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ALUMINUM BASE CHIPS

= class, where 1 = CRM and 2 = RM

#	Number	Si	Co	Cr	Cu	Fe	Mg	Mn	Ni	Pb	Sn	Ti	V	Zn	Be	Bi	Cd	Ga	Li	Sb	Zr	Units
1	C55XG28J30	17.5	0.345	0.256	1.58	0.50	0.99	0.378	1.81	0.081	0.059	0.073	0.011	0.32	0.0042	0.020	0.004					40 g
2	C55XA30J30	16.5	0.194	0.037	4.02	0.286	0.31	0.259	0.072	0.018	0.083	0.144	0.006	0.048	<0.0005							25 g
1	C55XG28J10	14.33	0.119	0.319	1.82	0.678	1.26	0.024	2.47	0.0038	0.182	0.104	0.0095	0.258								40 g
1	C54XG06H50	13.76	<0.005	0.026	0.0229	0.210	(0.0022)	0.85	0.0067	(0.0020)	0.022	0.106	0.008	0.225								50 g
1	C54XG06H40	13.21	0.207	0.120	0.237	0.138	0.134	0.691	0.139	0.040	(0.007)	0.124	0.011	0.131								50 g
1	C54XG13H40 *	12.55	(0.001)	0.0264	0.643	0.405	0.78	0.617	0.84	0.055	0.068	0.083		0.251	0.0048	<0.001					0.021	50 g
1	C55XG02B60	12.4	0.018	0.035	0.48	1.28	0.34	0.445	0.027	0.46	<0.01	0.35	0.010	0.083								50 g
1	C54XG06H30	11.27	0.021	0.069	0.327	0.500	0.179	0.445	0.295	0.065	0.050	0.084	0.010	0.072			0.0052				50 g	
2	C55XG02B70	10.8		0.095	1.59	0.90	1.52	0.45	0.255	0.217	0.047	0.161	0.007	0.61	0.0006	0.08						50 g
2	C54XG13H30	10.8		0.06	0.82	0.72	1.05	0.38	0.94	0.08	0.09	0.17		0.31								50 g
1	C54XG13H20	10.42	0.004	0.103	1.29	0.767	1.37	0.248	1.15	0.083	0.145	0.166	0.018	0.530								50 g
2	C54XG06H20	10.19	0.0086	0.130	0.54	0.640	0.40	0.234	0.55	0.213	0.116	0.179	0.018	0.47		0.0027						50 g
2	C55XG02B80	10.04	0.056	0.052	2.27	0.94	0.21	0.45	0.37	0.33	0.19	0.240	0.025	1.32	0.001							50 g
2	C54XG23H10	9.82	0.089	0.089	1.19	0.80	1.05	0.029	0.31	0.145	0.082	0.022	0.145	0.60	(0.00002)							50 g
1	C55XG26H30	9.6	0.076	0.130	2.19	1.07	1.41	0.45	0.51	0.228	0.16	0.147	0.020	0.79			0.011	0.006				40 g
1	C55XG26H20	9.36	0.052	0.083	4.14	0.71	1.49	0.52	0.41	0.111	0.110	0.120	0.011	0.64		0.035						40 g
2	C55XG02B40	8.98	0.11	0.035	3.16	0.64	0.10	0.18	0.67	0.19	0.26	0.09		2.46								50 g
1	C54XG13H10	8.91	0.0051	0.062	1.87	0.801	2.89	0.0137	1.83	0.240	0.260	0.112	0.007	0.37	0.0078	<0.001						50 g
2	C55XG02B90	8.62	0.052	0.11	3.40	0.82	0.21	0.113	0.62	0.106	0.19	0.090	0.003	2.46	0.001							50 g
1	C54XG25B50	8.17	0.003	0.010	0.269	0.191	<0.01	(0.004)	0.008	0.28	0.13	0.006	0.007	0.020								50 g
2	C55XG26H10	7.69	0.022	0.20	4.34	1.78	0.29	0.015	0.012	0.24	(0.008)	0.21	0.012	1.14		0.07						40 g
1	C55XG04H100	7.32	0.043	0.090	1.36	0.52	0.004	0.53	0.023	0.010	(0.01)	0.010	0.007	2.28								50 g
1	C54XG25B40	7.22	0.047	0.019	0.160	0.13	0.072	0.090	0.10	0.162	0.092	0.09	(0.002)	0.11	0.02							50 g
1	C55XG02D100	6.56	0.059	0.16	4.65	0.186	<0.01	0.015	0.96	(0.004)	0.9	<0.005		4.76	(0.002)	0.09	0.0015					50 g
1	C55XG04H90	5.99	0.010	0.005	2.64	0.304	0.079	0.304	0.231	0.062	0.031	0.31	0.009	1.89								50 g
Number	Si	Co	Cr	Cu	Fe	Mg	Mn	Ni	Pb	Sn	Ti	V	Zn	Be	Bi	Cd	Ga	Li	Sb	Zr	Units	
1	C54XG25B30	5.86		0.062	0.113	0.43	0.20	0.29	0.114	0.074	0.06	0.083	0.011	0.092	0.003		0.017					50 g
2	C55XG04H30	5.55	0.06	0.150	0.30	0.86	0.17	0.40	0.33	0.10	0.10	0.20	(0.006)	1.30	0.049	0.22						50 g
1	C54XG25D20	3.93	0.10	0.150	0.130	0.58	0.59	0.48	0.139	0.042	0.042	0.152	0.073	0.169	0.001	0.11						50 g
1	C54XG25D10	3.34	0.010	0.14	0.010	0.72	0.65	0.81	0.26	0.004	<0.01	0.098	0.016	0.36	0.001	0.11						50 g
1	C57XG12H10	2.52	0.113	0.069	5.54	0.88	0.40	0.032	0.31	0.016	0.095	0.114	0.153	1.03		0.012		0.008				50 g
1	C55XG90J740	1.39		0.343	0.249	0.306	0.459	0.75	0.351	0.088	0.153	0.171		0.149		0.285						50 g
1	C514X90J130	0.74	0.106	0.023	0.623	0.94	0.149	11.3	0.143	0.114	0.019	0.425	0.070	0.221	0.0024	0.063					<0.005	50 g
1	C51XG00H20	0.61	0.079	0.100	0.173	0.49	0.089	0.305	0.206	0.115	0.122	0.137	0.070	0.072	0.003	0.023	(0.017)					50 g
1	C57XG12H50	0.55	0.054	0.016	12.2	0.192	0.028	0.073	0.108	0.068	0.067	0.036	0.033	0.309		0.55						50 g
2	C511XG10H40	0.44		0.118	0.864	0.378	0.622	0.145	0.133	0.52	0.341	0.054		0.309								50 g
1	C511XG05H10	0.42	0.240	0.240	0.32	0.79	2.02	0.012	0.123	0.023	0.179	0.205	0.053	0.47	(0.0002)	0.013					25 g	
1	C59XG77J30	0.366	<0.005	0.023	2.42	0.712	2.27	0.594	0.43	0.075	0.137	0.107	0.006	4.57	0.046	0.0115					0.026	50 g
1	C511XG05H20	0.35	0.008	0.30	0.37	0.60	3.12	0.186	0.22	0.068	0.154	0.079	(0.001)	0.26	0.004							50 g
2	C511XG3000B30	0.35	0.008	0.056	0.120	0.376	0.80	1.06	0.116	0.062	0.028	0.22	<0.005	0.140	0.005							40 g
2	C511XG10H40	0.33		0.15	0.052	0.19	10.4	0.12	0.085	0.10	0.051	0.097	0.085	0.21	0.023							40 g
2	C59XG77J50	0.30	0.050	0.050	0.122	1.32	0.72	0.030	1.38	(0.003)	<0.01	0.058	0.007	7.57								50 g
1	C56XG25J10	0.26	0.008	0.0057	3.82	0.41	0.075	0.040	1.33	0.101	0.125	0.008	0.102	0.28							(0.003)	50 g
1	C511XG05H30	0.24	0.06	0.10	0.10	0.54	5.35	0.38	0.09	0.10	0.10	0.07		0.09								25 g
2	C511XG3000B20	0.23	0.007	0.200	0.20	0.335	0.68	0.81	0.063	0.137	0.105	0.111	<0.005	0.098	0.0017							40 g
1	C56XG25J20	0.211	0.195	0.063	4.81	0.346	0.060	0.225	1.10	(0.0016)	(0.004)	0.210	0.018	0.155							0.324	50 g
1	C56XG25J50	0.205	0.34	0.047	4.36	0.535	0.022	0.150	1.77	0.076	0.097	0.051	0.021	0.086	0.0022							50 g
1	C59XG77J10	0.15	0.018	0.24	2.41	0.21	4.83	0.46	0.17	0.125	0.126	0.178	0.005	1.91	0.06							50 g
1	C56XG25J30	0.11	0.264	0.024	4.90	0.079	(0.011)	0.278	0.92	0.024	0.031	0.162	0.036	0.103	0.0014							50 g
1	C511XG05H40	0.11	0.029	0.029	0.056	0.14	5.16	0.547	0.040	0.040	0.144	0.048		0.062								25 g
1	C58XG40H60	0.09	0.006	0.005	0.111	0.08	(0.003)	0.004	0.008	<0.002	<0.005	0.064	<0.005	7.55	(0.002)							50 g
1	C56XG2000J10	0.05	0.005	0.005	3.50	0.13	2.75	1.42	0.01	0.01	0.1	0.004	0.003	1.01	0.16							50 g
1	C59XG77J60	0.04		0.046	1.13	0.054	2.63	0.0024	0.005	(0.005)	0.006	0.023	0.003	11.62	<0.005	<0.002					0.2	50 g
1	C514X90J110	0.035	<0.005	0.027	0.046	0.081	(0.001)	6.93	(0.0026)	0.016	0.013	0.0017		0.06								50 g
1	C51XG00H10	0.012	0.011	0.027	0.034	0.051	0.039	0.041	0.038	0.018	0.028	0.031	0.016	0.042	0.0004	0.011						50 g

* C54XG13H40 also contains Sr: 0.026

CRM CHROMIUM

T = Total

BCS: 100 g powder VS: 100 g chips

Number	Cr	Al	As	C	Cu	Fe	N	O	P	Pb	S	Si	Sn	Ti	Zn
VS F36	99.9	.	.	0.0027	0.00038	.	0.0026	.	.	.	0.0019	0.0039	.	0.0069	.
VS F8/2	99.2	0.17	0.00027	0.023	0.0014	0.26	0.025	.	0.0035	0.00033	0.013	0.25	0.0003	.	0.003
BCS 361	.	(0.083T)	.	0.0039	.	0.0920	0.0079	0.1010	.	.	0.0043	0.0449	.	.	.

CRM COBALT BASE CHIPS

100 g units

Number	Grade	Co	Cr	Fe	Mn	Mo	Ni	Si	Ti	W	Al	B	C	Cu
IARM 208C	F 75	64.0	27.55	0.29	0.53	6.12	0.63	0.62	0.012	0.02	0.07	0.002	0.052	0.01
IARM 208A	F 75	63.4	27.7	0.78	0.68	5.3	0.80	0.77	0.012	0.07	0.07	0.002	0.28	0.021
IARM 95B	Stellite 6B	60.9	28.8	1.10	0.99	6.83	2.25	0.46	0.004	3.42	0.07	(0.002)	0.946	0.008
IARM 208B	F 75	60.0	30.0	1.17	0.75	6.63	0.42	0.63	0.029	3.03	0.04	0.005	0.100	0.03
IARM 95C	Stellite 6B	57.0	29.0	2.47	1.55	1.37	2.88	0.54	0.004	3.96	0.13	(0.002)	1.10	0.014
IARM 64B	Ultimet 1233	54.2	25.26	3.02	0.78	4.77	9.06	0.27	0.011	2.12	0.12	(0.001)	0.062	0.020
IARM 64C	Ultimet 1233	53.4	25.4	2.99	0.79	4.72	9.47	0.24	0.007	2.39	0.138	0.0010	0.064	0.019
IARM 96D	Stellite 25	49.8	19.97	2.17	1.40	0.35	10.66	0.23	0.046	14.71	0.23	0.003	0.079	0.038
IARM 96B	Stellite 25	49.4	20.54	2.29	1.39	1.17	10.04	0.16	0.007	14.52	0.035	0.0021	0.132	0.047
IARM 96C	Stellite 25	47.1	19.95	2.93	1.91	1.88	10.36	0.31	0.007	15.4	0.08	0.002	0.132	0.08
IARM 97B	Stellite 188	42.5	21.2	1.92	0.76	0.56	19.4	0.34	0.006	12.9	0.08	(0.002)	0.096	0.07
IARM 97C	Stellite 188	35.8	22.2	2.37	0.82	0.36	22.8	0.47	0.011	14.6	0.19	0.0028	0.130	0.027
IARM 256A	MP159	35.6	19.1	9.0	0.014	7.0	25.7	0.07	3.03	0.02	0.17	0.013	0.020	0.008
IARM 207A	MP35N	33.46	19.98	0.64	0.015	9.62	35.19	0.053	0.91	0.028	0.040	0.011	0.007	0.017

Number	La	Mg	N	Nb	O	P	S	Sn	Ta	V	Zr
IARM 208C	.	0.0002	0.169	0.011	0.0010	0.008	0.0004	.	(0.02)	0.012	0.0014
IARM 208A	.	0.0003	0.063	0.020	(0.003)	0.030	0.001	0.007	0.012	0.012	(0.001)
IARM 95B	.	(0.0004)	0.0027	(0.002)	(0.001)	0.010	0.0006	.	0.03	(0.002)	(0.002)
IARM 208B	.	(0.0004)	0.003	0.06	0.0015	0.004	0.0009	0.004	0.042	0.05	0.002
IARM 95C	.	(0.0004)	0.033	(0.008)	(0.004)	0.009	0.001	.	0.03	0.004	(0.005)
IARM 64B	.	0.005	0.12	(0.018)	(0.0009)	0.005	(0.0004)	.	(0.028)	(0.014)	<0.01
IARM 64C	.	0.0043	0.113	0.016	0.0012	0.0064	0.0004	<0.01	0.02	0.020	<0.01
IARM 96D	.	(0.004)	0.0084	0.08	0.0006	0.006	0.0005	(0.001)	0.03	0.008	(0.007)
IARM 96B	.	(0.0005)	0.007	0.046	0.002	0.0063	0.0005	.	0.028	0.012	0.007
IARM 96C	.	(0.0002)	0.031	0.047	0.001	0.008	0.001	.	0.03	0.012	0.009
IARM 97B	0.005	<0.002	0.014	0.022	0.003	0.009	(0.001)	.	0.019	0.012	(0.001)
IARM 97C	.	0.0010	0.075	0.023	0.0007	0.011	0.0004	.	0.04	0.010	(0.007)
IARM 256A	.	<0.001	0.0032	0.51	0.0011	0.006	0.002	.	<0.005	0.03	(0.005)
IARM 207A	.	(0.0005)	0.0031	0.043	0.0011	0.002	0.0027	.	0.007	0.011	0.003

Pb: 0.0006

COBALT BASE CHIPS

= class, where 1 = CRM and 2 = RM

BAM, ECRM: 100 g units

others: 30 g units

#	Number	Cr	C	Co	Fe	Mn	Mo	Nb	Ni	Si	W	Al	Cu	N	P	Pb	S	Sn	Ta
1	ECRM 378-1C	28.22	1.181	.	0.606	0.0579	0.0503	.	0.617	1.172	4.43	.	.	.	(0.0023)	.	0.0055	.	.
2	C113X4010	26.9	0.53	.	0.65	0.20	.	.	11.5	1.25	7.14	.	.	.	.	.	.	.	.
2	C113X4020	24.75	0.42	.	2.17	1.13	.	.	9.64	0.28	7.95	.	.	.	.	.	.	.	.
2	C112X149360	23.0	0.50	.	0.44	0.74	4.97	.	1.57	0.12	0.95	0.50	.	.	.	.	.	.	.
2	C111X126690	22.7	0.51	.	1.2	0.54	.	2.59	0.57	0.62	12.3	.	0.006	.	.	0.001	.	0.01	.
1	BAM 328-1	20.54	0.390	41.65	2.40	1.395	4.41	3.61	20.54	0.629	4.16	0.070	0.013	0.027	0.005	.	.	.	0.18
2	C111X126670	19.7	0.38	.	2.20	0.97	.	1.53	1.12	0.064	10.2	.	0.11	.	.	0.03	.	0.10	.

CRM Co/Fe/V ALLOY PERMENDUR 2V

analysis listed in mass %

31 mm Ø x 2 or 18 mm

Number	Co	Fe	V	Al	C	Mn	P	S	Si	Cu	Ni	Cr	Mo
IARM 326A	48.4	49.6	1.94	(0.003)	(0.002)	0.003	0.0013	0.0011	0.029	(0.002)	0.037	(0.002)	(0.002)

Number	As	B	Mg	N	Nb	O	Sn	Ta	Ti	W	Zr
IARM 326A	<0.005	(0.001)	(0.001)	0.0004	0.038	0.0082	<0.001	(0.01)	(0.002)	(0.001)	0.002

CRM COPPER CHIPS AND PINS

analysis listed in mg/kg

BAM: 100 g chips

IMN 5: 200 g chips

IMN 100: 50g of 0.31g pins

all others: 50 g chips

Number	Ag	As	Bi	Cd	Co	Cr	Fe	Mn	Ni	P	Pb	S	Sb	Se	Si	Sn	Te	Zn
IMN 001	27.1	3.13	1.39	(0.11)	2.09	3.53	13.9	5.16	3.64	.	4.02	5.99	2.4	1.34	.	3.39	1.23	4.57
IMN 5	10	4.0	0.096	.	8.1	.	4.5	(1.3)	4.4	.	27	.	(0.92)	.	(2.6)	4.6	.	(13)
BAM 366	7.9	1.11	(0.03)	0.27	.	.	23.4	.	3.2	263	10.8	8.7	0.99	(1.1)	.	111	(0.3)	15.6
FNE Cu2/1	.941	.	312	509	.	.	.	.	680	.	208	.	508	.	.	206	.	.
FNE Cu2/2	.472	.	154	260	.	.	.	.	255	.	105	.	231	.	.	107	.	.
FNE Cu2/6	.19	.	5.5	10	.	.	.	.	12	.	7	.	9.5	.	.	4.5	.	.
FNE Cu2/7	.9	.	1.8	4.5	.	.	.	.	7.5	.	7	.	4.9	.	.	2.5	.	.
FNE Cu2/8	.4	.	1.3	2.3	.	.	.	.	2.8	.	7	.	2.8	.	.	1.3	.	.
FNE Cu2/9	.25	.	0.6	0.9	.	.	.	.	1.4	.	7	.	1.2	.	.	0.9	.	.
BCR 017B	.	.	.	.	.	.	.	.	6.9	.	10.4	.	.	.	.	.	.	.

CRM COPPER CHIPS

analysis listed in mass %														BAM, BCS, IARM: 100 g units			IPT, C39X: 50 g units		IMN: 200 g units	
Number	Cu	Ag	Al	As	Au	B	Be	Bi	C	Cd	Co	Cr	Fe	Mg						
IPT 64	99.98	0.0010	(<0.0006)	(0.0002)	.	.	.	(<0.0001)	.	.	.	.	0.00045	.		
BAM 365	99.937	0.01027	.	0.00298	.	.	.	0.00294	.	.	0.00236	.	0.00223	.						
IARM 70B	99.9+	0.0011	.	(0.0001)	.	.	.	<0.0002	(0.007)	.	<0.003	.	<0.001	.						
IARM 278A	99.5	(0.001)	<0.002	(0.001)	.	.	.	(0.001)	(0.003)	.	(0.001)	(0.001)	0.004	.						
IARM 279A	99.1	(0.003)	(0.002)	(0.002)	.	.	.	(0.001)	(0.002)	.	(0.002)	0.86	0.025	.						
BCS 399	REM	.	.	(<0.001)	.	.	.	(0.001)	.	(0.003)	.	.	(0.006)	.						
IMN 4	REM	0.21	.	0.054	.	.	.	(0.0011)	.	.	0.0010	<0.00005	0.0010	.						
C39X178700	.	0.049	0.0024	0.003	0.031	0.0014	<0.001	0.081	.	0.0014	0.0024	0.0016	0.054	(0.0007)						
C39X178710	.	0.025	<0.0005	0.029	0.0048	.	.	0.069	.	0.0031	0.0008	.	.	.						
C39X178680	.	0.0198	(0.0005)	0.0239	0.0190	.	.	0.028	.	0.0049	0.0006	(0.0005)	(0.001)	(0.0002)						
C39X178660	.	<0.001	<0.002	0.037	.	.	.	0.001	.	<0.001	0.003	0.002	<0.001	<0.001						

Number	Mn	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Te	Zn
IPT 64	.	0.00018	.	.	0.00006	.	(0.0002)	(<0.0002)	.	(<0.0005)	(<0.0001)	(0.001)
BAM 365	(<0.0001)	0.01753	.	.	0.00288	(0.00077)	0.00088	.	.	(<0.0005)	0.00046	.
IARM 70B	<0.0003	<0.0002	.	0.002	(0.003)	(0.0005)	(0.0002)	<0.0002	<0.0005	(0.0002)	.	<0.001
IARM 278A	(0.0004)	<0.005	(0.0004)	0.011	(0.003)	0.002	<0.005	.	(0.002)	(0.001)	0.53	(0.002)
IARM 279A	(0.002)	0.014	(0.001)	(0.005)	(0.01)	0.0015	(0.004)	.	0.020	0.021	.	(0.01)
BCS 399	.	(0.002)	.	0.045	(0.002)	.	(<0.001)	.	.	(0.003)	.	(0.003)
IMN 4	<0.00003	0.078	.	.	0.20	.	(0.0041)	.	.	(0.00029)	0.00044	(0.0017)
C39X178700	0.024	0.0053	.	0.075	0.059	(0.0039)	0.054	0.007	(0.0022)	0.016	0.011	0.008
C39X178710	0.0010	0.027	.	<0.0005	0.0092	0.0080	0.017	0.028	<0.0005	.	0.011	.
C39X178680	(0.0001)	0.126	.	(0.001)	0.0245	0.0041	0.0198	0.0195	0.0012	0.006	0.0106	(0.003)
C39X178660	<0.001	0.034	.	<0.002	<0.001	0.003	<0.001	.	<0.005	0.013	<0.001	0.005

Zr: 0.012

RM PHOSPHORUS DEOXIDIZED COPPER CHIPS

analysis listed in mass % except * which is mg/kg															100 g chips	
Number	Ag%	Al*	As%	Bi*	Co*	Cu%	Fe*	Mn*	Ni*	P%	Pb%	Sb*	Si%	Sn%	Te%	Zn%
CURM 09.03	0.012	<3	<0.001	<3	<3	99.92	33	<3	<3	0.056	<0.0005	<5	<0.001	<0.001	<0.001	<0.001
CURM 09.01	0.011	<5	<0.001	<3	<3	99.82	19	<3	<3	0.151	<0.0005	<5	<0.001	<0.001	<0.001	0.0008
CURM 09.02	0.0055	<5	<0.001	<5	<5	99.90	42	<5	<5	0.078	<0.001	<5	<0.002	<0.001	<0.001	<0.001
CURM 09.04	0.0033	<5	<0.001	<5	<5	99.96	47	<5	<5	0.0174	<0.001	<5	<0.002	<0.001	<0.001	<0.001

CRM COPPER ANODE

analysis listed in mg/kg												425 g chips	
Number	Ag	Au	As	Bi	Fe	Pb	Ni	Sb	Se	Sn	Te		
CAN CUAR-1	294	2.3	145	62	76	864	.	.	113	33	.		
CAN CUPD-1	216	3.9	306	62	40	69	153	147	237	5	.		

CRM COPPER CONCENTRATE POWDER

analysis listed in mass %																	CETEM: 170 g		VS: 50 g	
Number	Cu	S.Cu	Al ₂ O ₃	C	CaO	Cd	Fe	Fe ₂ O ₃	K ₂ O	MgO	Mn	Na ₂ O	P ₂ O ₅	Pb	S	SiO ₂	Zn	LOI		
VS 2891-84	40.4	.	.	.	.	0.029	(5.78)	.	.	.	.	.	.	2.25	(15.98)	(21.74)	2.89	.
CETEM CBPA-2	27.9	(0.6)	1.57	(0.07)	1.21	(0.0004)	.	39.6	(0.22)	0.79	(0.0048)	0.35	(0.38)	0.0112	(30.6)	(6.3)	0.0096	(14.5)		
continued analysis listed in mg/kg																				
Number	Ag	As	Au	Ce	Co	Cr	F	La	Mo	Ni	Re	Se	Sm	Sr	Th	Ti	U	Zr		
VS 2891-94	7.077	.	.	.	.	.	.	.	.	.	28.2	.	.	.	.	.	.	.
CETEM CBPA-2	12	(9)	(8)	(43)	444	20	(322)	(21)	(54)	(2030)	.	(38)	(3.3)	(25)	(7)	(600)	(3.9)	(21)		

CRM COPPER CONCENTRATE POWDER

certified values listed in mass % except * which is mg/kg																	200 g units					
Number	Ag*	Al	Au*	Ca	Cd*	Co	Cu	Fe	Mg	Mn*	Pb	S	Sb*	SiO ₂	Zn							
CAN CCU-1D	120.7	0.191	14.01	0.195	245.9	0.0330	23.95	29.26	0.508	99.4	0.262	32.76	61.9	3.036	2.63							
continued informational values listed in mg/kg except % which is mass %																						
Number	As	Ba	Bi	C%	Ce	Cl	Cr	Cs	F	H ₂ O%	Hg	In	K	La	Mo	Ni	Se	Sr	Te	Ti	Tl	LOI%
CAN CCU-1D	545	12.41	3	0.088	2	60	6	0.08	200	2.03	7	7.0	316	3	18.1	7.6	244	4.9	36.7	66	2.63	19.51

CRM	SEBILOY / ENVIROBRASS / FEDERALLOY CHIPS													100 g units
Number	Bi	Se	Sn	Zn	Cu	As	Co	Fe	Ni	P	Pb	Sb	Si	
C32X SEB10	5.77	0.895	3.83	11.57	(76.7)	0.051	0.0108	0.059	0.118	0.025	0.564	0.354	.	
C32X SEB20	4.35	0.027	9.40	3.75	81.8	0.009	0.013	0.078	0.078	0.014	0.42	0.013	.	
IARM 264A	3.6	(0.001)	3.03	5.33	(87.3)	(0.004)	(0.001)	0.048	0.54	0.027	0.057	0.074	0.003	
IARM 263A	2.55	(0.002)	3.5	15.8	(78)	0.003	0.001	0.047	0.66	0.040	0.022	0.06	0.003	
IARM 265A	2.4	(0.002)	4.4	2.45	(90)	(0.005)	(0.001)	0.013	0.69	0.024	0.011	0.015	0.003	
IARM 266A	2.37	0.001	6.9	3.48	(87)	0.004	(0.001)	0.035	0.46	0.032	0.010	0.010	0.002	
C32X SEB40	2.69	0.115	9.29	8.55	78.58	0.0011	0.476	0.365	0.0092	0.006	0.010	0.0055	.	
IARM 227A	2.3	1.21	5.1	4.70	85.9	0.003	0.001	0.060	0.53	0.003	0.042	<0.01	0.002	
IARM 226A	1.7	0.93	5.1	4.8	86.7	0.003	0.001	0.054	0.54	0.005	0.040	0.004	0.002	
IARM 228A	1.53	0.67	4.1	4.1	89.0	0.003	0.001	0.052	0.45	0.032	0.026	0.010	0.002	
C32X SEB50	1.17	0.512	5.28	6.64	85.5	0.0121	0.0048	0.360	0.308	0.183	0.0149	0.0344	.	

Number	Ag	Al	B	C	Cd	Cr	Mn	N	O	S
C32X SEB10	.	.	.	.	.	.	.	.	.	.
C32X SEB20	.	.	.	.	.	.	.	.	.	.
IARM 264A	(0.005)	0.003	.	(0.004)	.	(0.002)	(0.002)	.	.	0.0013
IARM 263A	(0.006)	(0.002)	.	<0.005	.	(0.002)	(0.002)	.	.	(0.002)
IARM 265A	(0.002)	0.003	.	.	.	(0.001)	(0.002)	.	.	(0.002)
IARM 266A	(0.001)	0.002	.	(0.002)	.	(0.002)	(0.002)	.	.	(0.002)
C32X SEB40	.	.	0.0021	.	0.0004	.	.	.	.	.
IARM 227A	0.004	0.002	.	0.003	.	(0.001)	0.001	(0.0002)	0.0013	0.005
IARM 226A	0.004	0.002	.	0.003	.	(0.001)	0.002	<0.0005	(0.001)	0.005
IARM 228A	0.003	0.002	.	0.003	.	0.001	0.001	<0.0005	(0.002)	0.004
C32X SEB50	.	.	0.0028	.	0.0067	.	.	.	.	.

COPPER BASE CHIPS

= class, where 1 = CRM and 2 = RM C36X, DH: 50 g units GBW: 95 g units all others: 100 g units

#	Number	Sn	Al	Fe	Mn	Ni	Pb	Zn	Be	Bi	Co	Se	
2	DH 0209	11.92	.	.	.	0.265	0.542	.	.	.	.	.
1	BAM 228	9.76	(0.0001)	0.036	(<0.001)	0.109	1.24	3.32	.	0.0086	.	0.0012	
2	DH 0201	8.84	0.022	0.677	0.035	0.795	1.17	6.30	.	0.006	.	.	
2	DH 0208	4.78	4.15	2.54	0.711	2.82	1.31	1.85	.	.	.	.
2	DH 0206	2.78	0.059	1.79	0.044	0.221	0.891	10.89	.	.	.	.
2	DH 0203	2.17	12.50	5.76	0.057	.	0.59	1.36	.	.	.	.
2	DH 0204	2.16	12.51	5.70	0.057	.	0.58	1.36	.	.	.	.
2	DH 0205	2.14	12.53	5.66	0.056	.	0.76	1.36	.	.	.	.
2	DH 0207	0.74	.	0.936	0.027	0.174	2.16	30.20	.	.	.	.
2	DH 0202	0.381	.	0.911	0.007	0.034	0.139	0.229	.	.	.	.
1	VS 1924-80	0.19	10.40	0.94	2.08	1.03	0.21	1.29	.	.	.	.
1	C37X2180	0.018	0.0025	0.075	0.084	2.51	0.0025	0.029	.	.	.	.
1	C36X2740	0.0140	0.0013	0.0781	0.0148	2.54	0.0021	0.0395	.	.	0.0028	.	
1	VS 1925-80	0.10	9.40	0.51	1.73	0.55	0.097	0.92	.	.	.	.
1	VS 1974-80	0.076	0.097	0.140	.	0.39	(0.004)	0.021	2.63	.	.	.	
2	C36XCBC40	0.01	0.06	0.09	0.003	0.04	0.30	0.02	1.82	.	2.44	.	
1	IARM 158B	0.01	0.002	0.090	0.019	0.32	0.01	0.014	.	.	0.002	.	
1	IARM 158C	0.01	0.002	0.090	0.019	0.32	0.01	0.014	.	.	0.002	.	
1	IARM 71B	0.005	0.040	0.042	0.0010	0.021	0.006	0.005	1.84	.	0.21	.	
1	C36XCXZ	0.0047	0.0003	0.029	0.0008	0.0084	0.0024	0.0075	.	.	0.0012	.	
2	C36XCBC20	0.004	0.03	0.02	(<0.01)	0.07	0.004	0.03	0.56	.	0.13	.	
1	C37X2260	0.0032	0.0020	1.52	0.582	0.0024	(0.001)	2.82	.	.	.	.
2	C36XCBC10	0.002	0.02	0.03	(<0.01)	1.88	0.002	(<0.01)	0.42	.	0.23	.	
2	IARM 160A	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	.	.	(<0.01)	.	
2	IARM 159A	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	.	.	(<0.01)	.	
2	C36XCBC30	(<0.002)	0.02	0.04	(<0.01)	0.02	0.003	0.02	1.81	.	.	.	
Number	Ag	As	C	Cd	Cr	O	P	S	Sb	Si	Ti	Zr	Cu
DH 0209	.	.	.	.	.	.	.	.	.	.	.	.	87.07
BAM 228	.	0.024	.	.	.	.	0.019	0.036	0.078	.	.	.	85.34
DH 0201	.	0.076	.	.	.	.	0.046	.	0.104	.	.	.	81.84
DH 0208	.	.	.	.	0.009	.	0.027	.	0.083	0.052	.	.	81.67
DH 0206	.	0.025	.	.	.	.	0.017	0.059	0.060	0.043	.	.	83.05
DH 0203	.	.	.	.	.	.	.	.	0.329	0.23	.	.	76.88
DH 0204	.	.	.	.	0.009	.	0.007	.	0.336	0.22	.	.	77.00
DH 0205	.	.	.	.	.	.	0.008	.	0.350	0.22	.	.	76.82
DH 0207	.	.	.	.	.	.	.	.	0.014	.	.	.	65.66
DH 0202	.	.	.	.	0.003	.	.	0.037	0.008	.	.	.	98.15
VS 1924-80	.	.	.	.	.	.	0.094	.	0.0012	0.26	.	.	83.3
C37X2180	.	.	(0.002)	.	0.033	.	0.0015	0.006	.	0.56	.	.	96.60
C36X2740	.	0.0011	(0.0029)	.	0.531	.	0.0011	0.0035	.	0.594	.	<0.005	96.24
VS 1925-80	.	.	.	.	.	.	0.043	.	.	0.0010	.	.	86.51
VS 1974-80	.	.	.	.	.	.	.	.	.	0.094	0.126	.	96.42
C36XCBC40	.	.	.	.	0.01	.	.	.	.	0.09	.	.	98.5
IARM 158B	(0.01)	(0.001)	0.002	.	0.85	0.002	0.005	0.003	0.002	0.02	.	.	98.5
IARM 158C	(0.01)	(0.001)	0.002	.	1.04	0.002	0.005	0.003	0.002	0.02	.	.	98.5
IARM 71B	(0.002)	.	0.003	.	0.0030	.	0.004	(0.0004)	(0.002)	0.060	.	.	97.7
C36XCXZ	.	.	0.0018	0.0027	0.674	.	0.0015	0.0008	.	0.0032	.	0.048	99.21
C36XCBC20	.	.	.	.	0.005	.	.	.	.	0.05	.	.	91.58
C37X2260	.	.	0.006	.	0.003	.	0.0025	0.0005	.	3.54	.	.	91.58
C36XCBC10	.	.	.	.	0.005	.	.	.	.	0.04	.	.	91.58
IARM 160A	3.03	.	0.003	.	(<0.01)	.	(0.004)	(<0.003)	.	(<0.01)	.	0.40	.
IARM 159A	3.48	.	(0.002)	.	(<0.01)	.	(<0.01)	(<0.01)	.	(<0.01)	.	.	.
C36XCBC30	.	.	.	.	0.005	.	.	.	.	0.06	.	.	.

CUPRO-NICKEL AND COPPER-NICKEL-SILVER CHIPS

= class, where 1 = CRM and 2 = RM

C212X: 50 g units

all others: 100 g units

#	Number	Ni	Zn	Ag	Al	C	Co	Cr	Cu	Fe	Mg	Mn	P	Pb	S	Si
2	C212X40010	67.6	.	.	0.09	0.10	0.12	0.05	.	0.57	0.13	3.04	.	0.08	0.022	1.48
2	C212X40020	65.2	.	.	0.05	0.04	0.08	0.02	.	1.17	0.02	2.00	.	0.04	0.075	0.10
2	C212X40060	63.3	.	.	3.85	0.03	0.05	0.12	.	1.95	0.016	0.83	.	0.02	0.035	3.94
1	C36XCN60	33.46	0.026	.	(0.0024)	0.0180	0.0440	1.10	63.35	0.878	.	0.451	0.031	0.0066	0.0109	0.144
1	IARM 85C	31.3	0.057	<0.002	<0.01	0.008	0.016	0.002	67.3	0.63	0.01	0.65	(0.003)	0.004	(0.002)	0.01
1	BCS 180/2	30.35	.	.	.	0.04	.	.	68.12	0.68	.	0.75	.	(0.003)	0.006	(0.018)
2	C36XCN40	30.2	.	.	.	.	0.04	.	.	0.50	0.003	0.33	.	0.015	.	0.54
1	IARM 236A	30.0	0.002	.	0.003	0.010	0.004	0.002	66.7	0.91	.	1.04	0.003	0.004	0.003	0.19
1	IARM 85B	29.60	0.12	.	(<0.01)	0.011	0.034	.	.	0.53	.	0.53	0.007	0.005	0.010	(<0.01)
1	C36XCN100	29.3	.	.	.	0.064	0.081	1.59	61.01	4.28	0.0026	0.262	(0.020)	0.004	0.055	1.02
2	C36XCN90	28.1	.	.	.	0.02	<0.01	2.19	.	0.93	.	1.20	0.016	0.05	0.002	0.56
1	C34X NS50	17.16	(23)	0.0102	0.674	.	0.197	0.0014	55.11	0.717	0.704	0.127	0.067	1.29	.	0.158
1	GBW 02104	14.87	20.81	.	.	.	.	.	Rem	0.47	0.033	0.32	0.0048	0.019	.	0.146
2	C34XNS30	14.86	17.94	0.108	0.038	0.014	0.102	.	66.30	0.201	0.0011	0.129	0.013	0.155	0.063	0.018
1	IARM 84B	10.03	0.082	0.005	(0.002)	(0.01)	0.013	(0.003)	87.9	1.30	.	0.62	0.004	0.008	0.008	0.01
2	C36XCN10	9.5	.	.	.	.	0.10	.	.	1.94	0.015	1.91	.	0.05	.	0.19
2	CURM 62.12	7.94	0.180	.	.	.	0.081	.	89.42	0.45	0.002	1.59	.	0.053	0.034	0.109
2	C34XNS10	7.67	29.0	.	.	.	.	.	.	0.05	.	0.02	0.010	0.05	<0.002	0.03

Number	As	B	Bi	N	Nb	O	Sb	Sn	Ti	Zr
C212X40010	0.11	.
C212X40020	0.06	.
C212X40060	1.34	.
C36XCN60	.	(0.0015)	0.0058	.	0.514	.	.	0.0307	0.0066	.
IARM 85C	0.0009	.	.	.	.	.	.	0.005	.	.
BCS 180/2
C36XCN40
IARM 236A	.	.	0.003	0.0002	.	0.002	<0.005	0.005	.	.
IARM 85B	(<0.01)	0.014	.	.
C36XCN100	.	0.0029	0.014	.	0.89	.	.	.	0.03	(0.055)
C36XCN90	.	0.005	<0.01	.	.	.	.	.	0.12	0.13
C34XNS50	0.194	.	.
GBW 02104	0.0098	.	0.0019	.	.	.	0.0020	.	.	.
C34XNS30
IARM 84B	(0.002)	0.014	.	.
C36XCN10
CURM 62.12	0.111	.	.
C34XNS10

GUN METAL CHIPS

= class, where 1 = CRM and 2 = RM

100 g units

#	Number	Sn	Ni	Pb	Zn	Cu	Ag	Al	As	Bi	Cr	Fe	Mn	P	S	Sb	Si
1	BCS 207/2	9.74	0.28	0.70	1.60	87.35	.	0.013	0.066	0.04	.	0.029	.	(0.018)	.	0.10	0.016
1	C33XGM70	9.23	0.36	0.78	2.06	.	.	0.03	0.12	0.08	.	0.05	0.18	0.067	0.001	0.06	0.09
1	C33XGM60	7.31	1.069	3.11	2.99	84.46	0.0114	0.136	0.175	0.037	0.0019	0.131	0.0912	0.0566	0.07	0.258	0.124
1	BCS 183/4	7.27	1.30	3.15	3.47	84.08	.	(<0.002)	0.13	0.005	.	0.056	(0.01)	0.090	0.11	0.23	(0.01)
2	CURM 71.32	6.46	0.70	4.43	6.52	80.48	0.34	0.12	0.25	0.051	0.05	0.35	0.046	0.016	0.08	0.26	0.022
1	C33XGM290	6.12	0.029	0.052	4.27	89.30	0.0025	(0.0004)	0.0017	0.0020	0.0004	0.011	0.0005	0.136	0.002	0.0015	0.0030
1	CURM 71.33	4.96	0.938	6.84	3.60	83.60	<0.002	<0.001	<0.001	<0.002	<0.0005	0.018	<0.0005	<0.001	<0.001	<0.002	<0.005
2	C33XGM50	4.73	1.45	4.72	5.08	.	.	<0.005	0.05	0.05	.	0.23	0.05	0.029	0.094	0.08	0.03
2	CURM 71.31	4.06	1.98	6.07	3.98	83.00	0.046	0.023	0.110	0.030	0.039	0.118	0.037	0.060	0.059	0.128	0.020
2	C33XGM80	4.03	0.115	6.78	6.21	82.3	0.105	0.0067	.	0.0138	.	0.298	0.0010	0.0213	0.0055	.	(0.0010)
1	C33XGM240	3.85	0.010	3.39	3.67	88.82	0.004	0.0001	0.0008	0.0008	0.0014	0.008	(0.0002)	0.190	0.003	0.0015	0.003
1	C33XRB20	3.19	0.255	3.85	9.14	82.67	0.0029	0.0362	0.0211	0.101	0.0017	0.493	0.0028	0.0208	0.078	0.019	0.0116
1	C33XGM40	2.50	2.05	5.20	7.17	82.6	0.0062	<0.002	0.021	0.041	.	0.051	(0.0019)	<0.005	0.33	0.042	<0.005
1	C33XRB10	2.137	0.0539	5.02	7.95	83.25	0.0174	0.0048	0.0030	0.0029	0.0013	0.928	0.0167	0.020	0.0044	0.432	0.063

BRASS CHIPS

= class, where 1 = CRM and 2 = RM

100 g units

#	Number	Zn	Al	As	Bi	Cu	Fe	Mn	Ni	P	Pb	S	Sb	Si	Sn
1	GBW 02101	Rem	0.26	.	0.0024	58.00	0.89	0.73	.	0.0076	0.19	.	0.0091	.	0.54
1	BAM 224	39.40	0.0012	0.0025	0.0006	57.40	0.136	1.70	0.038	0.0112	1.13	0.0004	0.0026	(0.002)	0.066
1	IPT 40	39.1	0.010	.	.	58.10	0.007	.	0.0012	.	2.45	.	0.023	.	0.18
1	IARM 74B	38.9	0.003	<0.01	(<0.005)	60.4	0.011	<0.01	0.006	(0.008)	0.017	(0.003)	0.003	0.003	0.70
1	BAM 223	38.82	(<0.002)	0.0084	0.0018	58.74	0.091	(<0.001)	0.0214	0.0003	2.13	0.0011	0.0040	(<0.003)	0.089
1	BCS 390	38.6	0.83	.	.	57.1	0.83	1.30	0.033	.	1.04	.	.	(0.023)	0.34
1	IARM 74A	38.14	<0.01	(<0.01)	.	.	0.01	<0.01	0.01	0.006	0.02	0.001	<0.01	(<0.01)	0.50
1	IARM 75B	38.0	(0.005)	(0.004)	(0.001)	60.63	0.06	(0.003)	0.02	0.003	0.63	(0.001)	(0.004)	(0.003)	0.59
1	IARM 76B	36.71	(0.005)	(0.003)	.	60.5	0.060	(0.003)	0.015	0.005	1.94	0.003	0.006	.	0.69
1	BAM 229	36.63	.	0.00217	.	63.334	0.01061	.	0.01114	(0.00106)	0.0192	.	0.00072	.	0.00485
1	BCS 179/2	35.8	2.22	(0.008)	.	58.5	1.02	0.86	0.56	.	0.35	.	.	0.044	0.70
2	CURM 48.01	32.6	<0.001	0.067	0.038	66.98	0.049	<0.001	0.134	0.016	0.106	.	0.047	0.041	0.002
2	CURM 48.02	32.58	0.013	0.025	0.004	67.16	0.053	0.067	<0.001	0.012	0.084	0.007	0.037	0.010	0.035
2	CURM 48.05	31.0	<0.002	<0.001	<0.0005	68.69	0.066	0.016	0.117	0.007	<0.003	0.013	<0.0005	0.026	0.083
1	C31XB40	30.40	(<0.002)	(0.0015)	(0.001)	69.46	0.016	(0.0003)	0.0119	.	0.0071	.	(0.001)	(<0.005)	0.0075
2	CURM 48.04	26.99	<0.001	0.034	0.014	72.68	0.008	0.012	0.096	0.006	0.043	0.011	0.026	0.004	0.018
1	C31XB70	15.01	<0.005	0.0016	0.066	84.80	0.018	(0.002)	0.020	.	0.010	.	0.0019	<0.005	0.101
1	IARM 151B	12.94	0.002	(0.002)	.	84.0	0.025	0.002	0.011	0.003	0.013	<0.001	(0.001)	3.11	0.009
1	C31XB80	9.52	(0.0013)	0.0081	0.031	90.28	0.0267	0.0012	0.0083	.	0.072	.	0.0108	0.0051	0.035
2	C31XB950	.	(0.001)	(0.01)	(0.01)	95.0	(0.01)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(0.01)	0.5

Number	Ag	B	C	Cd	Co	Cr	Se
GBW 02101	.	.	.	.	.	.	.
BAM 224	.	.	.	.	.	.	.
IPT 40	0.002	.	.	0.049	.	.	.
IARM 74B	(0.005)	.	.	.	.	.	.
BAM 223	.	.	.	.	.	.	.
BCS 390	.	.	.	(0.011)	.	.	.
IARM 74A	(0.002)	.	(0.012)	.	.	.	.
IARM 75B	(0.005)	.	(0.004)	.	(0.003)	.	.
IARM 76B	0.005	.	(0.004)	.	0.0007	.	.
BAM 229	.	.	.	.	.	0.0034	.
BCS 179/2	.	.	.	(0.003)	.	.	.
CURM 48.01	.	.	.	<0.0003	.	.	.
CURM 48.02	.	.	.	<0.0005	.	0.004	.
CURM 48.05	.	.	.	<0.0003	.	.	.
C31XB40	.	0.0015	.	.	.	.	.
CURM 48.04	.	.	.	<0.0003	.	.	.
C31XB70	.	0.0030	.	.	.	.	.
IARM 151B	(0.01)	.	0.005	.	.	(0.003)	.
C31XB80	.	0.0021	.	.	.	.	.
C31XB950	.	.	.	.	.	.	.

BRASS CHIPS

= class, where 1 = CRM and 2 = RM

100 g units

#	Number	Cu	Zn	Al	Fe	Mn	Ni	Pb	Sn	As	Bi	Sb	Si
2	CURM 30.09	89.53	<10.47	<0.001	0.0005	<0.0003	<0.003	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
2	CURM 43.02	76.21	20.82	2.40	0.128	0.035	0.068	0.064	0.060	0.083	<0.001	<0.001	0.038
2	CURM 43.01	74.36	22.44	2.75	0.008	0.064	0.121	<0.002	0.116	0.118	<0.002	<0.001	0.063
1	BCS 344	68.98	30.98	.	.	.	.	.	.	.	.	.	.
2	CURM 30.18	63.66	32.33	3.28	0.006	<0.001	<0.001	<0.005	0.58	<0.005	<0.001	<0.001	0.131
1	C31XTB20	61.90	37.20	0.083	0.073	0.088	0.090	0.110	0.105	0.099	0.032	0.050	0.042
2	CURM 30.20	61.46	35.71	2.32	<0.005	<0.001	<0.001	<0.002	0.40	<0.001	<0.002	<0.002	0.17
2	CURM 30.15	60.66	<38.88	<0.001	0.50	<0.001	<0.001	<0.005	0.002	<0.005	<0.001	<0.001	<0.005
2	CURM 30.16	60.53	<38.33	<0.001	1.14	<0.001	<0.001	<0.005	0.002	<0.005	<0.001	<0.001	<0.005
1	C31XB20	60.3	.	0.19	0.10	0.31	0.22	0.31	0.18	0.14	0.04	0.10	0.01
2	CURM 30.11	59.86	<38.17	<0.001	0.002	0.23	1.70	0.005	0.002	<0.001	<0.002	<0.001	<0.001
2	CURM 30.23	58.77	<39.19	<0.001	0.005	<0.001	<0.001	2.04	0.001	<0.001	<0.002	<0.001	<0.001
2	CURM 30.24	58.33	<38.32	<0.001	0.001	<0.001	<0.001	3.31	0.002	<0.001	<0.002	<0.001	<0.001
2	CURM 30.21	56.23	40.08	1.44	0.003	<0.001	<0.001	0.004	2.01	<0.001	.	<0.002	0.213

LEADED AND MANGANESE BRASS CHIPS

= class, where 1 = CRM and 2 = RM

100 g units

#	Number	Pb	Mn	Zn	Al	As	Fe	Ni	P	Sb	Si	Sn	Cu
1	IARM 250A	7.2	<0.002	9.7	(0.002)	.	0.17	0.33	0.003	0.052	0.003	2.46	80.2
1	C31X 783510	2.91	.	35.20	0.0146	0.0011	0.134	0.144	0.0197	0.0047	0.053	0.407	60.96
1	IARM 73B	2.71	(0.001)	35.3	0.001	(0.005)	0.17	0.059	0.003	0.007	(0.002)	0.15	61.5
1	BCS 385	2.24	(<0.005)	38.5	(<0.005)	.	0.15	0.13	.	(<0.01)	.	0.27	58.7
2	C31X 783520	2.08	.	32.88	0.199	0.046	0.077	0.0088	0.0149	0.053	.	0.202	64.34
1	C31X 783550	1.64	.	6.23	0.077	0.104	0.126	0.249	0.018	0.114	.	0.116	91.25
1	IARM 87B	1.58	0.006	36.1	0.20	0.007	0.29	0.095	0.008	0.014	0.004	0.78	60.9
2	C31X MNB10	1.44	0.188	29.37	0.596	.	0.268	0.053	.	.	.	0.105	67.77
1	C31X 783530	1.376	.	37.51	0.163	0.110	0.170	0.251	0.0391	0.084	0.038	0.121	60.07
1	C31X 783540	1.03	.	30.09	0.561	0.206	0.020	0.492	0.125	0.188	.	0.046	67.11
1	C31X MNB20	1.02	2.23	32.19	0.268	.	0.66	0.118	.	.	0.233	0.319	63.02
1	C31X MNB50	0.127	0.243	37.91	3.35	.	0.56	1.31	.	.	0.49	1.75	54.14

Number	Ag	B	Bi	C	Cd	Co	Cr	O	S	Se
IARM 250A	0.02	.	0.02	<0.005	.	(0.002)	<0.003	.	0.046	.
C31X 783510	.	0.0005	0.0141	.	.	0.029	.	.	(0.001)	(0.0045)
IARM 73B	0.005	.	(0.005)	(0.004)	.	(0.003)	.	.	(0.004)	.
BCS 385	.	.	.	.	.	.	.	.	.	.
C31X 783520	.	.	.	.	.	.	.	.	.	.
C31X 783550	.	.	.	.	.	.	.	.	.	.
IARM 87B	(0.01)	.	0.003	0.003	.	0.007	(0.002)	.	(0.001)	.
C31X MNB10	.	.	.	.	.	.	.	.	.	.
C31X 783530	.	(0.0015)	0.0116	.	0.0039	0.0064	.	.	.	0.004
C31X 783540	.	.	.	.	.	.	.	.	.	.
C31X MNB20	.	.	.	.	.	.	.	.	.	.
C31X MNB50	.	.	.	.	.	.	.	.	.	.

ADMIRALTY & NAVAL BRASS CHIPS

= class, where 1 = CRM and 2 = RM

typical analysis

100 g units

#	Number	Sn	Pb	Zn	Cu	Al	As	Bi	Co	Fe	Mn	Ni	P	S	Sb	Si
2	CURM 42.25	2.72	0.0023	39.20	57.78	0.021	0.118	<0.001	.	0.003	0.169	<0.001	0.050	0.005	<0.001	<0.001
2	CURM 42.24	2.25	0.91	33.75	62.45	0.067	0.065	0.054	.	0.066	0.065	0.025	0.226	0.012	0.060	0.093
2	C42.25	2.2	<0.01	rem	58.5	0.02	0.10	<0.002	.	<0.005	0.13	<0.005	0.06	0.001	<0.005	<0.002
2	C31XNB40	2.07	0.09	.	63.8	0.29	0.025	0.09	.	0.11	0.02	0.16	0.20	0.002	0.39	0.22
2	CURM 42.23	1.63	0.575	22.13	74.36	0.008	0.168	0.034	.	0.354	0.019	0.168	0.128	0.045	0.356	0.015
2	CURM 42.22	1.10	1.10	26.32	70.46	0.042	0.217	0.046	.	0.23	0.122	0.061	0.177	<0.001	0.173	0.042
2	CURM 42.21	0.60	0.259	31.61	66.78	0.003	<0.003	0.013	.	0.119	<0.001	0.120	0.087	0.034	0.25	0.15
1	IARM 76C	0.66	1.6	37.2	60.4	(0.004)	(0.003)	.	.	0.013	(0.001)	0.003	0.003	(0.001)	(0.004)	(0.003)
2	C42.21	0.54	0.23	rem	66.1	0.005	<0.005	0.012	.	0.06	<0.005	0.096	0.081	0.007	0.19	0.081
1	C31X NB10	0.535	0.504	29.73	68.35	(0.0004)	0.161	0.0065	(0.0006)	0.0367	0.0508	0.520	0.0223	0.0024	0.0057	0.004

SILICON BRASS CHIPS

= class, where 1 = CRM and 2 = RM

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

100 g units

#	Number	Si	Zn	Cu	Al	Fe	Mn	Ni	Pb	Sn	As	Co	Cr	Mg	P	S	Sb	Bi*	Cd*
1	C31XWSB50	6.07	0.343	90.06	0.218	0.79	0.496	0.492	0.100	1.050	0.0284	0.057	0.0087	0.0012	0.080	0.0081	0.124	298	47
1	C31XWSB10	5.95	7.55	(82.7)	1.90	0.100	0.099	0.076	0.55	0.23	0.13	0.34	0.017	0.003	0.040	<0.002	0.03	.	.
1	C31XWSB40	4.40	5.61	86.09	0.290	0.592	1.45	0.228	0.204	0.802	0.0286	0.096	0.103	0.006	0.042	(0.002)	0.0335	318	12
1	C31XWSB40	4.58	5.05	85.7	0.48	0.77	1.85	0.25	0.168	0.80	0.040	0.109	0.045	(0.0007)	0.060	<0.005	0.067	.	.
1	C31XWSB30	3.48	9.66	(82.4)	0.70	0.51	1.44	0.36	0.39	0.60	0.053	0.052	0.05	0.004	0.044	<0.002	0.067	.	.
2	C31XWSB60A	2.61	1.12	Rem	0.10	0.05	0.29	0.37	0.96	0.39	0.01	0.05	.	0.004	0.06	0.01	0.10	.	.
1	C31XWSB60D	2.48	0.881	94.74	0.059	0.032	0.248	0.117	0.95	0.056	0.0051	0.247	0.058	(0.001)	(0.020)	(0.002)	0.007	56	71

ALUMINUM BRONZE CHIPS

= class, where 1 = CRM and 2 = RM

#	Number	Al	Cu	Fe	Mn	Ni	P	Pb	Si	Sn	Zn	As	C	Cr	Mg	Sb	Units
1	C32XALB30	11.56	79.94	4.15	0.374	3.72	0.025	0.11	0.135	0.10	0.325	0.0060	.	0.0089	0.088	.	50 g
2	CURM 52.52	10.69	79.26	6.02	0.145	3.56	.	0.074	0.011	0.044	0.094	.	.	0.004	0.007	.	100 g
1	C32XALB10	10.3	(80.4)	3.00	0.094	5.90	0.016	0.218	0.132	0.025	0.035	(0.002)	.	0.011	0.0013	.	50 g
1	BCS 304/1	9.71	80.23	4.64	0.12	4.82	.	0.010	0.08	0.03	0.31	.	.	.	(<0.01)	.	100 g
1	C32XALB20 *	9.6	(80.7)	4.1	0.055	4.6	0.045	0.26	0.29	0.095	0.25	0.007	0.01	0.003	0.003	.	50 g
2	CURM 51.14	8.42	88.57	0.72	0.55	0.219	0.12	0.003	0.286	0.113	0.656	0.44	.	.	.	.	100 g
1	C32XALB80	8.1	(75.3)	6.70	0.31	6.79	0.14	0.009	0.69	0.58	1.02	0.17	.	0.045	(0.002)	.	50 g
1	C32XALB60	8.05	81.98	2.53	0.904	5.31	0.0101	0.096	0.295	0.147	0.685	0.012	(0.0025)	0.0097	0.0019	.	50 g
1	C32XALB40	7.87	79.61	3.55	1.028	7.03	0.036	0.120	0.252	0.085	0.264	0.0130	.	0.022	0.153	.	50 g
2	CURM 52.54	7.85	81.59	3.31	1.20	5.40	.	0.086	0.022	0.135	0.39	.	.	<0.005	<0.005	.	100 g
2	C32XALB50	7.6	.	1.95	1.39	5.11	.	0.04	0.03	0.03	0.16	.	.	.	0.018	.	50 g
2	CURM 51.13	7.30	88.79	1.81	0.898	0.057	0.022	0.104	0.174	0.270	0.335	0.215	.	.	0.174	.	100 g
2	CURM 51.12	6.36	88.29	2.87	1.33	0.112	<0.001	0.219	0.005	0.196	0.45	0.111	.	.	.	.	100 g
2	CURM 51.11	5.27	93.95	0.060	<0.001	0.012	0.035	0.33	0.159	0.027	0.111	<0.001	.	.	.	.	100 g

* Provisional Analysis

LEADED BRONZE CHIPS

= class, where 1 = CRM and 2 = RM

IPT 74: 60 g chips

IPT 10A, B: 80 g chips

all others: 100 g chips

#	Number	Pb	Sn	Zn	Cu	Al	As	Bi	Fe	Mn	Ni	P	S	Sb	Si	Other
1	IARM 184A	19.0	6.0	0.37	(74)	0.0016	0.010	(0.03)	(0.003)	(0.002)	0.30	0.008	0.021	0.27	(0.002)	.
1	GBW 02140	17.62	4.24	5.37	72.25	.	.	.	.	.	.	.	.	.	.	.
2	CURM 50.01	11.74	9.45	1.17	74.08	0.018	0.22	0.029	0.243	0.024	2.24	0.113	0.113	0.59	0.007	.
2	CURM 50.02	10.67	10.34	0.006	78.84	<0.001	<0.002	<0.0005	<0.001	<0.0005	<0.0005	0.046	<0.001	<0.0005	<0.002	.
2	CURM 50.04	9.94	11.30	0.66	76.11	0.014	0.06	0.10	0.028	0.028	1.10	0.035	0.14	0.50	0.011	.
1	C32XLB20	9.42	12.38	0.27	(76.8)	0.04	0.017	0.009	0.40	0.22	0.22	0.04	(0.001)	0.023	<0.01	.
2	C32XLB30	9.4	10.3	<0.01	80.6	<0.01	0.02	0.025	<0.01	<0.01	1.52	0.006	0.020	0.04	.	.
1	BCS 364	9.25	9.35	0.13	80.6	(0.002)	(0.07)	(0.01)	(0.005)	.	0.28	0.056	(0.06)	0.18	(0.005)	.
2	CURM 50.03	8.86	8.41	1.72	77.42	0.005	0.11	0.051	0.018	0.037	2.89	0.159	0.064	0.24	0.005	.
1	C32X LB130	7.59	5.80	0.520	84.87	0.0011	0.131	0.0721	0.0160	0.0005	0.828	0.0161	0.115	0.0186	(0.0035)	Ag: 0.0063
1	GBW 02138	6.33	5.31	6.50	81.29	.	.	.	.	.	1.07	.	.	.	.	.
1	IPT 74	6.24	2.84	9.88	80.41	.	0.002	.	0.315	.	0.15	0.002	0.056	0.016	.	Cd: 0.013
1	GBW 02139	6.16	4.08	6.96	81.45	.	.	.	.	.	.	.	.	.	.	.
1	IARM 86D	5.4	4.9	4.6	(84.5)	(0.002)	0.007	0.042	0.035	0.0011	0.40	0.072	0.029	0.112	Ag: 0.022	Co: 0.004
2	C32X SN10	5.15	11.75	0.804	79.96	(0.002)	.	.	0.0034	0.0018	2.17	0.0025	0.0064	0.006	.	.
1	IPT 10B	4.74	4.61	4.73	85.2	.	0.019	.	0.211	.	0.33	0.003	0.068	0.114	.	.
1	IPT 10A *	4.72	4.58	4.71	85.13	.	0.020	.	0.211	.	0.33	0.003	(0.068)	0.113	.	.
1	C32X SN20	1.97	13.54	1.28	82.8	0.0004	.	.	0.0332	0.0043	0.104	0.082	0.0326	0.100	.	.
1	C32X SN40	1.059	18.80	0.342	77.88	0.034	0.0468	.	0.060	0.0065	0.556	0.988	0.040	0.102	(0.004)	Co: 0.151
1	C32X SN30	0.270	16.51	0.43	81.32	0.0004	.	.	0.0782	0.0026	0.513	0.297	0.096	0.260	.	.

* IPT 10A certification expired September 2009, our remaining stock is offered at a discounted price.

PHOSPHOR BRONZE CHIPS

= class, where 1 = CRM and 2 = RM

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

C, CURM: 100 g chips

GBW, BCS: 150 g chips

#	Number	P	Sn	Zn	Cu	Al	As	C	Fe	Mg	Mn	Ni	Pb	S	Sb	Se*	Si
2	CURM 54.03	0.954	7.30	0.003	91.74	<0.001	0.006	.	0.005	<0.0003	<0.0005	0.0019	0.003	<0.001	0.0007	.	<0.002
2	C32XPB10	0.84	11.0	0.02	89.6	<0.01	0.05	.	<0.01	.	<0.01	0.12	0.37	.	0.07	.	0.01
1	C32XPB110	0.72	3.00	1.93	89.6	0.068	0.175	.	0.493	<0.002	0.80	1.01	1.02	0.016	0.54	.	0.52
1	BCS 374	0.59	9.80	0.006	89.5	(0.005)	.	.	(0.005)	.	.	0.014	0.064	0.012	(0.01)	.	(0.005)
2	CURM 54.05	0.501	11.36	0.554	84.78	0.055	0.063	.	0.051	0.0021	0.078	1.28	1.14	0.063	0.111	.	0.006
1	GBW 02133	0.423	5.79	.	93.72	.	.	.	.	.	.	.	.	.	.	.	.
2	C32XPB120	0.42	4.64	0.49	(92.0)	<0.001	0.098	.	0.31	<0.001	0.39	0.51	0.47	(0.010)	0.024	55	0.01
1	GBW 02136	0.372	5.79	.	93.70	.	.	.	0.011	.	.	.	0.021	.	0.0058	.	0.0012
1	C32X PB230	0.319	7.56	0.0020	92.04	(0.0004)	0.0011	0.004	(0.0005)	.	(0.0006)	0.0033	0.0042	0.0015	0.0025	.	0.0016
2	CURM 54.04	0.250	9.47	1.09	86.54	0.074	0.106	.	0.316	0.0009	0.419	0.536	0.79	0.046	0.33	.	0.065
1	GBW 02134	0.238	6.82	.	92.85	.	.	.	.	.	.	.	.	.	.	.	.
1	C32XPB130	0.22	6.96	0.27	(91.5)	<0.001	0.052	.	0.14	<0.001	0.096	0.26	0.25	(0.03)	0.12	.	<0.005
2	CURM 54.02	0.107	5.53	0.410	92.87	0.020	0.023	.	0.102	0.0020	0.101	0.109	0.663	0.030	0.026	.	0.012
1	GBW 02135	0.106	7.92	.	91.73	.	.	.	.	.	.	.	.	.	.	.	.
2	CURM 54.01	0.053	3.17	0.346	95.42	0.040	0.044	.	0.028	0.008	0.158	0.348	0.307	0.023	0.070	.	0.039
1	C32XPB140	0.032	8.58	0.029	91.0	(0.001)	0.021	.	0.005	<0.001	<0.002	0.092	0.051	0.086	0.061	.	<0.005
2	C32XPB100	0.0236	11.93	0.037	87.70	(0.0008)	0.011	.	0.008	0.004	0.0010	0.057	0.055	0.018	0.0051	.	0.0015

CRM LEAD ORE CONCENTRATE

analysis listed in mass %

200 g units

Number	Pb	Ag	Al	As	Ca	Cd	Cu	Fe	Mg	Mn	Na	S	Sb	SiO ₂	Tl	Zn
CAN CPB-2	63.52	(0.03573)	0.074	(0.04)	(0.0776)	0.0167	0.1213	7.065	0.0683	(0.0395)	(0.01)	(18.02)	(0.423)	(0.652)	(0.0340)	6.04

CRM LEAD

analysis listed in mg/kg

Number	Type	Ag	As	Au	Bi	Cd	Cu	Ni	Sb	Se	Sn	Te	Tl	Zn	Units
VS 2036-2001	Powder	2322	.	32.6	.	.	.	.	.	.	.	.	.	.	100 g powder
VS 2038-81	Powder	415	.	0.21	.	.	.	0.410	.	.	.	.	.	.	100 g powder
BCR 288B	Added impurities	30.5	55.7	.	215.8	33.3	19.3	4.57	32.5	<0.2	30.6	32.8	2.3	8.2	160 g chips
BCR 287B	Thermal refined	15.2	<0.003	.	67.3	0.36	0.98	0.024	0.040	<0.005	<0.05	<0.02	0.73	<0.1	160 g chips
BCR 286B	Electro refined	0.015	<0.0002	.	21.5	0.125	1.49	0.041	0.10	<0.05	<0.05	<0.1	2.5	<0.1	160 g chips

LEAD BASE CHIPS AND POWDER

= class, where 1 = CRM and 2 = RM

analysis listed in mass %

BCS: 100 g powder

SRM: 150-200 g powder

all others: 100 g chips

#	Number	Sn	Sb	Ag	As	Bi	Ca	Cd	Cu	Fe	In	Na	Ni	Se	Te	Zn	Other
1	SRM 1129	62.7	0.13	0.075	0.055	0.13	.	.	0.16	.	.	.	0.010
1	SRM 127b	39.3	0.43	0.01	0.01	0.06	.	.	0.011	.	.	.	0.012
1	C93XS30APR30	33.0	0.96	0.021	0.018	0.28	.	0.009	0.008	0.003	.	.	0.010	.	.	0.0053	
1	C93XS30APR20	30.68	1.80	0.049	0.0178	0.168	.	0.0061	0.062	0.0026	0.0199	.	0.042	.	0.0102	0.028	
1	C93XS30APR10	28.58	2.54	0.0144	0.010	0.059	.	0.0014	0.192	(0.012)	0.0094	.	0.0010	.	0.0024	(0.004)	
1	GBW 02401	15.97	16.09	.	0.014	0.024	.	.	1.96	Pb: 65.72
2	C86XPSS40	10.69	16.97	(0.006)	0.278	0.120	.	0.047	0.328	*1	0.013	.	0.0031	.	.	*2	
2	C86XPSS20	6.33	8.16	0.004	1.42	0.054	.	0.069	0.118	*1	(0.002)	.	0.0080	.	.	*2	
1	SRM 53e	5.84	10.26	.	0.057	0.052	.	.	0.054	<0.001	.	.	0.003	.	.	.	
1	GBW 02402	5.69	15.02	.	0.012	0.0075	.	.	2.88	Pb: 76.22
1	BCS 177/2	5.07	10.1	.	0.05	0.028	.	.	0.12	.	.	.	0.007	.	.	.	Pb: 84.5
2	C85XSn20	1.87	0.023	0.002	*5	0.0093	.	*1	0.035	.	.	.	*1	0.0058	*1	*1	
1	C85X ANTH	1.45	6.05	0.0071	0.217	0.0194	.	0.0046	0.0291	0.010	.	.	0.0062	0.0149	0.0071	(0.0007)	
1	C85XHRH	0.874	1.13	0.247	0.74	0.092	.	(0.0002)	0.080	.	.	.	0.001	0.037	0.002	.	
1	C84XBA10	0.85	*1	0.0088	*1	0.0084	0.106	0.0016	0.0041	.	.	.	.	.	0.006	0.0007
2	C84XBA20	0.51	0.002	0.008	*05	0.024	0.061	0.0052	0.003	.	.	.	.	.	*2	0.019
1	C84XBA80	0.293	0.0009	0.0043	(0.0004)	0.019	0.157	0.0010	0.0007	.	.	.	.	<0.002	0.0013	Al: 0.021
2	C85XSb120	0.21	11.4	0.0015	0.11	0.007	.	*1	0.30	*1	.	.	0.0016	*1	*5	0.087	
1	C83XPR70	0.190	0.79	0.285	0.050	0.47	.	0.455	0.175	(0.008)	0.65	.	0.0015	0.0055	0.010	(0.0005) Pt: 0.005	
2	C85XSb30	0.13	2.66	*2	0.14	0.010	.	*1	0.032	*1	.	.	0.0013	0.024	*2	(0.0002)	
2	C84XBA40	0.11	0.061	0.003	(0.0008)	0.074	(0.014)	0.010	0.031	.	.	.	0.0007	.	0.029	(0.0003)	
2	C85XSb80	0.085	8.43	0.016	0.02	0.010	.	*1	0.032	*1	.	.	0.0014	0.0007	*5	(0.0002)	
2	C85XSb100	0.080	10.2	0.0015	0.11	0.007	.	*1	0.14	*5	.	.	0.0013	*1	*2	0.014	
2	C85X0616Pb10	0.070	1.78	0.002	0.070	0.025	.	0.0023	0.048	*1	.	.	0.001	0.018	0.001	0.001	
2	C85XSb50	0.057	5.14	0.0017	0.12	0.022	.	*1	0.007	*1	.	.	0.0025	0.0008	*1	*1	
1	C83XPR40	0.009	0.012	0.014	(0.002)	0.014	0.0026	0.010	0.015	.	0.005	0.001	0.013	0.003	0.025	0.005 Au: 0.002	
1	C83XPR10	0.004	0.005	0.088	0.050	0.080	0.004	0.075	0.006	.	0.045	0.01	0.001	<0.002	0.003	0.002 Au: 0.008	

* In the above chart, * represents <0.00 so that, for example, *1=<0.001

LEAD-SILVER ALLOY CHIPS

Class	Number	Ag	Al	As	Bi	Cd	Cu	Fe	In	Sb	Sn	Zn	Units
RM	C82XAg6.0	6.0	0.002	0.025	0.54	0.010	0.19	0.001	0.006	0.48	0.50	0.008	100 g
RM	C82XAg3.5	3.48	<0.001	0.022	0.27	0.004	0.075	0.001	0.045	0.11	0.24	0.001	100 g
CRM	C82XAg1.5	1.55	.	0.006	0.06	.	0.27	.	.	0.39	0.04	0.004	100 g

RM LEAD BASE BATTERY ALLOY CHIPS

TEMPORARILY UNAVAILABLE

100 g units

Number	Sn	Ag	As	Bi	Ca	Cd	Cu	Sb	Te	Zn
C84XBA60	0.73	0.002	<0.001	0.008	0.095	(0.002)	0.0010	0.001	<0.001	<0.001
C84XBA70	0.61	0.002	<0.001	0.009	0.036	<0.002	0.0009	0.002	<0.001	<0.0005

CRM MAGNESIUM CHIPS

Number	Ag	Al	Be	Ca	Cd	Ce	Cu	Fe	La	Mn	Ni	Pb	Si	Sn	Zn	Units
C61XMgP30	0.013	0.090	<0.0001	0.053	0.015	0.006	0.030	0.014	0.004	0.015	0.005	0.015	0.050	0.016	0.019	30 g
C61XMgP20	0.003	0.065	<0.0001	0.014	0.006	0.002	0.012	0.006	0.002	0.012	0.003	0.006	0.031	0.007	0.012	30 g
C61XMgP10	<0.001	0.013	<0.0005	<0.001	<0.0005	.	(0.0006)	0.027	.	0.0037	<0.002	0.005	0.005	(0.001)	0.002	30 g

MAGNESIUM BASE CHIPS

= class, where 1 = CRM and 2 = RM

BCS: 100 g units

C: 30 g units

#	Number	Al	RE	Ag	Mn	Zn	Be	Ca	Cd	Cu	Fe	Ni	Pb	Si	Sn	Zr	Other
2	C65XMgA40	11.5	.	0.018	0.008	0.005	0.0011	0.03	.	0.061	0.008	0.004	0.004	0.03	0.010	.	
1	C65XMgA50	8.01	.	0.0050	0.399	0.411	0.0013	0.013	0.0035	0.020	0.006	0.020	0.043	0.110	0.013	.	Sr: 0.00034
1	BCS 316	8.01	.	.	0.28	0.68	.	.	.	0.040	0.009	0.004	0.024	0.055	0.005	.	
1	C65XMgA20	7.19	.	.	0.14	0.95	0.0007	(0.005)	.	0.112	0.011	0.003	0.006	0.13	0.050	.	Sr: 0.0005
1	C65XMgA10	5.45	.	0.012	0.060	1.26	0.006	0.029	0.013	0.221	0.021	0.021	0.012	0.20	0.072	(0.0015)	Ce: 0.009
																	La: 0.007
1	C65XMgB30	3.21	.	(0.002)	0.012	0.60	0.0030	0.029	0.011	0.021	0.007	0.0019	0.004	0.011	0.005	.	
1	C65XMgB10	2.39	.	0.03	0.68	1.71	0.0007	0.41	0.07	0.20	0.016	0.012	0.01	0.17	0.011	.	Ce: 0.015
																	La: 0.013
2	C65XMgB20	2.32	.	.	0.44	0.95	.	0.008	.	0.096	0.015	0.005	0.012	0.06	0.012	.	
2	C63XMgE20	0.056	.	.	1.58	0.04	.	(0.003)	.	0.058	0.009	0.012	0.013	0.035	0.011	.	
2	C65XMgD30	0.041	0.008	0.005	0.28	1.97	0.0003	(0.07)	.	0.058	0.023	0.002	0.009	0.020	0.007	0.029	
1	C63XMgE30	0.015	.	0.005	2.36	0.022	.	0.13	0.001	0.012	0.004	0.0023	0.005	0.01	0.0057	.	
2	C67XMgF30	0.01	2.40	.	0.015	3.18	.	0.006	.	0.03	0.009	0.002	0.017	0.005	0.006	0.48	
1	BCS 307	(0.008)	2.84	.	0.006	2.08	.	.	.	0.005	0.002	.	.	.	.	0.56	
2	C66XMgC20	0.007	.	.	0.016	5.93	.	0.006	.	0.15	0.013	0.016	0.018	0.007	0.010	0.45	
2	C66XMgD40	0.006	.	.	0.02	2.80	.	0.004	.	0.01	0.003	0.002	0.017	0.01	0.003	0.44	
2	C68XMgH40	0.004	2.4	2.05	0.015	0.17	.	.	.	0.03	0.001	0.004	.	0.002	.	0.46	
2	C68XMgL10	0.002	2.09	1.41	0.016	0.009	.	.	.	0.013	0.009	0.005	.	0.001	.	0.54	Th: 0.24
2	C67XMgG40	0.001	(<0.01)	.	0.015	5.47	.	0.001	.	0.06	0.003	0.007	0.009	0.003	0.005	0.72	Th: 1.85

RE = Total Rare Earths

NICKEL POWDER

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

Number	Ag	Al	Au	C	Cr	Cu	Fe	Ir	Mn	Mo	Ni%	Os	P	Pb	Pd	Pt	Rh	Ru	S	Si	Units
CRM - nickel ore																					
VS 1702-86	23.4	.	0.84	.	.	(3%)	.	0.11	.	.	5.4	0.06	.	.	30.0	8.6	0.98	0.34	.	.	200 g
RM - nickel powder																					
BS HPN-1	(<0.1)	70	.	268	22	2	202	.	2	3	.	.	5	0.2	.	.	.	.	4	6	100 g

continued informational values

Number	As	B	Ba	Be	Bi	Ca	Cd	Co	Ga	H	In	Mg	N	Na	O	Sb	Se	Sn	Te	Ti	Tl	V	Zn
VS 1702-86	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
BS HPN-1	<0.5	<2	<1	<1	<0.2	3	<0.1	<2	<0.5	70	<0.2	1	17	4	1400	<0.1	<0.2	<1	<0.2	<1	<0.1	<1	<1

CRM NICKEL CHIPS

= class, where 1 = CRM and 2 = RM

100 g units

#	Number	Ag	Al	As	B	Be	Bi	C	Ca	Cd	Co	Cr	Cu	Fe
2	IARM 190A	0.00109	0.0050	0.0028	<0.0005	(<0.0001)	0.00111	0.0022	<0.0010	0.0005	0.0008	(0.0001)	0.0017	0.0099
2	IARM 189A	0.00024	0.0044	0.00007	(<0.0005)	(<0.0001)	0.00026	0.0023	<0.0010	0.00008	0.00031	(0.0010)	0.00090	0.0038
2	IARM 188A	0.00011	0.0024	0.00007	(<0.0005)	(<0.0001)	0.00009	0.0022	<0.0010	0.00002	0.00017	(0.0006)	0.00018	0.0019
2	IARM 187A	0.00001	0.0011	0.00001	(<0.0005)	(<0.0001)	<0.00001	0.0013	<0.0010	(<0.00001)	0.00010	(0.0003)	0.00022	0.0019
2	IARM 191A	0.00001	0.00015	0.0013	(<0.0005)	(<0.0001)	<0.00001	0.0014	<0.0010	<0.0001	0.0545	0.00021	0.00042	0.00079
1	BAM RS 4	<0.0001	<0.0001	<0.00005	(<0.0002)	.	(<0.00001)	0.00094	<0.0001	<0.00002	<0.0001	<0.00005	<0.0002	0.00042
1	IARM 50B	.	0.031	.	(0.0002)	.	.	0.010	.	.	0.069	0.010	(0.001)	0.079

Number	Ga	Mg	Mn	Mo	N	Nb	Ni	O	P	Pb	S	Sb	Se
IARM 190A	<0.00005	(0.0006)	0.00018	(<0.0001)	(0.0001)	.	.	(0.0019)	0.0034	0.00093	0.00033	0.0011	0.00065
IARM 189A	<0.00005	(0.0008)	0.00019	(<0.0001)	(0.0001)	.	.	(0.0018)	0.00037	0.00029	0.00018	0.00039	0.00021
IARM 188A	<0.00005	(0.0004)	0.00023	<0.0001	(0.0001)	.	.	(0.0017)	0.00014	0.00010	0.00018	0.00011	0.00007
IARM 187A	<0.00005	(0.0002)	0.00030	(<0.0001)	(0.0001)	.	.	(0.0014)	<0.00010	0.000015	0.00019	<0.00005	<0.00001
IARM 191A	<0.00005	(0.0002)	0.00031	(<0.0001)	(0.0002)	.	.	(0.0030)	<0.00010	0.00003	0.00021	<0.00005	0.00019
BAM RS 4	<0.00002	<0.00008	<0.00005	(<0.00002)	0.00025	.	99.995	(0.0029)	.	<0.0001	(<0.0002)	<0.00002	<0.0001
IARM 50B	.	(0.001)	0.20	(0.003)	0.0001	(0.002)	99.5	0.0061	0.002	.	0.0002	.	.

Number	Si	Sn	Ta	Te	Ti	Tl	V	W	Zn	Zr
IARM 190A	0.0028	0.00062	.	0.00089	(0.0006)	0.00058	(<0.00005)	.	0.00081	.
IARM 189A	0.0019	0.00022	.	0.00017	(0.0003)	0.00023	(<0.00005)	.	0.00028	.
IARM 188A	0.0018	0.00011	.	0.00008	(0.0002)	(0.00009)	(<0.00005)	.	0.00023	.
IARM 187A	(0.0018)	0.00004	.	<0.00001	(0.0003)	<0.00002	(0.00008)	.	<0.00005	.
IARM 191A	(0.0005)	0.00004	.	<0.00001	(<0.0001)	<0.00002	(<0.00005)	.	0.00019	.
IARM 192A	(0.0007)	0.00011	.	<0.00001	(<0.0001)	<0.00002	(<0.00005)	.	0.0011	.
BAM RS 4	(<0.0002)	<0.00003	.	(<0.00002)	.	<0.00002	(<0.00002)	(<0.00001)	<0.0004	.
IARM 50B	0.059	.	<0.005	.	0.002	.	0.016	0.010	.	(0.001)

NICKEL ALLOY CHIPS

= class, where 1 = CRM and 2 = RM

#	Number	Al	C	Co	Cr	Cu	Fe	Mg	Mn	Mo	Nb	Ni	Si	Ti	V	W
2	C212X 40060	3.85	0.03	0.05	0.12	.	1.95	0.016	0.83	.	.	63.3	3.94	1.34	.	.
1	IARM 52C	2.98	0.153	0.005	0.046	30.6	1.04	0.0021	0.89	0.011	0.003	(63.6)	0.14	0.55	(0.003)	(0.01)
1	IARM 257A	0.34	0.005	0.024	1.57	0.019	1.47	0.010	0.63	28.0	<0.03	67.9	0.024	0.002	0.01	0.07
2	C215X HB10	0.31	0.056	0.094	0.84	0.054	7.71	.	1.21	33.6	.	.	0.48	(0.026)	0.87	.
1	IARM 63B	0.31	0.0025	0.019	0.47	0.012	1.68	0.005	0.61	27.3	(0.001)	69.6	0.019	0.003	(0.010)	0.060
1	C215X HB50	0.19	0.150	2.47	0.03	0.05	3.05	.	0.44	26.0	.	.	1.32	0.03	0.14	.
1	IARM 51C	0.13	0.122	0.019	0.36	31.6	2.17	0.0096	1.01	0.072	0.003	64.4	0.11	0.026	0.002	0.021
1	IARM 63C	0.11	0.010	0.013	0.10	0.003	1.13	0.003	0.76	26.6	0.002	71.1	0.01	0.15	0.007	0.03
1	IARM 55B	0.09	0.004	0.036	8.25	0.013	1.12	0.011	0.323	24.62	0.08	65.4	0.021	0.002	0.005	0.12
2	C212X 40010	0.09	0.10	0.12	0.05	.	0.57	0.13	3.04	.	.	67.6	1.48	0.11	.	.
2	IARM 202A	0.080	0.13	0.020	0.008	32.3	1.31	0.024	1.03	(<0.01)	.	64.8	0.046	0.005	(<0.01)	(<0.01)
2	IARM 203A	0.066	0.005	12.88	0.72	0.05	40.6	(<0.0002)	0.023	0.090	5.00	38.44	0.41	1.58	(<0.01)	(0.02)
2	C212X 40020	0.05	0.04	0.08	0.02	.	1.17	0.02	2.00	.	.	65.2	0.10	0.06	.	.
1	BCS 363/1	0.027	0.140	0.032	(0.05)	31.90	1.86	.	1.26	.	.	64.7	0.028	(0.03)	.	.
1	NCS HC20502	.	0.0015	0.043	0.466	0.027	Rem	.	0.983	4.13	.	80.07	0.317	0.004	.	.
1	BCS 371	.	0.30	0.39	.	.	.	0.060	.	.	.	.	0.34	.	.	.

Number	B	N	O	P	Pb	S	Sn	Zr	Units
C212X 40060	.	.	.	.	0.02	0.035	.	.	50 g
IARM 52C	(0.001)	(0.0002)	(0.001)	0.009	(0.0003)	0.002	(0.001)	0.051	100 g
IARM 257A	<0.003	0.0039	0.0004	0.004	<0.0005	0.0005	<0.0005	(0.008)	100 g
C215X HB10	(0.0023)	0.042	.	0.006	.	0.026	(0.004)	.	50 g
IARM 63B	(<0.002)	0.0041	0.0010	0.004	.	(0.0004)	.	(0.002)	100 g
C215X HB50	(0.003)	0.008	.	0.053	.	0.002	(0.002)	.	50 g
IARM 51C	.	0.0004	(0.002)	0.010	<0.005	0.005	(0.001)	0.002	100 g
IARM 63C	0.003	0.0006	0.0005	0.005	.	0.0005	.	0.001	100 g
IARM 55B	0.002	0.016	0.0009	0.005	.	0.0010	.	(0.005)	100 g
C212X 40010	.	.	.	.	0.08	0.022	.	.	50 g
IARM 202A	(<0.002)	0.0004	(0.0018)	0.011	.	0.032	.	0.010	100 g
IARM 203A	(0.002)	.	.	0.006	.	0.0009	.	<0.01	100 g
C212X 40020	.	.	.	.	0.04	0.075	.	.	50 g
BCS 363/1	.	.	.	.	.	(0.002)	.	.	100 g
NCS HC20502	.	.	.	0.0007	.	0.0024	.	.	100 g
BCS 371	.	.	.	.	.	0.013	.	.	100 g

NICKEL BASE CHIPS WITH Cr > 10 % CONTINUED ON THE NEXT PAGE

= class, where 1 = CRM and 2 = RM

#	Number	Cr	Mo	Al	C	Co	Cu	Fe	Mn	Nb	Ni	Si	Ti	W
2	IARM 201A	29.9	0.018	0.37	0.019	0.009	0.008	9.09	0.19	0.009	59.9	0.15	0.30	(<0.01)
1	IARM 67B	28.54	4.98	0.26	0.008	3.69	1.74	14.26	1.12	0.73	41.1	0.24	0.005	3.10
1	IARM 60B	25.3	2.87	0.05	0.062	2.9	0.05	17.9	1.53	0.016	45.3	0.87	0.004	3.08
1	NCS HC24524	24.03	.	0.08	.	.	.	0.53	0.258	.	74.18	0.344	0.182	.
1	NCS HC24526	23.35	.	0.18	.	.	.	0.44	0.449	.	74.08	1.27	0.081	.
1	IARM 59D	22.9	3.06	0.07	0.016	0.04	1.73	26.2	0.56	(0.005)	44.5	0.16	0.78	0.007
2	C23X 80010	22.9	0.52	0.38	0.11	0.98	0.07	.	1.05	.	30.1	0.22	0.44	.
1	IARM 258A	22.8	15.5	0.30	0.005	0.083	1.54	0.85	0.21	0.01	58.6	0.015	0.003	0.14
1	NCS HC24523	22.68	.	0.088	.	.	.	0.86	0.415	.	74.72	0.531	0.153	.
1	IARM 59C	22.1	3.25	0.17	0.011	0.28	1.80	29.5	0.36	0.24	40.7	0.24	0.90	0.31
1	C28X 62530	21.90	7.86	0.32	0.124	0.39	0.30	5.41	0.54	4.25	56.67	1.26	0.044	.
1	IARM 100C	21.9	3.06	0.35	0.104	17.9	0.105	31.2	0.97	0.172	20.5	0.441	0.013	2.49
2	C22X 8010	21.88	0.20	1.03	0.12	0.52	0.22	0.66	0.50	.	.	0.22	2.81	.
1	IARM 69C	21.6	8.32	0.11	0.068	1.11	0.069	18.3	0.47	0.09	48.7	0.35	0.017	0.62
1	C28X 62520 **	21.5	8.77	0.21	0.077	0.20	0.145	4.14	0.28	3.39	59.9	0.61	(0.027)	.
1	IARM 65B	21.32	13.02	0.283	0.0054	0.59	0.054	3.63	0.29	0.029	57.3	0.030	0.005	2.87
1	C28X 71820	21.30	0.88	0.34	0.035	0.64	0.117	17.0	0.184	4.76	52.7	0.47	1.13	.
1	IARM 69D	21.13	8.78	0.21	0.090	1.67	0.075	17.7	0.72	0.204	48.1	0.63	0.004	0.49
1	C28X 62540	21.1	5.89	0.05	0.037	0.22	0.027	6.46	0.093	3.53	(61.3)	0.58	0.30	.
2	C27X 141840	21.0	10.2	0.05	0.29	10.3	0.09	0.57	0.41	.	.	0.39	0.07	.
2	C22X 9030	20.96	0.06	1.66	0.05	18.04	0.01	0.33	0.20	.	.	1.00	1.85	.
2	C24X 26350	20.9	6.62	0.605	0.11	18.9	0.23	0.17	0.11	.	.	0.55	1.96	.
1	C24X W4SP30	20.84	1.96	2.99	0.118	13.77	0.735	0.96	0.542	0.163	.	0.208	5.52	0.064
2	IARM 58A	20.71	0.17	0.53	0.076	0.10	0.03	(44.90)	0.65	(0.03)	32.01	0.26	0.49	(<0.01)
2	C24X W4SP40	20.7	3.06	0.91	0.14	11.76	0.23	2.33	0.42	0.12	.	0.02	2.53	0.22
2	IARM 157A	20.7	6.18	0.021	0.023	0.045	0.14	(Rem)	0.35	0.019	23.8	0.39	(0.004)	0.023
1	C28X 62510	20.5	9.88	0.16	0.039	0.022	0.051	3.12	0.17	2.70	(62.3)	0.47	(0.01)	.
1	NCS HC23501	20.30	.	1.09	0.042	.	0.059	.	0.345	.	.	0.37	2.89	.
1	NCS HC23504	20.30	2.06	0.635	0.059	.	.	.	0.442	.	.	0.631	0.613	.
1	IARM 275A	20.1	3.20	0.22	0.0101	0.41	1.77	27.9	0.61	0.27	42.8	0.23	2.31	0.22
1	IARM 25C	19.98	2.26	0.024	0.017	0.092	3.52	38.8	0.89	0.59	33.26	0.53	0.003	0.07
2	C215X HC50	19.9	15.5	.	0.67	0.13	.	10.96	0.27	.	.	1.04	.	5.5
2	C22X 7530	19.9	0.06	0.07	0.06	0.52	0.05	5.00	0.23	.	.	0.96	0.26	.
2	C23X DS30	19.87	0.62	0.01	0.04	0.11	0.62	.	0.67	.	39.66	1.43	0.34	.
1	IARM 58B	19.6	0.01	0.45	0.073	0.02	0.011	47.7	0.51	0.01	30.7	0.282	0.50	0.01
1	BCS 310/1	19.45	.	1.06	0.068	17.0	.	0.25	0.35	.	58.6	0.46	2.43	.
1	IARM 62B	19.06	4.17	1.38	0.028	12.95	0.024	0.79	0.026	0.050	58.33	0.073	3.02	0.068
2	C24X 26310	18.96	5.66	0.30	0.06	20.9	0.07	0.74	0.71	.	.	0.12	2.56	.
2	C23X 80030	18.92	0.14	0.06	0.05	0.11	0.53	.	0.42	.	34.7	0.87	0.10	.
1	C28X 71830	18.85	1.31	1.21	0.296	0.94	0.26	(19.6)	0.36	6.25	49.0	0.52	1.21	.
#	Number	Cr	Mo	Al	C	Co	Cu	Fe	Mn	Nb	Ni	Si	Ti	W
1	C28X 71810	18.71	2.94	(0.007)	0.008	0.01	0.013	(19.5)	0.108	4.97	52.6	0.71	0.025	.
1	IARM 56E *	18.44	3.07	0.61	0.033	0.27	0.056	18.3	0.097	5.34	52.6	0.09	0.96	0.04
1	BCS 351	18.12	3.06	0.55	0.025	0.136	0.016	18.26	0.037	5.20	53.1	0.14	1.06	.
2	C22X 9050	18.10	0.51	1.01	0.20	20.99	0.22	1.09	0.97	.	.	0.21	2.75	.
2	C22X 7550	18.09	0.52	0.58	0.12	0.10	0.23	1.11	0.99	.	.	0.22	0.84	.
1	C28X 71860	18.0	2.95	0.32	0.005	0.41	0.09	.	0.25	5.20	54.9	0.63	0.25	.
2	C24X W4SP10	17.82	6.20	1.65	0.02	14.9	0.07	0.58	0.11	<0.01	.	0.56	3.68	0.02
2	C22X 8030	17.7	0.50	1.84	0.03	1.99	0.08	1.88	0.21	.	.	1.09	1.81	.
2	C23X DS10	17.7	0.04	0.04	0.13	0.99	0.04	.	1.65	.	34.6	2.38	0.04	.
2	C28X 75010	16.82	0.51	0.98	0.10	.	0.52	5.08	1.52	1.46	.	0.60	2.31	.
2	C28X 60010	16.75	.	0.02	0.06	0.98	1.08	5.98	0.14	.	.	0.85	0.60	.
1	BAM 326-1	16.37	(0.025)	.	0.092	0.223	(0.027)	.	0.406	.	61.16	1.46	.	.
2	C215X HC10	16.0	19.6	.	0.04	2.28	.	4.50	1.28	.	.	0.38	.	3.58
1	IARM 66B	15.86	16.06	0.40	0.0044	0.90	0.086	5.80	0.47	0.019	56.65	0.028	0.006	3.42
1	C215X HC20	15.7	18.9	0.18	0.066	1.70	0.023	3.62	0.97	.	.	1.02	0.03	3.91
1	IARM 66C	15.7	15.7	0.23	0.004	0.23	0.15	5.24	0.41	0.03	59.1	0.025	0.007	3.25
1	IARM 57C	15.56	0.034	0.74	0.038	0.018	0.010	8.00	0.23	0.93	71.73	0.15	2.47	0.006
2	C22X 10550	15.52	3.96	4.74	0.30	21.7	<0.01	1.22	<0.01	.	.	0.26	0.44	.
1	IARM 53E	15.39	0.220	0.25	0.072	0.045	0.168	9.42	0.21	0.024	73.7	0.050	0.254	0.024
1	IARM 53D	15.20	0.02	0.34	0.045	0.052	0.015	6.86	0.49	0.006	76.2	0.35	0.34	<0.005
1	IARM 57D	15.42	0.01	0.60	0.051	0.040	0.015	7.31	0.048	0.869	73.0	0.16	2.51	0.01
1	IARM 277A	14.35	4.22	4.38	0.080	14.5	0.004	0.16	0.01	0.034	58.9	0.037	3.40	0.047
1	NCS HC23505	14.28	.	1.88	0.038	.	.	.	0.28	.	37.83	0.19	2.89	5.87
2	C28X 60020	13.95	.	0.26	0.16	0.21	0.03	10.07	0.64	.	.	0.20	0.12	.
2	C22X 10530	13.91	6.05	5.24	0.12	17.74	0.21	0.40	0.51	.	.	0.98	1.37	.
2	C22X 90120	13.76	4.49	0.13	0.10	0.38	0.14	.	0.52	.	41.1	0.25	2.01	.
2	C28X 75030	13.72	0.12	0.41	0.06	.	0.07	8.04	0.54	0.55	.	0.25	2.93	.
1	BCS 350	13.50	4.30	6.00	0.14	0.30	.	1.5	0.030	2.0	Rem	0.010	0.80	.
2	C211X 71320	12.9	5.50	6.59	0.16	1.04	0.13	0.39	0.27	1.64	.	0.51	1.13	.
1	BCS 387	12.46	5.83	0.24	0.030	0.21	0.032	36.0	0.08	.	41.9	0.28	2.95	.
1	BCS 387/1	11.50	6.00	0.20	0.050	0.020	0.020	38.00	0.020	.	41.0	0.050	3.00	.
2	C22X 90130	11.02	6.38	0.34	0.11	1.02	0.25	.	0.68	.	43.6	0.29	3.88	.
2	C211X 71310	10.92	3.53	5.5	0.04	0.14	0.008	0.57	0.06	2.78	.	0.11	0.45	.
#	Number	Cr	Mo	Al	C	Co	Cu	Fe	Mn	Nb	Ni	Si	Ti	W

* Provisional Analysis

** C28X 62520 also contains As: 0.009, Bi: 0.010, and Zn: 0.008

NICKEL BASE CHIPS WITH Cr > 10 % CONTINUED FROM THE PREVIOUS PAGE

Number	Ag	B	Mg	N	O	P	S	Sn	Ta	V	Zr	Units	Other
IARM 201A	.	(<0.002)	0.006	0.0053	(0.0009)	0.005	(0.0004)	.	.	0.011	<0.01	100 g	
IARM 67B	.	(0.001)	0.007	0.060	0.0014	0.012	0.0010	.	(0.03)	0.054	(0.002)	100 g	
IARM 60B	.	0.002	(0.001)	0.029	0.0035	0.015	0.0003	0.002	(0.01)	0.070	0.001	100 g	
NCS HC24524	70 g	
NCS HC24526	70 g	
IARM 59D	.	0.0017	(0.0005)	0.0047	0.014	0.008	0.0010	(0.001)	.	0.01	<0.003	100 g	
C23X 80010	50 g	
IARM 258A	.	0.001	0.009	0.032	0.0009	0.005	0.0007	<0.001	<0.01	0.014	<0.005	100 g	
NCS HC24523	70 g	
IARM 59C	.	0.0025	0.0005	0.0084	0.0033	0.019	0.0005	0.003	.	0.031	.	100 g	
C28X 62530	.	0.023	.	0.35	.	0.02	0.013	.	.	.	.	50 g	
IARM 100C	.	(0.002)	(0.001)	0.126	0.001	0.013	0.0005	0.003	0.67	0.039	0.006	100 g	
C22X 8010	<0.00001	(0.0001)	0.008	.	.	.	.	0.0010	.	.	<0.01	50 g	Pb: 0.0001
IARM 69C	(0.00004)	0.0034	0.0030	0.0180	0.0017	0.011	0.0005	(0.002)	.	0.033	0.004	100 g	
C28X 62520 **	0.009	0.014	.	0.32	.	0.010	0.004	.	.	.	.	50 g	
IARM 65B	.	(0.002)	0.009	0.046	0.0013	0.006	0.0005	(0.001)	(0.06)	0.155	<0.001	100 g	
C28X 71820	.	(0.0010)	.	0.033	.	0.004	0.0066	.	.	.	.	50 g	
IARM 69D	0.00012	0.0044	0.0021	0.029	0.0012	0.012	0.0003	0.002	.	0.033	0.0074	100 g	Pb: 1.0 ppm
C28X 62540	.	0.0014	.	0.065	.	.	.	.	.	.	.	50 g	
C27X 141840	50 g	
C22X 9030	.	0.023	(<0.005)	.	.	.	.	.	.	.	.	50 g	
C24X 26350	.	<0.001	.	.	.	.	0.005	.	.	.	.	50 g	
C24X WASP30	.	0.0087	.	.	.	0.059	0.026	.	.	0.123	0.014	50 g	
IARM 58A	.	(<0.001)	(<0.001)	.	.	0.011	(<0.001)	.	(<0.01)	0.03	(<0.01)	100 g	
C24X WASP40	.	0.011	.	.	.	<0.001	0.008	.	.	0.15	0.10	50 g	
IARM 157A	.	.	.	0.20	.	0.014	0.001	.	.	0.044	.	100 g	
C28X 62510	.	0.0047	.	0.211	.	(0.0014)	0.001	.	.	.	.	50 g	
NCS HC23501	0.011	0.006	.	.	.	.	100 g	
NCS HC23504	0.0182	0.0107	.	.	.	.	100 g	
IARM 275A	.	0.002	<0.001	0.0033	0.0013	0.019	0.0003	(0.002)	<0.01	0.032	(0.001)	100 g	
IARM 25C	.	0.001	0.002	0.025	0.003	0.022	0.0010	0.006	.	0.097	(0.002)	100 g	
C215X HC50	0.085	0.078	.	.	0.60	.	50 g	
C22X 7530	.	.	0.05	.	.	.	.	.	.	.	.	50 g	
C23X DS30	50 g	
IARM 58B	.	(0.0003)	(0.001)	0.010	0.001	0.010	0.001	(0.002)	.	0.035	<0.005	100 g	
BCS 310/1	100 g	
IARM 62B	.	0.005	(0.001)	0.0022	0.0014	0.0028	0.0003	.	.	0.022	0.036	100 g	
C24X 26310	.	0.006	.	.	.	.	0.002	.	.	.	.	50 g	
C23X 80030	50 g	
C28X 71830	.	0.0016	.	0.037	.	0.003	0.0023	.	.	.	.	50 g	
Number	Ag	B	Mg	N	O	P	S	Sn	Ta	V	Zr	Units	Other
C28X 71810	.	0.0010	.	0.233	.	(0.003)	0.005	.	.	.	.	50 g	
IARM 56E *	.	0.004	0.0024	0.0078	0.001	0.008	0.0004	0.002	0.01	0.074	0.001	100 g	
BCS 351	.	0.0051	.	.	.	.	0.0006	.	.	.	.	100 g	
C22X 9050	.	(<0.001)	(<0.005)	.	.	.	.	.	.	.	.	50 g	
C22X 7550	.	.	(<0.005)	.	.	.	.	.	.	.	.	50 g	
C28X 71860	.	0.004	.	0.084	.	0.018	0.015	.	.	.	.	50 g	
C24X WASP10	.	<0.001	.	.	.	0.009	0.002	.	.	<0.01	0.03	50 g	
C22X 8030	0.018	(<0.001)	0.001	.	.	.	.	0.018	.	.	0.05	50 g	Pb: 0.023
C23X DS10	50 g	
C28X 75010	50 g	
C28X 60010	.	.	0.003	.	.	.	.	.	.	.	.	50 g	
BAM 326-1	0.0028	.	.	.	0.129	100 g	
C215X HC10	0.006	0.007	.	.	0.13	.	50 g	
IARM 66B	.	0.0020	0.004	0.0108	0.0010	0.008	0.0003	.	.	0.16	0.02	100 g	
C215X HC20	.	(0.004)	.	0.18	.	.	.	.	.	0.38	.	50 g	
IARM 66C	.	0.0023	0.02	0.029	<0.001	0.008	0.001	(0.003)	(0.01)	0.012	0.01	100 g	
IARM 57C	.	0.0015	0.007	0.0049	0.0027	0.009	0.0006	0.0005	<0.01	0.019	0.016	100 g	
C22X 10550	.	.	0.014	.	.	.	.	.	.	.	.	50 g	
IARM 53E	.	0.0026	0.045	0.0055	0.0003	0.007	0.0011	<0.005	(0.01)	0.013	(0.001)	100 g	
IARM 53D	.	0.0035	0.007	0.0075	0.0009	0.005	0.0005	<0.001	<0.01	0.022	.	100 g	
IARM 57D	.	0.003	0.0028	0.0022	0.0013	0.0041	0.0005	0.0012	(0.004)	0.024	0.037	100 g	
IARM 277A	.	0.015	0.0021	0.0017	0.0005	0.002	0.0010	<0.003	(0.02)	0.011	0.010	100 g	
NCS HC23505	0.008	.	.	.	.	.	100 g	
C28X 60020	.	.	0.05	.	.	.	.	.	.	.	.	50 g	
C22X 10530	.	.	0.0007	.	.	.	.	.	.	.	.	50 g	
C22X 90120	.	0.008	.	.	.	0.015	0.022	.	.	.	.	50 g	
C28X 75030	50 g	
BCS 350	0.003	.	.	.	.	100 g	
C211X 71320	.	0.016	.	.	.	.	.	.	.	.	0.18	50 g	
BCS 387	.	0.016	.	.	.	0.007	0.003	.	Clearance Sale Item	.	.	100 g	
BCS 387/1	0.005	0.005	.	.	.	.	100 g	
C22X 90130	.	0.036	.	.	.	0.036	0.034	.	.	.	.	50 g	
C211X 71310	.	<0.001	.	.	.	.	.	.	.	.	0.06	50 g	
Number	Ag	B	Mg	N	O	P	S	Sn	Ta	V	Zr	Units	Other

* Provisional Analysis

** C28X 62520 also contains As: 0.009, Bi: 0.010, and Zn: 0.008

IN 100 TYPE NICKEL ALLOY CHIPS

analysis listed in mass %

Number	Al	Co	Cr	Mo	Ti	V	B	C	Cu	Fe	Si	Mn	N	Zr	Units
CRM															
BCS 345	5.58	14.70	9.93	3.01	4.74	1.00	0.019	0.153	.	.	.	.	.	0.044	100 g
BCS 346	(5.5)	(15)	(10)	(3)	(5)	(1)	.	(0.15)	.	.	.	.	.	.	100 g
RM															
typical analysis															
C210X117750	7.00	14.90	10.45	3.18	5.70	0.46	.	0.023	0.008	1.02	0.37	0.125	0.003	.	50 g

continued

analysis listed in mg/kg

Number	Ag	As	Bi	Ca	Cd	In	Ga	Mg	Pb	Sb	Se	Sn	Te	Tl	Zn
BCS 345	<0.2	(2)	<0.2	(<5)	<0.1	.	8	5	0.2	<2	<0.5	6	<0.2	<0.2	<0.5
BCS 346	35	50	10	(36)	0.4	(19)	(52)	147	21	47	9	91	12	.	29
C210X117750	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

CRM TRACE ELEMENTS IN SUPERALLOY CHIPS

analysis listed in mg/kg

11520-4: 150 g units

11525-9: 100 g units

Number	Ag	As	B	Bi	Ca	Cd	Ce	Cu	Hf	Ga	Ge	In	P	Mg	Pb	Sb	Sc	Se	Sn	Te	Tl	Zn
NCS HCl1529	5.4	25	13	1.8	.	.	0.19	53	12	49	27	10	80	.	11	33	0.6	2.2	43	1.3	1.1	13
NCS HCl1522	5.3	15	(90)	0.4	11	1.8	(110)	.	.	108	.	30	(40)	15	11	59	.	11	72	2.1	51	105
NCS HCl1521	4.6	11	(100)	0.4	21	4.6	(40)	.	.	32	.	2.6	(40)	16	4.1	95	.	16	53	11	22	32
NCS HCl1528	4.4	44	24	2.0	.	.	0.28	94	33	52	75	31	131	.	8.2	49	1.2	2.5	45	2.3	3.9	15
NCS HCl1520	3.5	17	(100)	4.2	42	7.3	(30)	.	.	29	.	11	(40)	82	12	204	.	43	103	3.0	8.5	24
NCS HCl1527	2.5	96	25	1.2	.	.	0.44	172	3.8	38	38	2.6	55	.	4.7	16	1.2	4.1	18	7.5	4.3	14
NCS HCl1526	1.0	14	47	0.19	.	.	1.8	363	7.4	34	24	7.2	36	.	3.7	3.3	2.7	12	8.3	31	0.16	13
NCS HCl1525	0.78	6.7	90	0.14	.	0.31	0.37	571	3.5	31	13	0.88	41	.	3.4	1.4	1.3	9.8	3.2	28	0.13	12
NCS HCl1524	0.7	72	(100)	3.4	5.3	1.6	(10)	.	.	63	.	9.2	(40)	111	91	6.2	.	53	92	83	8.1	6.0
NCS HCl1523	0.3	72	(100)	0.5	32	1.9	(10)	.	.	28	.	0.4	(40)	53	2.2	7.4	.	43	1040	0.5	83	20

RM TIN CHIPS

Number	analysis listed in mass %			analysis listed in mg/kg								100 g chips		
	C	Sn	Melting Point °C	As	Bi	Cd	Cu	Fe	In	Pb	Ni	S	Sb	Zn
BCS 192h	0.001	99.998	231.9	<1	<1	<1	<1	<1	<1	6	<1	2	<5	<1

CRM TIN POWDER

Number	analysis listed in mass %												Units
	Ag	As	Cu	Fe	Pb	S	Sb	Zn	SiO ₂	Sn	WO ₃		
GBW 07231	0.0025	0.574	.	21.33	2.89	0.183	0.024	0.264	.	45.80	.		100 g
GBW 07232	.	0.306	0.043	9.53	1.62	0.090	0.016	0.120	0.93	.	0.182		100 g

TIN CHIPS AND POWDER

#	Number	Sb	Ag	Cd	Cu	Ni	Pb	Sn	Zn	Al	As	Au	Bi	Co	Fe	In	Te
# = class, where 1 = CRM and 2 = RM																	
BCS: 100 g powder GBW: 100 g chips SRM: 170 g powder all others: 50 g chips																	
2	C73XSC70	14.01	0.006	0.0018	6.51	0.008	0.356	.	(0.003)	0.001	0.047	.	0.009	0.0160	0.046	0.014	.
1	GBW 02302	11.81	.	.	6.72	.	1.20	80.27	.	.	0.020	.	0.012	.	.	.	.
2	C73XSC110	11.7	0.06	1.63	10.7	0.48	0.04	.	0.066	<0.005	0.30	.	0.53	.	0.07	.	.
1	BCS 178/2	9.45	(0.002)	0.14	4.58	0.17	3.18	82.2	0.040	.	0.15	.	0.11	.	0.024	.	.
2	C73XSC90	8.18	0.004	0.078	8.47	0.008	0.20	.	(0.003)	<0.001	0.53	.	0.066	0.0030	0.037	0.010	.
1	GBW 02301	7.87	.	.	4.06	.	1.32	86.61	.	.	0.018	.	0.014	.	.	.	.
1	SRM 54d	7.04	0.0032	.	3.62	0.0027	0.62	88.57	.	.	0.088	.	0.044	.	0.027	.	.
2	C73XSC40	6.02	0.042	0.052	3.05	0.017	0.514	.	0.008	0.005	0.005	.	0.218	0.0035	0.011	0.011	.
1	C74XHB	5.00	0.070	0.011	4.75	1.12	0.058	.	0.018	.	0.026	.	0.008	.	0.12	.	.
2	C72XSA50R	4.93	.	0.05	0.018	.	0.08	.	0.035	.	0.015	.	0.006	.	(0.004)	.	.
1	C71XSR30	0.14	0.007	0.022	0.10	0.002	0.28	.	0.015	0.003	0.077	0.003	0.10	.	0.001	0.030	0.008
1	C71XSR20	0.063	0.029	0.042	0.055	0.005	0.13	.	0.010	0.003	0.057	0.008	0.057	.	<0.001	0.051	0.023
1	C71XSR10	0.021	0.009	0.008	0.01	0.002	0.027	.	0.007	0.001	0.004	0.003	0.01	.	<0.001	0.015	0.002

CRM TIN-LEAD SOLDER CHIPS AND POWDER

Number	Sn	Pb	Ag	As	Au	Bi	Cd	Cu	Fe	In	Ni	Sb	Te	Zn	Units
BAM, BCS: powder all others: chips															
C91XS63 PR40	66.8	Rem	0.030	<0.002	0.05	0.030	0.021	0.021	<0.005	0.014	<0.005	0.093	0.006	<0.001	100 g
BAM BNM 010	63.40	36.47	(0.014)	(0.012)	(<0.001)	0.0245	0.0016	0.0417	(0.0020)	(<0.001)	0.0021	0.0488	.	(<0.0001)	100 g
C91XS63 PR10	63.0	Rem	0.01	0.007	0.046	0.06	0.006	0.009	0.003	.	0.001	0.28	.	<0.001	100 g
BCS 347	62.6	Rem	0.099	(0.02)	0.037	0.080	0.004	0.169	(0.002)	.	0.0072	0.191	.	0.0015	100 g
C91XS63 PR20	62.6	Rem	0.057	0.080	0.090	0.162	0.0168	0.052	0.030	0.019	0.0073	0.614	0.009	0.007	100 g
C91X S63 PR00 *	60.0	Rem	0.01	0.01	0.015	0.007	0.010	0.02	0.002	0.005	0.002	0.02	0.003	<0.001	100 g
C91XS30 PR30	30.88	Rem	0.024	0.0126	0.0063	0.294	0.0115	0.102	0.0016	0.0085	0.0269	0.269	.	(0.003)	100 g

* Provisional Analysis

RM TITANIUM POWDER

Number	typical analysis													powder 50 g	
	Ti	Al	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	Pb	Si	W	Zn	Zr
DH SL2701	98.52	0.018	0.00123	0.046	0.001	0.174	0.009	.	0.029	.	.	0.021	0.011	0.00027	0.00010
DH SL2703	98.42	0.024	0.00190	0.059	0.002	0.238	0.017	0.016	0.031	<0.006	0.00030	.	0.015	0.00067	0.00020
DH SL2702	97.60	0.036	0.00380	0.066	0.002	0.363	0.035	0.018	0.036	0.005	.	0.042	0.029	0.00100	0.00020

CRM TITANIUM

Number	Al	B	C	Co	Cr	Cu	Fe	H	Mn	Mo	N	Nb	Ni
IARM 311A	0.32	.	0.009	.	0.013	0.0013	0.060	0.0021	0.0013	0.0012	0.012	(0.002)	0.014
BCR 090	(0.074)	0.00282	.	0.0501	0.0533	0.0513	0.0563	.	0.0314	0.0488	.	(0.0492)	0.0667
IARM 303A	0.008	.	0.011	.	0.021	(0.002)	0.051	0.0011	0.002	(0.001)	0.0069	<0.0005	0.022
IARM 303A	0.006	.	0.012	<0.002	0.022	0.002	0.052	0.0012	0.0022	(0.001)	0.0070	(0.001)	0.020
IARM 312A	0.006	.	0.004	(0.001)	(0.002)	(0.002)	0.028	0.0049	(0.001)	(0.002)	0.0023	.	(0.002)
IARM 174C	(0.003)	.	0.0057	(0.001)	0.009	0.0015	0.28	0.0027	0.0019	0.002	0.004	(0.004)	0.007

BCR produced by HIP; 090A: 40 mm Ø x 20 mm; 090B: 25 g of 0.2 g cubes IARM: 65 g

Number	O	P	Pd	S	Si	Sn	V	W	Y	Zr
IARM 311A	0.083	.	.	.	0.005	0.0020	0.004	(0.002)	(0.0002)	0.012
BCR 090	.	.	.	.	.	(0.071)	(0.057)	(0.050)	.	(0.0436)
IARM 303A	0.134	.	0.139	.	0.004	<0.005	0.005	.	.	(0.001)
IARM 303A	0.134	<0.002	0.14	.	0.004	<0.003	0.005	.	<0.001	(0.001)
IARM 312A	0.066	.	(0.004)	(0.001)	0.006	0.0012	(0.002)	.	(0.0004)	(0.001)
IARM 174C	0.34	.	.	(0.0005)	(0.006)	0.023	(0.002)	.	(0.0004)	(0.003)

TITANIUM ALLOY CHIPS

= class, where 1 = CRM and 2 = RM

* Provisional Analysis

#	Number	Al	C	Cr	Cu	Er	Fe	Mn	Mo	Nb	Ni	Si	Sn	V	Zr
2	C101 P8110	7.97	.	.	.	.	0.08	.	0.97	.	.	.	.	1.02	.
1	IARM 269A	7.79	0.015	0.010	0.003	.	0.133	(0.001)	1.02	<0.005	0.010	0.080	(0.01)	1.00	0.0010
2	C101 P3180	6.5	.	.	.	.	0.19	.	.	.	.	.	.	4.08	.
1	GBW 02501	6.42	0.013	1.55	.	0.276	0.473	.	2.53	.	.	0.28	.	.	.
1	GBW 02502	6.33	0.0123	.	.	1.71	0.057	.	3.40	.	.	0.275	.	.	.
1	BCS 356	6.25	(0.0085)	0.0112	0.0055	.	0.124	.	0.0020	.	0.0070	(0.0200)	.	4.05	.
2	C101 P6850	6.11	.	.	.	.	0.02	.	0.48	.	.	0.21	.	.	5.05
1	IARM 177C	6.02	0.005	0.012	(0.003)	.	0.033	0.0015	1.96	.	0.011	0.086	2.02	0.020	3.99
1	IARM 300A *	5.97	0.006	0.009	(0.003)	.	0.19	(0.001)	(0.001)	6.9	0.008	0.019	(0.01)	(0.01)	.
1	IARM 176B	5.86	0.010	0.013	0.003	.	0.111	0.001	0.006	.	0.012	0.017	0.009	3.87	(0.002)
1	IARM 285A	5.81	0.007	(0.001)	0.008	.	0.037	(0.001)	0.77	2.00	0.006	0.009	(0.004)	(0.004)	(0.002)
2	C101 P8290	5.62	.	.	.	.	0.02	.	0.25	0.97	.	0.28	3.49	.	2.98
1	IARM 178B	5.58	0.030	0.015	0.51	.	0.56	0.003	0.008	.	0.017	0.025	2.00	5.56	0.004
1	IARM 314A	5.50	0.008	3.09	(0.002)	.	0.46	0.002	4.78	.	0.022	0.02	(0.01)	4.98	0.002
1	BCS 357	5.46	(0.0072)	0.0521	0.0537	.	0.202	.	0.053	.	0.0511	(0.0500)	.	3.53	.
1	IARM 271A	5.28	0.026	0.016	.	.	0.31	(0.002)	0.011	.	0.035	0.021	2.49	0.09	0.015
1	IARM 315A	4.58	0.011	0.016	0.005	.	0.065	0.008	0.008	.	0.012	0.014	0.004	1.84	0.0044
1	IARM 280A	4.11	0.005	0.0055	0.003	.	0.044	(0.002)	4.01	(0.001)	0.012	0.47	2.07	0.023	(0.002)
2	C101 P5510	4.04	.	.	.	.	0.05	.	3.8	.	.	0.48	3.89	.	.
1	IARM 286A	3.25	0.010	6.3	(0.004)	.	0.09	(0.002)	4.15	.	0.013	0.030	(0.003)	8.1	4.08
1	IARM 297A	3.12	0.014	0.007	(0.002)	.	1.86	0.007	0.004	(0.06)	0.0041	0.022	0.006	9.71	(0.002)
1	IARM 261A	3.00	0.007	0.013	.	.	0.19	0.0011	(0.003)	.	0.006	0.012	0.008	2.48	(0.002)
2	C101 P6790	2.35	.	.	.	.	0.02	.	1.0	.	.	0.2	10.88	.	4.88

Number	H	N	O	Pd	S	Units	Other
C101 P8110	.	.	.	.	.	50 g	
IARM 269A	0.0059	0.0039	0.104	.	(0.002)	65 g	
C101 P3180	.	.	.	.	.	50 g	
GBW 02501	.	0.010	.	.	.	50 g	
GBW 02502	.	0.021	.	.	.	50 g	
BCS 356	.	0.0103	.	.	.	50 g	
C101 P6850	.	.	.	.	.	50 g	
IARM 177C	0.0014	0.0022	0.107	(0.004)	.	65 g	
IARM 300A *	0.0019	0.004	0.16	.	.	65 g	
IARM 176B	0.0036	0.0051	0.109	.	.	65 g	
IARM 285A	0.0038	0.0043	0.076	.	(0.0004)	65 g	Ta: 0.97, Y: 0.0024
C101 P8290	.	.	.	.	.	50 g	
IARM 178B	0.0028	0.008	0.157	.	(0.001)	65 g	
IARM 314A	0.004	0.0034	0.155	.	.	65 g	
BCS 357	.	0.0148	.	.	.	50 g	
IARM 271A	0.013	0.012	0.16	.	(0.002)	65 g	
IARM 315A	0.0016	0.0052	0.099	(0.003)	.	65 g	
IARM 280A	0.0015	0.0014	0.19	(0.002)	(0.001)	65 g	
C101 P5510	.	.	.	.	.	50 g	
IARM 286A	0.0039	0.010	0.089	(0.02)	(0.001)	65 g	
IARM 297A	0.0045	0.008	0.109	.	(0.001)	65 g	
IARM 261A	0.0023	0.007	0.10	.	(0.001)	65 g	
C101 P6790	.	.	.	.	.	50 g	

CRM TUNGSTEN POWDER

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

Number	Al	Bi%	Ca	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Si	Sn	WO ₃ %	Units
BAM S002	29.4	.	46	45	47.0	28.4	53	40.0	38.8	16.7	59	41	29	(7.2)	106	42	.	100 g
VS 1710-79	.	0.146	.	.	.	.	.	.	.	.	.	.	.	.	.	.	71.96	100 g

CRM TUNGSTEN ALLOY CHIPS

analysis listed in mass %

Number	Co	Fe	Mn	Ni	Units
NCS HCS5905	0.502	3.22	0.060	6.01	50 g
NCS HCS5904	0.400	2.43	0.050	4.50	50 g
NCS HCS5903	0.302	1.63	0.040	3.00	50 g
NCS HCS5902	0.102	0.813	0.030	1.51	50 g

CRM ZINC PELLETS

Number	Cd	Cu	Fe	Pb	As	Sb	Sn	Units
GBW 02703	0.0733	0.0021	0.0301	0.309	0.0052	0.0106	0.0025	50 grams of 3 mm Ø pellets
GBW 02702	0.0103	0.00099	0.0097	0.0142	.	.	.	50 grams of 3 mm Ø pellets
GBW 02701	0.0010	0.00010	0.0010	0.0030	.	.	.	50 grams of 3 mm Ø pellets

CRM ZINC POWDER

Number	As	Ag	Ca	Cd	Co	Cu	Fe	Hg	Mg	Mn	Pb	S	Sb	Zn	Units
CAN CZN-3	0.039	0.0045	0.058	0.248	0.685	0.009	9.97	(0.0005)	.	(0.0096)	0.113	31.6	(0.0010)	50.92	200 g last
SRM 113b	.	0.04607	0.8196	0.7804	.	0.2953	2.077	(0.000055)	0.4460	.	2.731	30.032	.	56.49	100 g

ZINC SPELTER CHIPS

BS: 50 g units SRM: 100 g units

Number	Al	Cu	Fe	Pb	Sb	Sn
RM BS SPD	0.25	<0.0005	0.060	0.038	0.006	<0.001
CRM SRM 2139	0.2049	.	.	0.0302	.	.
RM BS SPB	0.141	<0.002	0.025	0.021	0.061	<0.001
RM BS SPC	0.185	<0.0005	0.041	0.005	0.031	<0.001
RM BS SPA	0.051	<0.0005	0.011	0.003	0.099	<0.001

ZINC ALLOY CHIPS, chart 1 of 2

= class, where 1 = CRM and 2 = RM

FNE: 100 g units

all others: 50 g units

#	Number	Al	Cu	Cd	Fe	Mg	Mn	Ni	Pb	Sb	Sn	Bi	Cr	Si	Ti
2	C43XZ230	29.8	2.73	0.002	0.008	0.01	0.002	0.003	0.002	.	0.003	.	.	.	.
1	CAN NZA-1	28.70	1.51	0.00098	0.046	0.020	.	.	0.0030	.	0.0069	.	.	.	.
1	CAN NZA-4	26.65	2.45	0.0029	0.027	0.0106	.	.	0.0101	.	0.0087	.	.	.	.
1	CAN NZA-3	25.99	2.00	0.0064	0.066	0.049	.	.	0.0045	.	0.0034	.	.	.	.
2	C43XZ210	24.9	2.05	0.01	0.05	0.06	0.009	0.002	0.007	.	0.01	.	.	.	.
1	CAN NZA-2	23.81	3.00	0.0047	0.021	0.029	.	.	0.0076	.	0.0045	.	.	.	.
1	CAN NZA-7	13.17	0.212	0.00020	(0.016)	0.052	.	.	0.0136	.	0.0116	.	.	.	.
2	C43XZ110	11.2	0.47	0.014	0.008	0.05	0.01	0.006	0.015	.	0.02	.	.	.	.
1	CAN NZA-5	10.85	1.04	0.0095	(0.016)	0.021	.	.	0.0012	.	0.0017	.	.	.	.
1	C43XZ120	10.05	0.796	0.0114	0.047	0.027	0.0059	0.004	0.0133	0.0039	0.0089	(0.002)	0.0023	(0.008)	0.0054
1	C43XZ130	9.58	0.977	0.0102	0.06	0.020	0.007	0.011	0.012	0.009	0.011	.	.	.	.
1	C43XZ140	8.24	1.23	0.0067	0.015	0.0026	0.0033	0.0052	0.0082	0.011	0.0053	0.010	0.0046	0.010	0.0012
1	CAN NZA-6	7.54	3.17	0.0147	(0.105)	0.00037	.	.	0.0109	.	0.0051	.	.	.	.
1	C43X Z150	7.36	1.53	0.0030	0.009	0.0024	0.0020	0.0019	0.0054	0.005	0.004	0.005	0.0025	(0.011)	0.0020
1	C42XZ80	7.03	0.0215	0.0003	0.013	0.0033	0.0014	0.0019	0.0025	.	(0.0023)	.	(0.0002)	0.013	.
1	C43XZ40	4.76	3.21	0.0025	(0.064)	0.0434	0.088	0.0286	(0.002)	0.0043	(0.0024)	0.012	0.0063	(0.0065)	0.0017
1	C42XZ70	4.39	0.0249	0.030	0.027	0.0095	0.0045	0.0067	0.0097	.	0.012	.	(0.001)	0.006	.
2	C42XZ10	4.3	0.003	<0.001	0.002	<0.001	<0.001	0.001	0.002	.	0.002	.	.	.	.
1	C42XZ50	4.22	0.098	0.0021	0.029	0.073	0.0068	0.0185	0.0048	(0.00055)	0.0022	0.006	0.0018	.	.
1	GBW 02704	4.09	0.935	0.0024	0.019	0.040	.	.	0.0050	.	0.00099	.	.	.	.
1	C43XZ60	4.02	2.72	0.0016	0.019	0.0256	0.0006	0.029	0.0016	0.0045	0.0053	0.049	0.0006	0.012	0.0013
2	C42XZ30	3.74	0.159	0.0048	(0.047)	0.0287	0.0256	0.0102	0.0060	0.003	0.0030	.	0.0020	0.015	.
1	C43XZ30	3.64	1.59	0.0132	0.061	0.0143	0.0125	0.0061	0.0132	0.003	0.0125	0.018	0.004	0.005	.
1	C42XZ40	3.55	0.063	0.008	0.01	0.057	0.008	0.017	0.011	0.002	0.006	.	.	.	.
1	C43XZ50	3.05	6.05	0.0111	0.023	0.041	0.0030	0.0021	0.0045	.	0.0032	.	0.0010	0.003	0.0009
2	C43XZ20	3.2	0.89	0.01	0.02	0.042	0.008	0.003	0.008	0.008	0.01	.	.	.	.
2	C41X0336Z40	1.39	0.874	0.638	(0.018)	0.179	0.038	0.0074	2.87	0.048	2.38	0.027	.	.	.

#	Number	Ag	As	Ce	In	La	Tl
2	C43XZ230	.	.	.	.	.	.
1	CAN NZA-1	.	.	.	.	.	.
1	CAN NZA-4	.	.	.	.	.	.
1	CAN NZA-3	.	.	.	.	.	.
2	C43XZ210	.	.	.	.	.	.
1	CAN NZA-2	.	.	.	.	.	.
1	CAN NZA-7	.	.	.	.	.	.
2	C43XZ110	.	.	.	.	.	.
1	CAN NZA-5	.	.	.	.	.	.
1	C43XZ120	.	.	.	.	.	.
1	C43XZ130	.	.	.	.	.	.
1	C43XZ140	.	.	.	.	.	.
1	CAN NZA-6	.	.	.	.	.	.
1	C43X Z150	.	.	.	.	.	.
1	C42XZ80	.	.	0.0081	.	0.0079	.
1	C43XZ40	.	.	.	.	.	.
1	C42XZ70	.	.	0.053	.	0.047	.
2	C42XZ10	.	.	.	.	.	.
1	C42XZ50	.	.	0.011	0.0048	0.009	0.006
1	GBW 02704	.	.	.	.	.	.
1	C43XZ60	.	.	.	.	.	.
2	C42XZ30	.	.	.	.	.	.
1	C43XZ30	.	.	.	(0.0019)	.	(0.0035)
1	C42XZ40	.	.	0.020	0.001	0.019	0.003
1	C43XZ50	.	.	.	.	.	.
2	C43XZ20	.	.	.	.	.	.
2	C41X0336Z40	0.0023	0.0005	.	.	.	.

