)	0.136	(0.0460)	0.700	.
VS 813-89	.	.	5	.	.	8	.	.	2e-10	5	200	.	.	.	.	.	.
VS 3192-89	37	.	18	.	.	13	.	.	.	57	.	.	.	8	.	.	1.7

Number	Sr	SrO	Ta	Tb	Te	Th	Ti%	Tl	Tm	U	V	W	Y	Yb	Zn	ZnO	Zr
SRM 1d	.	303	.	(0.09)	.	(0.5)	.	.	.	(1)	(10)	.	(5)	(0.3)	.	22	.
UL CCH1	267	.	(0.03)	0.11	.	0.30	.	.	.	3.9	27	.	(7)	0.24	29	.	(35)
NCS DC73375	107	.	(0.05)	0.054	.	0.86	0.230	(0.03)	(0.024)	0.24	5.4	0.13	1.9	0.15	7	.	11
GUW KH	545	.	0.19	.	.	2.6	.	.	.	.	24	.	.	0.86	22	.	35
GUW KH2	532	.	.	.	.	2.08	.	.	.	(8)	.	.	.	.	22.9	.	.
GUW KH3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
VS 3193-85	500	.	.	.	.	(2)	.	.	.	(1)	24	.	(9)	(1)	25	.	26
VS 3193-89	440	.	.	.	.	1.8	.	.	.	1.0	.	.	.	0.9	30	.	27
GBW 07108	913	.	0.42	0.35	(0.024)	4.1	0.1960	0.33	0.17	1.9	36	0.67	9.1	0.90	52	.	62
JBO-1	116	.	(0.009)	0.116	.	0.0429	.	(0.003)	(0.059)	0.050	3.14	.	10.3	0.323	35.4	.	6.21
VS 813-89	90	.	.	.	.	1.0	.	.	.	1.5	25	.	.	.	30	.	30
VS 3192-89	44	.	.	.	.	15	.	.	.	0.8	22	.	.	2.5	30	.	70

LIMESTONE and DOLOMITE

= class, where 1 = CRM and 2 = RM

f.SiO₂ = free SiO₂

#	Number	CaO	Al ₂ O ₃	Fe	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P	P ₂ O ₅	S	SO ₃	SiO ₂	f.SiO ₂	TiO ₂	LOI
1	NCS DC16006	65.20	0.885	.	0.46	0.19	4.55	0.013	0.021	0.0054	.	0.101	.	3.72	.	.	25.06
1	VS W10/3	55.8	0.012	.	.	.	0.32	.	.	0.0035	.	0.0053	.	0.050	.	.	.
1	ECRM 752-1	55.4	0.12	.	0.045	0.02	0.15	0.01	(<0.03)	.	(0.01)	0.007	.	0.70	.	0.009	43.4
1	BCS 513	55.59	0.108	.	0.0275	0.0150	0.182	0.0095	(<0.3)	.	(0.005)	0.0097	.	0.228	.	(0.004)	43.61
1	DK 1a	55.4	0.05	.	0.04	0.01	0.39	0.01	0.01	.	.	.	0.02	0.64	.	<0.01	43.3
1	NCS DC14014b	55.12	0.079	.	0.341	0.0030	0.73	0.0058	0.0075	0.0013	.	0.010	.	0.073	.	Ti:0.0010	43.53
1	NM 711	55.10	.	.	.	.	0.50	.	.	.	.	.	.	0.52	.	.	43.48
2	DH X3513	55.06	0.097	.	0.082	0.029	0.466	0.017	0.003	.	0.007	.	0.012	0.289	.	0.006	.
1	VB K1	54.58	0.11	.	0.097	(0.028)	0.72	0.0095	0.020	.	(0.016)	.	(0.051)	0.44	.	(0.011)	43.70
1	NCS DC14017b	54.11	0.61	.	0.319	0.0038	0.79	0.0074	0.021	0.0017	.	0.182	.	0.85	.	Ti:0.0021	42.79
1	GBW 03105a	54.03	0.24	.	0.11	0.084	0.81	0.0067	0.017	.	0.0081	.	0.018	1.09	0.67	0.010	43.12
1	NM 172	52.70	0.27	.	0.27	0.10	1.58	0.013	.	.	0.0009	.	.	1.92	.	0.011	42.57
1	NCS DC28205	52.42	0.39	.	0.197	.	1.92	0.0054	.	0.0019	.	0.012	.	2.17	.	0.0093	42.53
1	NCS DC60108a	51.61	0.33	.	0.17	0.17	2.25	0.0089	0.017	.	0.0061	.	0.016	2.09	1.38	0.015	42.84
1	NCS DC14015b	51.41	0.74	.	0.838	0.0062	2.31	0.013	0.0073	0.0021	.	0.273	.	2.06	.	Ti:0.0071	41.79
1	NCS DC28204	50.72	0.18	.	0.208	.	3.96	0.012	.	0.0076	.	0.016	.	0.83	.	0.0060	43.70
1	NCS DC60109a	50.09	0.94	.	0.58	(0.42)	1.79	(0.014)	(0.027)	.	0.033	.	(0.054)	4.05	(2.02)	(0.052)	41.53
2	DH X3515	48.91	0.787	.	1.293	0.187	0.379	0.028	0.032	.	0.036	.	0.055	8.75	.	0.048	.
1	NCS DC62002d	48.16	1.67	.	1.17	0.61	0.93	0.09	0.09	.	.	.	0.06	7.88	.	0.12	38.96
1	NCS DC60110a	47.07	0.60	.	0.38	(0.20)	5.81	(0.012)	(0.016)	.	(0.037)	.	(0.032)	2.25	(1.21)	(0.030)	43.22
1	DK 1b	43.6	3.20	.	1.25	0.96	3.00	0.02	0.13	.	.	.	0.13	9.5	.	0.15	37.7
1	VB K2	43.19	3.93	.	1.39	0.82	0.65	0.025	0.064	.	.	.	0.22	13.38	.	(0.21)	35.61
1	NCS DC14050	42.62	0.36	.	0.260	0.021	9.45	0.015	0.015	0.0033	.	0.039	.	7.97	.	Ti:0.0096	38.80
1	IPT 122	32.0	1.24	.	0.65	0.43	17.5	0.042	0.019	.	0.048	.	.	4.3	.	0.06	43.3
1	VS K4/4	31.2	0.47	.	0.56	.	20.1	0.034	.	.	.	.	.	0.96	.	.	.
1	SRM 88b *	29.95	0.336	.	0.277	0.1030	21.03	0.0160	0.0290	.	0.0044	.	.	1.13	.	(0.016)	(46.90)
1	DK 2a **	29.2	0.91	.	1.01	0.37	19.5	0.06	0.04	.	.	.	0.06	4.3	.	0.07	44.3

continued

Number	CO ₂	Cl ⁻	Cr	Cr ₂ O ₃	Cu	Pb	SrO	Zn	Ins.Res	Units
NCS DC16006	.	.	.	.	.	.	.	.	.	15 g
VS W10/3	.	.	.	.	.	.	.	.	.	75 g
ECRM 752-1	.	.	.	.	.	0.019	.	.	.	100 g
BCS 513	.	.	.	0.0012	.	0.0009	0.0176	0.0014	.	100 g
DK 1a	.	.	.	.	.	.	.	.	.	60 g
NCS DC14014b	.	.	.	.	.	.	Sr:0.025	.	.	50 g
NM 711	.	.	.	.	.	.	.	.	.	100 g
DH X3513	43.80	.	.	.	.	.	0.019	.	.	100 g
VB K1	(43.54)	.	(0.0025)	.	(0.00055)	.	.	.	.	100 g
NCS DC14017b	.	.	.	.	.	.	Sr:0.024	.	.	50 g
GBW 03105a	(43.12)	0.0028	.	.	.	.	.	.	.	50 g
NM 172	.	.	.	.	.	.	.	.	.	100 g
NCS DC28205	.	.	.	.	.	.	0.023	.	.	50 or 100 g
NCS DC60108a	(42.59)	0.0066	.	.	.	.	.	.	.	50 g
NCS DC14015b	.	.	.	.	.	.	Sr:0.023	.	.	50 g
NCS DC28204	.	.	.	.	.	.	0.046	.	.	50 or 100 g
NCS DC60109a	(41.32)	(0.0062)	.	.	.	.	.	.	.	50 g
DH X3515	.	.	.	.	.	.	0.050	.	.	100 g
NCS DC62002d	.	.	.	.	.	.	.	.	.	20 g
NCS DC60110a	(43.02)	(0.0054)	.	.	.	.	.	.	.	50 g
DK 1b	.	.	.	.	.	.	.	.	.	60 g
VB K2	.	.	.	.	.	.	.	.	.	100 g
NCS DC14050	.	.	.	.	.	.	Sr:0.017	.	.	50 g
IPT 122	.	.	.	.	.	.	0.018	.	.	80 g
VS K4/4	.	.	.	.	.	.	.	1.30	.	75 g
SRM 88b *	46.37	.	.	.	.	.	0.0076	.	.	75 g *
DK 2a **	.	.	.	.	.	.	.	.	.	60 g **

-H₂O @ 900°C: 0.099

100 g

100 g

80 g

* SRM 88b lists Mn as MnO
** DK 2a lists Mn₃O₄ as MnO

CRM SYNTHETIC LIMESTONE WITH TRACE ELEMENTS

Material base: CaCO₃ 85%, MgCO₃ 8%, SiO₂ 5.2%, Al₂O₃ 1.1%, Fe₂O₃ 0.3%, Na₂SO₄ 0.2%, K₂SO₄ 0.2% analysis listed in mg/kg 70 g units

Number	Ag	As	B	Ba	Be	Bi	Cd	Ce	Co	Cr	Cu	Ga	La	Li	Mn
GBW 07712	(0.030)	2.2	2.2	24	0.22	0.23	(0.023)	2.8	2.3	2.3	2.2	2.8	2.6	3.2	37
GBW 07713	0.060	5.2	5	54	0.52	0.53	0.053	5.8	5.3	5.3	5.2	5.8	5.6	6.2	67
GBW 07714	0.11	10.2	10	104	1.0	1.0	0.10	11	10.3	10.3	10.2	10.8	10.6	11.2	117
GBW 07715	0.21	20	20	204	2.0	2.0	0.20	21	20.3	20.3	20	20.8	20.6	21	217
GBW 07717	1.0	100	100	1000	10	10	1.0	101	100	100	100	101	101	101	1020
GBW 07718	2.0	200	200	2000	20	20	2.0	200	200	200	200	200	200	200	2020
GBW 07719	5.0	500	500	5000	50	50	5.0	500	.	.	500	.	.	500	5000
GBW 07720	10	.	.	.	100	100	10	.	.	.	1000	.	.	.	10000

continued

Number	Mo	Nb	Ni	Pb	Sb	Sn	Sr	Ti	V	W	Y	Yb	Zn	Zr
GBW 07712	0.21	2.5	2.1	2.4	0.21	0.28	170	31	3.2	0.22	2.1	0.22	3.0	4.0
GBW 07713	0.51	5.5	5.1	5.4	0.51	0.58	200	61	6.2	0.52	5.1	0.52	6.0	7.0
GBW 07714	1.0	10.5	10	10.4	1.0	1.1	250	111	11.2	1.0	10	1.0	11	12
GBW 07715	2.0	20.5	20	20.4	2.0	2.1	350	210	21	2.0	20	2.0	21	22
GBW 07717	10	100	100	100	10	10	1150	1010	101	10	100	10	101	102
GBW 07718	20	200	200	200	20	20	2200	2000	200	20	200	20	200	202
GBW 07719	50	.	500	500	50	50	5200	5000	500	50	.	50	500	500
GBW 07720	100	.	.	1000	100	100	.	.	.	100	.	100	1000	.

CRM LITHIUM ORE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

17025

100 g units

Number	Al ₂ O ₃	CaO	Fe ₂ O ₃ T	K ₂ O	Li ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	SiO ₂	TiO ₂	Zn	LOI	Units
CGL 128	13.66	0.746	0.663	6.28	0.578	0.033	0.603	(0.603)	(0.029)	(0.223)	73.40	(0.053)	0.0594	(2.14)	100 g

continued analysis listed in mg/kg

Number	As	Ba	Bi	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd
CGL 128	61.75	83.51	185	(3.64)	(46.93)	(0.401)	(105)	(67.38)	186	(1.37)	(1.18)	(0.091)	(29.69)	(1.22)

Number	Hf	Ho	Ind	La	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc
CGL 128	(5.64)	(0.313)	(0.303)	(28.92)	(0.421)	(7.26)	(77.63)	(8.64)	(1.76)	558	(3.41)	(2135)	(20.50)	(9.62)

Number	Sm	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	W	Y	Yb	Zr
CGL 128	(2.26)	(11.43)	24.54	(9.74)	(0.208)	(1.12)	(24.20)	(14.65)	(0.240)	45.28	107	(12.33)	(2.19)	69.94

CRM LITHIUM ORE

analysis listed in mass %

10 g units

Number	Li	Ta	Al	Ca	Fe	K	Mg	Mn	Na	Nb	Si	SiO ₂	Sn	LOI
GTA-10	2.8622	0.0928	13.9	<0.2	0.59	1.0	0.09	0.0900	.	<0.04	30.1	.	0.0542	0.93
GTA-11	2.5760	0.0845	13.4	<0.5	1.00	1.3	0.18	0.0885	.	0.0267	30.2	.	0.0484	0.83
GTA-12	1.7412	0.0556	11.5	0.8	1.85	2.4	0.38	0.0770	.	0.0183	30.8	.	0.0325	1.05
GTA-13	1.4384	0.0458	10.8	0.8	2.06	2.8	0.40	0.0699	.	0.0153	30.8	.	0.0271	1.08
GTA-04	0.9275	.	8.11	0.24	1.38	2.85	.	0.0738	1.33	.	34.4	.	(0.0148)	.
GTA-05	0.8422	.	7.85	0.17	(0.88)	2.29	.	0.0749	2.27	.	34.5	.	(0.0070)	.
GTA-06	0.7843	.	8.03	0.17	(0.66)	2.58	.	0.1304	2.34	.	34.5	.	(0.0131)	.
GTA-03	0.7782	0.0173	8.22	0.19	1.01	2.95	.	0.1146	2.23	0.0060	.	72.0	0.0296	.
GTA-14	0.6362	0.0204	9.1	1.2	2.75	3.8	0.54	0.0590	.	0.0076	31.5	.	0.0122	1.18
GTA-09	0.4886	0.0148	8.46	0.24	0.63	1.79	.	0.1382	4.01	.	33.47	.	0.0094	.
GTA-01	0.3132	0.0415	7.59	0.25	0.52	2.18	.	0.0814	3.72	0.0047	.	73.4	0.0438	.
GTA-15	0.2434	0.0078	8.3	1.4	3.12	4.4	0.61	0.0523	.	<0.005	31.9	.	0.0048	1.20
GTA-02	0.1715	0.0691	8.31	0.31	0.48	2.49	.	0.0623	4.03	0.0052	.	71.8	0.0395	.
GTA-08	0.1121	0.0146	7.92	1.20	2.46	3.78	.	0.0639	0.258	.	31.88	.	0.0154	.
GTA-07	0.0502	0.0203	7.97	1.35	2.72	4.00	.	0.0576	2.55	.	31.41	.	0.0117	.

CRM LITHIUM ORE

analysis listed in mass %

Number	Li ₂ O	Al ₂ O ₃	CaO	Cs ₂ O	F-	FeO	T.Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	Rb ₂ O	SiO ₂	TiO ₂	LOI
NCS DC86314	3.89	24.53	0.063	0.30	5.08	(0.043)	0.30	(2.77+)	7.75	0.027	0.40	1.08	0.13	1.24	53.92	0.029	(5.34)
NCS DC86304	2.29	19.12	0.076	0.177	3.12	(0.020)	0.301	2.29-	4.80	0.036	0.252	2.33	0.237	0.735	64.64	0.028	4.06
NCS DC86303	0.460	14.76	0.335	0.037	0.667	(0.062)	0.394	1.06-	3.17	0.054	0.070	4.19	0.173	0.145	74.37	0.018	1.48

continued analysis listed in mg/kg except % which is mass %

Number	BeO%	CeO ₂	Dy ₂ O ₃	Er ₂ O ₃	Eu ₂ O ₃	Gd ₂ O ₃	Ho ₂ O ₃	La ₂ O ₃	Lu ₂ O ₃	Nb ₂ O ₅	Nd ₂ O ₃	Pr ₆ O ₁₁
NCS DC86314	0.0164	(1.88)	0.50	0.24	0.10	0.56	0.094	1.16	0.036	81	1.66	0.46
NCS DC86304	0.026	2.6	0.64	0.26	0.13	0.75	(0.13)	(2.1)	0.034	61.1	2.8	0.63
NCS DC86303	0.018	9.0	2.5	1.2	(0.14)	2.1	0.45	5.1	0.18	27.0	5.0	1.3

Number	RE _x O _y *	Sc ₂ O ₃	Sm ₂ O ₃	Sn	Ta ₂ O ₅ %	Tb ₄ O ₇	Tm ₂ O ₃	W	Y ₂ O ₃	Yb ₂ O ₃	Units
NCS DC86314	10.7	0.31	0.52	152	.	0.10	0.038	79.0	3.06	0.22	70 g
NCS DC86304	15.2	0.44	0.64	97.1	0.012	0.13	0.040	43.7	3.4	0.23	70 g
NCS DC86303	47.0	0.98	1.6	(36)	0.00494	0.43	0.18	8.9	16.9	1.3	70 g

* RE_xO_y : Rare Earth Oxide**CRM LITHIUM ORE**

45 g units

Number	Li ₂ O%
SRM 182	4.34
SRM 183	4.12

CRM LUJAVRITE

analysis listed in mass %

Number	SiO ₂	Al ₂ O ₃	CaO	FeO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	TiO ₂	Ba	Be	Co	Cr	Cu	Ga	Ge
VS 2124-81	56.13	16.96	1.25	1.14	5.52	6.23	0.74	0.254	9.26	0.92	0.080	0.00139	0.00063	0.00125	0.00111	0.0063	0.00013
continued																	
Number	La	Li	Mo	Nb	Ni	Pb	Rb	Sn	Sr	V	Y	Yb	Zn	Units			
VS 2124-81	0.040	0.0037	0.00028	0.034	0.00078	0.0020	0.0250	0.0014	0.080	0.0086	0.0081	0.00057	0.012	40 g			

CRM LOW BORON MAGNESITE

Number	Al	B	Ca	Cr	Fe	K	Mg	Mn	Na	P	Si	Ti	Units
ECRM 779-1	0.105	0.0116	1.691	(0.0030)	3.73	(0.0020)	(54.57)	0.503	(0.0058)	0.0267	0.182	0.0081	100 g

CRM MAGNESITE

analysis listed in mass %

100 g units

analysis listed in mg/kg

Number	MgO	Al ₂ O ₃	CaO	Fe ₂ O ₃	FeO	K ₂ O	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	Ba	Ce	Co	Cr	Cu	Ni	Sr	Zn
SARM 43	44.11	(0.06)	0.89	0.26	(0.1)	(0.04)	(0.1)	(0.05)	(0.02)	5.99	(0.01)	(25)	(20)	4	(195)	(15)	252	8	(10)

MAGNESITE

= class, where 1 = CRM and 2 = RM

analysis listed in mass %

CERAM: 25 or 100g

NCS: 50g

NH: 75g

others: 100g

#	Number	MgO	Al ₂ O ₃	B ₂ O ₃	CaO	Cr ₂ O ₃	Fe ₂ O ₃	K ₂ O	MnO	Mn ₂ O ₃	Na ₂ O	P ₂ O ₅	S	SiO ₂	SrO	TiO ₂	LOI
1	BCS 389/1	97.89	0.104	.	0.880	.	0.607	.	0.100	.	.	0.0295	.	0.274	.	0.0052	.
1	BCS 319/1	95.38	0.109	.	3.00	0.0035	0.291	.	0.108	.	.	.	.	1.093	.	0.0070	.
2	CERAM AN37	94.00	.	0.09	1.46	0.005	1.80	<0.01	.	0.12	<0.05	0.02	.	1.39	.	0.03	.
2	CERAM AN36	93.30	.	0.09	0.94	0.004	4.66	<0.01	.	0.11	<0.05	0.008	.	0.48	.	0.01	.
1	ECRM 778-1	81.02	0.56	.	1.23	0.15	0.96	.	0.014	.	.	(0.009)	.	1.05	.	(0.013)	.
1	NCS DC28090	46.40	0.10	.	0.53	.	0.65	0.0050	0.016	.	0.017	0.013	0.0027	0.32	0.005	0.0060	51.58
1	USZ 37-2003	45.80	0.04	.	1.69	.	0.05	0.011	.	.	.	.	.	0.25	.	CO ₂ : 48.31	51.35
1	UNS MK	45.22	0.414	.	0.581	.	.	0.013	0.160	.	0.024	0.055	.	0.593	.	0.019	.
1	NCS DC28089	43.45	1.14	.	1.52	.	1.74	0.037	0.095	.	0.018	0.036	0.015	4.13	0.0013	0.041	47.35
1	NCS DC28089a	43.44	1.46	.	1.26	.	1.66	0.044	0.083	.	0.020	0.037	0.015	4.95	0.0014	0.048	46.57
2	CERAM AN43	.	.	0.005	.	.	.	(0.06)	.	.	.	.	.	.	.	.	last
2	CERAM AN45	.	.	0.222	.	.	.	.	.	.	.	.	.	.	.	.	last

RM MAGNESITE

typical analysis listed in mass %

100 g units

Number	MgO	Al ₂ O ₃	C tot.	CO ₂	CaO	Cr ₂ O ₃	Fe ₂ O ₃	K ₂ O	Mn ₃ O ₄	P ₂ O ₅	S	SiO ₂	TiO ₂	-H ₂ O at 900°C
DH 4208	47.83	41.66	0.353	0.580	2.06	0.040	1.49	0.037	0.070	0.077	0.007	5.09	0.066	0.894
continued														
Number	V ₂ O ₅	ZnO	ZrO ₂											
DH 4208	0.001	0.006	0.091											

CRM	MANGANESE ORE										# = class, where 1 = CRM and 2 = RM				analysis in mass %				T = Total	
#	Number	Mn	MnO2	Mn(CO3)	Al2O3	As	As2O3	Ba	BaO	CO2	CaO	Fe	Fe2O3	K2O	MgO	Na2O	SiO2	TiO2		
1	IGS 29	MnO: 93.38		.	.	.	.	0.59	.	.	.	.	.	.	.	.	.	.	.	
1	VS R13/3	58.88	90.4	.	.	.	.	.	.	.	.	.	.	.	.	.	2.01	.	.	
1	NCS DC26703	58.80	(62.07)	.	0.74	.	.	.	.	C:0.034	0.37	1.45	.	.	0.17	.	5.63	Ti:0.025		
1	VS P13/1	58.8	.	.	.	.	.	.	.	.	.	.	.	.	.	.	2.00	.	.	
1	SRM 25d	51.78	.	.	(5.33)	.	.	.	(0.21)	.	(0.052)	.	(3.91)	(0.928)	.	.	2.54	(0.136)		
1	SARM 16	49.17	.	.	(0.3)	.	.	.	0.60	.	4.70	11.48	.	0.02	0.76	(0.03)	5.04	.	.	
1	NCS DC35015	49.00	68.28	.	.	0.015	.	.	.	.	.	3.97	.	.	.	.	.	.	.	
1	JSS 861-2	48.7	.	.	Al: 1.57	.	.	.	.	.	Ca: 0.063	(5.7)	.	.	.	.	Si: 2.62	.	.	
1	NCS DC26702	48.53	(72.64)	.	3.28	.	.	.	.	C:0.085	0.37	4.93	.	.	0.25	.	5.56	Ti:0.102		
1	BAM 633-1	47.85	.	.	1.64	.	(0.004)	.	1.13	.	2.02	1.64	.	.	0.58	.	10.39	0.079		
1	AMIS 0403	46.82	MnO: 60.42	.	0.37	.	.	.	Ca: 3.56	5.12	12.43	18.25	(0.023)	.	0.66	(0.18)	5.25	(0.02)		
2	RH01	46.8	51.3	.	1.50	.	.	.	(0.3)	.	1.77	1.63	.	1.33	1.10	0.41	11.4	.	.	
1	AMIS 0404	45.93	MnO: 59.45	.	(0.40)	.	.	.	Ca: 3.07	4.43	13.63	19.54	(0.06)	.	0.51	0.79	3.56	(0.02)		
1	NCS DC25008	45.47	.	.	6.81	.	.	.	.	0.071	3.21	.	.	.	0.077	.	9.51	0.087		
1	NCS DC26704	45.20	(67.71)	.	6.88	.	.	.	.	C:0.090	0.103	6.03	.	.	0.097	.	5.55	Ti:0.092		
1	NCS DC28045	44.97T	67.67	.	2.35	0.042	.	.	0.058	.	0.195	2.75T	.	1.48	0.182	0.034	16.00	0.105		
1	NCS DC26701	44.95	(32.31)	.	0.37	.	.	.	C:1.22	7.53	10.50	.	.	.	1.05	.	5.41	Ti:0.010		
1	NCS DC28210	44.76	66.46	.	7.28	.	.	.	.	0.24	5.72	.	.	.	0.257	.	4.62	0.34		
1	VS R12/2	43.24	52.4	.	1.87	.	.	.	0.53	.	2.02	1.56	.	.	1.16	.	15.00	.		
1	AMIS 0402	43.01	MnO: 56.77	.	0.38	.	.	.	Ca: 3.88	5.70	15.38	22.12	(0.02)	.	0.54	(0.11)	4.31	(0.024)		
1	SARM 17	38.81	.	.	0.24	.	.	.	(0.08)	.	(14.4)	4.27	.	0.09	3.03	0.09	4.69	.		
1	SARM 149	38.0	.	.	0.221	.	.	.	0.050	.	14.2	5.39	.	0.132	2.08	0.147	5.89	.		
1	OREAS 170b	MnO: 59.46	.	.	3.90	.	.	.	.	0.270	.	7.04	1.80	0.329	0.318	9.49	.	0.189		
1	OREAS 170a	MnO: 58.17	.	.	4.44	.	.	.	.	0.090	.	6.49	1.70	0.222	0.276	11.34	0.179	.		
1	NCS DC28044	36.31T	45.02	.	2.08	0.039	.	.	0.410	.	3.30	6.90T	.	0.49	1.29	0.076	17.70	0.085		
1	AMIS 0407	35.72	MnO: 46.81	.	0.29	.	.	.	Ca: 11.04	15.81	4.10	6.03	0.04	3.17	(0.039)	5.51	(0.02)	.		
1	NCS DC11023	35.54T	52.73	.	3.80	0.112	.	.	1.62	.	2.34	10.25T	.	0.396	0.78	0.053	13.03	0.143		
1	CGL 127	MnO: 45.9	.	.	9.27	(0.0131)	.	(0.9384)	.	(1.63)	.	19.51T	(0.017)	.	0.79	(0.086)	10.84	0.53		
1	NCS DC28062	34.67	51.64	.	9.97	.	.	.	.	0.48	8.05	.	1.14	0.87	0.063	10.70	.	.		
1	VS 5404-90	34.12	48.66	.	5.28	.	.	.	.	4.68	6.68	.	0.83	0.45	0.38	15.69	0.27	.		
1	NCS DC28211	32.70	32.32	.	3.30	.	.	.	Ca: 12.62	4.21	10.47	.	.	3.04	.	14.40	0.16	.		
1	AMIS 0406	32.27	MnO: 41.81	.	0.24	.	.	.	.	4.62	6.77	(0.11)	.	3.51	(0.14)	4.36	(0.02)	.		
1	NCS DC28043	30.99T	45.61	.	6.40	0.089	.	.	1.11	.	1.15	10.68T	.	0.65	0.70	0.058	17.30	0.215		
1	NCS DC11022	29.48T	41.76	.	6.49	0.062	.	.	1.04	.	1.82	10.22T	.	0.89	0.65	0.062	19.84	0.224		
1	NCS DC28209	27.76	21.00	.	1.77	.	.	.	.	5.44	12.00	.	.	4.08	.	17.54	0.085	.		
1	NCS DC28063	27.45	39.38	.	10.05	.	.	.	.	0.99	8.10	.	1.57	1.16	0.064	20.96	.	.		
1	NCS DC11021	26.53T	36.60	.	6.99	0.052	.	.	0.80	.	2.31	11.01T	.	1.01	0.774	0.064	22.10	0.247		
1	NCS DC28061	22.93	33.45	.	9.88	.	.	.	.	1.11	6.71	.	1.95	0.94	0.053	31.42	.	.		
1	NCS DC28042	22.18T	18.35	.	2.80	0.032	.	.	0.164	.	6.20	10.62T	.	0.83	3.14	0.049	24.73	0.123		
1	NCS DC11020	22.31T	30.34	.	7.69	0.034	.	.	0.54	.	2.36	9.66T	.	1.11	1.72	0.056	28.11	0.270		
1	KZ 185-89	21.61T	.	.	1.42	.	.	.	.	25.72	1.11T	.	0.11	0.95	.	16.07	0.066	.		
1	NCS DC11019	18.36T	25.59	.	5.66	0.031	.	.	0.43	.	12.83	8.89T	.	1.04	0.611	0.045	21.94	0.206		
1	NCS DC28060	18.22	27.06	.	10.39	.	.	.	.	1.22	5.86	.	2.34	0.84	0.054	38.94	.	.		
1	VS 5406-90	15.98	14.40	.	9.78	.	.	2.65	.	1.29	1.96	2.43	4.99	0.74	0.70	47.66	0.31	.		
1	NCS DC28041	14.45T	20.66	.	8.25	0.013	.	.	0.064	.	2.07	0.85T	.	3.74	0.60	0.48	56.03	0.177		
#	Number	Mn	MnO2	Mn(CO3)	Al2O3	As	As2O3	Ba	BaO	CO2	CaO	Fe	Fe2O3	K2O	MgO	Na2O	SiO2	TiO2		
Number	Cr	Cu	Ge	Ni	P	P2O5	Pb	S	V	Zn	LOI	Units	Other							
IGS 29	.	.	.	.	.	.	.	.	.	.	.	40 g								
VS R13/3	.	0.0219	.	0.101	0.196	.	0.0013	0.07	.	.	.	100 g								
NCS DC26701	.	0.024	.	(0.002)	0.033	.	0.013	0.18	.	0.013	.	50 g	Co: 0.008							
VS P13/1	.	.	.	.	0.197	.	0.0014	0.070	.	.	.	100 g	MnO: 90.4, last of stock							
SRM 25d	.	.	.	.	.	0.251	.	.	.	.	.	60 g	available Oxygen: 14.28, H2O: (0.96)							
SARM 16	.	.	.	.	0.033	.	.	0.17	.	0.0364	.	100 g								
NCS DC35015	.	0.006	.	0.014	.	.	0.015	.	.	0.036	.	80 g	Co: 0.025							
JSS 861-2	.	0.0064	.	.	0.086	.	.	0.0084	.	.	(3.3)	100 g	Activated O: 13.55							
NCS DC26702	.	0.005	.	0.012	0.080	.	0.012	0.017	.	0.016	.	50 g	Co: 0.014							
BAM 633-1	.	.	.	.	0.170	.	.	0.227	.	.	.	100 g								
AMIS 0403	Cr2O3: (0.03)	.	.	.	.	0.08	.	specific gravity: 4.63	4.27	100 g	multiple Mn									
RH01	.	.	.	.	0.28	.	.	(0.025)	12.8	100 g										
AMIS 0404	Cr2O3: (0.024)	.	.	.	.	(0.08)	.	specific gravity: 4.65	4.88	100 g	multiple Fe, Mn									
NCS DC25008	.	.	.	.	0.094	.	.	.	.	.	.	50 g	B: 0.0018							
NCS DC26703	.	0.033	.	0.0024	0.009	.	0.018	0.003	.	0.219	.	50 g	Co: 0.0014							
NCS DC28045	0.038	0.022	.	0.079	0.230	.	0.011	0.0086	0.018	0.070	.	50 g								
NCS DC26704	.	0.009	.	0.039	0.127	.	(0.007)	0.028	.	0.052	.	50 g	Co: 0.096							
NCS DC28210	.	0.062	.	0.057	0.099	.	0.014	.	.	0.088	.	50 g								
VS R12/2	.	.	.	.	0.209	.	.	0.029	.	.	.	100 g								
AMIS 0402	Cr2O3: (0.05)	.	.	.	.	0.10	.	specific gravity: 4.62	4.97	100 g	multiple Ca, Fe, Mn									
SARM 17	.	.	.	.	0.018	.	.	(0.01)	.	0.0043	.	100 g								
SARM 149	.	.	.	.	0.021	.	.	.	.	.	.	100 g								
OREAS 170b	.	.	.	.	.	0.195	.	.	.	.	11.95	10 g								
OREAS 170a	.	.	.	.	.	0.152	.	.	.	.	12.14	10 g								
NCS DC28044	0.0018	0.0086	.	0.010	0.105	.	0.0083	0.021	0.0075	0.027	.	50 g								
AMIS 0407	Cr2O3: 0.22	.	.	.	.	(0.04)	.	specific gravity: 3.74	17.83	100 g	multiple Mn									
NCS DC11023	0.0053	0.011	.	0.023	0.105	.	0.058	0.052	0.016	0.066	.	60 g								
CGL 127	(0.0086)	(0.0127)	17025	0.0377	.	0.76	(0.0038)	.	(0.0241)	0.0182	(6.41)	100 g	mg/kg: Co:316 Y:104 Sr:1354 Zr:208							
NCS DC28062	.	.																		

CRM MANGANESE NODULE

analysis listed in mass % except * which is mg/kg T = Total * AMIS Lists Mn by XRF and M/ICP

Number	MnO	MnO ₂	Al ₂ O ₃	COrg	CO ₂	CaO	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI	Density	Units
US N00-P-1	37.6	.	4.8	.	.	3.1	0.3T	1.2	3.3	2.2	0.46	13.9	0.5	.	.	25 g
AMIS 0104*	35.31*	35.49*	2.20	.	.	1.34	20.78	0.26	(0.35)	(0.10)	(P: 192*)	18.30	0.27	(3.28)	4.32	100 g or 1kg
VS 5374-90	35.09T	41.7	5.68	0.18	0.43	2.82	9.28T	1.27	3.40	2.94	0.68	16.60	0.74	15.3	.	50 g
JMn-1	33.09	.	4.30	.	.	2.91	14.40T	0.94	3.12	2.80	0.54	14.11	1.06	.	.	100 g
VS 5375-90	25.16T	31.1	5.46	0.22	0.60	3.01	24.87T	0.83	2.24	2.40	0.80	14.50	1.91	13.8	.	50 g
US N00-A-1	23.9	.	3.07	.	.	15.4	15.6T	0.6	4.76	1.0	1.40	3.01	0.53	.	.	25 g
VS 5376-90	19.85T	24.2	6.71	.	0.50	5.13	22.13T	1.18	2.29	2.24	1.61	22.30	1.56	11.4	.	100 g

Number	As	Au*	B*	Ba	Be*	Bi*	C*	Cd*	Ce	Cl	Co	Cr	Cr ₂ O ₃	Cs*	Cu	Dy*
US N00-P-1	.	.	.	0.3350	.	.	.	.	(0.0290)	.	0.2240	.	.	.	1.1500	(27)
AMIS 0104	(0.0116)	.	.	2.86	(2.1)	(0.61)	.	(0.78)	(0.02994)	.	0.0240	(0.01802)	(0.03)	(0.19)	(0.0192)	(10.6)
VS 5374-90	0.006	0.005	.	0.18	.	.	17	0.020	0.020	0.7	0.220	0.0018	.	.	1.01	.
JMn-1	0.00754	(0.00095)	(138)	0.1714	(7.8)	(4.3)	(905)	(15.5)	0.0277	.	0.1732	0.00266	.	0.60	1.1132	(28.3)
VS 5375-90	0.017	0.010	.	0.17	.	.	5	0.09	0.9	0.47	0.0019	.	.	.	0.22	.
US N00-A-1	.	.	.	0.1670	.	.	.	(0.0730)	.	0.3110	.	.	.	.	0.1100	(23)
VS 5376-90	0.014	.	.	0.16	19	.	.	0.10	.	0.27	0.0067	.	.	.	0.13	.

Number	Er*	Eu*	Ga*	Gd*	Ge*	H ₂ O+	Hf*	Ho*	In*	La	Li	Lu*	Mo	Nb	Nd	Ni
US N00-P-1	(12)	(7.5)	.	(20)	.	.	.	.	.	(0.0104)	.	(1.8)	0.0760	.	(0.0120)	1.3400
AMIS 0104	(5.7)	(4.3)	(35.8)	(12.1)	(1.7)	.	(3.0)	(2.0)	(0.05)	(0.00444)	(0.00183)	(0.66)	(0.00047)	(0.00055)	(0.00557)	(0.00421)
VS 5374-90	.	.	.	.	.	.	.	.	.	0.009	0.014	0.052	0.0020	0.0020	0.008	1.37
JMn-1	14.6	7.6	(37.1)	(29.8)	.	(7.90)	(6.2)	(5.8)	.	0.0122	(0.00717)	2.1	0.0318	(0.00276)	0.0137	1.2632
VS 5375-90	.	.	.	.	.	.	.	.	.	0.014	0.004	.	0.033	0.009	0.014	0.422
US N00-A-1	(12)	(5)	.	(26)	.	.	.	.	.	(0.0120)	.	(2.2)	0.0440	.	(0.0094)	0.6360
VS 5376-90	.	.	.	.	.	.	.	.	.	0.012	0.0019	.	0.035	0.006	0.010	0.34

Number	Li	Lu*	Mo	Nb	Nd	Ni	Pb	Pd*	Pr*	Pt*	Rb*	S	Sb*	Sc
US N00-P-1	.	(1.8)	0.0760	.	(0.0120)	1.3400	0.0560	.	.	.	.	.	.	.
AMIS 0104	(0.00183)	(0.66)	(0.00047)	(0.00055)	(0.00557)	(0.00421)	(0.00507)	.	(12.6)	.	(5.3)	(0.32)	(9.7)	(4.6)
VS 5374-90	0.014	.	0.052	0.0020	0.008	1.37	0.040	.	.	0.10	21	0.10	.	11
JMn-1	(0.00717)	2.1	0.0318	(0.00276)	0.0137	1.2632	0.0430	.	(31.4)	(0.110)	10.9	(0.0940)	37.5	(13.0)
VS 5375-90	0.004	.	0.033	0.009	0.014	0.422	0.098	0.003	.	0.21	10	0.16	.	13
US N00-A-1	.	(2.2)	0.0440	.	(0.0094)	0.6360	0.0046	.	.	.	.	.	.	.
VS 5376-90	0.0019	.	0.035	0.006	0.010	0.34	0.105	.	.	.	19	0.16	.	19

Number	Sm	Sn*	Sr	Ta*	Tb*	Th*	Tl	Tm*	U*	V	W*	Y	Yb*	Zn	Zr
US N00-P-1	(0.0030)	.	0.0680	.	.	.	.	.	.	0.0570	.	.	(1.3)	0.1600	.
AMIS 0104	(0.00128)	(2.0)	(0.0309)	(0.21)	(1.8)	(9.5)	(0.42*)	(0.78)	(8.1)	(0.0108)	(3.5)	(0.00412)	(4.9)	0.0142	(0.01341)
VS 5374-90	0.0022	.	0.064	.	.	17	.	4	0.043	.	0.011	13	0.12	0.032	.
JMn-1	0.00302	(4.4)	0.0792	(0.64)	4.8	11.7	.	2.1	5.0	0.0424	(45.3)	0.0111	13.8	0.1068	0.0344
VS 5375-90	0.003	.	0.11	.	.	38	.	.	8	0.048	.	0.014	14	0.058	0.060
US N00-A-1	(0.0021)	.	0.1750	.	.	.	.	.	.	0.0770	.	.	(14)	0.0590	.
VS 5376-90	0.0027	.	0.11	.	.	28	0.010%	.	6	0.054	.	0.016	6	0.060	0.055

CRM MANGANESE NODULE

analysis in mass %

Number	SiO ₂	Co	Cu	T.Fe	T.Mn	Ni	Units
NM 2300	16.07	0.14	0.49	14.94	21.20	0.71	100 g

CRM MARIPOLITE

analysis listed in mass %

40 g units

Number	Al ₂ O ₃	CO ₂	CaO	FeO	Fe ₂ O ₃	K ₂ O	MnO	Na ₂ O	Nb	Rb	SiO ₂	TiO ₂
VS 2122-81	21.96	0.72	1.20	0.88	2.05	4.30	0.085	10.79	0.034	0.030	56.29	0.045

continued

analysis listed in mg/kg

Number	Ba	Be	Cr	Cu	Ga	Ge	La	Li	Mo	Ni	Pb	Sn	Sr	V	Y	Yb	Zn	Zr
VS 2122-81	170	86	9.8	21	80	1.4	130	4.3	5.2	6.5	25	15	120	13	64	5	69	70

CRM MERCURY ORE

analysis listed in mass %

100 g units

Number	Hg	Al ₂ O ₃	CaO	FeO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	SiO ₂	TiO ₂	Co	Cr	Cu	Ni	Sr	V	LOI
USZ 43-2006	0.0689	0.53	17.39	0.49	4.66	0.03	9.93	0.29	0.07	41.01	0.018	0.0047	0.21	0.0007	0.10	0.0382	0.0038	25.28



MICROSAMPLES

The USGS Microanalytical Reference Materials (MRMs) are designed for use in the quantitative analysis of geologic samples using direct solid sampling techniques such as Laser Ablation ICP-MS. Recommended and informational total element concentrations were obtained through international round robin analysis using both bulk and microanalytical data.

Samples are distributed in polished epoxy mounts and ready for immediate use. These MRMs are supplied as individual samples or as sets contained within a plastic holder. Accessories are also available which integrate the USGS MRM holder with standard sample chamber mounts for CETAC® and New Wave® laser ablation systems.

MOUNTED MICROANALYTICAL REFERENCE MATERIALS

Number	Material Type	Form	Comments	Mount Color
US MM BCR-2Ga	Basalt Glass	Epoxy Mount	Melted BCR-2	Colorless
US MM BHVO-2G	Basalt Glass	Epoxy Mount	Melted BHVO-2	Magenta
US MM BIR-1G	Basalt Glass	Epoxy Mount	Melted BIR-1	Yellow
US MM NKT-1G	Nephelinite Glass	Epoxy Mount	Melted NKT-1	Magenta
US MM TB-1G	Basalt Glass	Epoxy Mount	Melted TB-1	Orange
US MM GSC-1G	Synthetic Basalt Glass	Epoxy Mount	Traces ~ 3 ppm	Light Blue
US MM GSD-1G	Synthetic Basalt Glass	Epoxy Mount	Traces ~ 30 ppm	Medium Blue
US MM GSE-1G	Synthetic Basalt Glass	Epoxy Mount	Traces ~ 300 ppm	Dark Blue

PRESSED POWDER MICROANALYTICAL REFERENCE MATERIALS

Number	Material Type	Form	Comments
US MP MASS-1	Synthetic Polymetal Sulfide	Pressed Pellet	Pellet in 19 mm ring
US MP MACS-3	Synthetic Calcium Carbonate	Pressed Pellet	Pellet alone

MICROANALYTICAL ACCESSORIES FOR LASER ABLATION

Number	Description	Comments
US MA SH-V1	Sample Holder	Plastic, will hold 4 RM plugs
US MA CM-V1	Cetac system sample mount	Mount for sample holder to fit Cetac
US MA NWM-V1	New Wave system sample mount	Mount for sample holder to fit New Wave chambers
US MA RM-KIT-1	Contains 1 each of GSD-1G, BCR-2G, BHVO-2G, BIR-1G, and sample holder (SH-V-1)	



US MA SH-V1

US MA CM-V1

US MA NWM-V1

US MA RM-KIT-1

RM MOLOCHITE

analysis listed in mass %

25 g unit, last

Number	Al ₂ O ₃	BaO	CaO	Fe ₂ O ₃	K ₂ O	MgO	Mn ₃ O ₄	Na ₂ O	P ₂ O ₅	SiO ₂	SrO	TiO ₂	ZrO ₂
CERAM AN40	37.9	0.03	0.14	0.85	1.52	0.24	0.01	0.12	0.11	58.8	0.02	0.06	0.016

CRM MOLYBDENUM ORE AND CONCENTRATE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

50 g units

Number	Mo	Al ₂ O ₃	Ba	CaO	F	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	S	SiO ₂	TiO ₂	W	WO ₂	Zn	Zr
NCS DC93010a*	55.4	0.23	.	0.95	C:0.34	1.44	.	0.47	.	Cu:0.06	.	2.56	.	0.12	.	0.014	.
NCS DC73522	50.08	(1.16)	.	1.95	.	1.23	(0.06)	1.96	.	(0.21)	33.72	7.58	.	0.0732	.	0.0068	.
GBW 07238	1.51	3.46	.	31.44	4.08	21.34	0.046	0.86	1.40	0.075	1.64	34.10	0.13	0.36	.	0.000655	.
NCS DC73521	0.54	5.12	.	18.09	.	9.88	0.66	4.35	.	0.90	0.68	56.87	.	0.0557	.	0.0360	.
NCS DC73520	0.15	5.20	.	18.13	.	9.89	0.66	4.37	.	0.91	0.44	57.47	.	0.0518	.	0.0365	.
KZ 7025-93	0.067	.	0.27	.	.	.	.	.	.	.	.	.	.	.	0.04	.	0.013
NCS DC73519 *	0.066	5.20	.	18.37	.	10.05	0.66	4.29	.	0.90	0.38	57.23	.	0.0489	.	0.0357	.

continued

analysis listed in mg/kg except % which is mass %

Number	Ag	As	Be	Bi	Cd	Co	Ce	Cr	Cu	Dy	Eu	Er	Ga	Gd	Ge	Ho	In	La	Li	Lu	Mn
NCS DC93010a*			.	52			.			.	.	.	.	.		.	.	.	.	.	0.033
NCS DC73522	(2.1)	(2.2)	.	86	0.20	10.2	.	30	266	.	.	.	.	.	(0.67)	.	.	.	.	.	0.15
GBW 07238	0.09	1.6	.	2.2	0.12		20.8	(24)	93.6	1.8	0.59	1.0	25.1	1.9	19.0	0.36	2.9	7.1	(3.2)	0.16	
NCS DC73521	0.13	4.7	.	8.2	0.52	13.2	.	23	48	.	.	.	.	.	6.2	.	.	.	.	.	0.91
NCS DC73520	0.10	4.8	.	7.4	0.52	12.9	.	23	46	.	.	.	.	.	6.0	.	.	.	.	.	0.91
KZ 7025-93	0.8	.	19	51	.		.		0.077%	.	.	.	.	.	.	.	.	.	.	.	
NCS DC73519 *	(0.11)	5.2	.	6.9	0.50	13.3	.	23	46	.	.	.	.	.	6.2	.	.	.	.	.	0.92

Number	Nb	Nd	Ni	P	Pb	Pr	Re	Sb	Sc	Se	Sm	Sn	Tb	Te	Th	Tl	Tm	Y	Yb	
NCS DC93010a*	.	.	.	55	440	.	26	.	.	.	.	.	*	also contains Total Oil and Water: (0.34%)						
NCS DC73522	.	.	(20)	(130)	316	.	23	13.2	.	.	.	(11.9)	.	.	.	.	.	.	.	
GBW 07238	11.3	17.8	.	18.7	3.0	(0.35)	1.2	3.4	2.1	2.1	86.7	0.34	0.40	2.3	0.06	0.14	11.4	1.0	.	
NCS DC73521	.	.	52	(1210)	13.7	.	0.31	0.73	.	.	.	4.7	.	.	.	.	.	.	.	
NCS DC73520	.	.	52	(1231)	10.5	.	0.12	0.60	.	.	.	4.5	.	.	.	.	.	.	.	
KZ 7025-93	13	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
NCS DC73519 *	.	.	54	(1160)	9.1	.	(0.07)	0.58	.	.	.	4.7	*	also contains Total Oil and Water: 0.85%						

CRM MOLYBDENUM ORE AND CONCENTRATE

% = mass % * = mg/kg

Insol = Insoluble Residue

Number	Mo%	Ag*	As*	Bi*	Cu%	Fe%	Insol%	Na%	P%	Pb%	Re%	S%	Sb*	SiO ₂ %	W*	Zn%	Units/g
SRM 423	58.61	(29)	.	(60)	0.0640	1.708	7.69	(0.2)	.	0.0433	(0.004)	(0.063)	(24)	.	.	(0.017)	50
CGL 202	51.5	.	(278)	.	(1.34)	(1.44)	.	.	(0.014)	(0.0160)	(0.05)	(35.66)	.	(4.50)	.	.	100
GM0-04	0.7949	1.93	4.52	95	0.0240	.	.	.	.	0.0046	.	.	8.9	.	.	0.0128	10 or 250
GM0-03	0.5329	1.47	3.50	72	0.0191	.	.	.	.	0.0037	.	.	6.8	.	.	0.0122	10 or 250
GM0-12	0.4797	1.04	3.5	50.0	0.01425	.	.	.	.	0.00346	.	0.39	4.41	.	1.2	0.0104	10 or 250
GM0-11	0.2937	0.89	3.3	40.2	0.01155	.	.	.	.	0.00319	.	0.26	3.40	.	0.8	0.0101	10 or 250
GM0-10	0.0953	0.55	2.6	15.3	0.00698	.	.	.	.	0.00262	.	0.13	1.36	.	0.6	0.0096	10 or 250
GM0-07	0.00447	6.10	74.00	0.3	0.0014	.	.	.	.	0.0011	.	.	0.1	.	last	0.0011	10 or 250
GM0-05	0.00277	0.88	12.71	11	0.0639	.	.	.	.	0.0013	.	.	0.5	.	.	0.0087	10 or 250

RM MOLYBDENUM CONCENTRATE

analysis listed in mass %

100 g units

Number	Mo	Al ₂ O ₃	Tot.C	CaO	Cr ₂ O ₃	CuO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	S	SiO ₂	SrO	TiO ₂	V ₂ O ₅	ZnO
DH 4707	61.08	0.702	0.040	1.61	0.004	0.504	1.80	0.182	0.117	0.008	0.045	0.069	4.38	.	0.040	.	0.064
DH 4706	57.55	1.178	0.016	0.644	.	0.106	3.83	0.407	0.207	0.036	1.009	0.050	7.52	.	0.092	.	.

CRM MULTI-METAL ORE

analysis listed in mass %

50 g units

Number	Al ₂ O ₃	As	CaO	Cu	Fe	K ₂ O	MgO	Mn	Na ₂ O	Pb	S	SiO ₂	Zn
NCS DC73510	(2.5)	0.15	6.5	0.096	19.6	0.78	0.59	0.066	(0.03)	5.13	29.0	14.1	13.9

continued analysis listed in mg/kg except

Number	Ag	Bi	Cd	Ga	Ge	Hg	In	Mo	Sb	Tl	W
NCS DC73510	148	(5)	400	62	25	114	(7.5)	(1.9)	260	(0.3)	(1.9)

CRM MULTI-METAL ORE

analysis in mass % except g/T for grams per ton and * for mg/kg

Number	Ag	Al ₂ O ₃	As	Bi	Cd	Cu	Fe	Hg*	Pb	S	Sb	SiO ₂	Sn	Zn	LOI	Units
NCS DC29114	0.03679	(1.42)	0.138	.	0.066	0.071	(11.48T)	(270)	22.96	(15.92)	0.044	(20.20)	.	16.22	(12.14)	50 g
NCS DC29112	0.0362	(7.83)	0.082	.	.	0.10	(11.61T)	(0.233)	2.93	(8.17)	0.011	(59.40)	.	0.51	(10.49)	50 g
NCS DC29113	0.0103	(3.97)	0.040	.	.	0.075	(8.65T)	(0.074)	2.19	(6.02)	0.00383	(31.99)	.	1.54	(13.40)	50 g
NCS DC35008	19.8 g/T		0.084	.	.	0.037	22.62		2.07		0.013		0.125	0.51		60 g
NCS DC29115	0.000530	(3.25)	0.0095	.	0.119	0.021	(3.93T)	(84.8)	1.25	(16.30)	0.00205	(41.23)	.	30.19	(9.52)	50 g
NCS DC29111	0.00129	(9.96)	0.0090	.	0.019	0.020	(2.62T)	(12.6)	0.48	(3.13)	0.00090	(69.88)	.	4.94	(3.70)	50 g
NCS DC35009	.	6.70	2.17	0.120	.	1.09	.	.	0.095	.	.	4.99	0.930	1.49	.	60 g

T = Total Fe as Fe₂O₃**CRM MULTI-METAL ORE WITH EXTENSIVE ANALYSIS**

analysis listed in mass %

CAN PTC-1b shows classical and instrumental values for Cu and Ni #

SiO₂*

RTS-5: 100 g

others: 200 g

Number	Al	As	Ca	Cu	Fe	Mg	Mo	Ni	Pb	S	Si	Sn	W	Zn	LOI
CAN RTS-5	6.25	0.1286	3.86	0.0647	11.9	3.31	(0.0001338)	0.1104	0.00663	1.924	19.20	.	.	0.0105	(9.90)
CAN MP-2a	5.99	(0.558)	3.22	0.0459	5.00	0.0923	0.1586	(0.00098)	0.277	0.716	31.2	0.0537	0.338	0.566	(4)
CAN SU-1b	4.30	0.000249	2.21	1.185	25.54	1.790	(0.0004)	1.953	0.0058	14.14	15.23	.	.	0.0235	(8)
CAN PTC-1b	(0.7518)	0.0222	(0.571)	7.919, 7.97#	36.78	0.441	(0.0011)	11.256, 11.29#	0.0795	29.95	2.468	(0.0120)	.	0.2083	(13.44)
CAN MP-1b		2.30	2.47	3.069	8.19	0.024	0.0285		2.091	13.79	16.79*	1.61	(0.1100)	16.67	
CAN RTS-5	6.25	0.1286	3.86	0.0647	11.9	3.31	(0.0001338)	0.1104	0.00663	1.924	19.20	.	.	0.0105	(9.90)

continued analysis listed in mg/kg except % for mass %

Number	Ag	Au	Ba	Be	Bi	C%	Cd	Ce	Co	Cr	Cs	Dy	Er	Eu	Ga	Gd	Ge
CAN RTS-5	1.50	0.408	252	(0.7)	(2.05)	(1.617)	.	(17.0)	76.9	261	(1.0)	(2)	(2)	(0.6)	(14)	.	.
CAN MP-2a	4.82	(0.06)	12.3	1.25	989	(0.04)	14.5	357	5.50	150	5.78	32.5	(22.8)	(0.1)	(26.2)	24.8	(8)
CAN SU-1b	6.39	(0.2)	(350)	(0.4)	(2.73)	(0.04)	(3)	(35)	672	(320)	(0.3)	(1.4)	(0.7)	(0.7)	(10)	(2)	.
CAN PTC-1b	53.1	1.99	(61.5)	.	.	.	(38)	.	3253	(40)	.	.	.	.	.	.	.
CAN MP-1b	470	.	.	.	954	(0.028)	527	.	(4)	.	.	.	.	(1)	.	.	.

Number	H ₂ O%	Hf	Ho	In	Ir	K%	La	Li	Lu	Mn%	Na%	Nb	Nd	P%	Pd	Pr	Pt
CAN RTS-5	(1.4)	.	.	.	.	0.850	(9.7)	(16.9)	(0.3)	0.1092	1.285	(4)	(8)	0.0369	(0.14)	.	(0.2)
CAN MP-2a	.	9.40	(7.04)	(12.09)	.	(1.226)	157	81	4.36	0.1018	(0.03)	97	117.9	(0.0090)	.	38.5	.
CAN SU-1b	.	.	(0.3)	.	.	(0.6)	(17)	.	(0.09)	0.0703	(1.6)	(3)	(15)	(0.06)	0.791	.	0.491
CAN PTC-1b	0.81	.	.	.	(0.2)	(0.15)	.	.	.	(0.0193)	(0.17)	.	.	.	9.46	.	6.47
CAN MP-1b	.	(6)	.	(565)	.	(0.2)	.	(4)	(0.0480)	.	.	.	.	(0.02)	.	.	.

Number	Rb	Rh	Sb	Sc	Se	Sm	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	Y	Yb	Zr
CAN RTS-5	(30.5)	.	50.4	(1.23%)	.	(8.03)	130.6	.	.	.	(2.25)	3132	.	.	.	(61.2)	(10.1)	.	.
CAN MP-2a	229	.	4	(7.84)	4.87	.	26.7	12.3	11.6	4.82	(5.75)	61.3	268	(3.16)	4.10	37	(229)	28.8	134
CAN SU-1b	(13)	.	.	(0.2)	(9)	(20.7)	(3)	(280)	.	.	.	.	(0.3)	.	(0.2)	(82.5)	(7)	(0.6)	.
CAN PTC-1b	.	(0.5)	(6)	(120)	.	(30)	.	.	.	(30)	.	.	(696)	.	.	(20)	(3)	.	.
CAN MP-1b	.	.	(54.0)	(3)	.	.	.	(5)	.	(50)	.	.	.	.	(20)	.	.	.	(150)

CRM MULTI-METAL ORE

10 or 250 g units

Number	Pb%	Cu%	Ni%	S%	Zn%	Ag*	As*	Co*
GBM320-15	8.9551	0.0123	0.0038	10.99	17.9664	59.6	.	.
GBM320-13	4.9252	0.0504	0.0071	10.77	19.0189	47.7	.	.
GBM309-10	4.9144	0.0503	0.0069	.	18.7866	47.3	65	78
GBM315-13	3.4311	1.2570	0.0209	5.34	3.7358	41.5	.	.
GBM306-12	2.6812	1.4804	0.9483	.	2.0500	.	.	.
GBM398-1	2.6770	1.4874	0.9511	.	2.0418	5.2	8	24
GBM995-8	2.5919	0.0264	0.0060	.	12.4308	52.0	53	.
GBM914-13	2.3186	0.8583	0.0052	3.32	2.5491	29.2	.	.
GBM309-3	2.1335	0.0331	0.0058	.	10.8553	30.7	68	67
GBM915-13	2.0016	0.8462	0.0013	28.99	11.5823	182.9	.	.
GBM314-1	2.0010	0.8432	0.0008	.	11.6161	182.3	5246	83
GBM310-3	1.0687	1.4443	0.0073	.	3.0935	19.4	1276	62
GBM313-2	0.8219	0.8049	0.0042	.	1.0891	205.5	157	43
GBM314-11	0.4745	3.4499	0.0063	4.90	1.5367	51.6	.	.
GBM914-10	0.4671	0.1864	0.0011	.	0.9697	9.4	11	20
GBM315-9	0.4600	3.4274	0.0071	.	1.5131	50.2	278	135
GBM319-5	0.4022	0.4574	0.0443	.	0.3833	7.4	805	539
GBM311-12	0.3600	1.0188	0.0668	4.4	1.4425	20.6	.	.
GBM311-3	0.3522	1.0089	0.0642	.	1.4291	20.4	359	122
GBM912-1	0.2638	0.3332	0.0119	.	0.3414	7.2	10	28
GBM313-9	0.2560	0.3313	0.0120	.	0.3394	6.6	112	32
GBM915-7	0.2487	0.5934	0.0073	.	0.5037	12.8	329	47
GBM915-3	0.0031	0.0132	0.0051	.	0.0171	1.1	33	40
GBM908-10	0.2067	0.3630	0.2257	.	0.1046	3.0	55	24
GBM396-1	0.1916	0.2873	0.2140	.	0.6990	8.1	743	.
GBM319-6	0.1887	0.2186	0.0225	.	0.1842	3.5	375	271
GBM311-2	0.1903	0.2272	0.0391	.	0.1944	10.4	741	57
GBM396-1	0.1916	0.2873	0.2140	.	0.6990	8.1	743	.
GBM319-6	0.1887	0.2186	0.0225	.	0.1842	3.5	375	271
GBM399-6	0.1446	2.1373	0.0020	.	0.2488	15.5	175	4
GBM916-2	0.1335	0.1675	0.0223	.	0.8792	29.0	72	10
GBM316-1	0.1248	0.2966	0.0052	.	0.2572	6.3	163	40
GBM319-3	0.1116	0.4055	0.0025	.	0.4067	7.4	887	211
GBM999-8	0.1061	0.1852	0.3014	.	0.0537	1.8	185	25
GBM913-8	0.0923	0.4379	0.0006	.	0.0127	6.7	1409	12
GBM397-7	0.0908	0.0687	0.0243	.	0.0801	3.1	770	.
GBM914-8	0.0849	0.6241	0.0414	.	0.3786	8.5	316	90
GBM309-4	0.0795	2.2334	0.0056	.	0.0914	42.3	83	89
GBM396-6	0.0774	1.3903	0.0083	.	0.0260	5.4	541	.
GBM301-4	0.0762	0.1656	0.1430	.	0.0448	1.9	308	123
GBM313-1	0.0738	0.3079	0.0015	.	0.1170	4.9	26	10
GBM913-7	0.0633	0.7990	0.0010	.	0.0431	7.0	2052	17
GBM316-2	0.0626	0.1523	0.0041	.	0.1331	3.2	82	35
GBM910-7	0.0592	0.5335	0.0117	.	0.1249	7.1	80	86
GBM314-2	0.0532	0.0419	0.0029	.	0.0975	3.3	4912	7
GBM320-14	0.0529	17.2671	0.0486	29.11	2.2911	10.6	.	.
GBM320-1	0.0527	0.0872	0.0023	.	0.0486	1.9	657	7
GBM919-9	0.0520	0.1526	0.0069	.	0.5198	6.0	98	44
GBM319-4	0.0505	0.1756	0.0017	.	0.1791	3.3	390	95
GBM904-3	0.0489	0.0515	0.0323	.	0.0464	1.8	270	82
GBM913-1	0.0477	0.3964	0.0005	.	0.0787	10.0	705	9
GBM320-10	0.0476	0.1531	0.0563	.	0.1139	6.2	142	45
GBM900-2	0.0464	0.0859	0.0886	.	0.0334	1.3	786	61
GBM908-6	0.0461	0.0441	0.4736	.	0.1354	1.2	14	832
GBM918-4	0.0439	0.3948	0.0128	.	0.0387	1.1	204	19
GBM305-4	0.0416	0.1138	0.0475	.	0.1199	2.6	263	70
GBM913-9	0.0404	0.4542	0.0006	.	0.0158	3.8	611	13
GBM301-9	0.0389	0.2881	0.0102	.	0.7208	11.2	317	48
GBM907-8	0.0388	0.0339	0.4295	.	0.1234	1.0	11	219
GBM318-2	0.0373	0.2149	0.0026	.	0.2103	3.5	573	535
GBM317-2	0.0338	0.7414	0.0011	.	0.2356	7.4	166	388
GBM917-16	0.0320	6.1345	4.7437	7.39	0.0101	66.5	.	.
GBM917-4	0.0305	6.1310	4.7052	.	0.0090	65.7	2.04%	1.16%
GBM998-4	0.0357	0.7514	0.0025	.	0.0038	4.4	244	47
GBM996-4	0.0336	0.0492	0.0036	.	0.0968	3.6	442	.
GBM300-5	0.0322	1.0779	0.0076	.	0.0035	3.6	571	332
GBM311-6	0.0302	0.1037	0.0336	.	0.0571	4.2	1540	40
GBM913-10	0.0300	0.3019	0.0007	.	0.0380	3.0	823	10
GBM913-4	0.0291	0.1556	0.0104	.	0.0282	2.0	255	193
GBM906-6	0.0288	0.0171	0.0013	.	0.0210	392.8	10	8
GBM916-10	0.0282	0.2393	0.0011	.	0.1235	4.5	135	319
GBM312-6	0.0270	0.3705	0.0229	.	0.0795	7.4	32	34
GBM311-8	0.0266	0.1350	0.2504	.	0.0233	1.2	57	140
GBM915-10	0.0261	0.0907	0.0317	.	0.0938	14.4	497	149
GBM903-5	0.0254	0.1424	0.1772	.	0.0689	3.3	932	50
GBM919-7	0.0246	0.1250	0.1954	.	0.0226	3.6	288	85
GBM913-5	0.0243	0.2880	0.0024	.	0.3722	0.3	2492	55
GBM320-9	0.0241	0.3392	0.0265	.	0.0583	6.9	450	55
GBM302-5	0.0239	0.1059	0.0498	.	0.0359	1.8	1873	50
GBM313-3	0.0239	0.0875	0.0256	.	0.1012	4.0	1039	37
GBM316-10	0.0223	0.4554	0.0006	.	0.0178	1.3	179	8
GBM318-1	0.0215	0.1187	0.0031	.	0.1061	3.2	329	243
GBM917-1	0.0209	0.0079	0.0017	.	0.1646	1.0	384	15
GBM913-6	0.0207	0.3321	0.0004	.	0.0029	0.5	1104	6
GBM907-11	0.0191	0.3873	4.5163	7.56	0.1033	4.7	.	.
GBM397-8	0.0189	0.1419	0.1320	.	0.0363	1.5	553	.
GBM914-2	0.0175	0.1824	0.0099	.	0.0626	5.9	9	26
GBM912-11	0.0170	2.8323	0.0042	3.49	0.0937	8.8	.	.
GBM917-15	0.0168	2.5774	2.1808	3.19	0.0065	29.3	.	.
GBM910-5	0.0161	0.7952	0.0036	.	0.0491	2.7	52	90
GBM311-1	0.0152	0.1233	0.0214	.	0.0629	6.0	395	34
GBM916-5	0.0149	0.7006	0.0005	.	0.0268	2.3	22	10
GBM917-5	0.0148	2.5667	2.1664	.	0.0042	29.3	9335	0.51%
GBM310-5	0.0140	0.0335	0.3691	.	0.0483	0.5	12	247
GBM312-7	0.0137	0.6182	0.0346	.	0.1157	6.8	14	34
GBM915-1	0.0135	0.0485	0.0176	.	0.0513	7.2	246	89
GBM305-3	0.0135	0.0451	0.0272	.	0.0372	1.7	656	46
GBM311-7	0.0134	0.0947	0.0126	.	0.0452	2.0	830	28
GBM314-4	0.0126	0.3302	0.0021	.	0.0454	5.5	4	19
GBM914-1	0.0118	0.1152	0.0069	.	0.0427	4.8	6	24
GBM305-9	0.0114	0.0565	0.2551	.	0.0104	0.8	219	47
GBM910-4	0.0110	0.5412	0.0030	.	0.0377	1.8	40	67
GBM313-4	0.0110	0.0342	0.0250	.	0.0337	2.7	385	33
GBM908-1	0.0110	0.0074	0.0053	.	0.0102	1.7	10	34
GBM312-8	0.0107	0.1530	0.0057	.	0.0675	1.1	5	22
GBM311-5	0.0105	0.3801	0.0300	.	0.0367	2.5	1153	36
GBM313-7	0.0103	0.2976	0.0299	.	0.0367	2.4	1131	35
GBM319-2	0.0101	0.0155	0.0109	.	0.0101	0.3	65	88
GBM919-5	0.0100	0.1670	0.2419	.	0.0172	0.6	10	83
GBM914-5	0.0094	1.2970	0.0210	.	0.0592	4.1	43	40
GBM309-1	0.0092	0.1554	0.0023	.	0.5239	6.0	95	22
GBM305-2	0.0091	0.0054	0.0045	.	0.0080	1.2	2	27
GBM915-5	0.0087	0.0307	0.0106	.	0.0333	3.9	128	61
GBM314-12	0.0077	2.9880	0.0127	7.79	0.5516	3.1	.	.
GBM312-5	0.0075	0.8239	0.0114	.	0.0398	5.0	17	34
GBM398-2	0.0074	0.0235	0.0273	.	0.0105	1.0	206	22

Number Pb% Cu% Ni% S% Zn% Ag* As* Co*

CRM MULTI-METAL ORE

10 or 250 g units

Number	Pb%	Cu%	Ni%	S%	Zn%	Ag*	As*	Co*
GBM903-10	0.0074	0.0198	0.0559	.	0.0140	1.2	2779	57
GBM319-10	0.0075	0.0122	0.0006	.	0.0831	1.1	2196	3
GBM918-1	0.0075	0.0094	0.0066	.	0.0166	0.3	18	54
GBM305-6	0.0069	0.0242	0.0062	.	0.0120	1.5	315	31
GBM315-5	0.0067	0.0045	0.0005	.	0.0154	14.8	72	9
GBM308-15	0.0065	1.5595	2.3913	23.40	0.0113	4.4	.	.
GBM918-2	0.0065	0.0081	0.0072	.	0.0101	0.2	22	29
GBM303-6	0.0066	1.3967	0.0106	.	0.0057	5.5	603	151
GBM320-2	0.0056	0.0117	0.0005	.	0.0012	27.1	42	4
GBM919-6	0.0055	0.2756	0.5208	.	0.0218	1.9	591	358
GBM315-1	0.0051	0.0049	1.9801	.	0.0314	0.6	4	4393
GBM320-12	0.0050	2.5716	0.0137	9.29	0.0131	8.3	.	.
GBM915-6	0.0050	0.0186	0.0068	.	0.0225	2.1	63	47
GBM914-7	0.0050	0.0034	0.0005	.	0.0084	8.8	49	9
GBM903-7	0.0049	0.0313	0.0021	.	0.0669	3.0	33	12
GBM997-9	0.0047	0.0485	0.0016	.	0.0016	0.9	5	.
GBM914-3	0.0046	0.1441	0.0010	.	0.0193	1.2	34	34
GBM320-11	0.0045	1.6875	0.0253	20.4	0.0113	5.9	.	.
GBM312-4	0.0045	0.6004	0.0025	.	0.0127	3.5	9	26
GBM914-15	0.0044	0.0060	1.5093	0.06	0.0354	0.6	.	.
GBM316-3	0.0043	0.0019	0.0011	.	0.0048	0.2	5	8
GBM915-8	0.0042	0.5897	0.4259	.	0.0025	6.6	1873	1083
GBM914-4	0.0042	0.0864	0.0006	.	0.0202	0.8	13	15
GBM998-10	0.0041	1.5414	2.3610	.	0.0090	3.5	25	1202
GBM399-7	0.0040	0.0041	0.0033	.	0.0051	0.6	14	24
GBM919-10	0.0039	0.0114	0.0609	.	0.0066	0.6	583	23
GBM302-1	0.0038	0.0120	0.1180	.	0.0230	0.9	748	159
GBM305-10	0.0037	0.0114	0.0604	.	0.0066	0.7	569	22
GBM910-10	0.0037	0.0033	0.0013	.	0.0051	0.5	2	9
GBM904-10	0.0035	0.0162	0.2709	.	0.0039	0.5	35	59
GBM906-9	0.0035	0.0094	0.0071	.	0.0079	4.0	50	20
GBM917-2	0.0035	0.0031	0.0009	.	0.0121	10.3	57	5
GBM398-10	0.0034	0.0206	0.0175	.	0.0134	1.9	131	48
GBM903-3	0.0034	0.0167	0.2758	.	0.0042	0.7	33	60
GBM307-5	0.0034	0.0031	0.0029	.	0.0018	1.0	23	4
GBM308-3	0.0033	0.0928	0.0036	.	0.0109	14.5	41	63
GBM912-16	0.0031	0.3442	3.7560	11.51	0.0107	1.9	.	.
GBM904-5	0.0031	0.1111	0.0039	.	0.0026	0.8	108	155
GBM915-3	0.0031	0.0132	0.0051	.	0.0171	1.1	33	40
GBM912-5	0.0031	0.0487	0.0019	.	0.0088	4.2	4	18
GBM916-1	0.0031	0.0017	0.0012	.	0.0045	0.4	6	9
GBM310-8	0.0029	0.0396	0.0028	.	0.0027	0.5	85	50
GBM313-10	0.0029	0.0268	0.0025	.	0.0086	3.2	3	22
GBM911-5	0.0029	0.0042	0.0020	.	0.0060	0.8	6	15
GBM314-7	0.0029	0.0026	0.0014	.	0.0047	0.4	4	9
GBM399-2	0.0028	0.0205	0.0014	.	0.0309	0.7	4	3
GBM311-9	0.0028	0.0124	0.0306	.	0.0072	0.7	3	34
GBM917-3	0.0028	0.0054	0.0005	.	0.0175	4.8	42	18
GBM912-3	0.0028	0.0026	0.0013	.	0.0041	0.4	2	8
GBM315-3	0.0027	1.205	0.0021	.	0.0077	2.6	4	19
GBM912-6	0.0027	0.0273	0.0021	.	0.0076	3.2	3	18
GBM914-11	0.0027	0.0093	0.7245	0.07	0.0135	0.6	.	.
GBM315-2	0.0026	0.0055	1.6741	.	0.0232	0.3	4	2221
GBM314-5	0.0024	0.0039	0.0024	.	0.0078	3.1	5	22
GBM320-16	0.0022	0.0049	3.8993	0.05	0.0076	4.6	.	.
GBM919-4	0.0022	0.0039	0.0025	.	0.0076	12.4	2	22
GBM918-7	0.0022	0.0018	0.0030	.	0.0019	0.4	4	2
GBM319-9	0.0021	0.0109	0.0045	.	0.0714	0.7	273	18
GBM906-4	0.0021	0.0372	0.0089	.	0.0145	0.8	62	29
GBM314-3	0.0021	0.0287	0.0008	.	0.0249	6.9	400	7
GBM914-6	0.0020	0.4720	0.0041	.	0.0093	6.5	4	25
GBM313-3	0.0020	0.0034	0.0013	.	0.0051	0.6	5	12
GBM910-1	0.0020	0.0032	0.0016	.	0.0061	7.9	5	15
GBM312-10	0.0019	0.0040	0.0022	.	0.0067	10.1	2	19
GBM313-5	0.0019	0.0036	0.0022	.	0.0067	1.6	5	19
GBM918-5	0.0018	1.523	0.4960	.	0.1021	6.9	36	282
GBM397-1	0.0018	0.0061	0.0573	.	0.0032	1.9	449	.
GBM908-2	0.0018	0.0056	0.0026	.	0.0070	7.2	3	21
GBM315-6	0.0018	0.0045	0.0027	.	0.0091	1.3	2	25
GBM313-6	0.0018	0.0037	0.0022	.	0.0066	3.0	6	19
GBM312-1	0.0017	0.0011	0.0008	.	0.0008	0.8	17	2
GBM918-9	0.0016	0.0021	0.0922	.	0.0040	0.5	20	100
GBM907-5	0.0017	0.0078	0.0026	.	0.0092	12.8	5	23
GBM914-16	0.0017	0.0020	1.1763	0.03	0.0141	0.7	.	.
GBM913-2	0.0017	0.0011	0.0004	.	0.0009	0.9	22	2
GBM316-4	0.0017	0.0010	0.0008	.	0.0007	0.5	23	2
GBM315-4	0.0015	0.1179	0.0068	.	0.0089	0.8	10	17
GBM316-8	0.0015	0.3175	0.0832	.	0.0330	18.7	426	57
GBM997-5	0.0015	0.0328	0.6258	.	0.0085	1.3	125	.
GBM396-8	0.0015	0.0246	0.4064	.	0.0109	1.1	110	140
GBM399-3	0.0015	0.0054	0.0037	.	0.0066	1.0	45	21
GBM314-13	0.0014	0.5356	9.5073	0.65	0.0095	4.4	.	.
GBM916-6	0.0014	0.3599	0.1005	.	0.0330	21.1	497	62
GBM318-9	0.0014	0.1076	0.0069	.	0.0087	0.9	22	15
GBM320-3	0.0013	0.2718	0.0829	.	0.0254	11.5	309	55
GBM316-4	0.0013	0.1842	0.0913	.	0.0248	10.9	287	53
GBM918-8	0.0013	0.1662	0.0853	.	0.0241	9.2	277	55
GBM318-10	0.0013	0.0872	0.0058	.	0.0077	0.7	33	15
GBM999-6	0.0013	0.0639	0.0219	.	0.0087	0.9	13	23
GBM302-4	0.0013	0.0160	0.0118	.	0.0085	0.8	738	21
GBM314-8	0.0013	0.0065	0.0033	.	0.0106	3.1	4	32
GBM310-9	0.0013	0.0063	0.0028	.	0.0083	3.1	8	26
GBM315-8	0.0013	0.0062	0.0034	.	0.0106	4.8	3	32
GBM320-8	0.0012	0.6686	0.0020	.	0.0121	2.7	3	31
GBM919-1	0.0012	0.3723	0.0019	.	0.0132	2.3	2	29
GBM313-11	0.0012	0.1168	0.0054	0.23	0.0075	1.7	.	.
GBM317-1	0.0012	0.0626	0.0062	.	0.0077	0.6	100	21
GBM908-3	0.0012	0.0054	0.0025	.	0.0098	4.8	6	26
GBM316-6	0.0011	0.701	0.0003	.	0.0045	0.5	3	8
GBM919-3	0.0011	0.6054	0.0019	.	0.0117	3.6	2	31
GBM916-8	0.0011	0.2692	0.0772	.	0.0095	0.4	30	52
GBM318-6	0.0011	0.2446	0.0819	.	0.0204	6.9	200	53
GBM301-3	0.0011	0.0776	0.7910	.	0.0094	0.9	304	187
GBM908-7	0.0011	0.0212	0.4666	.	0.0117	1.0	53	229
GBM320-7	0.0010	0.4445	0.0021	.	0.0097	2.7	3	73
GBM318-5	0.0010	0.2993	0.0827	.	0.0127	4.7	179	56
GBM320-6	0.0010	0.2702	0.0021	.	0.0043	1.4	3	37
GBM919-2	0.0010	0.1592	0.0015	.	0.0039	0.8	3	41
GBM916-3	0.0010	0.1293	0.0048	.	0.0079	1.0	12	14
GBM318-10	0.0010	0.0992	0.0038	.	0.0077	0.8	14	13
GBM914-9	0.0010	0.0952	0.0058	.	0.0070	0.8	10	15
GBM317-3	0.0010	0.0736	0.0066	.	0.0071	0.7	17	17
GBM316-9	0.0010	0.0710	0.0003	.	0.0040	0.5	3	7
GBM300-9	0.0010	0.0317	0.3765	.	0.0084	0.8	11	182
GBM300-4	0.0010	0.0266	0.8118	.	0.0098	0.7	18	258
GBM908-8	0.0010	0.0128	0.5525	.	0.0114	0.6	69	304

CRM MULTI-METAL ORE

10 or 250 g units

Number	Pb%	Cu%	Ni%	S%	Zn%	Ag*	As*	Co*
GBM900-8	0.0010	0.0046	3.8468	.	0.0053	4.7	8	50
GBM320-4	0.0009	0.3238	0.0743	.	0.0090	0.5	32	49
GBM320-5	0.0009	0.1259	0.0021	.	0.0037	0.6	2	57
GBM901-4	0.0009	0.0946	0.0018	.	0.0069	0.7	6	21
GBM910-15	0.0009	0.0381	0.5621	0.1	0.0062	1.1	.	.
GBM397-9	0.0009	0.0059	0.0042	.	0.0073	0.9	11	.
GBM998-9	0.0009	0.0023	0.0013	.	0.0027	101.9	7	8
GBM307-2	0.0009	0.0089	0.0034	.	0.0094	0.5	8	31
GBM314-6	0.0008	0.4290	0.0072	.	0.0117	0.6	14	205
GBM916-7	0.0008	0.3170	0.0769	.	0.0090	0.3	31	49
GBM316-7	0.0008	0.2742	0.0849	.	0.0077	0.5	44	52
GBM907-9	0.0008	0.0365	0.5442	.	0.0053	0.8	12	305
GBM906-7	0.0008	0.0362	0.5562	.	0.0051	0.9	25	210
GBM305-5	0.0008	0.0194	0.1785	.	0.0056	0.5	67	51
GBM998-5	0.0008	0.0056	0.0025	.	0.0084	0.6	10	28
GBM910-8	0.0008	0.0055	0.0024	.	0.0087	0.7	5	28
GBM915-2	0.0007	0.0065	0.0036	.	0.0119	9.9	8	37
GBM307-4	0.0007	0.0059	0.0025	.	0.0077	3.9	6	25
GBM314-10	0.0006	0.0061	0.0036	.	0.0121	0.7	4	39
GBM313-8	0.0006	0.0058	0.0035	.	0.0114	0.4	2	36
GBM910-9	0.0006	0.0055	0.0023	.	0.0081	0.5	2	27
GBM911-8	0.0006	0.0055	0.0023	.	0.0088	0.7	4	27
GBM310-7	0.0006	0.0019	0.0013	.	0.0032	50.1	4	8
GBM918-6	0.0005	0.0478	0.1437	.	0.0370	1.4	12	71
GBM912-4	0.0005	0.0054	0.0025	.	0.0084	0.4	3	26
GBM318-3	0.0005	0.0054	0.9874	.	0.0327	0.5	3	807
GBM318-7	0.0002	0.0003	0.0002	.	0.0002	0.1	2	1
GBM316-5	0.0004	0.0057	0.0036	.	0.0114	0.4	1	37
Number	Pb%	Cu%	Ni%	S%	Zn%	Ag*	As*	Co*

NICKEL ORE

listed in mass % except * which is mg/kg

GBM: CRM, 10 or 250g

IGS, NCS: CRM, 50g

JSM: RM, 50g

Number	Ni	Cd	Co	Cr	Cu	Fe	Mn	Pb	S	Zn	Ag*	Al ₂ O ₃	CaO	MgO	P	SiO ₂	Ti
GBM909-15	11.5901	.	.	.	1.3120	.	.	0.2120	26.7	2.6608	13.5	.	.	.	.	.	.
NCS DC28072	5.71	0.047	0.042	0.015	0.270	23.73	0.037	0.040	2.51	4.65	.	3.91	6.47	1.14	1.61	21.10	0.15
NCS DC28079	3.98	0.028	0.041	0.364	0.169	20.74	0.147	0.030	1.41	2.85	.	3.55	4.54	8.67	1.08	27.48	0.098
GBM911-14	3.2361	.	.	.	0.2856	.	.	0.0091	10.5	0.0180	1.7	.	.	.	.	.	.
GBM312-16	2.7983	.	.	.	0.3082	.	.	0.0059	9.8	0.0142	1.8	.	.	.	.	.	.
GBM910-13	2.6969	.	.	.	0.2306	.	.	0.0034	8.2	0.0152	1.9	.	.	.	.	.	.
GBM911-15	2.2856	.	.	.	0.5003	.	.	0.0253	8.1	0.0288	2.9	.	.	.	.	.	.
JSM 0800-1	2.27	.	0.053	0.70	.	14.2	.	.	.	.	.	0.98	0.030	26.2	.	35.7	.
NCS DC28078	2.18	(<0.0015)	0.055	0.76	0.0058	14.89	0.254	0.0020	0.034	0.079	.	1.59	0.46	21.28	0.029	39.20	0.027
JSM 0800-2	2.07	.	0.036	0.57	.	11.5	.	.	.	.	.	1.27	0.37	23.3	.	45.4	.
GBM915-11	2.0568	.	.	.	1.4092	.	.	0.0183	6.95	0.3387	4.3	.	.	.	.	.	.
GBM915-12	2.0155	.	.	.	0.9137	.	.	0.0051	6.35	0.0573	2.5	.	.	.	.	.	.
GBM307-13	1.9995	.	.	.	0.1251	.	.	0.0045	6.78	0.0117	.	.	.	.	.	.	.
NCS DC28077	1.97	(<0.0015)	0.060	0.823	0.0016	14.84	0.263	0.0015	0.016	0.021	.	1.03	0.14	25.49	0.0043	36.00	0.017
IGS 21	1.97	.	0.069	.	0.798	23.40	.	.	.	.	.	.	.	.	.	.	.
GBM918-11	1.9404	.	.	.	0.4736	.	.	0.0054	6.87	0.1265	53.6	.	.	.	.	.	.
JSM 0800-3	1.90	.	0.072	0.84	.	15.0	.	.	.	.	.	0.84	0.034	26.1	.	34.9	.
GBM907-12	1.8948	.	.	.	0.0837	.	.	0.0068	2.89	0.0274	.	.	.	.	.	.	.
NCS DC28076	1.86	(<0.0015)	0.065	0.92	0.0017	15.20	0.282	0.0016	0.016	0.021	.	1.04	0.10	25.70	(<0.007)	34.70	0.015
NCS DC28075	1.70	(<0.0015)	0.043	0.80	0.0025	14.92	0.294	0.0013	0.014	0.019	.	2.00	0.385	21.05	0.0043	38.77	0.039
GBM919-14	1.6566	.	.	.	0.0288	.	.	0.0361	2.90	0.1391	1.1	.	.	.	.	.	.
GBM309-6	1.6113	.	0.0909	.	0.0277	.	.	0.0341	.	0.1344	1.2	.	As:0.0018	.	.	.	.
GBM915-14	1.3070	.	.	.	1.7404	.	.	0.0095	2.08	0.0067	18.5	.	.	.	.	.	.
NCS DC28080	1.30	(<0.0025)	0.033	1.38	0.0071	34.55	0.192	0.0019	0.180	0.022	.	6.53	0.070	10.54	0.020	15.48	0.092
GBM318-8	1.2863	.	0.3258	.	1.7336	.	.	0.0097	.	0.0035	18.5	.	As:0.5606	.	.	.	.
GBM316-16	1.2733	.	.	.	0.0050	.	.	0.0012	0.10	0.0243	1.2	.	.	.	.	.	.
GBM316-15	1.2308	.	.	.	0.0056	.	.	0.0022	0.10	0.0257	1.0	.	.	.	.	.	.
NCS DC28073	1.17	(<0.0015)	0.042	0.95	0.0049	18.57	0.327	0.0024	0.024	0.019	.	2.90	0.82	20.75	(<0.007)	37.41	0.024
GBM918-12	1.1398	.	.	.	0.2138	.	.	0.0023	11.44	0.0838	9.6	.	.	.	.	.	.
GBM918-3	1.1270	.	0.0498	.	0.2153	.	.	0.0021	.	0.0816	9.4	.	As:0.0020	.	.	.	.
GBM919-15	1.1621	.	.	.	0.0158	.	.	0.0111	0.81	0.0670	1.6	.	.	.	.	.	.
NCS DC28074	0.892	(<0.0020)	0.014	1.84	0.012	46.99	0.149	0.0023	0.288	0.023	.	10.29	0.033	0.51	0.030	2.52	0.145
GBM305-16	0.6503	.	.	.	0.0381	.	.	0.0026	.	0.0092	.	.	.	.	.	.	.
Number	Ni	Cd	Co	Cr	Cu	Fe	Mn	Pb	S	Zn	Ag*	Al ₂ O ₃	CaO	MgO	P	SiO ₂	Ti

CRM**NICKEL ORE**

analysis in mg/kg except % which is mass %

Number	Ag	Au	Cu%	Ir	Ni%	Os	Pd	Pt	Rh	Ru	Units
VS 1702-86	23.4	0.84	(3)	0.11	5.4	0.06	30.0	8.6	0.98	0.34	100 g

NICKEL SULPHIDE ORE

analysis listed as mass % except ** for ppb, * indicates certified as element instead of oxide, much more detail on certificates, 10 or 60g units

Number	Ni	Co	Fe	S	Al ₂ O ₃	As	Ca	Cr	Cu	K	MgO	Mn	Na	P	SiO ₂	Ti	Au**	Pd**	Pt**
OREAS 78	25.79	23.74		28.61													LOI: (2.36)		
OREAS 77b	11.24	0.1604	29.21	22.29	1.86*	.	3.11	0.0341	0.3163	0.344	2.67*	0.068	0.406	.	9.24*	0.065	.	.	.
OREAS 77a	10.71	0.1675	34.0	26.83	1.48	0.0162	.	0.0840	0.4400	.	7.27	.	.	.	13.3	.	61	566	1088
OREAS 76a	7.78	0.1103	21.76	15.18	2.58*	.	3.115	0.0663	.	0.474	5.80*	0.079	0.510	0.0139	13.74*	0.103	.	.	.
OREAS 76a	7.40	0.1215	24.6	18.0	1.78	0.0117	.	0.1283	0.2974	.	16.5	.	.	.	21.7	.	41	403	701
OREAS 75b	5.38	0.0788	17.17	10.79	2.79*	.	3.03	0.0942	0.1483	0.410	8.75*	0.097	.	0.0187	15.67*	0.139	.	.	.
OREAS 75a	5.25	0.0894	19.1	12.5	1.99	0.0080	.	0.1552	0.2005	.	22.3	.	.	.	27.3	.	34	280	353
OREAS 74b	3.39	0.0502	12.40	6.57	3.55*	.	3.09	0.0981	0.0947	0.691	9.23*	.	0.692	0.0195	19.36*	0.1555	.	.	.
OREAS 74a	3.24	0.0581	13.7	7.48	2.21	0.00496	.	0.1780	0.1240	.	27.9	.	.	.	32.4	.	21	172	223
OREAS 14p	2.99	.	.	.	.	.	.	.	0.997	.	.	.	.	.	.	.	51	150	99
OREAS 73b	1.50	0.0246	8.63	2.90	3.77*	.	3.15	0.1172	0.0430	0.586	11.80*	0.115	0.736	0.024	20.89*	0.191	.	.	.
OREAS 72b	0.709	0.0126	6.80	1.44	4.75*	.	2.83	0.0971	0.0193	1.09	9.61*	0.1004	0.958	0.0267	23.92*	0.213	.	.	.
OREAS 70b	0.223	.	5.51	0.286	3.81*	.	3.07	0.1243	.	0.585	13.54*	0.115	.	0.024	22.42*	0.178	.	.	.

NIOBIUM ORE

analysis listed in mass %

100g units

Number	Nb ₂ O ₅	Al ₂ O ₃	BaO	CO ₂	CaO	CeO ₂	F	Fe	K ₂ O	La ₂ O ₃	MgO	MnO	Na ₂ O	Nd ₂ O ₃	P ₂ O ₅
FQZ 1807	61.95	0.382	0.192	0.056	13.18	0.567	4.12	2.29	0.320	0.150	0.150	0.310	5.42	0.209	0.112
DH X1803	60.62	0.291	0.201	0.097	13.02	0.556	3.65	3.50	0.233	0.153	0.136	0.325	5.28	0.207	0.102
FQZ 1808	56.71	0.614	0.277	0.139	11.67	0.588	4.02	5.41	0.463	0.185	0.177	0.383	4.73	0.214	0.134
DH X1806	0.095	0.945	0.046	36.82	27.77	0.086	.	5.44	0.525	0.040	16.16	1.12	0.061	0.038	1.75

continued

Number	S	SiO ₂	SrO	Ta ₂ O ₅	ThO ₂	TiO ₂	U ₃ O ₈	V ₂ O ₅	Y ₂ O ₃	ZnO	ZrO ₂	-H ₂ O 900 °C
FQZ 1807	0.052	2.28	1.18	0.276	0.734	3.86	0.190	0.056	0.098	0.005	0.868	0.611
DH X1803	0.051	1.91	1.20	0.273	0.770	4.26	0.202	0.073	0.085	0.001	0.847	.
DH X1808	0.056	3.52	1.31	0.265	0.802	3.92	0.153	0.075	0.074	0.003	0.837	0.668
FQZ 1806	0.798	3.38	0.274	(0.001)	0.010	0.089	(0.002)	(0.009)	(0.009)	0.013	0.027	.

NIOBIUM ORE

certified analysis

analysis listed in mass %

informational values

200 g units

Number	Nb	Al	Ca	Fe	K	Mg	Mn	Na	P	Pb	S	Si	Sr	Zn	LOI
CAN OKA-1	0.37	0.9	31.3	2.8	0.3	1.3	1.1	0.2	1.1	1.1	0.6	2.4	1.0	0.05	31.9

NOBLE METAL ORE

analysis listed in mg/kg except % which is mass %

[illegible]

CRM NOBLE METAL ORE - CERTIFIED BY ANALYTICAL METHOD

analysis listed in mg/kg

Ni = Nickel Sulfide, Pb = Lead Extraction

analysis listed in mass %

AR = Aqua Regia, M = M/ICP, X = XRF

Number	Pd(Ni)	Pd(Pb)	Pt(Ni)	Pt(Pb)	Rh(Ni)	Ru(Ni)	Au(Ni)	Au(Pb)	Ir(Ni)	Co(M)	Co(AR)	Cu(M)	Cu(AR)	Cu(X)	Ni(M)	Ni(AR)	Ni(X)
AMIS 0314	11.74	11.35	34.17	32.20	(1.89)	5.13	2.50	2.53	(0.91)	0.0242	0.0212	0.7326	0.7115	0.7183	0.8790	0.8429	0.9073
AMIS 0354	(1.33)	1.34	(2.19)	2.25	(0.25)	(0.39)	(0.68)	0.71	(0.08)	(0.0145)	(0.00911)	0.0582	0.0586	0.0587	(0.1839)	0.1493	(0.1886)
AMIS 0209	0.64	0.63	1.20	1.21	(0.09)	(0.17)	(0.09)	(0.09)	(0.031)	0.0049	0.0030	0.0447	0.0449	(0.0445)	0.0909	0.0747	
AMIS 0443	.	0.97	.	0.78	(0.07)	.	.	(0.14)	.	0.00988	(0.00700)	0.0951	0.0935	0.0879	0.1918	0.1678	(0.1833)
AMIS 0451	.	(0.254)	(0.534)	(0.518)	.	.	.	(0.044)	.	(0.0142)	(0.001312)	0.00755	0.00757	.	0.0903	0.0214	.

analysis listed in mass %

S by combustion, rest by XRF

SP.G = Specific Gravity

4E = sum Pd + Pt + Rh + Au

100 g units

Number	Al ₂ O ₃	CaO	Co	Cr	Cr ₂ O ₃	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	S	SiO ₂	TiO ₂	Sp.G	LOI	4E g/t
AMIS 0314	7.75	5.46	(0.0271)	.	0.96	15.68	0.14	17.04	0.15	0.58	3.49	44.23	0.22	3.11	(4.92)	50.30
AMIS 0354	5.50	4.01	.	.	1.94	18.32	0.09	23.65	0.24	0.37	0.36	44.63	0.59	3.330	.	4.45
AMIS 0209	5.80	3.10	.	.	0.48	4.74	0.14	6.38	(0.07)	0.46	0.20	77.84	0.11	2.84	(0.29)	2.02
AMIS 0443	8.10	7.08	.	.	1.72	11.61	0.26	20.06	0.32	0.62	.	44.67	0.25	3.03	(4.77)	1.96
AMIS 0451	11.61	4.05	.	.	13.42	16.89	0.13	16.69	(0.19)	0.62	.	36.19	0.46	3.46	.	0.83

last

CRM NOBLE METAL ORE

analysis listed in ppb (ng/g)

mass % except * which is mg/kg

GPP: 10g or 1kg
NCS: 500g or 1kgCAN WMS-1A: 200g
other CAN: 400g

Number	Au	Ir	Os	Pd	Pt	Rh	Ru	Hg	Al ₂ O ₃	As*	Cr*	Cu	Fe ₂ O ₃	K ₂ O	MnO	Ni	S
NCS DC29116	(2310)	1.6	1.9	1680	2430	1.9	1.5	(0.70)	(1.47)	(12.24)	(0.17)	3.58	(13.10)	(0.12)	(0.11)	1.78	(7.44)
NCS DC29119	(2120)	1.9	1.6	1330	4440	1.4	0.71	(7.01)	(0.87)	(537.6)	(0.06)	0.62	(1.59)	(0.12)	(0.047)	1.76	(0.19)
GPP-10	1576	.	.	2008	2349	.	.	.	.	.	.	.	.	.	.	.	.
NCS DC29118	(1450)	3.2	3.0	700	900	3.2	3.5	(1.01)	(4.90)	(21.58)	(0.093)	3.25	(24.09)	(0.35)	(0.13)	1.76	(13.41)
NCS DC29118	(1450)	3.2	3.0	700	900	3.2	3.5	(1.01)	(4.90)	(21.58)	(0.093)	3.25	(24.09)	(0.35)	(0.13)	1.76	(13.41)
NCS DC29117	(1430)	4.4	3.7	600	10610	3.6	4.2	(1.39)	(4.50)	(22.6)	(0.16)	3.01	(26.66)	(0.39)	(0.12)	0.053	(13.57)
GPP-06	980	.	.	709	938	.	.	.	.	.	.	.	.	.	.	.	.
GPP-02	929	.	.	523	505	.	.	.	.	.	.	.	.	.	.	.	.
GPP-14	900	.	.	481	503	.	.	.	.	.	.	.	.	.	.	.	.
GPP-05	859	.	.	699	912	.	.	.	.	.	.	.	.	.	.	.	.
GPP-11	722	.	.	567	592	.	.	.	.	.	.	.	.	.	.	.	last
GPP-13	612	.	.	390	307	.	.	.	.	.	.	.	.	.	.	.	.
GPP-09	603	.	.	408	343	.	.	.	.	.	.	.	.	.	.	.	.
CAN WMS-1A	300	(322)	(150)	1450	1910	222	(145)	.	Al:1.350	30.9	(68)	1.396	45.4 Fe	.	.	.	28.17
NCS DC29120	(170)	23.6	8.2	400	380	18.0	7.8	(58.1)	(2.83)	(66.0)	(0.30)	0.11	(9.30)	(0.12)	(0.14)	0.22	(0.17)
GPP-04	80	.	.	98	88	.	.	.	.	.	.	.	.	.	.	.	.
GPP-12	50	.	.	47	48	.	.	.	.	.	.	.	.	.	.	.	.
GPP-08	49	.	.	45	54	.	.	.	.	.	.	.	.	.	.	.	last
CAN UMT-1	48	8.8	.	106	128	9.5	10.9	.	.	.	.	.	.	.	.	.	.
NCS DC73357	(45)	28	15.6	568	440	22	13	.	.	.	.	.	.	.	.	.	.
GPP-07	25	.	.	23	28	.	.	.	.	.	.	.	.	.	.	.	last
NCS DC73353	10	0.05	0.06	2.3	1.6	0.95	(0.10)	.	.	.	.	.	.	.	.	.	.
CAN TDB-1	6.3	.	.	22.4	5.8	.	.	.	.	.	.	.	.	.	.	.	.
GPP-03	4	.	.	7	8	.	.	.	.	.	.	.	.	.	.	.	.
CAN WGB-1	2.9	(0.33)	.	13.9	6.1	(0.32)	(0.3)	.	.	.	291	.	6.71	0.94	MgO: 9.40	.	.
NCS DC73358	(1.8)	1.2	0.64	15.2	14.7	1.1	0.66	.	.	.	.	.	.	.	.	.	.
NCS DC73354	1.1	4.3	9.6	4.6	6.4	1.3	14.8	.	.	.	.	.	.	.	.	.	.
NCS DC73352	0.9	0.032	0.05	0.26	0.26	0.017	(0.05)	.	.	.	.	.	.	.	.	.	.
NCS DC73356	.	136	353	11.3	20	10	527	.	.	.	.	.	.	.	.	.	.
NCS DC73398	.	28	43	570	1900	7.3	74	.	.	.	.	.	.	.	.	.	.
NCS DC73399	.	2.1	(2)	1670	5700	1.5	(2)	.	.	.	.	.	.	.	.	.	.

Number	Au	Ir	Os	Pd	Pt	Rh	Ru	Hg	Al ₂ O ₃	As*	Cr*	Cu	Fe ₂ O ₃	K ₂ O	MnO	Ni	S
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CRM OBSIDIAN

analysis listed in mass %											35 g units	analysis listed in mg/kg							
Number	Al ₂ O ₃	CaO	FeO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	Cu	Ni	Pb	Rb	Sr	Th	Ti	U
SRM 278	14.15	0.983	1.36	2.04	4.16	(0.23)	0.052	4.84	0.036	73.05	0.245	5.9	3.6	16.4	127.5	63.5	12.4	0.54	4.58

RM OLIVINE WITH EXTENSIVE ANALYSIS

analysis listed in mass %												100 g units				
Number	Al ₂ O ₃	CaO	Co	Cr	TFe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	Ni	P ₂ O ₂	SiO ₂	TiO ₂	LOI		
IAG MUH-1	1.33	1.21	0.0106	(0.2710)	8.59	0.012	38.2	0.117	0.10	0.210	0.007	40.3	0.034	9.38		
continued analysis listed in mg/kg																
Number	As	Ba	Ce	Cs	Cu	Dy	Er	Eu	Ga	Gd	Hf	Ho	La	Li	Lu	Nb
IAG MUH-1	(3.6)	4.9	(0.20)	0.099	19	0.153	0.108	0.026	1.38	(0.110)	0.04	0.035	(0.134)	(1.8)	0.019	(0.062)
Number	Nd	Pb	Pr	Rb	Sb	Sc	Sm	Sr	Tb	Th	Tm	U	V	Y	Yb	Zn
IAG MUH-1	0.177	(0.42)	0.035	0.27	(0.134)	9.0	0.067	(8.5)	0.0212	0.018	0.0170	(0.014)	(41)	(0.97)	0.118	44

RM OLIVINE

typical analysis listed in mass %														100 g units	
Number	MgO	SiO ₂	Fe	Al ₂ O ₃	C tot	CO ₂	CaO	Co ₃ O ₄	Cr ₂ O ₃	K ₂ O	Mn ₃ O ₄	NiO	P ₂ O ₅	TiO ₂	-H ₂ O at 900°C
DH 4912	49.18	41.6	5.07	0.432	0.054	0.046	0.081	0.016	0.383	0.014	0.103	0.354	.	0.002	1.25
DH 4911	47.37	42.63	5.52	0.95	.	.	0.491	0.019	0.425	0.024	0.118	0.340	<0.01	0.013	.

CRM OOZE

Number	Type	SiO ₂	Al ₂ O ₃	Ba	CO ₂	CaO	Ce	Cr	FeO	T.Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂	LOI	
VS 5370-90	Calcareous Siliceous	11.90	3.60	0.010	32.20	39.23	.	0.0034	0.17	2.44	0.51	3.44	0.218	1.86	0.23	0.30	36.6	
VS 5371-90		59.60	8.96	0.15	2.70	6.40	0.033	0.0080	1.2	5.05	1.39	3.16	0.37	4.52	0.12	0.59	9.6	
continued		analysis listed in mass %																
Number	As	B	Org.C	Cu	Ni	S	Sn	Sr	V	Zn	Zr							
VS 5370-90	.	.	.	0.0030	0.0038	0.19	0.021	0.12	0.0057	0.010	0.008							
VS 5371-90	0.0020	0.007	0.34	0.014	0.010	0.17	0.00032	0.034	0.0085	0.0090	0.010							
continued		analysis listed in mg/kg																
Number	Au	Be	Co	Cs	Ga	La	Li	Mo	Nb	Nd	Pb	Rb	Sc	Sm	Th	U	Y	Yb
VS 5370-90	.	1.0	12	.	5	7	13	4	.	.	11	11	6	3	.	9	.	.
VS 5371-90	0.004	1.6	30	3.0	11	15	18	2.8	10	13	24	46	17	2.5	5	1.5	16	2.2

CRM PHOSPHATE ROCK

* CaO+SrO	** AFPC Method	(s) = soluble	analysis listed in mass %							GPO: 10 g units		SRM: 90 g units		others: 100 g units			
Number	P ₂ O ₅	CaO	Al ₂ O ₃	CO ₂	F	Fe ₂ O ₃	TFe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	S	SO ₃	SiO ₂	SrO	TiO ₂	LOI
SARM 32	39.96	54.44	(0.05)	1.61	2.49	0.14	.	.	0.50	(0.026)	.	.	.	(0.4)	0.52	.	.
GBW 07210	36.89	51.32*	0.58	2.15	3.54	.	1.04	0.17	0.43	0.024	0.33	.	.	3.26	0.077	0.037	.
IPT 188	35.7	52.6	0.35	.	1.33	0.21	.	0.23	1.65(s)	.	0.14(s)	.	.	1.15	0.48(s)	.	.
SRM 1206	33.34**	40.02**	1.30	3.27**	3.02**	1.08	.	0.147	0.32**	0.027	0.52	(0.37)	.	5.5**	(0.1)	0.103	.
BCR 032	32.98	51.76	0.55	5.10	4.04	0.231	.	.	0.403	.	.	.	1.84	2.09	.	.	.
SRM 694	30.2	43.6	1.8	.	3.2	0.79	.	0.51	0.33	0.0116	0.86	.	.	11.2	.	(0.11)	.
GPO-01	28.66	40.08	6.92	.	.	3.412	.	0.10	0.83	0.093	0.307	.	1.318	4.381	.	0.37	12.45
USZ 14-94	26.38	38.85	0.85	5.84	.	.	0.63	0.092	2.26	.	.	.	.	20.57	.	.	6.43
GPO-15	25.22	45.12	0.74	.	.	0.803	.	0.25	2.90	0.010	1.039	.	2.426	7.77	.	0.05	12.32
GBW 07211	20.86	40.71*	2.58	18.46	2.05	.	1.08	0.28	8.19	0.015	0.059	0.79	.	3.61	0.16	0.14	.
GPO-16	17.76	42.08	0.80	.	.	0.693	.	0.22	6.38	0.011	0.704	.	1.692	6.97	.	0.05	21.69
GPO-18	15.09	19.53	7.80	.	.	1.323	.	1.10	0.68	0.067	0.125	.	0.169	50.02	.	0.32	3.09
USZ HF	13.81	33.80	.	.	.	.	0.37	0.077	8.30	.	0.12	.	.	28.04	.	.	.
GPO-17	13.55	39.14	1.83	.	.	1.287	.	0.61	5.82	0.014	0.563	.	1.369	11.62	.	0.09	23.47
GPO-11	9.72	13.46	9.39	.	.	5.002	.	3.02	0.71	0.040	1.224	.	0.461	50.934	.	0.20	5.22
GBW 07212	6.06	19.42*	4.06	16.41	0.51	.	3.08	2.63	7.12	0.026	0.14	.	.	38.80	0.055	0.48	.
GPO-13	4.94	6.84	10.02	.	.	5.391	.	3.75	0.68	0.030	1.454	.	0.239	62.622	.	0.16	3.43

continued

analysis listed in mass %

analysis listed in mg/kg

Number	BaO	CdO	U	U ₃ O ₈	V ₂ O ₃	V ₂ O ₅	As	B	Cd	Cl	Co	Cr	Cu	Hg	I	Mn	Ni	Ti	V	Zn
SARM 32	.	.	.	.	.	.	.	.	.	(640)	.	.	.	.	.	.	.	.	.	.
GBW 07210	.	.	.	.	.	.	.	.	.	.	.	.	.	.	52	.	.	.	.	.
IPT 188	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
SRM 1206	.	.	.	0.0135	0.016	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
BCR 032	.	.	.	.	.	.	9.5	22.6	20.8	.	0.59	257	33.7	0.0551	.	18.8	34.6	171	153	253
SRM 694	.	0.015	0.01414	.	.	0.31	.	.	.	.	.	.	.	.	.	.	.	.	.	.
GPO-01	0.05	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.
USZ 14-94	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.
GPO-15	0.015	.	(0.00568)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.
GBW 07211	.	.	.	.	.	.	.	.	.	.	.	.	.	59	.	.	.	.	.	.
GPO-16	0.017	.	(0.00465)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.
GPO-18	0.060	.	(0.00168)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.
USZ HF	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.
GPO-17	0.017	.	(0.00324)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.
GPO-11	0.02	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.
GBW 07212	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
GPO-13	0.01	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last of stock	.	.

CRM PLAGIOGNEISS WITH EXTENSIVE ANALYSIS

analysis listed in mass %

100 g units

Number	Al ₂ O ₃	Ba	CO ₂	CaO	Cr	F	FeO	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	Zr	LOI
VS 8871-2007	15.90	0.091	(0.13)	2.85	0.0182	0.0573	4.14	6.06	(1.1)	3.56	2.59	0.069	2.25	0.080	64.92	0.70	0.0234	0.76

analysis listed in mg/kg

Number	Ag	As	B	Be	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Ge	Hf	Ho	La	Li	Lu	Mo	
VS 8871-2007	(0.09)	(2.0)	(100)	0.97	(0.10)	104	19.7	182	0.32	31	3.3	2.1	1.8	18.5	4.7	(1.1)	6.2	0.69	53	21	0.31	1.7	
Number	Nb	Nd	Ni	Pb	Pr	Rb	S	Sb	Sc	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn
VS 8871-2007	10.0	43.8	60	14.2	11.5	55	(74)	(0.05)	14.3	6.9	(0.6)	364	0.40	0.6	11.3	0.31	0.33	0.8	98	(0.3)	17.8	2.02	81

CRM PROPHILITE

analysis listed in mass %

50 g units

Number	Al ₂ O ₃	CaO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SO ₃	SiO ₂	TiO ₂	LOI
JCRM R802	32.3	0.04	0.23	.	.	0.07	<0.01	.	0.09	0.05	.	60.7	0.19	6.0
NCS DC60127	23.58	0.17	.	1.94	4.15	0.38	0.087	0.0037	0.34	0.20	0.61	66.84	0.70	5.48
NCS DC60128	22.20	0.066	.	0.22	5.57	0.028	0.041	0.0040	0.043	0.11	0.17	70.34	0.18	6.34

CRM

QUARTZ

analysis listed in mass %

T = Total

SRM: 5 g

US: 25 g

Number	SiO ₂	Al ₂ O ₃	CaO	FeO	Fe ₂ O ₃	Fe ₂ O ₃ T	K ₂ O	MgO	Mn	Na ₂ O	P ₂ O ₅	TiO ₂	Respirable Crystalline Phase
US QLO-1A SRM 1878b	65.6	16.2	3.17	2.97	1.02	4.35	3.60	1.00	.	4.20	0.25	0.62	96.56 +/- 0.40%

continued analysis, for SUS only, listed in mg/kg

Number	Ag	As	B	Ba	Br	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	F	Ge	La	Li	Lu
US QLO-1A	0.064	(3.5)	36	1370	(2.1)	54	220	7.2	3.2	1.0	29	3.8	2.3	1.43	200	(1.3)	27	25	0.37

Number	Mo	Nb	Nd	Pb	Rb	S	Sm	Sn	Sr	Ta	Tb	Th	Tm	U	V	W	Y	Yb	Zn	Zr
US QLO-1A	2.6	10	(26)	20	74	(30)	4.9	2.3	340	0.02	0.71	4.5	0.37	1.9	54	0.50	24	2.3	61	105

CRM RARE EARTH ORE WITH EXTENSIVE ANALYSIS

% = mass percent, * = mg/kg

AMIS: 100 g or 1 kg

GRE: 10 g

USZ: 100 g units

Number	As*	Ba	Be*	Ce%	Co*	Cr*	Cs*	Cu*	Dy*	Er*	Eu*	Ga*	Gd*	Hf*	Ho*
GRE-06		3442*	.	15.41					615	111	1773		3197		70.67
AMIS 0185	(31.01)	(6%)	.	4.075	(6.06)	(48)	(0.2)	(15.35)	(27.1)	(4.24)	(0.009)	(183)	(244)	(1.35)	(3.2)
USZ 25-2006	156	917*	.	2.90	32.46			128	206	79.50	211		553		36.60
USZ 42-2006	224	307*	.	2.76	7.89	(34)	(55)	27.37	57.63	(23.88)	87.22	.	(295)	.	7.86
GRE-02	.	.	.	1.6797	.	.	.	.	28.56	7.96	139.9	.	262.2	.	2.87
GRE-01	.	.	.	1.2960	.	.	.	.	20.86	5.16	85.1	.	163.5	.	2.13
USZ 44-2007	43.7	95*	.	0.10	(13.31)	200	1.05	13	165	(112)	8.3	64	117	400	37
GRE-05	.	.	100.89	0.012105	.	.	.	.	195.6	149.16	3.29	99.91	74	310.7	44.7

continued AMIS 0185 lists La by XRF and M/ICP, some informational values rounded, contains 22 other informational values

Number	La%	Li*	Lu*	Mo*	Nb*	Nd%	Ni*	P%	Pb%	Pr%	Rb*	Sc*	Sm%	Sn%	Sr%
GRE-06	9.14	.	6.81	.	.	7.12	.	(8.14)	.	1.92	114	(0.83)	.	.	.
AMIS 0185	3.003, 2.976	(18.50)	(0.56)	(22.33)	(73)	0.9238	(12.57)	.	(0.0145)	0.3471	(4.70)	(15.4)	0.0556	(1.13)	(5.3344)
USZ 25-2006	1.93	.	7.64	(23.86)	.	0.88	70.80	.	0.11	28	43	.	0.09	.	2.24
USZ 42-2006	2.11	21.78	.	34.40	31	0.65	13.18	.	0.16	0.23	67.12	(15.17)	0.0539	.	0.49
GRE-02	0.9786	.	0.42	.	383.6	0.7048	.	0.19955	.	0.1883	.	76.7	0.07692	.	.
GRE-01	0.8246	.	0.36	.	1669.8	0.4278	.	0.03059	.	0.12732	.	49.84	0.04222	.	.
USZ 44-2007	0.0434	37	.	(12.6)	(1700)	0.0434	(10.4)	.	0.0149	0.0122	641	.	0.0120	0.0126	0.0158
GRE-05	0.002738	(241)	19.32	.	2832	0.006839	.	.	.	0.001779	.	.	0.004614	0.0308	.

Number	Ta*	Tb*	Th*	Ti%	Tm*	U*	V*	W*	Y*	Yb*	Zn%	Zr%
GRE-06	.	229	1540	TL*(0.53)	10.27	30.22	.	.	1424	46.32	0.1450	(0.0168)
AMIS 0185	(0.16)	(15.3)	(237)	.	.	(46)	(54)	(1)	(62)	(2.75)	(0.0622)	(0.0057)
USZ 25-2006	.	54.60	217	.	.	138.6	.	.	959	54.52	0.06	.
USZ 42-2006	.	(45)	946	.	.	(52)	115	(19)	167	17.85	0.0469	(0.01)
GRE-02	5.58	14.62	.	0.2628	0.527	.	.	.	55.97	2.96	.	0.01363
GRE-01	14.1	9.98	.	1.921	0.397	.	.	.	49.81	2.42	.	0.06594
USZ 44-2007	123	25	202	.	57	88	1102	123	1076.3	145.28	0.0534	1.58
GRE-05	181.9	24.55	314.51	.	23.39	42.8	.	9.04	.	.	.	0.7133

continued analysis for AMIS, GRE-06 and USZ listed in mass % RExOy = Total Rare Earths

Number	RE _x O _y	Al ₂ O ₃	CO ₂	CaF ₂	CaO	F%	FeO	Fe ₂ O ₃	H ₂ O-	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SO ₃	SiO ₂	TiO ₂	LOI	Density
AMIS 0185	.	2.22	.	.	11.48	(Fe:3.59)	.	5.29	.	.	(0.10)	4.69	(1.09)	(0.17)	1.74	S:1.93	21.53	(0.081)	20.69	3.28
USZ 25-2006	7.56	2.47	1.04	(32.90)	25.51	(1.89)	0.14	13.45	(0.67)	.	0.91	0.50	0.14	0.92	19.26	4.58	14.86	0.15	6.78	.
USZ 42-2006	8.27	2.72	29.00	.	32.68	(1.61)	(0.08)	5.71	(0.19)	(2.03)	1.55	2.78	1.67	0.25	0.22	(0.14)	11.86	0.20	30.56	.
USZ 44-2007	.	10.93	.	(2.20)	2.03	(0.98)	(0.36)	3.38	(0.18)	(0.68)	3.70	(0.05)	0.06	3.46	(0.03)	.	71.38	0.31	(1.64)	.
Number	Al	Ca	Fe	K	Mg	Mn	S	Si	TiO ₂											
GRE-06	1.22	.	1.88	.	.	14.42	.	(0.08)	0.34	0.7396	.	.	0.35	0.8388	0.59	.	.	.	.	.

CRM RARE EARTH ORE

analysis listed in mass %

Number	RE _x O _y	Al ₂ O ₃	CaO	F-	FeO	Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI
NCS DC86318	4.30	(14.26)	0.29	0.017	0.20	2.24	3.60	5.52	(0.11)	0.052	0.66	(0.020)	66.90	0.17	5.43
NCS DC86317	1.83	16.59	(0.11)	0.15	0.18	0.71	4.63	4.03	0.13	0.10	0.13	(0.0073)	70.92	(0.018)	5.42
NCS DC86312	0.784	19.00	0.029	0.014	(0.072)	3.46	6.64	2.11	0.231	0.069	0.064	(0.029)	66.72	0.530	6.80
NCS DC86311	0.486	14.65	(0.031)	0.034	(0.039)	1.13	3.61	4.92	0.080	0.016	0.155	(0.0025)	74.34	(0.023)	3.70
NCS DC86310	0.085	14.70	(0.026)	0.034	0.054	1.15	3.61	4.98	0.077	0.017	0.158	(0.0027)	74.55	0.022	3.77
NCS DC86309	0.092	19.04	(0.033)	0.016	(0.071)	3.49	6.64	2.13	0.229	0.070	0.062	0.029	67.28	0.537	6.73

Number	CeO ₂	Cs ₂ O	Dy ₂ O ₃	Er ₂ O ₃	Eu ₂ O ₃	Gd ₂ O ₃	Ho ₂ O ₃	La ₂ O ₃	Li ₂ O	Lu ₂ O ₃
NCS DC86318	0.053	0.00126	0.37	0.20	0.00219	0.25	(0.064)	0.23	0.0121	0.030
NCS DC86317	0.021	0.0148	0.12	0.068	0.000956	0.091	(0.023)	0.25	0.0396	0.00645
NCS DC86312	0.023	0.00055	0.021	0.011	0.00750	0.026	0.00409	0.277	0.00398	0.00136
NCS DC86311	0.00348	0.00178	0.036	0.022	0.00018	(0.027)	0.00750	0.011	0.015	0.00304
NCS DC86310	0.00217	0.00177	0.00563	0.00364	0.000036	0.00324	0.00120	0.00200	0.015	0.00055
NCS DC86309	0.00915	0.00056	0.00273	(0.0016)	0.00081	0.00317	0.00057	0.031	0.00403	0.00020

Number	Nd ₂ O ₃	Pr ₆ O ₁₁	Rb ₂ O	Sc ₂ O ₃	Sm ₂ O ₃	Tb ₄ O ₇	Th	Tm ₂ O ₃	Y ₂ O ₃	Yb ₂ O ₃	Units
NCS DC86318	0.40	0.089	0.0404	0.00072	0.20	0.055	0.00670	0.031	2.16	0.21	70 g
NCS DC86317	0.24	0.066	0.12	0.00101	0.066	0.019	0.00210	0.00829	0.80	0.051	70 g
NCS DC86312	0.186	0.054	0.011	0.00118	0.033	0.00407	0.00236	0.00151	0.124	0.0100	70 g
NCS DC86311	0.022	(0.0045)	0.067	0.00089	0.015	0.00577	0.00390	0.00316	0.303	0.022	70 g
NCS DC86310	0.00276	0.00063	0.069	0.00095	0.00157	0.00082	0.00405	0.00057	0.057	0.00366	70 g
NCS DC86309	0.017	0.00492	0.012	0.00113	0.00338	0.00054	0.00245	0.00024	(0.018)	0.00141	70 g

CRM	RARE EARTH ORE										analysis listed in mass % and mg/kg * RE _x O _y = total rare earth oxides								
Number	RE _x O _y %	CeO ₂ %	Dy*	Er*	Eu ₂ O ₃ %	Gd ₂ O ₃ %	Ho*	La ₂ O ₃ %	Lu*	Nd ₂ O ₃ %	Pr ₂ O ₃ %	Sc*	Sm ₂ O ₃ %	Tb*	ThO ₂ %	Tm*	Y ₂ O ₃ %	Yb*	
UNS TRV	13.82	6.64	(207.1)	(41.2)	0.042	(0.089)	(41.5)	(4.23)	(6.7)	(1.94)	(0.71)	(22.5)	0.22	(82.3)	(0.29)	(14.8)	(0.048)	(21.6)	
continued	analysis listed in mass %										T = total								
Number	Al ₂ O ₃	BaO	CO ₂	CaO	F	FeO	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	T.S	SO ₃	SiO ₂	SrO	TiO ₂	
UNS TRV	(0.52)	17.02	(16.5)	13.54	1.57	3.61	8.34	(1.24)	0.15	2.27	1.15	(0.07)	(0.12)	6.05	(13.58)	(2.47)	5.92	0.079	
continued	analysis listed in mg/kg																		
Number	Ag	As	Be	Bi	Cd	Co	Cr	Cu	Li	Mo	Ni	Pb	V	Zn	Units				
UNS TRV	(6.7)	(335)	(4.2)	(72.9)	(7.5)	(26.5)	(40.6)	(41.5)	(28.8)	71.4	(44.0)	(332.9)	(74.2)	767.9	100 g				

CRM	RARE EARTH ORE														analysis listed in mass %														100 g units		
Number	Al	Ba	C	Ca	Fe	H ₂ O	K	Mg	Mn	Na	P	S	Si	Zr	LOI																
CAN REE-1	3.59	0.01001	(0.0786)	2.30	(4.16)	(0.6)	3.09	(0.895)	(0.155)	1.445	0.0261	(0.03)	31.36	1.91	(2)																
CAN REE-2	0.761	5.02	(9.06)	13.68	12.14	(0.4)	(0.0172)	6.26	1.316	(0.120)	0.461	1.745	1.377	(0.00322)	31.38																
CAN REE-3	4.372	0.00691	(0.08)	1.644	8.28	(0.1)	3.76	0.0594	(0.313)	(2.328)	0.0201	(0.04)	29.66	1.8660	0.346																
continued analysis listed in mg/kg																															
Number	Ag	As	Be	Bi	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd																
CAN REE-1	.	124	(590)	(0.652)	.	3960	1.58	277	1.07	79.7	847	701	23.5	(64)	433																
CAN REE-2	(1)	.	(3.31)	(2.00)	(1.11)	9610	7.71	(32.7)	(0.09)	(5.55)	69.2	14.0	96.6	(60)	(219)																
CAN REE-3	(2)	.	82.3	(1.171)	(4.2)	4540	(0.92)	82	1.118	16.3	330.3	187.2	20.85	(80)	346																
Number	Ge	Hf	Ho	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb																
CAN REE-1	(3)	479	208	(0.2)	1661	(205)	(92.4)	(36.6)	4050	1456	24.7	1137	435	1047	(3.16)																
CAN REE-2	(7)	(0.95)	7.87	(1.403)	5130	9.61	(0.92)	(154)	(1060)	3660	(13.1)	(40.8)	1075	1.22	(0.89)																
CAN REE-3	.	448	65.0	(0.4)	2121	(60)	21.53	59.7	1073	2083	10.83	534	550	887	(0.2)																
Number	Sc	Sm	Sn	Sr	Ta	Tb	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn															
CAN REE-1	(8)	381	498	129	(231)	106.2	719	(3840)	(1.85)	106	137	(9.9)	(10)	5480	678	(1870)															
CAN REE-2	57.5	410	24.1	2300	1.17	20.3	737	1969	(0.240)	1.383	3.73	(79)	9.9	176	(7.2)	(420)															
CAN REE-3	(3)	398	121.1	133.7	60.7	55.2	135.5	3202	(2.341)	25.8	(29.9)	(4)	(1)	1.725	159.4	1499															

analysis listed in mass %

Number	SiO ₂	Al	Al ₂ O ₃	CO2	CaO	Fe ₂ O ₃	FeO	T. Fe ₂ O ₃	H ₂ O	K	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	Si	TiO ₂	
JR-2	75.69	6.73	12.72	.	0.50	0.27	0.44	0.77	+1.19	-0.22	3.69	4.45	0.04	0.112	3.99	0.012	35.38	0.07
JR-1	75.45	6.79	12.83	.	0.67	0.35	0.49	0.89	+1.16	-0.20	3.66	4.41	0.12	0.099	4.02	0.021	35.27	0.11
CS-RGM-2 *	73.24	7.31	12.40	.	0.59	0.24	0.40	0.66	1.20	-0.20	3.61	4.44	0.12	0.112	4.02	0.012	34.3	0.07
GBW 07113	72.78	.	12.96	0.52	0.59	1.14	1.86	.	1.18	.	5.43	0.16	0.14	2.57	0.045	.	0.30	.
JR-3	72.76	.	11.90	.	0.093	2.61	1.86	4.72	.	.	4.29	0.050	0.083	4.69	0.017	.	0.21	.

continued analysis listed in mg/kg except % which is mass % and * which is ppb

Number	Ag	As	Au *	B	Ba	Be	Bi	C	Ca%	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er
JR-2	.	19.2	0.13	145	39.5	3.75	0.62	.	0.36	0.023	38.8	.	0.46	3.10	25.0	1.36	6.63	4.36
JR-1	.	16.3	0.25	117	50.3	3.34	0.56	70.8	0.48	0.026	47.2	920	0.83	2.83	20.8	2.68	5.69	3.61
GBW-2 *	.	16.9	0.22	117	50.3	3.34	0.56	(2.5%)	0.48	0.026	47.2	(536)	0.83	2.83	20.8	2.68	5.69	3.61
GBW 07113	0.08	0.66	.	3.5	506	4.09	0.60	(0.15%)	.	0.14	163	.	2.40	7.3	3.34	10.9	8.19	4.31
JR-3	.	.	.	.	65.8	7.6	.	.	.	327	.	.	0.98	3.5	1.0	2.9	.	.

Number	Eu	F%	Fe%	Ga	Gd	Ge	Hf	Hg*	Ho	In	La	Li	Lu	Mg%	Mn%	Mo	Na%	Nb	Nd
JR-2	0.14	0.1109	0.54	17.9	5.83	.	5.14	.	1.39	.	16.3	79.2	0.88	0.02	0.087	3.35	2.96	18.7	20.4
JR-1	0.30	0.0991	0.62	16.1	5.06	1.88	4.51	.	1.11	.	19.7	61.4	0.71	0.07	0.077	3.25	2.98	15.2	23.3
RG-2 *	(0.7)		1.30	(6.6)	(2.7)		(1.7)		(0.9)		(5.9)	(2.9)		0.17	(0.0273)	(3.07)	3.07	(2.9)	(2.9)
GBW 07113	1.18	0.13	.	20.5	9.47	1.17	10.8	5	1.64	0.09	82.7	12.7	0.67	.	.	2.46	.	34.3	64.5
JR-3	0.53	.	.	36.6	.	.	40.3	.	.	.	179.	.	2.8	.	.	0.49	.	510.	107.

Number	Ni	P%	Pb	Pr	Rb	S	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Th	Ti%	Tl
JR-2	.	0.005	21.5	4.75	303	.	1.51	5.59	.	5.63	3.51	8.11	2.29	1.10	31.4	0.04	1.85
JR-1	.	0.009	19.3	5.58	257	13.3	1.19	5.07	.	6.03	2.86	29.1	1.86	1.01	26.7	0.066	1.56
US-RGM-2 *	(4)	(0.02)	20	4.7	247	(0.0)	1.47	(0.0)	(0.0)	10.7	(4)	10.7	(4)	(0.0)	0.15	(0.9)	0.83
GBW 97113	64.5	.	33.3	18.4	213	0.009%	0.38	5.15	0.04	11.7	3.35	40.0	2.41	1.51	27.1	.	.
JR-3	.	.	32.8	33.1	453	.	0.50	0.50	.	21.3	17.4	13.4	36.8	4.29	112	.	.

Number	Tm	U	V	W	Y	Yb	Zn	Zr	Units
JR-2	0.74	10.9	3.00	.	51.1	5.33	27.8	96.3	20 g
JR-1	0.67	8.88	7.0	1.59	45.1	4.55	30.6	99.9	20 g
JR-2 *		4.9	(2)		24	3.3	22	50	50 g
GBW 07113	0.73	4.83	3.8	1.10	42.5	4.51	86.3	403	50 g
JR-3	.	21.1	4.2		166	20.3	209	1494	100 g

= class, where 1 = CRM and 2 = RM analysis listed in mass % except * which is mg/kg

#	Number	TiO ₂	Ti	Al ₂ O ₃	CaO	Cr ₂ O ₃	Fe	Fe ₂ O ₃	MgO	Nb	Nb ₂ O ₅	P ₂ O ₅	SiO ₂	V ₂ O ₅	ZrO ₂
1	SRM 670	96.16	.	.	.	0.23	.	0.86	.	.	.	.	0.51	0.66	0.84
1	SARM 166	93.9	.	0.45	0.11	0.122	0.60	.	0.022	.	0.31	0.024	1.90	0.46	1.08
2	DH 5805	93.35	.	0.500	0.035	0.117	.	3.53	0.032	.	0.532	0.147	0.297	0.243	0.198
1	IGS 32	.	57.19	.	.	.	.	.	.	(0.27)	.	.	.	.	.

[illegible]

CRM SANDSTONE

analysis listed in mass % and * mg/kg

Number	S%	Cu%	Ag*	Re*	Units
KZ 8077-94	0.33	0.11	10.2	0.14	100 g
KZ 8076-94	.	0.036	0.64	0.023	100 g

SANDSTONE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

Number	SiO ₂	Al ₂ O ₃	C(org)	C(tot)	CO ₂	CaO	F	FeO	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂	LOI				
GBW 07106	90.36	3.52	(0.05)	(0.10)	(0.19)	0.30	0.0183	0.61	3.22	1.01	0.65	0.082	.	0.061	.	.	1.10				
UL PRI-1	68.60	10.84	.	.	(2.62)	2.49	(0.0383)	(2.07)	3.32	.	3.79	3.24	0.04	1.71	0.18	0.71	4.99				
IAG OU-8	54.120	6.548	.	.	.	16.711	.	.	1.304	.	2.967	1.879	0.138	0.677	.	0.244	15.301				
continued analysis listed in mg/kg except * which is ng/g continued analysis listed in mg/kg except * which is ng/g																					
Number	Ag	As	Au*	B	Ba	Be	Bi	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Ge	Hf
GBW 07106	0.062	9.1	(1.8)	34	143	0.97	0.18	0.060	48	(44)	6.4	20	1.8	19	4.1	2.0	1.02	5.3	4.5	1.16	6.6
UL PRI-1	.	(4.7)	.	(52)	531	1.4	(0.1)	.	82	.	7.4	78	(2.2)	(3.5)	4.3	(2.7)	1.29	(13)	5.3	(<5)	10.7
IAG OU-8	.	.	.	.	528	1.42	(0.043)	.	41.8	.	.	(21.5)	3.23	8.36	2.25	1.59	0.67	6.28	2.32	(1.10)	4.72
Number	Hg	Ho	I	In	La	Li	Lu	Mn	Mo	Nb	Nd	Ni	P	Pb	Pr	Rb	S	Sb			
GBW 07106	0.008	0.75	(0.2)	(0.026)	21	11.1	0.30	155	0.76	5.9	21	16.6	970	7.6	5.4	29	860	0.60			
UL PRI-1	.	(1)	.	(<1)	38	.	0.41	.	(0.7)	13	36	21	.	(13)	(9.5)	90	(357)	(0.3)			
IAG OU-8	.	0.51	.	.	13.8	10.3	0.26	.	.	(4.46)	12.4	.	.	9.64	3.12	64.6	.	0.22			
Number	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	Class	Units
GBW 07106	4.2	0.08	4.7	1.1	58	0.38	0.79	0.038	7.0	1580	0.36	0.32	2.1	33	1.2	21.5	1.9	20	214	CRM	70 g
UL PRI-1	9.7	.	6.6	(2)	88	1	0.85	.	11.3	.	(0.2)	(0.39)	2.5	65	(2.2)	25	2.8	47	386	CRM	50 g
IAG OU-8	(3.63)	.	2.42	.	264.4	0.32	0.36	.	9.5	.	1.01	0.24	0.74	29.8	.	16.0	1.66	.	182.7	RM	~35 g

CRM SCHIST

analysis listed in mass %

UL: 50 g units

UNS, VS: 100 g units

US: 25 g units

Number	SiO ₂	Al ₂ O ₃	BaO	CO ₂	CaO	FeO	Fe ₂ O ₃	Fe ₂ O ₃ T	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SrO	TiO ₂	LOI	
US SDC-1	65.0	15.0	.	.	1.40	3.93	2.62	6.32	.	3.20	1.69	.	2.05	0.16	.	1.01	.	
VS 3191-85	63.40	16.71	.	.	0.09	4.65	.	7.6	.	3.56	2.52	0.13	0.08	0.030	.	1.01	4.54	
UNS MI	62.19	14.54	0.10	2.13	1.96	(6)	.	6.41	(12)	2.15	3.28	0.25	3.33	(10)	0.016	0.71	(16)	
UL SB01	55.16	18.24	.	.	1.76	(5.61)	.	7.15	.	3.55	(1.97)	0.18	0.66	0.17	.	0.94	9.67	
continued analysis listed in mg/kg																		
Number	Ag	As	B	Ba	Be	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	F		
US SDC-1	.	0.22	(13)	630	3	.	93	(32)	18	64	4	30	(6.7)	(4.1)	(1.7)	600		
VS 3191-85	.	.	100	950	3.5	.	90	.	27	70	(7)	46	.	.	.	.		
UNS MI	(0.006)	(0.007)	(0.005)	.	(0.006)	0.0100	.	.	0.0120	0.1073	.	0.0438	.	.	.	.		
UL SB01	.	(32)	.	549	(3.2)	.	101	.	22	116	(6.8)	33	(5.1)	(3.4)	1.64	.		
Number	Ga	Gd	Ge	Hf	Hg	Ho	La	Li	Lu	Mn	Mo	Nb	Nd	Ni	Pb	Pr	Rb	S
US SDC-1	21	7	.	0.3	(0.2)	(1.5)	42	34	.	000	.	(21)	40	(30)	25	.	127	.
VS 3191-85	(15)	.	(2)	.	.	.	.	(60)	(0.6)	.	(1.6)	16	.	45	15	.	150	.
UNS MI	(0.010)	.	.	.	.	.	.	.	.	.	.	(0.003)	.	0.0372	0.0945	.	0.0539	3300
UL SB01	(23)	6.2	.	5	.	(1.3)	48	.	0.49	.	.	17	42	60	27	11.1	163	.
Number	Sb	Sc	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	
US SDC-1	0.54	17	0.2	3.0	100	(1.2)	(1.2)	12	(0.7)	(0.65)	3.1	102	(0.00)	.	(4)	103	290	
VS 3191-85	.	22	.	(4)	39	.	.	(12)	.	.	(2)	100	.	48	5	100	230	
UNS MI	.	.	.	.	.	.	.	.	.	.	0.1052	(0.003)	0.0198	(0.003)	3000	0.1518	.	
UL SB01	.	17	7.8	.	150	1.4	1	15.2	.	(0.43)	3.1	153	.	32	3.2	82	183	

RM	SEDIMENT				analysis listed in mass %										~35 g units		
	Number	Al ₂ O ₃	CO ₂	CaO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI	Type			
IAG OU-10	10.97	.	2.34	4.92	1.28	1.77	0.120	2.43	0.090	73.12	0.534	(2.20)	Longmyndian	Greywacke			
IAG UoK	6.2	14.94	16.31	2.1	1.3	2.9	0.0644	1.058	0.13	53.24	0.423	16.03	Loess				
analysis listed in mg/kg																	
Number	As	Ba	Be	Bi	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd		
IAG OU-10	.	311	(1.1)	.	(2.8)	(38.0)	12.0	34.0	1.68	22.3	3.65	2.2	1.00	12.0	3.7		
IAG UoK	6.7	200.97	1.102	0.1	.	53	5.95	105.7	2.72	11.31	4.02	2.382	0.888	7.087	4.465		
Number	Hf	Ho	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc	Sm	Sr	
IAG OU-10	3.3	0.75	18.8	(26.0)	0.34	(0.98)	7.6	18.7	(17.7)	26.9	4.7	35.9	.	11.3	(3.9)	174	
IAG UoK	(9.10)	0.80	25.54	21.90	0.37	(1.40)	8.61	24.32	42.71	11.34	6.24	51.2	0.580	(5.93)	5.01	278.5	
Number	Ta	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr					
IAG OU-10	0.56	0.61	5.0	(0.23)	0.34	1.09	77	.	20.5	2.2	54	123					
IAG UoK	(0.73)	0.687	8.111	0.338	0.339	2.697	(37.56)	(1.45)	23.18	2.420	34.4	.					

LAKE SEDIMENT - SEQUENTIAL EXTRACTION METHOD

BCR 701, CRM 20g	Cd	Cr	Cu	Ni	Pb	Zn
Step 1	7.34	2.26	49.3	15.4	3.18	205
Step 2	3.77	45.7	124	26.6	126	114
Step 3	0.27	143	55.2	15.3	9.3	45.7
Concentration	(0.13)	(62.5)	(38.5)	(41.4)	(11.0)	(95)

LAKE SEDIMENT WITH ACID EXTRACTION

LAKE SEDIMENT WITH ACID EXTRACTION				analysis in mass % except * for mg/kg						CRM, powder 20 g		
Number	Analysis	Al	As	Ba	Ca	Cd*	Co	Cr	Cu	Fe	K	La
NIES 31	whole material	9.17	(0.00139)	(0.0338)	1.25	(0.342)	(0.00181)	0.00433	0.00531	5.38	(0.991)	(0.00204)
NIES 31	acid extract	.	.	.	.	(0.285)	.	(0.00337)	0.00506	.	.	.

Number	Analysis	Mg	Mn	Na	Ni	P	Pb	Sc	Sr	Ti	V	Zn
NIES 31	whole material	(0.836)	0.0978	0.882	0.00253	0.0925	0.00251	(0.00191)	(0.0125)	0.442	0.0154	0.0121
NIES 31	acid extract	.	0.0881	.	0.00222	.	0.00220	.	.	.	0.0133	0.0110

CRM	LAKE SEDIMENT
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99	99
100	100

[illegible]

CRM ESTUARY AND MARINE SEDIMENT

analysis listed in mg/kg except % which is mass %

Number	Hg	CH ₃ Hg	Ag	Al%	As	Ba	Be	Ca%	Cd	Ce	Co	Cr	Cu	Fe%	Ga
ERM-CC580	132 tot	0.075	.	.	.	.	.	.	.	.	.	.	.	.	.
NMIJ-7302a	0.52	.	0.49	.	22.1	.	.	.	1.32	.	12.4	145	57.8	.	.
BCR 277R	0.128	.	.	.	18.3	.	.	.	0.61	.	22.5	188	63	.	.
NMIJ-7303a	0.067	.	0.090	.	0.6	(210)	(<1)	0.519	0.342	(34)	11.1	39.1	23.1	.	.
SRM 1646a	(0.04)	.	(<0.3)	2.297	6.23	(210)	(<1)	0.519	0.148	(34)	(5)	40.9	10.01	2.008	(5)

Number	K%	La	Li	Mg%	Mn	Mo	Na%	Nd	Ni	P%	Pb	Rb	S%	Sb	Sc	Se
ERM-CC580	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NMIJ-7302a	.	.	.	.	.	1.90	.	.	25.0	.	02.7	.	.	1.22	.	0.61
BCR 277R	.	.	.	.	.	.	.	.	130	.	.	.	.	.	.	.
NMIJ-7303a	.	.	.	.	.	0.96	.	.	21.0	.	31.3	.	.	0.69	.	0.24
SRM 1646a	0.864	(17)	(18)	0.388	2345	.	0.741	(15)	22.5	0.027	11.7	(38)	0.352	(0.3)	(5)	0.193

Number	Si%	Sn	Sr	Th	Ti%	Tl	U	V	Zn	Units
ERM-CC580	.	.	.	.	.	.	.	.	.	40 g
NMIJ-7302a	.	10.5	.	.	.	.	.	.	401	60 g
BCR 277R	.	.	.	.	.	.	.	.	178	40 g
NMIJ-7303a	.	4.21	.	.	.	.	.	.	107	60 g
SRM 1646a	40.0	(1)	(68)	(5.8)	0.456	(<0.5)	(2)	44.84	48.9	70 g

CRM MARINE SEDIMENT

analysis listed in mass %

T = Total

Number	Al ₂ O ₃	C(org)	T.C	CO ₃ ²⁻	CaO	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	SiO ₂	TiO ₂	LOI
JMs-1	15.82	.	1.69	.	2.13	2.12	4.54	6.90	6.79	2.24	2.87	0.102	4.07	0.18	1.32T	53.74	0.70	15.44
JMs-2	14.18	.	0.39	.	4.68	<0.04	10.96	10.96	7.13	2.70	3.24	2.26	5.79	1.26	0.29T	41.78	1.40	19.15
SRM 2702	8.41	(3.27)	(3.36)	.	(0.343)	.	.	7.91	.	2.054	(0.990)	0.1757	0.681	0.1552	(1.5T)	.	0.884	.
SRM 2703	8.33	.	.	.	(0.31)	.	.	7.38	.	2.08	(1.0)	0.1734	0.693	(0.16)	.	0.880	.	.
NRC MESS-4	7.91	.	(1.79)	.	1.31	.	.	3.79	.	2.38	1.58	0.0298	1.26	0.104	0.158	27.8	0.384	.
NRC PACS-3	6.58	.	.	.	1.89	.	.	4.106	.	1.253	1.402	0.0432	3.52	0.0937	1.17	26.1	0.442	.
NRC HISS-1	0.73	.	.	.	1.14	.	.	0.246	.	0.332	0.075	0.00661	0.373	.	.	(44)	0.076	.
BCR 320R	.	.	.	.	.	.	.	2.5700	.	.	.	0.0910	.	.	.	.	.	.

continued analysis listed in mg/kg except % which is mass % SRM 2703 is intended for small sample techniques <10mg

Number	Ag	As	B	Ba%	Be	Bi	Br	Cd	Ce	Cl%	Co	Cr	Cs	Cu	Dy	Er	Eu
JMs-1	.	18	81	0.0307	1.3	.	.	.	.	.	2.69	18.1	133	5.9	88	.	.
JMs-2	.	35	106	0.1856	1.8	.	.	.	.	.	4.05	226	78	3.0	447	.	.
SRM 2702	(0.622)	45.3	.	0.03974	(3.0)	.	.	0.817	123.4	.	27.76	352	(7.1)	(117.7)	.	.	.
SRM 2703	(0.59)	45.5	.	0.0416	.	.	.	0.811	125.5	.	27.70	.	(7.7)	(120)	.	.	.
NRC MESS-4	0.161	21.7	.	(0.0920)	2.09	(2.7)	(60)	0.28	(72)	1.31%	13.0	94.3	(10)	32.9	.	.	(1.3)
NRC PACS-3	(1.10)	30.3	.	.	1.06	.	.	2.23	.	.	(12.1)	90.6	.	326	.	.	.
NRC HISS-1	0.016	0.801	.	.	0.129	.	.	0.024	.	(0.35)	(0.65)	30.0	.	2.29	.	.	.
BCR 320R	.	21.7	.	.	.	.	.	2.64	.	.	9.7	59	.	46.3	.	.	.

Number	Ga	Gd	Hf	Hg	Ho	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc
JMs-1	.	.	.	.	.	0.101	.	62	.	.	.	.	53	49	.	88	1.4	.
JMs-2	.	.	.	.	.	0.178	.	43	.	.	.	.	311	88	.	65	4.5	.
SRM 2702	(24.3)	.	(12.6)	0.4474	.	.	73.5	(78.2)	.	(10.8)	(63)	(56)	75.4	132.8	.	127.7	5.60	25.9
SRM 2703	(4.9)	(10.8)	(32)	0.474	.	.	75.9	(11)	(63)	(72)	(75)	(72)	130	.	.	130	5.62	25.95
NRC MESS-4	(18) Ge:	(0.16)	(3.0)	(0.08)	.	(0.10)	(35)	65.3	(0.11)	(2.53)	(12)	(42)	42.8	21.5	.	(180)	1.07	(13.4)
NRC PACS-3	.	.	.	2.98	.	.	.	31.9	.	(5.9)	.	.	39.5	188.0	.	.	14.7	.
NRC HISS-1	.	.	.	(0.01)	.	.	.	2.83	.	(0.13)	.	.	2.16	3.13	.	.	(0.13)	.
BCR 320R	.	.	.	0.85	.	.	.	.	.	.	.	.	27.1	85	.	.	.	5.2

* BUTILYN CONTENT DETAILED ON CERTIFICATES

Number	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	Units
JMs-1	.	.	.	154	.	.	0.132	.	.	.	.	127	.	24.3	.	264	132	100 g
JMs-2	.	.	.	454	.	.	1.38	.	.	.	.	183	.	254	.	166	220	100 g
SRM 2702	(4.95)	(10.8)	31.6	119.7	.	.	.	20.51	0.8267	.	(10.4)	357.6	(6.2)	.	.	485.3	.	50 g
SRM 2703	(4.9)	(10.8)	(32)	(118)	.	.	.	20.22	(0.83)	.	8.99	360	(6.4)	.	.	480	.	5 g
NRC MESS-4 *	(1.5)	(5.5)	2.35	132	(1)	.	(0.1)	(12)	0.85	.	3.4	216	(1.3)	(20)	(2)	147	(96)	50 g Re:(0.004)
NRC PACS-3 *	.	.	22.0	267	.	.	.	.	.	.	(2.6)	129	.	.	.	376	.	50 g
NRC HISS-1	0.050	.	(0.11)	96.9	.	.	.	(0.06)	.	.	(0.26)	6.80	.	.	.	4.94	.	100 g
BCR 320R	.	.	.	.	.	.	.	5.3	0.65	.	1.56	46.5	.	.	.	319	.	40 g

RIVER SEDIMENT

analysis listed in mg/kg except % which is mass %

SRM 1944: CRM, 50 g

SRM 8704: RM, 50 g

Number	Ag	Al%	As	Au	Ba	Be	Br	C%	Ca%	Cd	Ce	Cl%	Co	Cr	Cs	Cu	Eu	Hf	Hg	Fe
SRM 1944	6.4	5.33	18.9	(0.1)	.	1.6	86	.	1.0	8.8	(65)	1.4	14	266	3	380	(1.3)	.	3.4	3.53%
SRM 8704	.	6.10	(17)	.	413	.	.	3.351	2.641	2.94	66.5	.	13.57	121.9	5.83	.	1.31	8.4	.	3.97%

continued

Number	K%	Mg%	Mn	Na%	Ni	Pb	Rb	Sb	Sc	Se	Si%	Sn	Th	Ti%	Tl	U	V	Zn
SRM 1944	1.6	(1.0)	505	1.9	76.1	330	75	(5)	10.2	1.4	31	42	(13)	0.4300	0.59	(3.1)	100	656
SRM 8704	2.001	1.200	544	0.553	12.9	150	.	3.07	11.26	.	.	.	9.07	0.457	.	3.09	94.6	408

CRM STREAM SEDIMENT

analysis listed in mass %

BCR: 40 g

Jsd 1-3: 20 g

Jsd-4: 100 g

SARM: 100 g units

Number	SiO ₂	Al ₂ O ₃	Org.C	CO ₂	CaO	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O+	H ₂ O-	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂	LOI
Jsd-3	76.00	9.908	.	.	0.560	1.161	3.057	4.368	2.838	0.964	1.971	1.17	0.149	0.411	0.0817	0.403	.
Jsd-1	66.55	14.65	.	(0.0867)	3.034	1.363	3.526	5.059	(2.301)	0.836	2.183	1.813	0.0924	2.727	0.122	0.643	.
Jsd-2	60.78	12.31	.	(0.501)	3.658	5.955	4.552	11.65	2.554	0.451	1.145	2.731	0.120	2.438	0.105	0.614	.
Jsd-4	51.12	13.22	.	.	5.57	(2.08)	.	8.06	.	.	1.40	4.04	0.107	2.28	0.45	0.64	.
SARM 46	35.90	6.71	.	.	1.32	(18.0)	28.16	.	.	.	0.35	3.16	1.14	0.28	0.11	0.60	.
BCR 667	estuary sediment	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

continued

analysis listed in mg/kg except * which is ng/g and % which is mass %

Number	Ag	As	Au*	B	Ba	Be	Bi	Br	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	F	Fe
Jsd-3	(3.38)	252	(5.66)	.	462	.	.	.	.	42.0	.	12.7	35.3	30.6	426	2.22	1.07	0.686	3200	.
Jsd-1	(0.036)	2.42	(0.64)	.	520	1.40	.	.	.	34.4	.	11.2	21.5	1.89	22.0	2.23	0.906	0.925	306	.
Jsd-2	(1.04)	38.6	(54.6)	.	1199	.	.	.	.	23.4	.	48.4	108	1.07	1117	2.86	1.48	0.81	259	.
Jsd-4	.	.	.	.	(888)	.	.	.	.	.	.	(21)	(1215)	.	(486)	.	.	.	.	.
SARM 46	.	.	.	.	(180)	.	.	.	(110)	56	559	566	.	.	.	.	.	.	.	.
BCR 667	.	.	.	.	.	.	.	(99.7)	(0.67)	56.7	.	(23.0)	(178)	(7.8)	(60)	4.01	2.35	1.00	.	(44.48)

continued

Number	Gd	Ge	Hf	Hg*	Ho	I	In	La	Li	Lu	Mn	Mo	Nb	Nd	Ni	P	Pb	Pr	Rb	S
Jsd-3	.	.	3.21	(254)	.	.	.	19.8	151	0.196	.	.	7.80	15.7	19.6	.	82.1	3.09	285	(399)
Jsd-1	2.71	.	3.55	(15.5)	.	.	.	18.1	22.8	0.186	.	.	11.1	17.6	7.04	.	12.9	4.05	67.4	(68)
Jsd-2	.	.	2.70	(106)	.	.	.	11.3	(19.2)	0.252	.	11.5	4.56	13.2	92.8	.	146	2.40	26.9	1.31%
Jsd-4	.	.	.	.	.	.	.	(16)	(32)	.	.	.	.	.	(114)	.	(240)	.	(57)	.
SARM 46	.	.	.	.	.	.	.	.	.	.	(10)	.	.	.	(125)	.	(1.3)	.	(20)	(0.17%)
BCR 667	4.41	.	.	.	0.80	.	.	27.8	.	0.325	(920)	.	.	25.0	(128)	.	(31.9)	6.1	.	.

continued

Number	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti%	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
Jsd-3	.	10.5	.	3.26	.	58.7	0.687	0.368	.	7.79	.	.	.	1.66	70.4	.	14.9	1.40	136	124
Jsd-1	.	10.9	.	3.48	.	340	0.893	0.431	.	4.44	.	.	.	1.00	76.0	.	14.8	1.18	96.5	132
Jsd-2	.	17.5	.	2.68	.	202	.	0.440	.	2.33	.	.	.	1.10	125	.	17.4	1.67	2056	111
Jsd-4	.	(17)	.	.	.	(220)	.	.	.	.	.	.	.	.	(152)	.	(21)	.	(1485)	(90)
SARM 46	.	.	.	.	.	25	.	.	.	.	.	.	.	.	225	.	(20)	.	0.59%	101
BCR 667	(0.96)	13.7	(1.59)	4.66	.	.	(0.876)	0.682	.	10.0	.	.	0.326	2.26	.	.	.	2.20	(175)	.

CRM STREAM SEDIMENT

analysis listed in mass %

DC360xx: 75 g units

DC730xx: 70 g units

Number	SiO ₂	Al ₂ O ₃	C	C.Org	CO ₂	CaO	FeO	Fe ₂ O ₃ T	H ₂ O+	K ₂ O	MgO	Mn	N	Na ₂ O	P	S	Ti
NCS DC73017	77.42	11.44	(0.25)	0.20	(0.11)	0.85	(0.2)	1.86	(1.0)	3.89	0.18	0.122	0.0218	2.53	0.0234	0.0066	0.151
NCS DC73015	74.33	11.65	(0.46)	(0.08)	(1.34)	2.85	(0.57)	1.79	0.98	2.96	0.71	0.0290	(0.0079)	2.85	0.0335	0.0087	0.146
NCS DC73014	69.40	11.06	(0.48)	0.28	(0.76)	2.96	(1.83)	7.00	2.31	2.35	1.70	0.142	(0.0150)	1.40	0.0568	0.0432	0.32
NCS DC73018	66.02	11.25	1.01	0.34	2.57	3.82	(2.1)	6.31	3.23	2.41	2.34	0.0798	0.0291	0.83	0.0459	0.0110	0.53

continued analysis listed in mg/kg except % which is mass %

Number	Ag	As	B	Ba	Be	Bi	Br	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	F	Ga
NCS DC73017	0.044	4.4	5.5	1054	1.6	0.33	1.0	0.095	32	(30)	12.5	8.4	1.5	3.9	1.3	0.8	0.54	131	12.0
NCS DC73015	0.050	3.6	48	600	3.6	0.48	0.61	0.093	24	33	4.4	21	7.2	7.2	1.7	0.93	0.62	279	12.4
NCS DC73014	0.14	14.3	53	455	2.2	0.51	0.8	0.34	47	53	10.2	61	5.8	132	4.1	2.5	1.20	550	14.6
NCS DC73018	0.092	3.0	14	567	1.9	0.22	1.0	0.12	90	62	19.5	79	4.6	43	6.5	3.7	1.4	664	16.5

Number	Gd	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc
NCS DC73017	1.4	1.21	2.7	0.016	0.26	0.46	(0.014)	11.8	8.1	0.14	0.64	9.5	8.9	4.7	22	2.5	81	0.29	2.1
NCS DC73015	1.7	1.64	2.1	(0.007)	0.33	0.27	0.018	13.9	40	0.16	0.33	5.1	9.8	7.0	31	2.9	118	0.16	4.9
NCS DC73014	4.1	1.87	3.8	0.018	0.83	0.47	0.14	24	20.7	0.42	0.94	9.4	22	18.9	210	5.9	96	1.18	11.4
NCS DC73018	7.0	1.45	7.8	(0.014)	1.27	0.4	0.068	45	43	0.60	0.84	15.3	40	70	19	11.0	121	0.15	16.9

Number	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
NCS DC73017	0.072	1.6	(1.0)	167	0.81	0.22	(0.03)	5.4	0.44	0.13	1.1	28	0.58	7.0	0.83	19	100
NCS DC73015	0.053	1.9	2.3	253	0.72	0.29	(0.02)	4.1	0.83	0.16	1.9	31	0.66	9.7	1.0	27	71
NCS DC73014	0.47	4.5	2.5	171	0.65	0.68	(0.05)	8.3	0.91	0.40	2.2	77	2.0	23	2.6	209	132
NCS DC73018	0.24	7.5	1.9	117	1.04	1.14	(0.05)	15.4	0.77	0.59	3.5	120	1.7	34	3.8	74	275

CRM STREAM SEDIMENT

analysis listed in mass %

T = total Fe reported

Number	Al2O3	Ba	CaO	Cr2O3	Cu	FeO	T.Fe2O3	K2O	MgO	MnO	Na2O	P2O5	Pb	S	SiO2	TiO2	Zn	Zr
SARM 52	9.38	(0.0410)	0.37	0.19	0.0219	(4.0)	19.71	0.25	0.60	0.27	(0.1)	0.09	0.12	(0.02)	57.81	1.30	0.0264	0.0250

continued

analysis listed in mg/kg except % for mass %

Number	Ce	Co	Ga	Nb	Ni	Rb	Sr	Th	V	Y	Units
SARM 52	(210)	81	(15)	11	182	20	25	(11)	346	20	100 g

CRM SEDIMENT

analysis listed in mass % 3480 series: 100 g units 5360 series: 50 g units

Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂	LOI		
VS 3486-86	70.54	11.29	.	0.52	.	(3.5)	5.24	2.21	0.48	0.11	1.67	0.28	0.43	0.62	.		
VS 5361-90	70.5	11.31	.	0.48	1.3	.	5.24	2.23	0.49	0.105	1.65	0.27	0.44	0.61	5.5		
VS 5365-90	60.4	16.49	0.13	0.40	3.3	.	8.80	2.44	1.62	0.132	1.57	0.19	0.03	0.98	6.8		
VS 3484-86	51.95	16.76	.	1.13	(2.2)	(3.5)	6.33	2.51	1.53	0.071	1.37	0.18	0.05	0.85	(17.17)		
VS 5363-90	51.9	16.65	.	1.11	2.2	.	6.28	2.50	1.54	0.070	1.34	0.19	0.04	0.83	17.1		
VS 5362-90	45.4	11.58	.	7.04	1.5	.	4.59	2.96	5.72	0.074	0.85	0.14	0.04	0.63	20.3		
VS 3485-86	25.07	5.03	.	17.76	(0.24)	(0.2)	10.59	1.13	11.70	0.50	0.61	1.82	0.05	0.27	(25.14)		
VS 5364-90	25.0	4.98	21.6	17.83	0.4	.	10.56	1.13	11.7	0.48	0.63	1.82	0.05	0.26	25.1		
continued analysis listed in mg/kg except % which is mass %																	
Number	Ag	As%	Au	B%	Ba%	Be%	Bi%	Cd	Ce	Co	Cr	Cs	Cu%	F%	Ga	Ge	La%
VS 3486-86	.	.	.	0.016	0.039	0.00036	.	9	.	9	0.0076	.	0.025	.	16	.	0.0032
VS 5361-90	35	0.8	0.11	0.015	0.038	0.004	0.009	9	0.004	9.0	0.0075	17	0.025	0.21	16	15	0.0030
VS 5365-90	.	.	.	0.007	0.055	0.0003	.	.	0.006	29	0.013	4	0.0049	.	17	.	0.0032
VS 3484-86	(0.7)	(0.004)	(0.025)	(0.008)	0.058	0.00023	.	(1.9)	.	18	0.0120	.	0.0052	.	17	.	0.0034
VS 5363-90	0.10	0.004	0.016	0.008	0.050	0.00021	.	.	.	17	0.012	6	0.0050	0.09	17	12	0.0029
VS 5362-90	0.06	.	0.03	0.008	0.050	0.00020	.	.	0.005	13	0.0065	4	0.0044	0.12	12	12	0.0030
VS 3485-86	2.6	(0.009)	1.3	(0.0014)	0.035	0.00025	.	(3.5)	.	11	0.0028	.	0.026	.	9	.	0.026
VS 5364-90	2.3	0.006	1.2	0.0013	0.034	0.0003	0.0006	3	0.05	12	0.0029	4	0.024	0.19	8	16	0.022
Number	Li%	Mo	Nb	Ni	Pb%	Rb%	Sb%	Sc	Sn%	Sr%	V%	W%	Y%	Yb	Zn%	Zr%	Others
VS 3486-86	0.015	.	17	25	0.011	0.019	0.017	8	0.04	0.020	0.006	.	0.0016	2.24	0.039	0.021	
VS 5361-90	0.014	2.7	17	24	0.010	0.019	0.015	8	0.040	0.018	0.0058	0.20	0.0018	2.5	0.039	0.020	
VS 5365-90	0.007	2.1	13	72	0.0024	0.0080	.	18	0.00036	0.013	0.018	.	0.0030	4	0.012	0.021	Nd: 25, Sm: 4
VS 3484-86	0.0012	(3)	60	58	0.0016	0.010	.	15	0.00044	0.020	0.014	.	0.0030	3.2	0.009	(0.018)	
VS 5363-90	0.006	1.1	10	55	0.0015	0.0095	.	16	0.00040	0.019	0.014	.	0.0023	3	0.0086	0.018	
VS 5362-90	0.009	1.0	12	31	0.0014	0.0085	.	11	0.00040	0.025	0.0087	.	0.0020	2.6	0.0054	0.015	
VS 3485-86	0.0020	29	(7)	19	(0.020)	0.004	.	9	0.0004	0.018	0.007	.	0.004	3.3	0.014	0.007	
VS 5364-90	0.0020	27	7	18	0.015	0.0045	.	7	0.00033	0.017	0.0075	0.0025	0.0040	2.9	0.014	0.007	Th: 40

CRM SEDIMENT

analysis listed in mass % M2: 85 g others: 80 g units

Number	Al ₂ O ₃	Ba	Tot.C	CaO	T.Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	Pb	S	SiO ₂	TiO ₂	Zn	LOI	
US SDAR-M2	12.47	0.0990	.	0.84	2.63	5.00	(0.49)	0.134	2.58	(0.079)	0.0808	(0.0970)	73.45	0.300	0.0760	(1.6)	
US SDAR-H1	11.83	0.0866	(0.9)	1.46	6.45	4.17	1.53	0.515	(1.1)	0.185	0.3890	.	65.45	0.560	0.3680	.	
US SDAR-L2	11.58	0.0809	(0.1500)	1.06	3.63	4.10	(0.43)	0.099	2.66	0.080	0.0183	.	74.48	0.620	0.0201	(0.94)	
continued analysis listed in mg/kg																	
Number	Ag	As	Be	Bi	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Ge	Hf
US SDAR-M2	(15)	(76)	6.6	1.05	5.1	98.8	12.4	49.6	1.82	236	5.88	3.58	1.44	17.6	6.28	(1.5)	7.29
US SDAR-H1	(76)	(396)	(22)	(5.1)	(25)	89.3	55.6	.	4.78	1160	4.41	2.60	1.25	15.6	5.35	.	(6.9)
US SDAR-L2	(3.2)	16.9	3.38	0.26	(1.2)	140	5.41	26.0	1.14	50.8	9.83	5.98	1.44	17.0	9.73	(1.6)	(16)
Number	Hg	Ho	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pr	Rb	Sb	Sc	Se	Sm	Sn
US SDAR-M2	1.44	1.21	(2.1)	46.6	17.9	0.54	13.3	26.2	39.4	48.8	11.0	149	(107)	4.1	(2.7)	7.18	(2.4)
US SDAR-H1	(7.3)	0.900	(9.5)	44.9	50.5	0.398	64	21.9	36.2	230	9.97	152	(505)	(8.2)	(15)	6.39	(2.9)
US SDAR-L2	(0.33)	2.08	(0.47)	67.9	11.8	0.93	3.66	63.0	60.3	14.3	16.2	120	21.8	5.6	(0.9)	11.5	(3.2)
Number	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zr	Source			
US SDAR-M2	144	1.8	0.97	(2.1)	14.2	(2.8)	0.54	2.53	25.2	(3.5)	32.7	3.63	259	river			
US SDAR-H1	182	1.41	0.78	(9.5)	17.7	11.1	0.394	4.07	73.2	(13)	(25.4)	2.60	(258)	metalliferous			
US SDAR-L2	150	3.81	1.58	(0.44)	22.0	0.99	0.92	3.34	35.0	(1.72)	54.6	6.10	618	blended			

CRM CONTAMINATED RIVER SEDIMENT

certified analysis listed in mg/kg informational analysis listed in mass %

Number	As	Cd	Co	Cr	Cu	Hg	Ni	Pb	V	Zn	Al	C.Inorg	C.Org	Ca	Fe	K	Mg	Si	LOI	Units
BAM CC020	56.6	20.8	32.8	290	560	27.4	158	255	53	2030	5.5	0.2	9.7	2.9	5.1	1.7	0.9	25.3	18.5	52 g

analysis listed in mass %				T = Total											60 g units		
Number	SiO ₂	Al ₂ O ₃	Ba	CaO	F	Fe ₂ O ₃ T	K ₂ O	MgO	Mn	MnO	Na ₂ O	P	P ₂ O ₅	Sr	Ti	TiO ₂	
NCS DC70318	73.37	12.73	0.0437	1.32	0.0456	3.19	3.56	1.07	0.0422	0.055	2.09	0.0420	0.097	0.0165	0.253	0.422	
NCS DC70319	71.23	13.22	0.0470	1.40	0.0459	4.11	3.65	0.70	0.0527	0.069	2.72	0.0484	0.111	0.0256	0.344	0.589	
NCS DC70320	70.36	13.95	0.0483	2.40	0.0505	3.20	3.18	0.93	0.0451	0.059	3.26	0.0564	0.129	0.0404	0.274	0.461	
NCS DC70313	69.70	13.19	0.0508	0.39	0.0622	5.85	2.56	1.58	0.0876	0.113	1.23	0.0613	0.140	0.00593	0.439	0.725	
NCS DC70315	66.50	10.17	0.0384	6.50	0.0539	3.70	2.26	1.14	0.0567	0.074	1.17	0.0501	0.115	0.0132	0.290	0.491	
NCS DC70323	60.95	11.89	0.0475	7.77	0.0555	5.47	2.01	0.78	0.0608	0.078	1.09	0.0542	0.124	0.0327	0.339	0.558	

Number	Ag	As	Au*	B	Be	Bi	Br	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd
NCS DC70318	0.06	18.0	1.4	30.6	3.32	0.49	0.9	0.10	89.6	207	6.7	47.6	20.2	16.2	4.92	2.90	1.07	16.3	5.83
NCS DC70319	0.21	19.6	1.2	66.2	2.31	0.80	1.4	0.19	78.1	244	7.6	22.6	15.0	151	3.91	2.39	0.97	15.8	4.57
NCS DC70320	0.14	12.3	1.1	41.5	2.56	0.70	1.1	0.17	60	152	7.3	24.4	13.0	49.0	2.94	1.64	0.96	16.9	3.74
NCS DC70313	0.09	22.0	1.4	77.0	2.34	0.50	1.0	0.54	74.0	63	17.9	93.8	11.9	27.1	4.73	2.81	1.21	17.8	5.40
NCS DC70315	0.10	22.5	1.6	59.5	2.13	0.46	1.5	0.33	71.3	96.7	9.2	37.5	7.9	16.6	4.40	2.60	1.04	14.1	5.15
NCS DC70323	0.10	54.6	2.9	134	3.88	0.48	1.3	0.08	90.1	71	13.2	59.0	42.5	44.0	5.56	2.98	1.40	17.1	6.58

Number	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pd*	Pr	Pt*	Rb
NCS DC70318	1.33	6.7	0.030	0.97	(0.3)	(0.04)	47.8	36.6	0.44	0.59	14.7	35.8	16.9	35.8	(0.4)	9.78	(0.3)	180
NCS DC70319	1.13	9.5	0.028	0.79	(0.3)	(0.04)	42.6	26.1	0.39	7.0	16.1	30.6	9.5	46.8	(0.3)	8.57	(0.3)	154
NCS DC70320	1.12	5.5	0.012	0.58	(0.3)	(0.04)	32.5	25.6	0.25	2.7	10.5	25.7	11.1	45.4	(0.3)	6.94	(0.3)	136
NCS DC70313	1.34	6.5	0.033	0.95	(0.8)	(0.06)	38.8	53.9	0.41	0.60	15.9	31.1	51.9	61.9	(0.6)	8.33	(0.4)	115
NCS DC70315	1.09	6.0	0.026	0.87	(0.5)	(0.05)	37.0	27.9	0.38	0.83	15.6	29.3	20.1	31.7	(0.4)	8.10	(0.3)	104
NCS DC70323	1.66	6.3	0.066	1.06	(0.6)	(0.07)	42.6	69.8	0.38	0.66	15.5	36.3	37.2	27.7	(0.8)	10.1	(0.6)	110

Number		S	Sb	Sc	Se	Sm	Sn	Ta	Tb	Te	Tm	Th	Tl	U	V	W	Y	Yb	Zn	Zr
NCS	DC70318	(48)	0.84	7.3	0.05	6.62	3.8	1.8	0.91	(0.03)	0.46	25.1	1.0	4.8	52.5	4.1	26.5	2.83	54.1	225
NCS	DC70319	(480)	2.70	6.2	0.18	5.42	2.7	1.8	0.70	0.10	0.38	25.5	1.1	4.8	74.7	9.3	21.6	2.55	62.9	299
NCS	DC70320	(183)	1.27	6.0	0.11	4.49	2.0	1.2	0.54	0.07	0.25	16.7	0.91	3.6	59.4	4.2	15.3	1.63	61.1	184
NCS	DC70313	(123)	1.91	12.0	0.16	5.99	14.9	1.2	0.83	0.05	0.43	12.1	0.64	2.6	101	2.6	24.4	2.73	176	222
NCS	DC70315	(177)	0.82	7.9	0.12	5.61	3.3	1.3	0.78	(0.03)	0.40	12.3	0.62	2.5	57.4	2.4	23.7	2.55	91.1	206
NCS	DC70323	(528)	10.4	10.5	0.39	7.19	4.6	1.2	1.01	0.15	0.44	15.6	0.66	2.1	85.0	6.5	29.5	2.67	77.1	216

analysis listed in mass % T = total GUW: 50 g units all others: 100 g units

Number	Al ₂ O ₃	CO ₂	CaO	Cr ₂ O ₃	FeO	Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	Ni	P ₂ O ₅	SiO ₂	TiO ₂	LOI
NCS DC21001	3.34	.	2.97	.	T.Fe:5.47	.	.	34.25	0.131	.	.	P:0.012	41.37	0.180	8.86	
SARM 47	1.09	.	(0.1)	0.29	(0.4)	4.14	.	(0.02)	42.09	0.06	(0.05)	0.2221	(0.02)	36.30	(0.01)	.
GUW SW	0.66	0.28	0.18	.	2.00	7.40	13.6	(0.0014)	38.5	0.084	0.013	0.22	(0.0017)	39.04	0.016	.
USZ 24-99	(0.475)	(0.84)	(0.681)	.	(0.27)	8.00T	(0.58-)	(0.018)	38.22	0.082	(0.038)	0.2300	(0.023)	38.54	(0.022)	13.33

continued analysis listed in mg/kg except % which is mass %

Number	As	B	Ba	Ce	Co	Cr%	Cs	Cu	F	Ga	Li ₂ O	Nd	Pb	Rb	S	Sc	Sn	Sr	U	V	W	Y	Zn
NCS DC21001	.	.				.	.	(5)	.	(5)	.	.	(60)	.	0.066%	.	.	(3)	.	(16)	.	(5)	45
SARM 47	.	.	(75)	(20)	79	.	.	(5)	.	(5)	.	.	(60)	.	0.066%	.	.	(3)	.	(16)	.	(5)	45
GUW SW	(5)	37	19	.	102	0.24	(5)	7	66	(4)	(3)	(4)	(6)	(5)	(3)	(5)	(5)	.	(5)	20	(5)	.	58
USZ 24-99	.	.	.	.	106	0.2780	.	.	.	.	.	.	.	.	.	.	.	7.3	0.80	33.4	.	.	38

CRM	SHALE WITH EXTENSIVE ANALYSIS										analysis listed in mass %					* Provisional Analysis				
Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	FeO	Fe ₂ O ₃	Fe ₂ O ₃ T	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SO ₃	TiO ₂	ZrO ₂ +HfO ₂	LOI	Units		
GBW 03104	69.63	14.82	0.13	0.22	(0.40)	5.67	.	(3.71)	3.76	0.67	0.024	0.20	0.043	0.028	0.68	.	4.17	60 g		
NCS DC60106a	69.34	15.03	0.12	0.19	0.37	5.65	.	(3.73)	3.49	0.64	0.020	0.16	0.043	0.029	0.68	.	4.54	50 g		
GUW TS	62.8	15.96	(0.03)	0.12	0.70	7.40	.	4.01	4.86	1.77	0.037	0.078	0.28	.	0.69	.	.	50 g		
US-SC0-2 *	61.87	13.13	.	3.94	.	.	4.64	.	2.45	2.85	.	1.02	0.101	0.565	.	.	.	50 g		
VS 8549-04	61.21	16.80	1.41	1.14	(3.17)	.	5.57	.	3.72	2.67	0.057	0.95	0.086	(1.53)	0.91	.	6.00	100 g		
UL AWI 1	60.46	16.44	.	0.69	(5.52)	7.21	.	.	3.06	(2.09)	0.14	0.74	(0.15)	.	0.92	.	7.75	50 g		
GBW 07107	59.23	18.82	(0.10)	0.60	1.39	.	7.60	+5.6	4.16	2.01	.	0.35	.	.	.	.	(5.95)	70 g		
VS 8550-04	57.60	15.53	(3.8)	1.06	(5.3)	.	7.47	.	2.85	3.06	0.110	1.28	0.115	.	0.88	.	(9.5)	100 g		
SARM 41	56.67	13.50	.	1.50	(0.3)	4.23	.	.	1.39	8.10	0.06	0.93	0.05	.	0.55	.	.	100 g		
US-SBC-1 *	47.64	21.0	.	2.95	.	.	9.71	.	3.45	2.60	0.15	0.15	0.37	.	0.855	.	10.2	50 g		
US-ShPYR-1 *	28.7	6.14	.	14.9	Fe:1.75	2.50	.	.	1.53	5.23	.	1.85	0.28	0.22	.	.	.	200 g		
US-SGR-1b	28.24	6.52	.	8.38	(1.41)	(1.46)	3.03	.	1.66	4.44	.	2.99	0.328	.	0.253	.	.	30 g		
US-ShB00-1 *	25.13	4.00	.	32.95	.	.	1.61	.	0.34	0.42	0.012	0.05	0.099	.	0.10	.	31.6	80 g		
JCRM R651	21.74	71.7	.	0.19	.	1.48	.	.	0.65	0.10	.	0.03	0.19	.	3.15	0.18	0.58	100 g		
continued analysis listed in mg/kg except % which is mass % and ** which is ng/g																			# US SBC-1 also contains 0.85% inorganic C	
Number	Ag	As	Au	B	Ba%	Be	Bi	C Org%	T.C%	Cd	Ce	Cl%	Co	Cr	Cs	Cu				
GBW 03104	.	.	.	.	.	.	.	.	.	.	.	0.014	.	.	.	.				
NCS DC60106a	.	.	.	.	.	.	.	.	.	.	.	0.011	.	.	.	.				
GUW TS	(0.8)	27.5	.	74	(0.18)	4	.	1.42	.	.	(168)	.	41	280	13	460				
US-SC0-2 *	.	11.8	.	.	0.0500	1.75	.	.	.	.	54.5	.	10.8	68.3	7.1	23.5				
VS 8549-04	0.10	40	0.10	103	0.072	2.0	.	(1.31)	.	(0.27)	58	.	13	128	4.4	34				
UL AWI 1	.	(15)	.	.	0.0378	(2.7)	.	.	.	.	80	.	20	119	(7)	34				
GBW 07107	0.047	1.4	(1.0**)	154	0.0450	3.0	0.23	(0.16)	(0.19)	0.033	109	0.0041	21	99	14	42				
VS 8550-04	0.47	46	2.5	(118)	0.0376	(2.4)	.	(0.93)	.	(0.4)	53	.	20	116	4.0	39				
SARM 41	.	.	.	.	0.820	.	.	.	.	.	(60)	.	(15)	123	.	53				
US-SBC-1 *	.	25.7	.	.	0.0780	3.2	0.7	1.23#	2.00	0.4	100	.	22.7	109	8.2	31				
US-ShPYR-1 *	.	50	.	.	0.0538	.	.	(13.7)	(20.1)	.	32	.	.	.	.	42				
US-SGR-1b	.	67	.	54	0.0290	.	.	(3.2N)	(28)	(0.9)	36	(0.0032)	12	30	5.2	66	N = inorganic C			
US-ShB00-1 *	.	(15.1)	.	.	0.00730	(1.0)	(0.24)	4.61	11.9	2.0	24.8	.	6.4	29.6	3.1	33.8				
JCRM R651	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				
Number	Dy	Er	Eu	F	Ga	Gd	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mn	Mo			
GBW 03104	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			
NCS DC60106a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			
GUW TS	.	.	(3.2)	1150	21	.	.	(7)	.	.	.	.	(80)	40	(3.6)	.	130			
US-SC0-2 *	3.9	2.3	1.1	.	15.7	4.4	.	.	.	0.78	.	.	28.4	38.2	0.34	.	1.2			
VS 8549-04	5.6	(3.3)	1.2	(0.12%)	21	6.1	(2.1)	4.1	.	(1.1)	.	.	30	56	0.44	.	1.7			
UL AWI 1	5.1	2.9	1.47	.	22	6	.	6.3	.	1.1	.	.	38	.	0.45	.	.			
GBW 07107	5.1	2.7	1.7	1290	26	6.7	3.1	2.9	0.010	0.98	0.24	0.082	62	44	0.41	173	0.35			
VS 8550-04	(4.4)	(2.4)	1.2	.	18	4.5	(2.1)	4.7	.	(0.92)	.	.	28	50	0.40	.	(0.95)			
SARM 41	.	.	.	.	(20)	.	.	.	.	.	.	.	.	.	.	.	(5)			
US-SBC-1 *	7.1	3.8	1.98	.	27	8.5	.	3.7	.	1.4	.	.	52.5	163	0.54	.	2.4			
US-ShPYR-1 *	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	294	23			
US-SGR-1b	(1.9)	1.1	0.56	1960	(12)	(2)	.	1.4	(0.3)	(0.4)	.	.	20	147	.	267	35			
US-ShB00-1 *	1.67	0.97	0.45	.	6.27	1.95	.	(1.18)	.	0.34	.	.	13.5	24.1	0.15	.	47.8			
JCRM R651	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			
Number	N	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb	Rh	S%	Sb	Sc	Se	Sm				
GBW 03104	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				
NCS DC60106a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				
GUW TS	.	(13)	(108)	170	.	33	.	.	.	230	.	0.022	(8.2)	22	.	(22.9)				
US-SC0-2 *	.	11.2	25	27.8	.	20	.	6.6	.	101	.	.	0.9	11.4	.	4.9				
VS 8549-04	.	11	28	39	.	8.2	(0.0013)	(6.5)	(0.0012)	0.014%	.	0.62	0.9	23	.	5.7				
UL AWI 1	.	17	37	61	.	(24)	.	9.3	.	130	.	.	.	16	.	7				
GBW 07107	540	14.3	48	37	690	8.7	.	13.6	.	205	.	(0.0066)	0.18	18.5	0.075	8.4				
VS 8550-04	.	12	25	50	.	14.9	(0.0023)	6.2	(0.0022)	112	(0.001)	1.02	(1)	20	.	5.4				
SARM 41	.	(8)	122	(30)	.	.	.	.	.	59	.	(0.15)	.	.	.	.				
US-SBC-1 *	.	15.3	49.2	82.8	.	35	.	12.6	.	147	.	0.715	1.01	20	.	9.6				
US-ShPYR-1 *	.	.	.	19	1200	24	.	.	.	64	.	.	.	.	.	.				
US-SGR-1b	.	(5.2)	16	(29)	.	38	.	.	.	.	.	1.53 T	3.4	4.6	(3.5)	2.7				
US-ShB00-1 *	.	(5.6)	11	74.9	.	(6.1)	.	2.94	.	16.9	.	1.64	3.28	(3.6)	.	2.1				
JCRM R651	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				
Number	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr				
GBW 03104	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	last			
NCS DC60106a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				
GUW TS	(4.1)	88	(0.97)	(2.4)	.	.	(9.1)	.	.	(22)	960	.	150	(15)	63	290				
US-SC0-2 *	.	195	0.82	0.68	.	9	.	0.34	3.2	117	.	.	23.1	2.2	97	.				
VS 8549-04	2.2	150	0.86	0.95	.	8.2	.	(0.5)	2.1	148	(3.5)	28	2.9	96	176	.				
UL AWI 1	.	108	1.2	0.94	.	12	.	0.42	3	134	.	29	3	99	223	.				
GBW 07107	2.0	90	0.9	1.02	(0.023)	12.8	3950	0.71	0.43	1.5	87	0.79	26	2.6	55	96				
VS 8550-04	(3.2)	142	(0.7)	(0.74)	.	7.1	.	(0.33)	1.65	122	(3.3)	26	2.7	97	176	.				
SARM 41	.	54	.	.	.	(12)	.	.	.	139	.	17	.	76	146	.				
US-SBC-1 *	3.3	170	1.1	1.2	.	15.8	.	0.89	0.56	5.76	220	1.6	36.5	3.64	186	134				
US-ShPYR-1 *	.	753	.	.	.	5	1300	.	4	92	.	.	.	.	62	.				
US-SGR-1b	(1.9)	420	.	.	.	4.8	.	(0.18)	5.4	130	2.6	(13)	(0.94)	74	(53)	.				
US-ShB00-1 *	(3.8)	1070	.	0.29	.	2.74	.	(2.7)	0.15	(9)	419	.	9.6	0.98	97.8	52.6				
JCRM R651	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.				

SILLIMANITE

= class, where 1 = CRM and 2 = RM

#	Number	Al ₂ O ₃	SiO ₂	CaO	Fe ₂ O ₃	K ₂ O	Li ₂ O	MgO	MnO	Na ₂ O	TiO ₂	LOI	Units
2	CERAM 2CAS12	63.8	33.9	0.25	0.31	0.13	.	0.12	.	0.15	1.31	0.13	25 or 100 g
1	BCS 309	61.1	34.1	0.22	1.51	0.46	(0.01)	0.17	(0.03)	0.34	1.92	.	100 g

CRM SILLIMANITE SCHIST

analysis listed in mass %

100 g units

Number	Al ₂ O ₃	CaO	Fe ₂ O ₃	FeO	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂
SARM 44	58.80	0.14	2.06	(1.0)	(0.18)	(0.1)	(0.03)	(0.05)	(0.10)	34.84	1.83

continued

analysis listed in mg/kg

Number	Ba	Ce	Co	Cr	Cu	Ga	Mo	Nb	Ni	Pb	Rb	Sr	Th	V	Y	Zn	Zr
SARM 44	(50)	(220)	(8)	384	(10)	(55)	(15)	96	(15)	(30)	13	5	50	395	84	271	406

CRM SILICEOUS MINERAL SETS

available in SETS/3, as grouped

50 g units

Number	Material	SiO ₂	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂	LOI
JCRM R702	Albite	67.69	19.64	0.546	0.058	0.137	0.103	0.004	11.31	0.139	.	0.030	0.23
JCRM R703	Potassium Feldspar	66.99	17.93	0.095	0.082	11.02	0.040	0.003	3.32	0.008	.	0.005	0.36
JCRM R803	Prophyllite	68.52	23.95	0.033	0.047	2.32	0.017	0.0014	0.165	0.018	0.02	0.104	4.40
JCRM R604	Gairome Clay	47.88	35.37	0.216	1.357	0.468	0.251	0.006	0.083	0.020	(0.014)	0.865	13.37
JCRM R605	Kaolin	49.77	35.64	0.004	0.283	(0.008)	0.004	.	0.032	0.105	(0.023)	0.068	13.90
JCRM R751	Pottery Stone	79.32	14.15	0.033	0.340	(3.00)	0.049	0.003	0.121	0.009	(0.0010)	0.010	2.73

Also see our Industrial Materials catalog for more Siliceous Materials
<http://www.brammerstandard.com/pdf/industrial.pdf>

CRM SILT

analysis listed in mass %

Number	SiO ₂	Al ₂ O ₃	Co ₂	CaO	FeO	T.Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂	L.O.I.	Units
VS 5366-90	60.9	14.35	2.4	2.95	1.9	5.44	3.58	2.54	0.088	2.33	0.18	0.08	0.62	6.5	50 g
VS 3133-85	60.85	14.40	.	2.95	.	5.45	3.56	2.54	0.087	2.33	0.18	(0.10)	0.62	6.39	100 g
VS 3132-85	60.54	16.46	.	0.41	.	8.76	2.43	1.60	0.13	1.61	0.19	(0.027)	0.98	6.78	100 g
VS 3131-85	47.0	9.48	.	7.76	.	5.92	2.26	6.06	0.30	0.53	0.13	(0.037)	0.50	20.10	100 g
VS 5367-90	46.7	9.45	9.8	7.74	1.1	5.88	2.24	6.0	0.30	0.53	0.13	0.03	0.50	20.0	50 g

continued

analysis listed mass %

Number	As	B	Ba	Ce	Cr	Cu	Li	Ni	Rb	Sb	Sr	V	Zn	Zr
VS 5366-90	0.04	0.007	0.09	0.007	0.008	0.019	0.0035	0.0036	0.011	0.013	0.027	0.011	0.0094	0.023
VS 3133-85	(0.043)	0.006	0.091	0.008	0.0088	0.019	0.0037	0.0036	0.012	(0.0015)	0.028	0.011	0.009	0.023
VS 3132-85	(0.0038)	0.007	0.057	(0.006)	0.014	0.0048	0.00716	0.0072	0.0077	(0.00019)	0.013	0.018	0.012	0.022
VS 3131-85	(0.0016)	0.007	0.062	(0.006)	0.0068	0.0037	0.0096	0.0040	0.0061	.	0.025	0.011	0.005	0.013
VS 5367-90	.	0.008	0.059	0.005	0.0062	0.0037	0.009	0.0040	0.0062	.	0.025	0.0097	0.0049	0.013

continued

analysis listed in mg/kg

Number	Ag	Be	Cd	Co	Cs	Ga	Ge	La	Mo	Nb	Nd	Pb	Sc	Sm	Sn	W	Y	Yb
VS 5366-90	.	4	.	13	5	18	.	55	6.5	11	30	55	12	5	5	12	25	2.9
VS 3133-85	(0.8)	3.7	(1.5)	13	5.8	16	1.4	61	10	17	.	58	17	.	5	.	26	3.3
VS 3132-85	(0.17)	2.8	(0.2)	30	4.1	16	1.6	43	2.5	13	.	23	20	.	3.9	.	30	4.3
VS 3131-85	(0.2)	2.4	(2.3)	21	4	11	(1.2)	(38)	2.4	11	.	20	11	.	5	.	22	(2.8)
VS 5367-90	.	2.1	.	21	3.2	11	.	35	2.1	9	15	17	10	3	3.6	.	21	3

CRM SILVER ORE

analysis listed in mass % except * which is mg/kg

GBM: 10 or 250g

USZ: 250g

KZ: 100g

SRM: 200g

Number	Ag*	Ba	Cu	Fe	Fe ₂ O ₃	Pb	S	SO ₃	Zn	Al ₂ O ₃	As	Bi	CO ₂	CaO	Cd	Co*	F	Ge*
USZ 9-92	740	.	2.25	.	.	0.041	.	.	0.20	.	.	.	.	.	.	.	.	.
USZ 8-91	331	.	0.83	.	48.40	0.13	.	6.85	0.59	2.11	0.53	0.11	.	0.25	0.0020	.	.	.
USZ 7-91	169	.	0.46	.	.	0.101	.	.	0.42	.	.	.	.	.	0.0015	.	.	.
KZ 6587-93	60.2	33.6	0.019	2.5	.	2.86	11.5	.	2.72	.	0.016	.	.	.	0.012	.	.	.
GBM310-2	45.5	.	0.6936	.	.	0.6577	.	.	2.0680	.	0.0078	.	.	.	.	39	.	.
KZ 3031-84	37.4	.	3.37	15.17T	.	.	2.78	.	.	4.93	.	.	2.87	28.05	.	.	0.056	.
GBM310-1	19.0	.	0.5825	.	.	0.3046	.	.	0.9772	.	0.0362	.	.	.	.	36	.	.
KZ 6586-93	19	0.38	0.013	2.03	.	3.5	0.55	.	0.045	.	.	.	.	.	.	.	0.054	.
KZ 6588-93	13.7	0.42	.	3.67	.	1.57	5.88	.	4.68	.	.	.	.	.	0.013	.	.	4.4
KZ 47-85	8.7	.	0.42	21.0	.	.	2.70	.	.	.	.	.	.	.	.	.	.	.
KZ 3030-84	8.6	.	.	13.84T	.	.	2.04	.	.	10.85	.	.	1.04	18.94	.	.	0.048	.
SRM 886	8.25	.	.	.	.	.	1.466	.	.	.	.	.	.	.	.	.	.	.
KZ 48-85	7.3	.	1.98	15.9T	.	.	1.94	.	.	5.47	.	.	2.73	29.75	.	.	0.054	.
KZ 8079-94	3.7	.	0.73	.	.	0.62	1.25	.	0.41	.	.	.	.	.	0.016	.	.	.
KZ 3029-84	2.1	.	0.30	3.11T	.	.	1.59	.	.	15.18	.	.	.	.	.	.	0.074	.
KZ 8078-94	1.6	.	0.38	.	.	0.21	0.75	.	0.15	.	.	.	.	.	0.0036	.	.	.

continued

Number	K ₂ O	MgO	MnO	Mo	Na ₂ O	Ni	P ₂ O ₅	Re*	Sb	Se*	SiO ₂	Sr	Te*	TiO ₂	Zr
USZ 9-92	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USZ 8-91	0.53	1.48	2.77	.	.	.	0.54	.	0.50	.	17.80	.	.	0.12	.
USZ 7-91	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 6587-93	.	.	.	.	.	.	.	.	0.013	.	.	0.69	.	.	.
GBM310-2	.	.	.	.	.	0.0029	.	.	.	.	.	.	.	.	.
KZ 3031-84	0.26	1.33	0.33	0.18	0.18	.	.	0.40	.	13.1	33.56	.	9.1	0.19	.
GBM310-1	.	.	.	.	.	0.0346	.	.	.	.	.	.	.	.	0.019
KZ 6586-93	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 6588-93	.	.	.	.	.	.	.	.	0.0066	.	.	0.029	.	.	.
KZ 47-85	.	.	.	0.012	.	.	.	.	.	.	.	.	.	.	.
KZ 3030-84	0.48	2.06	0.41	0.38	0.16	.	0.17	0.30	.	.	42.32	.	.	0.54	.
SRM 886	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 48-85	0.13	0.66	0.36	.	0.10	.	0.11	0.04	.	5.7	33.77	.	.	0.147	.
KZ 8079-94	.	.	.	.	.	.	.	0.29	.	.	.	.	.	.	.
KZ 3029-84	4.06	.	0.081	0.0086	1.95	.	0.094	0.043	.	.	68.09	.	.	0.42	.
KZ 8078-94	.	.	.	.	.	.	.	0.072	.	.	.	.	.	.	.

SLATE WITH EXTENSIVE ANALYSIS

= class, where 1 = CRM and 2 = RM

analysis listed in mass %

#	Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	FeO	Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂	LOI
1	GUW TB2	60.4	20.5	.	0.20	5.4	6.95T	3.6+	0.86	1.86	0.047	1.29	0.095	.	0.93	3.46
1	GUW TB	60.23	20.64	0.14	.	5.43	6.90	3.78+	3.87	(1.93)	(0.052)	1.32	0.097	.	0.93	.
1	JSL-1	59.47	17.60	(0.769)	1.479	4.523	1.875	+3.92 -0.654	2.845	2.413	0.0599	2.184	0.202	.	0.725	.
1	JSL-2	59.45	18.17	(1.236)	1.885	5.048	0.959	+4.158 -0.362	3.008	2.385	0.0818	1.344	0.164	0.1467	0.754	.
2	IAG OU-6	57.35	20.45	(0.23)	0.74	(1.65)	8.94T	(0.14-)	3.03	2.41	0.28	1.76	0.12	.	0.99	3.62

continued

analysis listed in mg/kg

Number	As	Ba	Be	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	F	Ga	Gd	Hf	Ho	La	Li	Lu
GUW TB2	.	649	.	.	14	92	11	49	.	.	.	.	.	.	.	.	.	109	.
GUW TB	10.5	780	4.1	104	14	82	9	49	1.8	.	.	740	25	.	5	.	61	111	0.45
JSL-1	14.9	305	2.28	60.6	15.5	60.9	7.60	40.8	(5.11)	.	1.22	598	.	.	4.63	0.688	29.3	(50.7)	0.442
JSL-2	11.4	302	2.68	69.6	15.7	64.7	8.24	44.5	4.71	.	1.14	678	.	.	5.54	(0.671)	32.7	52.6	0.404
IAG OU-6	13.23	480	(2.53)	77.1	29.2	70.7	8.10	40.4	5.06	2.93	1.36	.	24.17	5.30	4.70	1.04	33.2	(95.3)	0.45

Number	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc	Sm	Sn	Sr	Ta	Tb	Th	Tl	Tm
GUW TB2	.	.	39	.	.	185	.	.	.	5	159	.	.	.	.	.
GUW TB	.	50	40	8	.	180	3.4	16	8.4	6	160	1.4	.	18	.	.
JSL-1	9.53	28.8	37.6	17.4	6.07	117	.	16.7	6.02	.	193	0.842	0.717	9.97	.	.
JSL-2	12.3	32.0	40.6	19.7	(6.44)	118	.	16.8	5.95	.	230	1.04	0.727	11.5	.	.
IAG OU-6	14.49	30.2	40.2	28.80	7.91	121.3	(0.56)	23.1	6.01	2.67	131.7	1.02	0.86	11.3	(0.54)	(0.45)

Number	U	V	Y	Yb	Zn	Zr	Units		
GUW TB2	.	96	.	3.8	94	180	50 g		
GUW TB	.	107	39	3.3	94	180	50 g	B: 0.0090%	W: 0.00022%
JSL-1	2.63	131	30.0	2.81	108	174	100 g		
JSL-2	2.92	122	31.3	3.15	101	191	100 g		
IAG OU-6	1.92	129.8	27.75	2.98	111.4	174.2	~35 g		

CRM SOIL - AQUA REGIA METHOD

certified analysis listed in mg/kg

BAM U112a and BAM show the two methods used

Number	As	Cd	Co	Cr	Cu	Hg	Mn	Ni	Pb	V	Zn	Units	Method Used
BAM U115	27.7	4.52	7.35	96.9	167	4	.	29.3	16.4	22.4	342	35 g	EN 16174 Method A
BAM U115	27.9	4.65	7.3	99.6	171	4.07	.	29.9	16.9	23.5	349	35 g	EN 16174 Method B
BAM U110 *	13.0	7.0	14.5	190	262	49.3	580	95.6	185	.	990	60 g	ISO 11466

informational analysis listed in mass %

Number	Si	Al	Ca	Fe	K	S	Mg	Dry Matter	LOI	Org.C	Inorg.C	Tot.C	H	N
BAM U115	34.7	3.2	3.5	2.2	1.4	.	.	98.6 @ 105°C	8.3 @ 550°C	2.5	1.1	.	.	.
BAM U110 *	25.7	5.1	4.1	2.8	1.9	1.1	1.0	97.3 @ 105°C	13.3 @ 550°C	6.7	0.8	7.5	1.2	0.4

* BAM U110 spectroscopic analysis also certified, see "Soil - Contaminated"

CRM MERCURY IN SOIL

analysis listed in mass % except * which is mg/kg

30 or 50 g

Number	Hg*	Al ₂ O ₃	C	CaO	Fe ₂ O ₃ T	K ₂ O	MgO	MnO	N	Na ₂ O	S	SiO ₂	TiO ₂	Dry Mass
USZ 305	2.75	(13.38)	(1.31)	(4.02)	(4.95)	(2.88)	(2.10)	(0.104)	(0.085)	(1.63)	(0.071)	(61.89)	(0.659)	(98.90%)
USZ 304	1.52	(11.96)	(1.42)	(4.55)	(4.22)	(2.85)	(1.79)	(0.082)	(0.075)	(1.99)	(0.093)	(64.11)	(0.605)	(99.21%)
USZ 303	0.157	(13.10)	(1.19)	(3.39)	(4.68)	(2.98)	(1.68)	(0.097)	(0.088)	(1.84)	(0.021)	(64.39)	(0.65)	(99.05%)

CRM AGRICULTURAL SOIL

analysis listed in mass % except * which is mg/kg

50 g units

Number	C	C.Org	Al ₂ O ₃	T.Fe ₂ O ₃	Ti	K ₂ O	MgO	CaO	N	Na ₂ O	P	S	SiO ₂	Mn	Ag*	As*	B*	Ba*
NCS ZC71020	3.85	2.10	14.34	12.09	1.78	1.61	0.906	0.541	0.268	0.187	0.141	0.117	53.61	0.0560	0.093	14.9	63	184
NCS ZC71021	2.02	1.12	14.26	6.59	0.570	3.25	1.12	0.377	0.211	0.168	0.106	0.0437	63.8	0.120	0.155	83	106	531
NCS ZC71022	1.37	0.710	17.68	9.77	0.618	2.25	1.09	0.483	0.158	0.146	0.0704	0.0327	55.9	0.675	0.16	55.7	77	471
NCS ZC71023	0.66	0.368	14.08	4.81	0.372	2.57	1.54	2.15	0.623*	3.216	0.0811	0.0160	66.9	0.0594	0.094	4.45	23.3	733
NCS ZC71024	1.60	0.84	13.26	4.42	0.431	2.66	1.29	1.67	0.129	1.99	0.0613	0.0677	66.9	0.0820	1.07	30.0	44.6	783
NCS ZC71025	1.81	0.995	14.15	5.37	0.435	2.45	1.76	1.98	0.170	2.47	0.152	0.0379	63.1	0.0848	0.399	9.88	34.9	765

continued analysis in mg/kg

Number	Be	Bi	Br	Cd	Ce	Cl	Co	Cr	Cu	Dy	Er	Eu	F	F.Sol	Ga	Gd	Ge	Hg	Ho
NCS ZC71020	3.40	0.483	4.6	0.57	116	51	32.8	152	98	8.8	4.6	2.80	878	2.29	23.1	9.7	1.59	0.249	1.72
NCS ZC71021	2.57	0.611	4.2	1.47	98	52	19.9	86.1	32.6	5.4	3.22	1.25	960	2.3	19.3	5.4	1.62	12.2	1.13
NCS ZC71022	3.83	0.85	4.0	12.1	107	42	23.9	106	52.2	7.6	4.23	1.87	883	1.91	25.8	8.0	1.89	0.395	1.53
NCS ZC71023	1.78	0.173	2.86	0.130	59.3	104	13.8	82.8	25.2	3.48	1.97	1.24	485	6.1	16.9	4.11	1.21	0.029	0.692
NCS ZC71024	2.11	2.38	9.0	26.2	77.8	410	13.4	61	63.1	4.42	2.57	1.32	503	10.9	16.6	5.11	1.54	4.64	0.88
NCS ZC71025	2.09	1.06	5.5	1.99	71.7	140	16.3	95.2	54.2	4.33	2.44	1.4	521	6.2	18.0	5.01	1.27	0.309	0.86

Number	I	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc	Se	Sm	Sn	Sr
NCS ZC71020	1.85	60	56	0.61	3.62	52	57	77.7	26.3	14.3	55	1.36	22.2	1.42	11.1	3.60	96
NCS ZC71021	1.96	45	52.1	0.51	2.37	19.7	34.8	38.1	248	9.5	131	6.3	13.4	0.659	6.4	3.94	80.3
NCS ZC71022	4.85	55.6	67	0.64	2.87	21.3	48	56.1	215	12.8	147	2.2	17.8	0.598	9.3	4.62	42.2
NCS ZC71023	1.63	31.1	21.8	0.305	0.69	11.8	27.8	29.9	19.7	7.33	87.1	0.41	10.8	0.143	5.06	2.22	343
NCS ZC71024	2.54	41.5	35.1	0.404	14.1	14.3	34.3	26.8	182	9.66	99	2.87	9.8	0.75	6.06	4.53	196
NCS ZC71025	2.59	38.2	31.9	0.364	1.35	13.8	33.4	38.3	53.9	8.85	97.7	1.95	11.9	0.451	6.03	5.22	267

Number	Tb	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
NCS ZC71020	1.58	11.5	0.43	0.68	6.1	289	1.51	45.2	4.2	185	369
NCS ZC71021	0.92	18.5	1.42	0.51	4.74	112	2.37	29.3	3.26	201	278
NCS ZC71022	1.31	19.7	1.15	0.66	5.91	175	2.87	40.8	4.2	941	277
NCS ZC71023	0.632	8.0	0.528	0.306	1.49	81.4	1.02	18.0	1.93	62.7	278
NCS ZC71024	0.79	11.4	0.865	0.395	2.26	79	3.28	23.3	2.54	100	335
NCS ZC71025	0.781	9.8	0.625	0.367	2.06	91	2.06	22.7	2.36	159	219

CRM SOIL

analysis listed in mass %

100 g units

Number	Al ₂ O ₃	T.C	CaO	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O-	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI
JSo-1	17.99	.	2.56	.	.	11.49	.	0.34	2.11	0.202	0.66	0.48	38.28	1.23	.
USZ 15-94	14.84	.	2.66	(1.44)	5.75	.	(4.97)	2.47	1.65	0.08	3.14	0.16	62.51	0.86	(5.29)
USZ 16-94	(14.11)	.	2.78	1.22	(5.18)	.	.	2.61	1.84	(0.08)	3.07	(0.18)	63.18	0.88	(4.53)

continued

informational analysis listed in mg/kg

Number	B	Ba	Co	Cr	Cs	Cu	Li	Ni	Pb	Rb	Sr	V	Y	Zn	Zr
JSo-1	12.0	269	32	71	1.5	169	11.2	39	13	14.5	196	300	24.9	105	96
USZ 15-94	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USZ 16-94	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

CRM SOIL SET

available in SET/6 ONLY

analysis listed in mg/kg%

25 g units

Number	As	Cd	Cr	Hg	Pb	Se
JSAC 0466	1093	1199	1483	113.5	1214	1175
JSAC 0465	550	607.4	738	57.8	612.4	587
JSAC 0464	271.1	301.0	499	28.6	302.7	291.9
JSAC 0463	137.6	146.8	244	14.76	151.6	141.5
JSAC 0462	71.5	74.2	149.6	7.27	73.7	71.6
JSAC 0461	21.53	(0.30)	97.2	0.075	24.4	(0.44)

CRM SOIL (TILL) REFERENCE MATERIALS WITH ACID EXTRACTION

analysis listed in mass %

100 g units

Number	SiO ₂	Al ₂ O ₃	CaO	Fe	Fe ₂ O ₃	K ₂ O	MgO	Mn	MnO	Na ₂ O	P	P ₂ O ₅	S	Ti	TiO ₂	LOI 1000°C	LOI 500°C	Sum
CAN TILL-3	69.1	12.2	2.63	2.78	3.92	2.42	1.71	0.0520	0.06	2.64	0.0490	0.11	<0.05	0.2910	0.49	4.6	3.6	99.88
CAN TILL-1	60.9	13.7	2.72	4.81	6.82	2.22	2.15	0.1420	0.18	2.71	0.0930	0.22	<0.05	0.5990	0.98	7.3	6.3	99.90
CAN TILL-2	60.8	16.0	1.27	3.84	5.39	3.07	1.83	0.0780	0.10	2.19	0.0750	0.17	<0.05	0.5300	0.88	8.1	6.8	99.80

continued

analysis in mg/kg except % for mass percent and * for parts per billion

Number	As	Au*	Ba	Be	Bi	Br	Ce	Co	Cr	Cs	Cu	Eu	Er	Hf	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Rb	Sb	Sc
CAN TILL-3	87	6	489	2.0	<5	4.5	42	15	123	1.7	22	<1.0	1.4	8	21	21	0.2	2	7	16	39	26	55	0.9	10
CAN TILL-1	18	13	702	2.4	<5	6.4	71	18	65	1.0	47	1.3	3.6	13	28	15	0.6	2	10	26	24	22	44	7.8	13
CAN TILL-2	26	2	540	4.0	<5	12.2	98	15	74	12.	150	1.0	3.7	11	44	47	0.6	14	20	36	32	31	143	0.8	12

continued

partial extraction elements from dilute acid

Number	Sm	Sr	Ta	Tb	Th	U	V	W	Y	Yb	Zn	Zr	Ag	Co	Cu	Fe%	Mn	Mo	Ni	Pb	Zn
CAN TILL-3	3.3	300	<0.5	<0.5	4.6	2.1	62	<1	17	1.5	56	230	49	10	23	2.2	310	1	32	17	43
CAN TILL-1	5.9	291	0.7	1.1	5.6	2.2	99	<1	38	3.9	98	502	<0.2	12	49	3.4	1020	1	17	14	71
CAN TILL-2	7.4	144	1.9	1.2	18.4	5.7	77	5	40	3.7	130	390	12	12	152	3.4	570	13	30	24	116

continued

partial extraction elements from concentrated acid

Number	Ag	As	Ba	Bi	Cd	Co	Cr	Cu	Fe%	Hg*	Mn	Mo	Ni	Pb	V	Zn
CAN TILL-3	1.6	84	43	<3	<0.2	11	73	23	2.0	107	310	<2	32	16	33	43
CAN TILL-1	0.2	13	84	<3	<0.2	12	30	48	3.1	92	950	<2	18	12	48	70
CAN TILL-2	0.2	22	95	4	0.3	13	40	149	3.2	74	530	11	31	21	38	116

last

CRM SOIL

analysis listed in mass %

100 g units

Number	Type	SiO ₂	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂	As	B
VS 2498-83	Sandy, Turf-Ash	91.24	3.36	0.27	0.99	1.23	0.13	0.011	0.51	0.036	0.29	0.0003	0.003
VS 2499-83	Sandy, Turf-Ash	91.24	3.36	0.27	0.99	1.23	0.13	0.011	0.51	0.036	0.29	0.0017	0.003
VS 2507-83	Black	71.49	9.81	1.60	3.48	2.42	0.95	0.079	0.81	0.18	0.74	0.0008	0.0056
VS 2508-83	Black	71.49	9.81	1.60	3.48	2.42	0.95	0.079	0.81	0.18	0.74	0.0021	0.0056
VS 2509-83	Black	71.49	9.81	1.60	3.48	2.42	0.95	0.079	0.81	0.18	0.74	0.004	0.0056
VS 2501-83	Red	59.18	17.01	0.17	7.86	0.98	0.92	0.051	0.15	0.10	1.56	0.0010	0.006
VS 2502-83	Red	59.18	17.01	0.17	7.86	0.98	0.92	0.051	0.15	0.10	1.56	0.003	0.006
VS 2503-83	Red	59.18	17.01	0.17	7.86	0.98	0.92	0.051	0.15	0.10	1.56	0.005	0.006
VS 2504-83	Grey	52.65	11.48	11.47	4.60	2.09	2.99	0.089	1.64	0.17	0.64	0.0013	0.0063
VS 2505-83	Grey	52.65	11.48	11.47	4.60	2.09	2.99	0.089	1.64	0.17	0.64	0.0029	0.0063
VS 2506-83	Grey	52.65	11.48	11.47	4.60	2.09	2.99	0.089	1.64	0.17	0.64	0.006	0.0063

continued

analysis listed in mass % except * which is mg/kg

Number	Ba	Be*	Cd*	Ce	Co	Cr	Cs*	Cu	F	Ga*	Hg*	La*	Li	Mo*
VS 2498-83	0.031	1.1	0.1	0.0017	0.00020	0.010	1.6	0.0009	.	5	0.03	10	0.00035	1.5
VS 2499-83	0.031	10	1.3	0.0017	0.0045	0.010	1.6	0.010	.	5	0.13	10	0.00035	7
VS 2507-83	0.050	2.0	0.10	0.007	0.0009	0.0083	4	0.0025	0.028	11	0.05	36	0.0023	1.2
VS 2508-83	0.050	9	1.8	0.007	0.0046	0.0083	4	0.011	0.028	11	0.21	36	0.0023	6
VS 2509-83	0.050	24	4.5	0.007	0.013	0.0083	4	0.027	0.028	11	0.4	36	0.0023	11
VS 2501-83	0.027	1.6	0.12	0.007	0.0014	0.018	9	0.0047	0.04	15	0.08	30	0.005	3
VS 2502-83	0.027	10	2.6	0.007	0.0063	0.018	9	0.017	0.04	15	0.26	30	0.005	8
VS 2503-83	0.027	25	5	0.007	0.015	0.018	9	0.031	0.04	15	0.4	30	0.005	13
VS 2504-83	0.050	2.2	0.3	0.006	0.0012	0.0084	5	0.0034	0.05	13	0.025	29	0.0032	1.4
VS 2505-83	0.050	8	2.1	0.006	0.0057	0.0084	5	0.012	0.05	13	0.18	29	0.0032	6
VS 2506-83	0.050	26	5.5	0.006	0.015	0.0084	5	0.029	0.05	13	0.4	29	0.0032	13

Number	Nb*	Ni	Pb	Rb*	S	Sc*	Se*	Sn	Sr	V	Y*	Yb*	Zn	Zr
VS 2498-83	12	0.0010	0.0008	32	.	2.6	(0.8)	0.00019	0.0069	0.0014	13	1.5	0.0010	0.035
VS 2499-83	12	0.0087	0.0087	32	.	2.6	(0.8)	0.0019	0.0069	0.0014	13	1.5	0.014	0.035
VS 2507-83	14	0.0032	0.0018	88	0.05	11	(3)	0.0003	0.011	0.0072	31	4.1	0.0056	0.047
VS 2508-83	14	0.011	0.009	88	0.05	11	(3)	0.0020	0.011	0.0072	31	4.1	0.018	0.047
VS 2509-83	14	0.030	0.026	88	0.05	11	(3)	0.006	0.011	0.0072	31	4.1	0.046	0.047
VS 2501-83	25	0.0054	0.0023	80	0.04	15	(3)	0.0005	0.005	0.018	27	3.6	0.0087	0.034
VS 2502-83	25	0.016	0.015	80	0.04	15	(3)	0.0022	0.005	0.018	27	3.6	0.027	0.034
VS 2503-83	25	0.038	0.028	80	0.04	15	(3)	0.006	0.005	0.018	27	3.6	0.061	0.034
VS 2504-83	13	0.0045	0.0017	81	0.04	14	(1)	0.0004	0.031	0.009	26	3.3	0.0070	0.019
VS 2505-83	13	0.013	0.010	81	0.04	14	(1)	0.0020	0.031	0.009	26	3.3	0.017	0.019
VS 2506-83	13	0.032	0.028	81	0.04	14	(1)	0.006	0.031	0.009	26	3.3	0.039	0.019

CRM SOIL

analysis listed in mass %

Number	Si	Al	Ca	Fe	K	Mg	Mn	N	Na	P	Ti	Units
GBW 08302	30.57	7.11	2.59	3.34	2.12	1.53	0.0677	0.128	1.52	0.086	0.40	15 g
BCR 142R	.	.	.	.	.	.	0.0970	.	.	.	.	40 g
ERM-CC690	.	.	.	.	.	.	.	.	.	.	.	70 g

continued

analysis listed in mg/kg except % which is mass %

Number	As	B	Ba	Be	Br	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Hf	Hg	In	La	Lu
GBW 08302	3.8	(25)	(509)	2.96	(1.3)	0.081	83.6	13.1	60.8	(7.3)	24.6	(5)	(239)	1.4	(13)	.	(7.3)	(0.018)	(0.06)	41.9	(0.48)
BCR 142R	.	.	.	.	.	0.34	12.1	12.1	(113)	.	69.7	.	.	.	.	.	.	0.067	.	.	.
ERM-CC690	.	.	.	.	.	.	49.1	.	.	.	.	2.90	.	.	.	3.2	.	.	.	24.4	.

Number	Mo	Nd	Ni	Pb	Pr	Rb	Sb	Sc	Se	Sm	Sr	Ta	Tb	Th	Tm	U	V	W	Y	Yb	Zn
GBW 08302	(0.8)	42.3	31.1	14.2	(9)	135	(0.4)	10.8	0.16	7.1	163	(1.1)	(0.9)	17.6	.	3.84	77.5	(3.5)	(25)	3.1	58
BCR 142R	.	.	64.5	40.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	(101)
ERM-CC690	.	19.1	.	.	.	.	.	7.9	.	3.5	.	.	0.50	7.6	0.232	1.90	.	.	.	1.57	.

CRM SOIL

analysis listed in mass %

70 g units

Number	Al ₂ O ₃	C(tot)	CaO	CO ₂	C.Org	T.Fe ₂ O ₃	FeO	H ₂ O+	K ₂ O	MgO	Mn	N	Na ₂ O	P	S	SiO ₂	Ti	LOI
NCS DC73319a	12.9	7.8	2.7	.	(6.8)	4.4	(2.25)	(4.3)	2.85	1.17	0.131	0.32	1.65	0.23	0.0726	56.6	0.326	15.8
NCS DC73320a	11.7	1.37	4.0	2.4	0.71	4.2	(0.78)	2.8	3.03	1.40	0.092	0.075	2.67	0.0512	0.0316	65.9	0.28	5.8
NCS DC73321a	12.9	0.69	0.84	.	0.65	2.6	(0.55)	2.6	2.91	0.61	0.033	0.085	2.54	0.042	(0.0146)	72.9	0.22	3.7
NCS DC73322a	16.9	0.46	(0.13)	.	0.42	6.9	(0.43)	6.3	3.00	1.33	0.030	0.073	(0.1)	0.031	0.0130	63.3	0.46	(6.97)
NCS DC73323a	16.8	(0.2)	(0.07)	.	(0.2)	9.8	(0.19)	7.0	2.14	0.70	0.051	0.059	(0.1)	0.0353	0.0839	61.5	0.61	7.2
NCS DC73324a	26.6	0.23	0.13	.	(0.2)	12.3	(0.1)	12	0.44	0.20	0.23	0.021	(0.14)	0.024	0.0534	45.3	0.43	(13.22)
NCS DC73325a	27.3	1.3	(0.2)	.	1.18	18.0	(1.46)	13.6	0.35	0.31	0.19	0.13	(0.1)	0.21	0.0432	33.7	2.06	15.3
NCS DC73326a	11.8	1.91	7.5	5.3	0.50	4.3	1.23	3.4	2.30	2.00	0.063	0.06	1.71	0.068	0.0187	60.1	0.37	8.9

analysis listed in mg/kg

Number	Ag	As	B	Ba	Be	Bi	Br	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	F	Ga	Gd
NCS DC73319a	0.81	33	69	700	3.3	1.4	4.1	2.5	71	(87)	10.3	44	7.2	42	6.0	3.8	0.89	513	18.1	5.5
NCS DC73320a	0.072	18	27	1187	2.6	0.29	4.6	0.2	123	(51)	11.1	52	4.7	20	4.5	2.5	1.8	723	14.8	6.2
NCS DC73321a	0.075	6.2	21	1117	1.7	0.21	3.8	0.079	45	(73)	6.9	35	3.2	13.4	2.8	1.7	0.8	354	15.7	3.1
NCS DC73322a	0.059	9.6	88	312	2.4	1.8	2.8	0.11	99	(30)	20	81	12.5	43	4.4	2.5	1.2	1127	23	5.5
NCS DC73323a	4.6	242	108	343	1.8	23	(1.5)	0.16	85	(31)	18	113	18	147	5.1	3.2	1.0	601	25	4.5
NCS DC73324a	0.24	88	28	181	6.9	89	(1.1)	(0.5)	85	110	20	86	9.4	358	5.4	3.7	0.39	1526	40	4.2
NCS DC73325a	0.08	(4.2)	(19)	237	2.9	(0.37)	6.4	(0.23)	113	(54)	93	379	2.9	84	5.7	2.4	3.0	341	39	8.3
NCS DC73326a	0.067	13.2	51	492	2.0	0.31	3.7	0.14	68	68	12.3	65	7.3	24	4.9	2.7	1.2	555	15.1	5.5

Number	Ge	Hf	Hg	Ho	I	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc	Se
NCS DC73319a	1.3	6.5	0.31	1.3	2.0	0.12	39	28	0.57	2.0	15.3	30.8	16.9	339	8.5	137	2.4	8.3	0.22)
NCS DC73320a	1.2	6.3	0.017	0.9	2.6	0.048	61	22	0.38	1.6	35	55	24	27	14.8	95	0.86	9.5	0.26
NCS DC73321a	1.2	7.1	0.116	0.58	2.5	0.033	21	18	0.28	0.5	10.6	19	15	28	4.9	85	0.69	5.6	0.12
NCS DC73322a	1.7	6.9	0.072	0.85	4.0	0.095	54	27	0.40	0.70	16.1	40	36	37	11.2	152	1.4	15.9	0.31
NCS DC73323a	2.3	8.3	0.7	1.1	2.8	1.4	35	51	0.49	2.3	20	27	38	245	7.3	142	14.9	16.9	0.75
NCS DC73324a	6.2	6.5	0.086	1.1	13.2	4.1	31	43	0.80	169	38	20	75	478	5.6	118	14	17	0.47
NCS DC73325a	1.5	8.9	0.058	1.0	19.0	0.11	56	23	0.30	3.2	80	47	217	18.3	11.7	28	0.53	25	0.34
NCS DC73326a	1.3	6.9	0.027	0.98	1.6	0.053	35	33	0.042	0.76	13.1	31	30	21	8.0	96	1.2	11.5	0.098

Number	Sm	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
NCS DC73319a	5.9	9.8	192	1.3	0.98	(0.06)	13.1	1.2	0.61	6.3	61	3.5	38	3.8	475	218
NCS DC73320a	7.9	2.0	249	(0.86)	0.89	(0.037)	13.3	0.63	0.38	1.9	65	1.9	25	2.5	58	219
NCS DC73321a	3.5	2.6	325	1.2	0.50	(0.04)	6.7	0.51	0.28	1.2	45	1.1	16	1.8	39	247
NCS DC73322a	6.8	5.6	58	1.4	0.84	(0.085)	19	1.0	0.4	3.0	125	2.9	23	2.6	92	234
NCS DC73323a	4.5	7.2	39	1.6	0.80	6.6	17.2	1.1	0.5	4.0	136	7.4	29	3.2	172	272
NCS DC73324a	4.7	439	30	16	0.84	(0.5)	35	3.6	0.7	28	108	132	33	5.2	1529	156
NCS DC73325a	9.3	5.0	37	5.7	1.2	(0.06)	10.5	0.3	0.33	2.6	240	2.3	25	2.0	187	370
NCS DC73326a	6.0	2.9	197	1.1	0.86	(0.034)	12.2	0.57	0.43	2.3	80	1.8	26	2.8	66	241

analysis listed in mass %		T = Total													100 g units	
Number	Type	SiO ₂	Al ₂ O ₃	CO ₂	CaO	Cr ₂ O ₃	FeO	T.Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂	LOI
NCS DC85112	Agricultural	83.34	8.89	.	(0.16)	.	.	1.34	0.65	(0.20)	0.015	(0.038)	0.124	(0.014)	0.22	4.86
VS 5360-90	Sod-Pozolic	78.3	9.58	.	0.82	.	0.5	3.00	2.48	0.77	0.070	1.15	0.075	0.03	0.84	2.6
SARM 42	Sedimentary	74.09	10.03	.	0.89	0.63	(4.0)	4.68	0.45	1.92	0.10	(0.15)	(0.03)	(0.02)	0.36	.
NCS DC85111	Agricultural	69.68	14.58	.	(0.22)	.	.	5.21	1.08	0.54	0.029	(0.090)	0.122	(0.014)	0.96	7.52
VS 5358-90	Light Chestnut	65.5	12.45	1.2	2.83	.	.	4.90	2.58	1.95	0.090	1.16	0.22	0.03	0.74	6.7
NCS DC85107	Agricultural	65.37	15.06	.	1.68	.	.	4.98	2.72	1.62	0.094	2.48	0.120	(0.013)	0.74	4.83
NCS DC85108	Agricultural	63.06	12.76	.	4.57	.	.	4.49	2.43	2.01	0.077	1.69	0.162	(0.017)	0.68	7.71
NCS DC85110	Agricultural	61.03	16.21	.	0.84	.	.	6.20	2.45	1.90	0.050	0.99	0.098	(0.033)	0.92	9.01
NCS DC85109	Agricultural	53.72	14.74	.	7.93	.	.	5.72	2.72	2.09	0.106	0.99	0.197	(0.019)	0.65	11.17

continued analysis listed in mg/kg except % which is mass %

Number	Ag	B%	Ba%	Be	C%	Ce%	Co	Cr%	Cs	Cu	F%	Ga	Ge	La	Li
NCS DC85112 VS 5360-90 SARM 42	. 0.08	(0.0020) 0.004	. 0.051 (0.0250)	1.5	. 0.55	. 0.005 (0.0030)	10 35	. 0.008	. 0.21	2.8 18 17	. 0.021	. 9 (12)	. .	. 35	. 16
NCS DC85111 VS 5358-90 NCS DC85107	. 0.12	0.0071 0.007 0.0034	. 0.046	. 2.1	. 1.7	. 0.006	. 14	. 0.014	. 4	32 30 24	. 0.034	. 13	. 1.6	. 38	. 28
NCS DC85108	.	0.0054	.	.	.	.	.	.	.	25	.	.	.	.	.
NCS DC85110	.	0.0065	.	.	.	.	.	.	.	42	.	.	.	.	.
NCS DC85109	.	0.0075	.	.	.	.	.	.	.	29	.	.	.	.	.

Number	Mo	Nb	Ni	Pb	Rb	Sc	Sn	Sr%	Th	V%	Y	Yb	Zn	Zr%
NCS DC85112 VS 5360-90 SARM 42	1.15 0.8 (5)	. 20 (8)	. 25 125	. 15 (10)	. 78 22	. 9 .	. 2.6 .	. 0.0012 0.0037	. (5)	. 0.0064 0.0094	. 27 11	. 4 .	. 42 44	. 0.053 0.0192
NCS DC85111 VS 5358-90 NCS DC85107	1.47 1.0 0.80	. 15 .	. 58 .	. 17 .	. 87 .	. 13 .	. 3.4 .	. 0.016 .	. .	. 0.011 .	. 27 .	. 3 .	. 73 67	. 0.030 .
NCS DC85108 NCS DC85110 NCS DC85109	(0.82) 0.73 1.53	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. 68 93 96	. . .

CRM SOIL

analysis listed in mass %						Org = Organic T = Total						DC360xx: 75 g units					DC730xx: 70 g units			
Number	SiO ₂	Al ₂ O ₃	C	CaO	Cl	CO ₂	C.Org	Fe ₂ O ₃ T	FeO	H ₂ O+	K ₂ O	MgO	Mn	N	Na ₂ O	S	Ti			
NCS DC73029	59.80	13.92	1.28	4.21	0.63	(3.0)	(0.5)	5.54	(1.5)	(4.2)	2.64	2.61	0.0882	0.0600	1.91	(0.0420)	0.50			
continued	analysis listed in mg/kg except * which is ng/g																			
Number	Ag	As	B	Ba	Be	Bi	Br	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	F	Ga	Gd	Ge
NCS DC73029	0.069	11.8	77	441	2.3	0.44	26	0.15	78	16.0	82	9.3	32	5.4	3.0	1.4	665	18.5	5.8	1.40
Number	Hf	Hg	Ho	I	In	La	Li	Lu	Mo	Nb	Nd	Ni	P	Pb	Pr	Rb	Re*			
NCS DC73029	6.1	0.058	1.08	6.1	0.066	42	50	0.48	0.65	17.4	36	38	675	28	9.3	123	(0.17)			
Number	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr	
NCS DC73029	0.77	13.8	0.13	6.6	3.4	154	1.3	0.93	(0.06)	13.5	0.71	0.49	2.6	104	2.1	29	3.1	97	210	

CRM SOIL - CONTAMINATED

certified analysis listed in mg/kg

T = Total

Number	As	B	Be	Cd	Co	Cr	Cu	F	Hg	Mn	Ni	Pb	Se	V	Zn	Type	Units
BAM U110 *	15.8	.	.	7.3	16.2	230	263	.	51.5	621	101	197	.	.	1000		60 g
JSAC 0411	11.3	.	1.04	0.274	.	23.5	26.7	.	.	943	11	18.9	1.32	68.6	64.6	Volcanic Ash Soil	50 g
JSAC 0401	10.62	.	5.28	4.25	.	50.4	15.3	.	.	266	18.9	26	0.27	65.0	66.8	Brown Forest Soil	50 g

* Aqua Regia values for BAM U110 listed under "Soil - Aqua Regia Method" in this catalog

CRM SOIL - CONTAMINATED

analysis listed in mass % except as noted

powder 75 g

Number	Hexavalent Cr	Cr	Fe	Mn	Al	Tot.Org.C	Ca	K	Mg	Na	Si	Ti	V	PH	Redox Potential
SRM 2701	0.05512	4.26	23.73	0.2137	(5.05)	(3.69)	(7.47)	(0.174)	(7.47)	(0.255)	(4.17)	(0.547)	(0.236)	9.6	(526 mV)

CRM SOIL - CYANIDE

analysis in mg/kg powder

Number	Total Cyanide	Uncertainty	Units
BAM U114	23.1	1.3	66 g last of stock

SOIL - CONTAMINATED

= class where 1 = CRM and 2 = RM

analysis listed in mg/kg except % which is mass %

CETEM: 80 g

all others: 50-55 g units

# Number	Ag	Al%	As	Au	B	Ba	Be	Bi	Br	C%	Ca%	Cd	Ce	Co	Cr	Cs	Cu	Dy
2 SRM 2780a	72.5	8.43	65.9	6.6	(27)	930	(1.1)	(45)	.	(0.19)	0.247	(4.8)	67.7	16.5	205	8.3	240	(3.1)
1 SRM 2710a	(40)	5.95	1,540	(0.2)	(20)	792	.	.	.	.	0.964	12.3	(60)	5.99	(23)	(8.25)	342	(3)
1 IRNT SVM **	(4)	(8.96)	13.6	.	(70)	582	(500)	.	(5)	.	(0.692)	0.214	(100)	15.4	79.8	(6)	30.0	(5)
1 IRNT SSP **	(5)	(7.48)	14.0	.	.	315	.	.	.	.	6.34	0.285	.	15.6	75.3	.	30.9	.
1 SRM 2709a	.	7.37	(10.5)	.	(74)	979	.	.	.	.	1.91	0.371	(42)	12.8	130	(5.0)	(33.9)	(3)
1 SRM 2586	.	6.652	8.7	.	.	413	(1.4)	.	.	.	2.218	2.71	58	(35)	301	.	(81)	(5.4)
1 SRM 2587	.	5.86	13.7	.	.	568	(9.2)	.	.	.	0.927	1.92	(57)	(14)	92	.	(160)	.

continued

Number	Er	Eu	Fe%	Ga	Gd	Ge	Hf	Hg	Ho	In	K%	La	Li	Lu	Mg%	Mn%	Mo
SRM 2780a	(2.0)	(0.9)	8.75	(21)	(3.2)	(<6)	(5.5)	(0.2)	(0.7)	(1.65)	3.99	34.4	(14)	(0.33)	0.465	0.0490	25.0
SRM 2710a	.	(0.82)	4.32	.	(3.0)	.	(7)	9.88	.	.	2.17	30.6	.	(0.3)	0.734	0.214	.
IRNT SVM **	.	(2)	3.73	.	(7)	.	(10)	0.171	.	.	3.08	(60)	(30)	(500)	(0.593)	0.0897	.
IRNT SSP **	.	.	3.73	.	.	.	.	0.0874	.	.	2.63	.	.	.	(1.19)	0.0734	.
SRM 2709a	.	(0.83)	3.36	.	(3.0)	.	(4)	(0.9)	.	.	2.11	(21.7)	.	(0.3)	1.46	0.0529	.
SRM 2586	(3.3)	(1.5)	5.161	(14)	(5.8)	.	.	0.367	(1.1)	.	0.976	29.7	(25)	.	1.707	0.1000	.
SRM 2587	.	.	2.813	(13)	.	.	.	0.29	.	.	1.583	(29)	(32)	.	0.6690	0.0651	.

continued

Number	Na%	Nb	Nd	Ni	P%	Pb%	Pr	Rb	Re	S%	Sb	Sc	Se	Si%	Sm	Sn	Sr
SRM 2780a	0.108	(20)	28.3	95	0.0286	0.665	(8)	220	(0.003)	8.85	18.3	15.6	(6)	24.1	4.7	(7.2)	121
SRM 2710a	0.894	.	(22)	(8)	0.105	0.552	.	(117)	.	.	52.5	(9.9)	(1)	31.1	(4.0)	.	255
IRNT SVM **	(0.3)	.	(50)	30.8	(0.000013)	0.00196	.	(200)	.	.	4.58	(15)	(300)	25	(10)	.	(82.0)
IRNT SSP **	.	.	.	37.4	.	0.00413	.	.	.	.	2.11	.	.	.	.	.	274
SRM 2709a	1.22	.	(17)	(85)	0.0688	0.00173	.	(99)	.	.	1.55	(11.1)	(1.5)	30.3	(4)	.	239
SRM 2586	0.468	(6)	26.4	(75)	0.1001	0.0432	(7.3)	.	.	.	.	(24)	(0.6)	29.15	(6.1)	.	84.1
SRM 2587	1.127	(14)	(25)	(36)	0.0970	0.3242	.	.	.	.	.	(11)	.	33.13	.	.	126

continued

Number	Ta	Tb	Te	Th	Ti%	Tl	Tm	U	V	W	Y	Yb	Zn%	Zr	
SRM 2780a	(1.2)	(0.5)	(22)	12.0	0.643	(5.5)	(0.31)	4.0	152	(17.4)	(18)	(2)	0.102	206	LOI: (11.1)
SRM 2710a	(0.9)	(0.5)	.	(18.1)	0.311	(1.52)	.	9.11	(82)	(190)	.	(2)	0.418	(200)	.
IRNT SVM **	(1)	(1)	.	(20)	0.55	(<200)	.	(3)	98.3	(3)	.	(4)	0.00888	(350)	last
IRNT SSP **	.	.	.	.	.	.	.	.	89.7	.	.	.	0.0119	(200)	last
SRM 2709a	(0.7)	(0.5)	.	(10.9)	0.336	(0.58)	.	(3.15)	110	.	.	(2)	(0.0103)	195	last
SRM 2586	.	(0.09)	.	(7)	0.605	.	(0.5)	.	(160)	.	(21)	2.64	0.0352	.	.
SRM 2587	.	.	.	(7.5)	0.3920	.	.	.	(78)	.	(15)	(1.6)	0.03358	.	.

** IRNT certificates expired, however use and sales continue without problems worldwide

RM

STEATITE

analysis listed in mass %

25 or 100 g units

Number	SiO ₂	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	TiO ₂	LOI
CERAM 2CAS14	62.7	0.149	0.249	0.314	0.002	31.28	0.008	0.005	5.10

CRM SULPHUR

Number	Recommended S Value (%)	95% Confidence Limits Low% High%	Standard Deviation of Between	Laboratories (%) Within	Number of Sets	Results	Units
CAN HCC-1	33.92	33.80	34.03	0.14	9	53	50 g
CAN INM-1	22.17	21.97	22.37	0.24	9	53	50 g

CRM SULPHUR IN VARIOUS FORMS - SEE ALSO "MULTI-METAL ORE"

analysis listed in mass %

Number	Type	S	SO ₄	Al	CO ₂	Ca	Cu	Fe	H ₂ O	Mg	Pb	Si	Zn	LOI	Units
NCS DC71307	Sulphide	52.72	.	.	.	.	0.0431	46.08	.	.	(0.00234)	.	0.0219	.	5 g
NCS DC71308	Sulphide	34.69	.	.	.	.	33.30	30.30	.	.	0.0128	.	0.30	.	5 g
CAN HCC-1	Concentrate	33.92	.	.	.	.	.	.	.	.	.	.	.	.	50 g
NCS DC71310	Sulphide	32.33	.	.	.	.	0.10	2.14	.	.	0.099	.	62.51	.	5 g
CAN WMS-1A	Sulphide	28.17	.	1.350	.	3.09	1.396	45.4	(0.2)	(0.331)	(0.0033)	(4.7)	(0.0130)	.	200 g
CAN INM-1	Concentrate	22.17	.	.	.	.	.	.	.	.	.	.	.	.	50 g
NCS DC71309	Sulphide	13.30	.	.	.	.	0.00624	0.0127	.	.	84.26	.	0.0533	.	5 g
CAN RTS-3a	Ore Tailings	9.59	(1.1)	5.12	0.04	2.14	0.2353	20.49	.	2.483	0.0209	18.28	0.2890	(10.6)	100 g

continued analysis listed in mass %

Number	C	Cd	Co	K	Mn	Na	Ni	P	Sb	Sn	Ti
NCS DC71307	.	0.000071	(0.00039)	.	0.00289	.	0.00340	.	0.00011	(0.00027)	.
NCS DC71308	.	0.00202	0.00751	.	0.00475	.	0.00413	.	(0.00027)	(0.00058)	.
CAN HCC-1	.	.	.	.	.	.	.	.	.	.	.
NCS DC71310	.	0.15	0.0491	.	0.0169	.	0.00432	.	0.0249	(0.00032)	.
CAN WMS-1A	(0.1)	(0.00014)	(0.145)	(0.0991)	(0.0600)	(0.0329)	3.02	(0.018)	(0.000692)	(0.00023)	(0.0840)
CAN INM-1	.	.	.	.	.	.	.	.	.	.	.
NCS DC71309	.	0.00165	(0.00004)	.	.	.	.	.	0.43	0.11	.
CAN RTS-3a	(0.04)	0.000921	0.0143	0.460	0.1585	0.684	0.00613	0.0446	0.000283	.	0.351

continued analysis listed in mg/kg

Number	Ag	As	Au	Ba	Bi	Cr	Ga	Ge	In	Pd	Pt	Se	Sr	Te	Tl	Zr
NCS DC71307	0.59	(14.4)	.	.	2.9	.	0.44	(0.2)	.	.	.	5.8	.	0.95	.	.
NCS DC71308	846	(3.1)	.	.	16.1	.	(0.3)	.	(66.6)	.	.	48.3	.	10.4	.	.
CAN HCC-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NCS DC71310	5.0	(3.3)	.	.	6.1	.	251	6.0	21.0	.	.	(3.0)	.	(0.3)	.	.
CAN WMS-1A	(3.7)	30.9	0.300	(70)	(1.2)	(68)	(4)	.	(0.2)	1.45	1.91	(87)	(31.3)	.	.	(20)
CAN INM-1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NCS DC71309	0.97%	5.3	.	.	1.4	.	(0.3)	1.47	0.29	.	.	.	.	(0.07)	0.65	.
CAN RTS-3a	11.1	18.2	0.561	106	31.3	176	(30)	.	(1.6)	(0.004)	.	44.8	44.7	(2.0)	(3)	78

CRM SULPHUR ORE

analysis listed in mass %

Number	Al ₂ O ₃	BaO	CaO	Cu	T.Fe	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	SiO ₂	TiO ₂	Zn	LOI	Units
UNS MII	10.63	0.049	0.49	0.21	6.79	2.22	2.06	0.11	0.93	(12)	(7)	(16)	0.50	1.79	(10)	100 g

continued analysis listed in mg/kg

Number	Ag	As	B	Cd	Co	Cr	Cs	Eu	Ga	Hf	La	Mo	Ni
UNS MII	(0.012)	0.0901	(0.005)	0.0767	0.0223	(0.012)	(0.003)	(0.003)	(0.008)	(0.003)	(0.003)	(0.003)	0.0329

Number	Pb	Rb	Sb	Sc	Sr	Ta	Th	U	V	W	Y	Yb	Zr
UNS MII	0.868	(0.005)	(0.004)	(0.003)	0.0259	(0.003)	(0.006)	(0.004)	0.0845	(0.004)	(0.008)	(0.006)	(0.008)

CRM SULPHUR ORE

Number	S%	C%
GS908-4	30.08	.
GS914-3	29.86	0.38
GS314-1	29.11	1.41
GS399-10	28.22	.
GS310-2	27.59	.
GS315-7	26.90	0.36
GS900-2	26.62	.
GS300-5	26.54	.
GS310-1	26.44	.
GS301-2	25.86	.
GS316-8	25.59	0.07
GS300-7	24.85	.
GS317-4	24.43	0.25
GS307-8	23.98	.
GS916-8	23.76	0.60
GS916-6	19.20	0.48
GS317-2	18.66	0.48
GS316-7	18.13	0.41
GS916-7	17.67	0.52
GS317-3	16.76	0.67
GS317-5	15.53	8.46
GS916-9	14.55	0.60
GS912-8	11.63	2.91
GS913-3	10.95	0.03
GS310-7	10.92	.
GS312-7	10.53	2.63
GS916-4	9.95	0.86
GS312-6	9.80	3.10
GS315-10	8.40	0.16
GS910-4	8.27	.
GS913-1	7.90	0.06
GS314-8	7.82	0.26
GS907-4	7.68	.
GS908-7	7.55	.
GS917-1	7.33	0.47
GS913-5	7.30	0.03
GS913-6	7.22	0.04
GS913-7	7.18	0.04
GS307-7	7.04	.
GS915-10	6.90	0.13
GS302-6	6.75	2.84
GS913-4	6.58	0.04
GS913-8	6.56	0.04
GS314-10	6.50	0.37
GS914-6	6.35	1.18
GS301-1	6.13	.
GS310-8	5.91	.
GS907-6	5.77	.
GS905-3	5.64	.
GS913-2	5.49	0.06
GS914-4	5.44	1.00
GS315-6	5.35	0.26
GS300-2	5.16	.
GS315-2	4.91	0.18
GS314-4	4.87	0.24
GS905-8	4.38	.
GS915-5	3.88	0.12
GS902-3	3.84	.
GS912-7	3.52	0.09
GS314-3	3.37	0.36
GS914-7	3.34	0.04
GS901-1	3.20	.
GS310-3	3.30	.
GS917-2	3.09	0.40
GS916-10	2.90	0.03
GS311-2	2.88	.
GS907-7	2.82	.
GS310-6	2.64	.
GS314-2	2.56	5.15
GS903-3	2.54	.
GS311-1	2.35	.
GS902-7	2.32	.
Number	S%	C%

CRM SULPHUR ORE

Number	S%	C%
GS914-9	2.29	0.57
GS399-5	2.29	.
GS305-1	2.20	.
GS310-5	2.20	.
GS916-3	2.17	0.26
GS915-1	2.06	0.08
GS916-5	2.05	0.07
GS302-5	1.98	.
GS311-9	1.98	.
GS302-9	1.94	.
GS313-9	1.89	0.08
GS911-8	1.76	.
GS997-10	1.74	.
GS305-6	1.71	.
GS901-8	1.65	.
GS910-6	1.50	.
GS300-4	1.43	.
GS305-5	1.41	.
GS305-7	1.41	.
GS313-8	1.24	0.94
GS916-1	1.18	0.59
GS310-4	1.17	.
GS311-3	1.12	.
GS398-2	1.10	.
GS914-5	1.08	1.39
GS312-4	1.05	0.04
GS315-9	0.94	0.34
GS900-3	0.92	.
GS910-3	0.92	.
GS910-7	0.86	.
GS313-7	0.78	0.74
GS305-2	0.76	.
GS312-8	0.75	0.03
GS900-4	0.71	.
GS302-3	0.68	.
GS906-9	0.68	.
GS312-1	0.67	0.05
GS314-9	0.64	1.13
GS903-1	0.63	.
GS910-9	0.63	.
GS309-1	0.61	.
GS303-7	0.59	.
GS316-4	0.58	0.09
GS916-2	0.56	0.17
GS314-6	0.56	0.15
GS316-2	0.56	0.08
GS311-4	0.54	.
GS917-5	0.53	0.30
GS912-3	0.52	0.07
GS305-10	0.51	.
GS312-3	0.47	0.06
GS301-6	0.40	.
GS300-8	0.37	.
GS917-4	0.36	0.05
GS316-1	0.36	0.04
GS316-3	0.34	0.06
GS303-9	0.31	.
GS312-5	0.28	0.88
GS915-2	0.28	0.13
GS303-10	0.27	.
GS310-10	0.27	.
GS914-2	0.26	0.06
GS313-3	0.25	0.13
GS315-8	0.25	0.19
GS914-10	0.24	0.21
GS903-6	0.23	.
GS317-1	0.21	0.15
GS906-6	0.21	.
GS312-9	0.21	0.03
GS915-3	0.19	0.11
GS914-1	0.18	0.04
GS906-5	0.18	.
GS398-6	0.16	.
GS915-8	0.13	0.07
GS915-9	0.12	0.04
GS917-8	0.11	5.78
GS314-5	0.11	0.08
GS912-1	0.09	0.03
GS917-9	0.09	5.56
Number	S%	C%

CRM SULPHUR ORE

Number	S%	C%
GS915-6	0.09	0.04
GS316-9	0.08	0.06
GS316-10	0.08	0.03
GS311-5	0.07	.
GS317-8	0.06	0.04
GS912-2	0.06	0.03
GS307-2	0.06	.
GS316-5	0.05	0.46
GS316-6	0.05	0.45
GS912-10	0.05	0.11
GS912-6	0.05	0.06
GS317-6	0.05	0.05
GS915-4	0.05	0.03
GS313-1	0.05	0.03
GS910-5	0.05	.
GS911-5	0.05	.
GS911-9	0.05	.
GS315-4	0.04	0.11
GS912-9	0.04	0.12
GS314-7	0.04	0.09
GS313-10	0.04	0.06
GS917-3	0.04	0.05
GS315-3	0.04	0.04
GS317-10	0.04	0.04
GS312-10	0.04	0.03
GS312-2	0.04	0.22
GS910-2	0.04	.
GS313-4	0.03	0.26
GS313-5	0.03	0.25
GS313-6	0.03	0.12
GS912-5	0.03	0.10
GS313-2	0.03	0.03
Number	S%	C%

for all GS Sulfur Ore samples,
unit size is 10 g powder

CRM SYENITE WITH EXTENSIVE ANALYSISanalysis listed in mass % * Provisional Analysis $^{87}\text{Sr}/^{86}\text{Sr}$ ratio: 0.70375 GBW, US: 50 g all others: 100 g units

Number	SiO ₂	Al ₂ O ₃	CO ₂	CaO	Cl	F	FeO	Fe ₂ O ₃	T.Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	TiO ₂	LOI
US-STM-2 *	60.90	18.4	.	1.09	(0.0570)	.	(2.00)	.	5.39	T.Fe:3.77	4.07	0.12	Mn:0.1640	8.90	0.17	.	0.16	.
JSy-1	60.02	23.17	.	0.25	.	.	.	0.084	.	4.82	0.016	0.0024	10.74	.	.	.	.	.
VS 6104-91	57.86	16.68	(0.20)	6.94	.	0.082	2.51	.	5.41	(-0.05, +0.28)	4.77	1.25	0.14	4.51	0.39	(0.017)	0.78	(0.38)
GBW 07109	54.48	17.72	0.26	1.39	0.059	0.048	1.23	6.04	.	2.38	7.48	0.65	0.12	7.16	0.018	0.011	0.48	.
CGL 015	52.20	24.59	.	1.98	.	(0.10)	2.60	.	4.67	(-0.104, +0.58)	4.44	0.37	(0.100)	9.76	0.139	.	0.37	1.05

continued analysis listed in mg/kg except % which is mass %

Number	Ag	As	B	Ba	Be	Bi	Br	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Ge
US-STM-2 *	(1.2)	.	(5.4)	639	9.7	.	.	.	256	.	.	1.52	.	(0.01)	(4.4)	3.45	34	(0)	.
JSy-1	.	.	.	15.7	.	.	.	.	2.6	.	2.0	0.69	1.3	0.37	0.30	0.16	23.5	7.0	0.95
VS 6104-91	(0.03)	(12)	(7)	0.69%	1.9	.	.	.	219	8	16	(1)	5	(6.9)	(2.5)	4.5	17	(10)	(1.2)
GBW 07109	.	6.27	31.8	251	17.2	0.37	1.21	0.07	242	4.59	3.6	2.05	11.8	4.70	2.48	2.35	35.8	.	.
CGL 015	.	.	.	1305	(1.86)	.	.	.	58.24	(5.33)	25.6	(1.31)	6.40	(4.49)	(2.69)	(1.36)	22.63	(4.75)	.

Number	Hf	Hg	Ho	I	In	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Rb	Sb	Sc
US-STM-2 *	27	.	(1.55)	.	.	154	36	0.60	6.2	267	01	(4.0)	12	25	114	.	.
JSy-1	1.2	.	0.094	.	.	1.2	.	0.076	.	0.51	1.2	1.1	4.9	0.32	66.3	0.15	.
VS 6104-91	5	.	(1)	.	.	108	10.5	0.33	1.1	20	102	8.4	21	(23)	56	.	4
GBW 07109	34.0	0.005	0.96	0.14	0.15	149	32.9	0.43	0.26	66.9	65.1	1.75	196	22.5	130	0.15	2.22
CGL 015	(3.15)	.	(0.93)	.	.	27.48	64.95	(0.42)	(1.51)	22.63	27.34	(3.4)	7.00	(6.99)	85.36	(0.14)	2.76

Number	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
US-STM-2 *	.	12.0	(6.6)	702	16	(1.30)	.	27	.	0.55	(7.6)	(5.5)	(2.2)	43	4.2	223	1200
JSy-1	.	0.27	0.17	19.3	.	.	0.23	.	0.053	0.20	2.1	.	.	2.6	0.41	3.2	70.2
VS 6104-91	.	16	(1.9)	0.52%	(1.8)	(1.7)	.	(12)	.	(0.45)	(2)	79	.	25	2.3	109	185
GBW 07109	0.05	9.7	6.50	1160	1.96	1.02	0.012	79.3	0.76	0.46	14.6	179	1.24	24.7	2.56	112	1540
CGL 015	.	(5.09)	.	312	(1.21)	(0.76)	.	(4.63)	(0.32)	(0.4)	(1.59)	(5.8)	(4.36)	25.32	2.66	75.42	157

NEPHELINE SYENITE

= class, where 1 = CRM and 2 = RM analysis listed in mass % GBW: 50 g units all others: 100 g units

#	Number	SiO ₂	Al ₂ O ₃	Ba	CO ₂	CaO	FeO	Fe ₂ O ₃	H ₂ O	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	Sr	TiO ₂	LOI
1	GBW 03124	60.64	20.05	.	.	0.52	0.28	1.37	2.34+	5.06	0.13	0.050	8.97	0.020	(0.011)	.	0.12	2.37
2	BCS 201a	57.3	23.54	.	.	1.07	.	0.12	.	8.90	0.025	.	7.53	0.025	.	.	0.05	0.76
1	USZ 45-2007	51.88	22.58	0.0447	(1.16)	2.28	0.80	2.63	.	9.10	0.24	0.14	6.78	0.04	.	0.01740	0.37	3.35
1	VS 728-75	40.18	28.5	.	1.6	7.13	(1.43)	3.25T	(1.9+)	(3.3)	1.01	(0.04)	12.2	0.51	0.084	.	0.24	.
1	GBW 03125	39.42	29.67	.	2.97	5.98	1.24	0.33	1.78+	4.72	0.92	0.031	12.59	0.072	(0.064)	.	0.14	.

continued analysis in mg/kg except % which is mass %

Number	As	Ce	Cr	Cu	F%	Ga	La%	Li	Nb%	Pb	Rb%	Th	U	V	Y	Zn%	Zr%
GBW 03124	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
BCS 201a	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USZ 45-2007	23.8	30.8	44	(2.6)	(0.26)	23	0.0163	54	0.0040	114	0.0207	61.6	12.4	30	23	0.0098	0.0600
VS 728-75	.	.	.	.	.	.	.	.	.	.	.	.	Fe ₂ O ₃ : (1.66%)	.	.	InsRes: (3.5%)	.
GBW 03125	.	.	.	.	.	.	.	.	.	.	.	.	2.3	.	.	.	.

TITANIUM ORE

analysis listed in mass %

#	Number	Ilmenite	TiO ₂	Al ₂ O ₃	C	CaO	Co	Cr	Cr ₂ O ₃	Fe	FeO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O
2	OSO Ki-370-99	95.41														
1	NCS HC26619		98.21	0.65	0.011							0.006				
1	DSZU 123.22-95		65.33	3.17		0.51			1.32	16.10				0.53	0.92	
1	DSZU 123.21-95		59.48	1.02		0.40			0.15	26.76				0.38	0.51	
1	VS R31		56.5	1.99					2.59	24.4						
1	NCS DC28139		55.68	2.30		0.070	0.0026		2.80	22.04	9.15			1.09	1.26	
1	NCS DC26705		51.35	0.75	0.043	0.16			(0.07)	31.40	23.81			0.84	0.90	
1	NCS DC28142		50.06	1.30		0.68	0.011		0.84	30.23	28.85			1.52	0.875	
1	NCS DC19019		49.78	0.53		0.028			0.054	34.56	25.05			0.32	1.55	
1	NCS DC28138		47.82	0.68		0.68	0.0087		0.014	34.79	39.14			2.11	0.652	
1	NCS DC28140		45.73	0.95		2.23	0.051		0.012	33.02	36.68			1.68	0.882	
1	NCS DC19017		45.71	1.64		1.75			0.014	29.12	32.56			5.18	0.709	
1	NCS DC28141		45.61	0.867		1.65	0.0098		0.0067	33.58	37.51			1.74	0.799	
1	AMIS 0454 *	Ti: 26.78	44.45	0.731		0.216		(0.0713)	(0.114)	see below	52.53	(0.045)		0.74	1.19	(0.03)
1	NCS DC28137		40.66	1.35		4.78	0.010		0.0064	30.31	33.33			1.30	1.20	
1	NCS DC28143		35.60	1.65		6.25	0.013		0.0077	29.29	29.34			1.55	1.02	
1	NCS DC19018		33.94	4.47		3.14			0.0085	27.30	29.70			6.88	0.524	
1	NCS DC28136		27.23	2.31		9.49	0.015		0.0078	26.50	23.62			2.34	0.802	
1	CGL 129	17025	14.88	9.79		1.16	0.0209	0.3068		61.86		61.86T	0.137	3.05	0.240	(0.086)
1	NCS DC28134		7.11	8.67		12.39	0.0052		0.0084	14.85	12.45			6.33	0.216	
1	NCS DC28135		6.14	8.82		9.87	0.0079		0.0095	15.07	12.77			6.78	0.187	

Number	Ni	P	P ₂ O ₅	S	SiO ₂	Sr	V	V ₂ O ₅	Zn	Zr	LOI	Units
OSO Ki-370-99												1 kg of ~3mm material
NCS HC26619				0.006								20 g
DSZU 123.22-95			0.15	0.0090	1.45			0.18				100 g
DSZU 123.21-95			0.24	0.96	3.00			0.26				100 g
VS R31			0.25		1.24							100 g
NCS DC28139	0.0007	0.047		0.025	1.54			0.266	0.017		Cu:0.0093	50 g
NCS DC26705		0.045		0.004	1.98			0.22				40 g
NCS DC28142	0.0021	0.048		0.172	2.04			0.700	0.017		Cu:0.0073	50 g
NCS DC19019		0.0048		0.010	0.578			0.137				100 g
NCS DC28138	0.0029	0.0076		0.184	2.65			0.095	0.016		Cu:0.0056	50 g
NCS DC28140	0.0051	0.048		0.74	4.85			0.203	0.016		Cu:0.013	50 g
NCS DC19017		0.117		0.0080	5.99			0.090				100 g
NCS DC28141	0.0046	0.047		0.536	4.16			0.188	0.015		Cu:0.011	50 g
AMIS 0454 *			(0.030)		2.23			(0.24)	ZrO ₂ : (0.12)		Nb: (0.0576)	100 g
NCS DC28137	0.0084	0.117		1.52	9.21			0.068	0.014		Cu:0.022	50 g
NCS DC28143	0.011	0.476		2.76	10.41			0.505	0.016		Cu:0.027	50 g
NCS DC19018		0.558		0.028	11.73			0.101				100 g
NCS DC28136	0.013	1.07		4.77	14.41			0.066	0.015		Cu:0.038	50 g
CGL 129	0.0306		0.022		7.77	0.0152	0.02818		0.0575	0.00354	(-0.25)	150 g
NCS DC28134	0.0037	0.883		0.196	38.43			0.062	0.019		Cu:0.0082	50 g
NCS DC28135	0.0098	0.232		0.021	42.61			0.092	0.018		Cu:0.016	50 g

* AMIS 0454 certifies Fe by XRF 36.50%, Titration 37.14%, and M/ICP 36.37%.

Special Note: more Titanium Powders are in our "Other Chips & Powders Catalog."

RM	ILMENITE																		typical analysis listed in mass %										100 g
Number	TiO ₂	Al ₂ O ₃	C	CaO	Co ₃ O ₄	Cr ₂ O ₃	CuO	Fe	K ₂ O	MgO	Mn	NiO	P ₂ O ₃	S	SiO ₂	SrO	V ₂ O ₅	ZnO	ZrO ₂										
DH 6706	32.37	4.46	0.044	1.179	0.024	0.143	0.017	36.83	0.118	2.82	0.094	0.049	0.017	0.288	7.31	0.016	0.285	0.020	0.044										

CRM TUNGSTEN ORE

analysis listed in mass % except * which is mg/kg CAN: 200 g GW: 10 g IGS: 65 g all others: 100 g

Number	W	WO ₃	Ag*	As	Be	Bi	Cu	Fe	Ge*	Mo	Nb	P	Pb	S	Sn	Zn
VS 1710-79	.	71.96	.	.	.	0.146	.	.	.	.	.	.	.	.	.	.
SRM 2430	.	70.26	.	0.002	.	0.078	.	.	.	0.22	.	0.017	.	0.26	.	.
SRM 277	.	67.50	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CAN CT-1	1.04	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CAN BH-1	0.422	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 7027-93	0.17	.	.	.	.	0.015	.	.	.	0.0093	0.0014	.	.	.	.	Zr:0.013
GW-03	0.1744	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
GW-02	0.1231	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KZ 7026-93	0.11	1.2	.	.	0.0022	0.018	0.052	.	3.6	0.00098	0.0015	.	.	Sr:0.017	.	.
CAN TLG-1	0.083	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
IGS 27	0.036	.	.	.	.	.	.	1.76	.	0.276	.	.	.	.	.	.
VS 1714-79	.	1.04	10.3	.	.	0.089	.	.	.	0.041	.	.	.	.	0.113	.
VS 1715-79	.	0.60	.	.	0.013	0.054	0.020	.	3.1	0.026	.	.	0.049	.	0.068	0.038
VS 2040-81	.	0.49	.	.	.	0.0058	0.053	0.94	.	0.016	.	.	.	.	.	.
VS 2042-81	.	0.38	.	.	.	0.0032	0.105	4.17	.	0.039	.	.	.	.	.	.
VS 2039-81	.	0.22	.	.	.	0.023	0.27	2.47	.	0.0026	.	.	.	.	.	.
VS 1713-79	.	0.17	5.5	.	0.0058	0.015	.	.	2.9	0.011	.	.	.	.	0.028	.
VS 1711-79	.	0.036	.	.	0.0022	0.0044	.	.	.	0.0026	.	.	.	.	0.0071	.

CRM TUNGSTEN ORE

analysis listed in mass % T = Total GBW: 50 g USZ: 100 g units

Number	WO ₃	Al ₂ O ₃	As	Bi	CaO	Cy	F	FeO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Mo	Na ₂ O	Pb	Rb	S	SiO ₂
USZ 26-99	0.41	14.14	0.09	0.0067	1.95	.	.	3.72	5.59T	4.32	2.04	0.12	0.079	2.13	0.0076	0.106	.	64.87
GBW 07241	.	11.15	.	0.068	4.17	0.096	4.84	.	5.60	1.58	0.14	0.090	0.098	0.12	.	(0.05)	1.90	71.27
GBW 07240	.	8.24	0.18	0.011	37.73	0.79	9.91	.	7.79	1.94	1.45	0.97	.	0.16	0.26	(0.08)	3.12	13.27

analysis listed in mass %			analysis listed in mg/kg except % which is mass %															
Number	Sn	TiO ₂	Zn	Ag	As	Cd	Ce	Co	Cu%	Dy	Eu	Er	Ga	Gd	Ge	Ho	In	La
USZ 26-99	(0.016)	0.82	0.017	.	.	.	.	11	0.022	.	.	.	.	.	.	.	.	.
GBW 07241	0.17	0.044	0.010	1.8	69.6	0.94	60.3	.	.	20.7	0.17	13.1	16.5	14.8	11.2	4.5	1.3	1.8
GBW 07240	0.14	0.079	0.29	8.3	.	26.1	10.0	.	.	0.46	0.15	0.23	17.8	0.64	2.5	0.11	8.7	5.0

analysis listed in mg/kg except % which is mass %																				
Number	Lu	Mo	Nd	Ni	Pb	Pr	Sb	Sc	Se	Sm	Sr	Tb	Te	Th	Tl	Tm	Y	V%	Yb	Zr%
USZ 26-99	.	.	.	35	.	(20)	.	.	.	.	78	.	.	.	.	.	.	0.010	.	0.017
GBW 07241	2.4	.	32.9	2.8	81.2	7.9	3.1	5.4	0.96	12.5	.	3.3	2.9	28.3	1.8	2.2	128	.	14.9	.
GBW 07240	0.06	4.2	4.0	4.1	.	1.1	5.1	1.8	0.39	0.79	.	0.15	0.66	2.2	5.0	0.04	2.8	.	0.28	.

CRM TUNGSTEN ORE

analysis in mass % except * is mg/kg more information on certificates 10g, 60g, 500g, or 1 kg units

Number	W	WO ₃	Au*	Cu	Fe	FeO	Fe ₃ O ₄	Mo	SiO ₂	Sn	Mass Recovered
OREAS 701	2.43	3.07	1.11	0.491	23.98	17.35	17.95	0.0254	33.95	0.0197	20.80
OREAS 700	1.13	1.42	0.506	0.202	16.06	12.07	10.91	0.0081	47.30	0.0182	11.28

RM TUNGSTEN ORE

analysis listed in mass % 10 x 100 g units

Number	W	Ag	Al ₂ O ₃	Bi	C	CaO	Cu	Fe ₂ O ₃	K ₂ O	MgO	Mo	Na ₂ O	S	SiO ₂	TiO ₂	LOI
CDN W-2	2.78	.	(3.1)	0.32	.	(10.1)	0.45	(43.4)	(1.0)	(5.2)	.	(0.8)	.	(27.9)	(0.1)	(5.7)
CDN W-3	1.73	.	(2.4)	0.2142	.	(8.4)	0.44	(49.5)	(0.6)	(3.9)	.	(0.8)	.	(25.3)	(0.1)	(6.5)
CDN W-5	0.391	.	(12.7)	.	(0.2)	(28.9)	.	(11.9)	(0.1)	(1.0)	.	(0.1)	.	(41.6)	(0.1)	(0.9)
CDN W-4	0.366	(0.319)	(12.7)	.	.	(3.8)	0.139	(13.7)	(2.4)	(2.3)	0.110	(2.0)	(0.3)	(56.2)	(0.5)	(4.5)

RM ULTRAMAFIC ROCK - KOMATIITE

analysis listed in mass %

Number	Al ₂ O ₃	CaO	T.Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI
IAG OKUM	7.97	7.85	11.81	0.044	21.2	0.188	1.13	0.026	44.1	0.380	(4.49)

continued analysis listed in mg/kg

Ba	Be	Ce	Co	Cr	Cs	Cu
(6.2)	(0.065)	1.27	88	2460	0.184	43

continued analysis listed in mg/kg

Number	Dy	Er	Eu	Ga	Gd	Hf	Ho	La	Li	Lu	Nb	Nd	Ni	Pb	Pr	Rb
IAG OKUM	1.61	1.04	0.300	8.7	(1.17)	0.55	0.355	0.41	(4.4)	0.148	0.37	1.49	88	(0.26)	0.235	0.96

Number	Sb	Sc	Sm	Sn	Sr	Ta	Tb	Th	Tm	U	V	Y	Yb	Zn	Zr	Units
IAG OKUM	(0.079)	27	0.71	(0.25)	16	0.026	(0.229)	0.031	(0.155)	(0.012)	167	9.0	1.00	61	17	100 g

CRM URANIUM ORE

analysis listed in mass % powder 10 g

Number	U	Cu	Fe
GU-10	0.1876	.	.
GU-09	0.1134	.	.
GU-08	0.03124	.	.
GU-07	0.02429	.	.
GU-11	0.003467	.	.
GU-03	0.00048	0.00210	3.5
GU-04	0.00042	.	.
GU-06	0.000382	.	.
GU-05	0.000356	.	.

CRM URTITE

analysis listed in mass %

40 g units

Number	SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MnO	MgO	CaO	Na ₂ O	K ₂ O	FeO	P ₂ O ₅	Ba	Sr
VS 2123-81	42.80	1.79	26.47	2.67	0.084	0.14	3.73	13.33	5.16	1.40	0.388	0.035	0.100

continued analysis listed in mg/kg

Number	Be	Co	Cr	Cu	Ga	La	Li	Mo	Nb	Ni	Pb	Rb	Sn	V	Y	Yb	Zn	Zr
VS 2123-81	5.1	8.1	9.7	24	48	100	8.9	2.3	97	6.5	5.8	79	3.4	86	26	1.7	44	220

CRM VANADIUM ORE

analysis listed in mass %

10 g units

Number	V ₂ O ₅	Al ₂ O ₃	CaO	Cr ₂ O ₃	Fe	K ₂ O	MgO	MnO	Na ₂ O	SiO ₂	TiO ₂	Co	Cu	Ni	P	S	Zn	LOI
GV-01	1.233	5.57	0.079	0.721	48.95	0.010	1.30	0.148	0.015	4.27	14.104	0.019	0.022	0.067	0.005	0.067	0.037	2.07
GV-02	0.790	11.24	2.484	0.560	34.41	0.080	2.80	0.161	0.573	19.76	9.174	0.017	0.033	0.061	0.018	0.220	0.030	2.76
GV-06	0.343	7.18	6.204	0.007	25.93	0.464	9.73	0.326	0.627	30.57	6.549	0.014	0.007	0.016	0.102	0.018	0.027	0.91
GV-03	0.327	16.78	2.966	0.044	20.24	0.183	3.59	0.176	0.843	33.96	4.302	0.013	0.013	0.048	0.023	0.073	0.016	7.44
GV-05	0.223	7.53	4.004	0.008	23.97	0.440	14.33	0.350	1.272	34.61	4.121	0.017	0.006	0.022	0.099	0.013	0.024	-1.28
GV-04	0.089	11.93	8.822	<0.01	13.15	1.809	4.21	0.263	3.008	45.99	3.568	0.005	0.013	0.004	0.348	0.086	0.020	0.47

RM VOLCANIC TUFF WITH EXTENSIVE ANALYSIS

analysis listed in mass %

~35 g units

Number	Al ₂ O ₃	Ba	CaO	FeO	T.Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	SiO ₂	Sr	TiO ₂	V	LOI
IAG OU-1	15.136	0.01314	6.488	4.995	8.987	0.215	4.727	0.129	2.463	0.050	58.247	0.010476	0.440	0.022223	3.058

continued analysis listed in mg/kg

Number	As	Be	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Hf	Ho	La	Li
IAG OU-1	8.221	0.43	0.17	12.49	24.41	27.65	0.14	61.55	3.40	2.40	0.52	13.63	2.78	1.65	0.80	5.60	20.35

Number	Lu	Nb	Nd	Ni	Rb	Sb	Sc	Sm	Ta	Tb	Th	Tm	U	Y	Yb	Zn	Zr
IAG OU-1	0.39	2.3	7.32	13.00	2.05	0.22	32.69	2.13	0.15	0.49	1.68	0.37	0.40	21.63	2.49	74.40	55.00

CRM WOLLASTONITE

analysis listed in mass %

50 g units

Number	Al ₂ O ₃	CaO	FeO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	S	SiO ₂	TiO ₂	LOI
GBW 03123	0.39	40.39	0.28	0.10	0.14	0.95	0.096	0.052	0.052	(0.010)	50.50	0.022	6.93

CRM ZEOLITE WITH EXTENSIVE ANALYSIS

analysis listed in mass %

T = Total

Number	Al ₂ O ₃	Ba	CaO	Fe ₂ O ₃	H ₂ O-	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	Rb	SiO ₂	Sr	TiO ₂	Zr	LOI	Units
FLX CRM104	33.74	.	0.063	0.014	.	.	.	.	20.06	.	.	45.98	.	.	.	(22.64)	35 g
USZ 49-2009	12.98	0.0371	1.34	1.27T	.	3.19	0.573	0.033	3.44	0.032	0.0106	67.44	0.0635	0.158	0.0177	8.80	70 g
CGL 017	12.91	0.0383	1.30	0.802T	(4.17)	3.21	(0.55)	0.007	3.35	0.030	0.0107	67.64	0.0651	0.161	(0.0179)	(9.77)	70 g
NH Zeolite 1	12.21	0.0779	4.51	1.75T	.	2.19	1.41	0.045	0.612	0.055	0.00957	67.11	0.0617	0.190	0.0158	.	50 g

continued analysis listed in mg/kg

Number	As	Be	Bi	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Ga	Gd	Hf	Hg	Ho
FLX CRM104	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USZ 49-2009	60.5	(2.75)	(11.7)	(7.85)	74.8	20.3	12.7	4.73	79.3	(3.46)	(1.83)	(0.50)	13.8	(3.81)	(5.38)	(1.85)	(0.66)
CGL 017	(63)	(2.6)	.	.	(77)	(0.94)	(7.9)	.	(2.9)	(3.5)	(1.91)	(0.49)	14.84	(4.3)	(7.9)	.	(0.67)
NH Zeolite 1	1.96	1.96	.	.	52.3	.	.	3.88	5.12	.	.	.	13.9	.	.	0.329	.

Number	La	Li	Lu	Mo	Nb	Nd	Ni	Pb	Pr	Sb	Sc	Sm	Sn	Ta	Tb	Th	Tm
FLX CRM104	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
USZ 49-2009	37.2	(6.07)	(0.27)	(0.43)	14.1	27.3	14.6	84.2	(7.97)	(50.9)	3.27	(4.82)	(2.27)	(1.16)	(5.9)	17.2	(0.27)
CGL 017	(39.5)	(6.4)	(0.28)	.	14.17	(27.5)	(2.2)	21.78	(8.4)	.	(3.6)	(5.1)	(2.6)	(1.26)	(0.63)	(17.3)	(0.29)
NH Zeolite 1	32.6	.	.	.	.	.	.	20.8	.	0.379	.	.	.	.	.	.	.

Number	U	V	W	Y	Yb	Zn
FLX CRM104	.	.	.	.	.	.
USZ 49-2009	3.09	42.3	(1.52)	18.6	(1.81)	79.3
CGL 017	(3.1)	(11.1)	.	20.36	(1.8)	25.37
NH Zeolite 1	.	12.6	.	21.8	.	38.2

17025

CRM

ZINC ORE

analysis listed in mass % except * which is mg/kg T = Total

Number	Zn	S	Al ₂ O ₃	Ca	CaO	Cd	Cu	Fe	Hg*	Mg	MgO	Ni	Pb	Sb	SiO ₂
IMN TC/P10	60.6	3.07	0.14		2.54			6.7			1.38		2.31		0.56
CAN CZN-4	55.24	33.07	Al:0.0715	(0.0419)		0.2604	0.403	(9)	4.54	(0.0352)		(0.0016)	0.1861	(0.0010)	Si:0.295
BCS 520	52.50	31.78	0.334		0.125		0.568	9.88			0.266		0.820		1.78
GBM305-12	17.0581						0.0119					0.0042	0.4214		
GBM310-16	17.0201	21.4					0.3459					0.0035	11.2603		
GBM310-13	10.8471	5.9					0.0334					0.0072	2.1599		
GBM919-13	6.5874	5.78					1.6692					0.0056	0.3986		
GBM916-11	6.0894	9.89					1.0864					0.0009	0.2843		
IMN RG 8	5.4	0.57	0.9		26.45	0.047		6.34			12.16		0.84		2.64
GBM907-14	3.1882	2.90					0.8167					0.0061	0.1973		
GBM311-11	3.1115	3.3					1.4504					0.0078	1.0730		
IMN RB 7	3.07	(10.3)			24.35	0.033		8.28			15.26		(0.26)		(0.8)
GBM916-9	2.9716						0.5257					0.0026	0.2710		
GBM919-12	1.6668	23.18					0.7274					0.0048	0.0206		
GBM906-14	1.5949						1.1758						0.0405		
GBM917-13	1.1030	1.91					0.8149					0.0041	0.8374		
BCR 109						0.46	0.946	14.51	0.96	0.020			0.738		

continued

Number	Ag*	As	Au*	Bi*	C	Cl	Co	F	In	Mn	PbO	Se*	Sn	ZnO	Units
IMN TC/P10															240 g last
CAN CZN-4	51.4	0.0356	(0.04)	(10)	(0.09)	(0.003)	0.00935	(0.004)	(0.020)	(0.009)		86.7	(0.05)		200 g
BCS 520	36	0.0228													100 g
GBM305-12															10 or 250 g
GBM310-16	314.3														10 or 250 g
GBM310-13	30.8														10 or 250 g
GBM919-13	17.3														
GBM916-11	68.0														
IMN RG 8											(0.72)		(4.36)		130 g
GBM907-14															10 or 250 g
GBM311-11	19.6														10 or 250 g
IMN RB 7															170 g
GBM916-9	40.6	0.0233					0.0044								
GBM919-12	5.3														
GBM906-14	2.9						31								10 or 250 g
GBM917-13	206.4														
BCR 109								0.0081							10 or 250 g

CRM

ZINC ORE WITH EXTENSIVE ANALYSIS

analysis listed in mass % T = Total * Provisional Analysis CGL: 200 g GBW: 50 g JZn-1: 100 g units

Number	Zn	Al ₂ O ₃	CaO	T.C	Cu	F	Fe ₂ O ₃	H ₂ O-	H ₂ O+	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	Pb	S	SiO ₂	TiO ₂	LOI
CGL 207	49.14	0.112	0.850		0.1940		10.45T				(0.068)	6.20	(0.016)	(0.026)	0.3407	31.12	(1.73)		
GBW 07237	2.75	2.80	1.91		0.71	1.20	3.50			0.99	0.082	0.026	0.56		0.25	2.87	82.95	0.017	
JZn-1 *	2.22	6.32	18.1	(1.28)	(0.0029)		11.8	(0.61)	(1.71)	0.83	1.94	1.49	0.45		0.161	(1.30T)	(43.95)	0.20	(6.61)

continued analysis listed in mg/kg

Number	Ag	As	Ba	Be	Bi	Cd	Ce	Co	Cr	Cs	Dy	Eu	Er	Ga	Gd	Ge	Ho	In	La	Li
CGL 207	33.43	167.7	(9.48)	(0.254)	309.6	910.5	(9.82)	424.4	(29.86)	(0.425)				(2.83)		(0.743)		152.9	(7.30)	
GBW 07237	13.5	12.4			56.4	29.3	2.3		(62)		0.49	0.06	0.28	8.0	0.31	1.4	0.13	0.23	1.3	(86)
JZn-1 *		(99)	(208)			(114)		(24)	(21)											(19.5)

Number	Lu	Mo	Nd	Ni	Pr	Rb	Sb	Sc	Se	Sm	Sn	Sr	Tb	Te	Th	Tl	Tm	U	V	W	Y	Yb
CGL 207		255.6		11.18	(0.938)		(3.24)					(5.65)			(0.450)		7.86	(1.52)				
GBW 07237	0.08	2.8	0.92	5.5	0.30	(73)	1.1	0.33	2.3	0.36	6.1		0.10	0.17	(1.1)	0.49	0.05			3.4	4.5	0.42
JZn-1 *				(6)		(42)	(31)					(358)							(24)			

CRM

ZINC ORE - EXTENSIVE CERTIFIED ANALYSIS ON CERTIFICATES AVAILABLE ON REQUEST

analysis listed in mass % except * which is mg/kg

Number	Zn	Ag*	Au*	Cu	Pb	S	Units
OREAS 622	10.24	102	1.85	0.486	2.21	7.95	10 or 60 g
OREAS 621	5.22	69	1.25	0.363	1.36	4.54	10 or 60 g
OREAS 620	3.15	38.5	0.685	0.173	0.774	2.52	10 or 60 g
OREAS 624	2.40	45.3	1.16	3.10	0.624	13.29	10 or 60 g
OREAS 623	1.03	20.4	0.827	1.73	0.250	9.07	10 or 60 g

CRM ZIRCONIUM ORE

analysis listed in mass %

Number	ZrO ₂	Al ₂ O ₃	CaO	F	FeO	Fe ₂ O ₃ (T)	H ₂ O+	HfO ₂	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	RE _x O _y *	SiO ₂	TiO ₂	LOI
NCS DC86316	4.68	(14.57)	0.63	0.027(F-)	0.10	0.38	0.49	0.084	3.90	0.079	0.021	4.20	0.040	0.0515	70.73	0.64	0.56
NCS DC86308	1.25	14.70	2.64	0.082	1.82	4.69	1.29	0.025	3.31	2.01	0.083	3.74	0.167	0.022	65.66	0.410	1.51
NCS DC86307	0.187	14.74	2.70	0.080	1.83	4.80	1.35	0.00421	3.37	2.10	0.085	3.83	0.163	0.018	66.02	0.420	1.55

continued analysis listed in mg/kg

* RE_xO_y : Rare Earth Oxide

Number	CeO ₂	Dy ₂ O ₃	Er ₂ O ₃	Eu ₂ O ₃	Gd ₂ O ₃	Ho ₂ O ₃	La ₂ O ₃	Lu ₂ O ₃	Nd ₂ O ₃	Pr ₆ O ₁₁	Sc ₂ O ₃	Sm ₂ O ₃	Tb ₄ O ₇	Th	Tm ₂ O ₃	W	Y ₂ O ₃	Yb ₂ O ₃	Units
NCS DC86316	146	14.9	16.4	0.55	9.92	3.66	69.2	6.11	53.4	15.7	10.7	10.1	2.02	202	2.84	5.01	142	25.9	70 g
NCS DC86308	74.4	4.6	4.6	1.2	(4.1)	1.3	37.9	1.5	26.9	7.8	14.8	4.9	0.74	15.2	0.92	.	41.9	7.8	70 g
NCS DC86307	70.7	2.8	1.8	1.2	3.4	0.59	36.6	0.38	27.5	7.7	14.1	4.7	0.53	7.8	0.31	.	19.5	2.2	70 g

ZIRCONIUM MATERIALS

CERAM: 25 or 100 g IGS: 50 g NCS: 20 g all others: 100 g units

Number	ZrO ₂	HfO ₂	ZrO ₂ + HfO ₂	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	Na ₂ O	P ₂ O ₅	SiO ₂	TiO ₂	LOI	Other	
CRM															
NCS HC26618	.	.	99.48	0.009	0.17	0.054	.	0.093	.	.	0.11	.	.		
BCS 358	92.70	1.63	.	0.08	1.50	0.065	.	3.42	.	.	0.21	0.20	0.08	BaO: 0.10	SrO: 0.07
VS K7/3	.	.	92.2	(0.1)	5.39	0.73	.	.	.	.	0.65	.	.		
VS K8/2	65.9	.	.	1.16	.	0.081	.	.	.	0.110	32.3	0.163	.	S: 0.0064	
IGS 35	65.86	1.368	.	.	.	.	.	.	.	.	.	0.27	.		
BCS 388	(64.9)	1.28	66.2	0.291	.	0.049	.	.	.	0.122	32.7	0.232	.	ThO ₂ : 0.019	U ₃ O ₈ : 0.034
SARM 13	64.01	1.29	.	0.61	(0.14)	0.187	.	(0.0440)	.	0.23	32.56	0.295	.	Th: 2 (0.0300)	U: (0.0328)
Y ₂ O ₃ : 0.136															
RM															
CERAM 2CAS15	(63.6)	(1.28)	65.0	0.38	0.28	0.07	0.01	0.07	0.02	.	33.9	0.20	0.23		
CERAM AN46	15.41	0.32	15.68	30.52	0.20	0.85	1.03	5.34	0.15	.	45.46	0.48	0.08	Li ₂ O: 0.02	
BCS 204A	.	.	53.8	0.74	0.15	0.18	0.017	0.012	0.014	0.77	37.6	2.22	0.50	SnO ₂ : 1.69	