

CATALOGUE CRM

METAL CHIP NON FERROUS

2022

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CRM ALUMINUM BASE CHIPS

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

SYLAB Ref	Si	Cr	Cu	Fe	Mg	Mn	Ni	Pb	Sn	Sr	Ti	V	Zn	Zr	Al	B*	Be	Cd	Ga	Units
BAM 201	13.20	.	0.009	0.18	0.0024	0.38	.	.	.	.	0.011	.	0.038	.	.	.	.	.	.	100 g
BCS 505	12.8	.	0.05	0.30	0.05	0.52	0.20	0.09	0.17	.	0.03	.	0.24	.	.	.	.	.	.	100 g
BCS 182/3	11.03	.	0.037	0.51	0.067	0.26	0.046	0.056	0.027	.	0.107	.	0.128	.	.	.	.	.	.	100 g
SRM 856a	9.21	0.060	3.50	0.85	0.063	0.35	0.37	0.11	0.10	0.018	0.065	(0.014)	0.96	(0.003)	.	.	Ca:(0.002)	.	.	30 g
SRM 855a	7.07	0.013	0.13	0.14	0.37	0.060	0.016	0.019	0.010	0.018	0.15	(0.012)	0.085	(0.003)	.	.	Ca:(0.001)	.	.	30 g
NCS HC28974-Al	7.03	.	3.73	0.51	0.071	0.062	0.048	.	.	.	0.005	.	0.385	.	.	.	.	.	.	50 g
SRM 87a	6.24	0.11	0.30	0.61	0.37	0.26	0.57	0.093	0.057	.	0.18	<0.01	0.16	.	.	.	.	.	0.020	75 g
BCS 268/1	5.49	.	1.35	0.47	0.49	0.24	0.16	0.028	0.031	.	(0.008)	.	0.028	.	.	.	.	.	.	100 g
BCS 380/1	1.93	.	0.91	1.24	0.24	0.094	0.94	.	.	.	0.024	.	0.025	.	.	.	.	.	.	100 g
SRM 2426	1.925	.	.	0.454	.	.	.	.	.	.	.	.	38.92	.	58.18	.	.	.	.	40 g
BCS 349	1.19	(<0.001)	3.40	0.154	0.024	0.111	.	0.077	0.074	.	0.034	.	0.299	.	.	.	.	.	.	100 g
SRM 858	0.79	0.0011	0.84	0.078	1.01	0.48	0.0006	.	.	.	0.042	0.0030	1.04	.	.	.	<0.0001	.	.	35 g
BCS 216/3	0.74	0.110	5.45	0.77	0.76	0.76	0.24	0.052	0.052	.	0.20	.	0.214	0.086	.	.	.	.	.	100 g
BCS 343	0.52	0.14	0.28	0.39	0.70	0.69	.	.	.	.	0.024	.	0.028	.	.	.	.	.	.	100 g
BCS 181/3	0.30	0.04	2.48	0.72	1.57	1.10	2.00	0.101	.	.	0.058	.	2.52	.	.	.	.	.	.	100 g
SRM 853a	0.1810	(<0.0005)	0.1504	0.504	1.092	1.251	0.00429	(<0.003)	(0.0003)(<0.0001)	0.0205	.	0.01842	0.0514	(0.0023)	.	.	.	.	0.0176	40 g
GBW 02202	0.18	.	0.095	0.38	0.021	1.38	0.013	0.032	.	.	0.036	.	0.10	.	.	.	.	.	.	100 g
BCS 262/1	0.16	(0.002)	0.039	0.20	10.75	0.084	0.071	(0.05)	(0.04)	.	0.005	.	0.085	.	.	.	(<0.01)	.	.	100 g
SRM 854a	0.1553	0.0340	0.0494	0.1990	4.474	0.3753	0.0195	.	.	(0.0002)	0.0335	0.0174	0.0505	.	.	.	.	(0.0006)	0.0185	40 g
BCS 300/1	0.14	0.13	1.27	0.24	2.74	0.33	.	.	.	.	0.09	.	5.87	0.18	.	.	.	.	.	100 g
BAM 300	0.14	0.216	0.040	0.198	2.68	0.018	.	0.014	.	.	0.012	.	0.128	.	.	.	.	.	.	100 g
BCS 263/2	0.14	0.074	0.019	0.26	4.67	0.36	.	.	.	.	0.022	.	0.056	.	.	.	(<0.01)	.	.	100 g
BAM 301	0.062	.	0.0018	0.054	0.0008	(0.001)	.	.	.	.	0.0046	0.0018	0.036	.	.	.	.	.	.	100 g
BCS 195g	0.035	.	0.001	0.080	.	0.001	.	.	.	.	.	0.004	0.015	.	99.85	.	.	.	0.009	100 g
BAM M319	0.104	(0.060)	0.0015	0.29	4.96	0.371	(0.037)	<0.001	<0.001	.	0.0030	(0.0093)	0.0073	0.32	Sc:	0.84%	.	.	(0.015)	100 g

ALUMINUM BASE CHIPS

= class , where 1 = CRM and 2 = RM

typical analysis

# SYLAB Ref	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	.	0.004	.	.	.	.	50 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	0.020	.	.	.	.	.	50 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	.	.	.	.	.	.	.	50 g
1 C54XG06H50	13.76	<0.005	0.026	0.0229	0.210	(0.0022)	0.85	0.0067	(0.0020)	0.022	0.0106	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 C55XGO2D60	12.4	0.018	0.035	0.48	1.28	0.34	0.64	0.027	0.46	<0.01	0.35	.	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	0.010	.	.	.	50 g
2 C55XGO2D70	10.8	0.095	0.09	1.59	0.90	0.52	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	.	0.530	.	.	.	.	.	.	.	50 g
2 C55XGO2D80	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 C54XG231H10	9.82	.	0.089	1.19	0.80	0.45	0.029	0.31	0.145	0.082	0.022	.	0.60	(0.0002)	.	.	.	.	.	.	50 g
1 C55XG26H30	9.6	0.076	0.130	2.19	1.07	1.01	0.45	0.51	0.228	0.16	0.147	0.020	0.79	.	.	.	0.011	0.006	.	.	50 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	.	.	.	.	.	50 g
2 C55XG02D40	8.98	.	0.11	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	.	0.37	0.0078	<0.001	.	.	.	.	.	50 g
1 C55XGO2D90	8.62	0.052	0.11	3.40	0.82	0.21	0.113	0.62	0.106	0.19	0.090	0.007	2.46	0.001	.	.	.	.	.	.	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	.	.	.	.	.	50 g
1 C55XGO4H100	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 C54XG25D40	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	0.09	.	.	.	.	.	50 g
1 C55XGO2D100	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	.	.	.	.	.	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	.	.	0.0015	.	.	.	.	50 g
1 C54XG25D30	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	3.60	0.86	0.17	0.40	0.33	0.10	0.10	0.20	.	1.30	.	.	.	.	.	.	.	50 g
1 C54XG25D20	3.93	0.10	0.150	0.130	0.58	0.59	0.48	0.139	0.073	0.042	0.152	(0.006)	0.169	0.049	0.22	.	.	.	.	.	50 g
1 C54XG25D10	3.34	.	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	.	0.07	50 g

# SYLAB Ref	Si	Co	Cr	Cu	Fe	Mg	Mn	Ni	Pb	Sn	Ti	V	Zn	Be	Bi	Cd	Ga	Li	Sb	Zr	Units
1 C55XG900J40	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 C514X909130	0.74	.	0.106	0.623	0.94	0.149	11.3	0.143	0.114	0.019	0.425	.	.	.	.	.	.	.	.	<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	0.221	0.0024	0.063	.	.	.	0.056	.	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	0.072	0.003	.	0.023	(0.017)	.	0.06	0.045	50 g
1 C55XG900J20	0.44	.	0.118	0.864	0.378	0.622	0.145	0.133	0.52	0.341	0.054	.	0.309	.	0.55	.	.	.	.	.	50 g
1 C511XG05H10	0.42	.	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 C511X G6063	0.412	.	0.0021	0.0014	0.185	0.437	0.0239	0.0021	0.0011	(0.0006)	0.0110	0.0087	0.0062	.	.	.	.	.	.	.	50 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	.	0.30	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	.	.	.	.	.	.	50 g
2 C511XG10H40	0.33	.	0.15	0.052	0.19	10.4	0.12	0.085	0.10	0.051	0.097	.	0.21	0.023	.	.	.	.	.	.	50 g
2 C59XG77J50	0.30	.	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 C56XG250J10	0.26	0.008	0.0067	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 C511XGO5H30	0.24	.	0.06	0.10	0.54	5.35	0.38	0.09	0.10	0.10	0.07	.	0.09	.	.	.	.	.	.	.	50 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	.	.	.	.	.	.	50 g
1 C56XG250J20	0.211	0.195	0.0063	4.81	0.346	0.060	0.225	1.10	(0.0016)	(0.004)	0.210	0.018	0.155	.	.	.	.	.	0.324	0.247	50 g
1 C56XG250J50	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	.	.	.	.	0.076	0.22	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 C56XG250J30	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	.	.	.	.	0.35	0.275	50 g
1 C511XG05H40	0.11	.	0.029	0.056	0.14	5.16	0.547	0.040	0.152	0.144	0.048	.	0.062	0.015	.	.	.	.	.	.	50 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)	.	0.032	.	(0.004)	<0.0005	(0.004)	50 g
1 C56XG2000J10	0.05	.	0.005	3.50	0.13	2.75	1.42	0.01	0.01	0.1	0.004	0.003	1.01	.	0.16	.	.	.	.	0.2	50 g
1 C59XG77J60	0.04	.	0.0046	1.13	0.054	2.63	0.0024	0.003	(0.005)	0.006	0.023	0.003	11.62	<0.005	<0.002	.	(0.005)	.	.	0.29	50 g
1 C514X909110	0.035	.	<0.005	0.046	0.081	(0.001)	6.93	(0.0026)	0.016	0.013	0.0017	.	.	.	.	.	.	.	.	0.184	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	.	.	.	<0.005	.	50 g

* C54XG13H40 also contains Sr: 0.026

CRM CHROMIUM

Analysis listed in mass %

BCS: 100 g powder

VS: 100 g chips

SYLAB Ref	Cr	Al	C	Ca	Cu	Fe	N	Ni	O	S	Si	V
BCS 361	.	(0.083T)	0.0039	.	.	0.0920	0.0079	.	0.1010	0.0043	0.0449	.

CRM COBALT BASE CHIPS

100g

SYLAB Ref	Cr	Co	C	Fe	Mn	Mo	N	Nb	Ni	Si	W
ECRM 378-1C	28.22	.	1.181	0.606	0.0579	0.0503	.	.	0.617	1.172	4.43
BAM 328-1	20.54	41.65	0.390	2.40	1.395	4.41	0.027	3.61	20.54	0.629	4.16
SRM 862	20.0	51.5	0.120	1.80	1.59	.	0.026	.	9.74	0.017	15.1

SYLAB Ref	Al	B	Cu	O	P	S	Ta	Ti	V
ECRM 378-1C	.	.	.	.	(0.0023)	0.0055	.	.	.
BAM 328-1	0.070	.	0.013	.	0.005	.	0.18	.	.
SRM 862	.	.	0.0010	.	0.002	0.0008	.	.	0.005

CRM COPPER IN VARIOUS FORMS

Analysis listed in mg/g

each of the blow available in 3 forms :

A: disc 39 mm Ø x 30 mm

B: Rod 8 mm Ø x 100 mm

C: Chips 50 g

SYLAB Ref	Al	B	Cu	O	P	S	Ta	Ti	V
ECRM 378-1C	.	.	.	.	(0.0023)	0.0055	.	.	.
BAM 328-1	0.070	.	0.013	.	0.005	.	0.18	.	.
SRM 862	.	.	0.0010	.	0.002	0.0008	.	.	0.005

CRM COPPER CHIPS AND PINS

Analysis listed in mg/kg

except % which is mass %

IMN 001: 50 g of 0.31 g pins

all others: chips as noted

SYLAB Ref	Ag	As	Au	Bi	Cd	Co	Cr	Cu%	Fe	Mn	Ni	P	Pb	S	Sb	Se	Si	Sn	Te	Zn	Units
SRM 454	286	46	7.5	19	.	.	.	99.84	.	.	.	.	66	.	24	479	.	2.2	27	7	35 g
SRM 400	181	140	.	24.5	.	0.6	.	99.70	41	.	603	.	128	.	102	214	last	.	153	114	50 g
SRM 399	117	47	.	10.5	.	0.5	.	99.79	20.0	.	506	.	114	.	30	95	.	.	50	45	50 g
BCR 017B	.	.	.	.	.	.	.	.	.	.	.	6.9	.	10.4	.	.	.	.	.	.	50 g

CRM COPPER CHIPS

Analysis listed in mass %

C39X: typical analysis 50 g

BAM, BCS, IARM: 100 g

IPT: 50 g

IMN: 200 g

SYLAB Ref	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 M365	99.73	0.0159	.	0.00404	.	.	.	0.00300	.	.	0.000213	.	0.00061	.
BCS 399	REM	.	.	(<0.001)	.	.	.	(0.001)	.	(0.003)	.	.	(0.006)	.
C39X 178700	.	0.0468	0.0012	0.0033	0.0009	.	.	0.0470	.	0.0305	0.0017	.	.	.
C39X 178710	.	0.025	<0.0005	0.029	0.0048	.	.	0.069	.	0.0031	0.0008	.	.	.
C39X 178680	.	0.0249	0.0072	0.0226	0.0101	.	.	0.0308	.	0.0130	0.0248	.	0.110	0.0085
C39X 178660	.	<0.001	<0.002	0.037	.	.	.	0.001	.	<0.001	0.003	0.002	<0.001	<0.001

SYLAB Ref	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 M365a	.	0.0235	(0.1712)	.	0.0141	.	0.00121	0.0179	.	(0.0029)	0.000127	0.0030
BCS 399	.	(0.002)	.	0.045	(0.002)	.	(<0.001)	.	.	(0.003)	.	(0.003)
C39X 178700	Ge:0.0076	0.0062	In:0.0078	0.0012	0.0447	0.0026	0.0478	0.0261	.	0.0031	0.0011	0.129
C39X 178710	0.0010	0.027	.	<0.0005	0.0092	0.0080	0.017	0.028	<0.0005	.	0.011	.
C39X 178680	0.0123	0.0222	.	0.0507	0.1040	0.022	0.0295	0.0133	.	0.103	0.0206	0.197 In: 0.0076
C39X 178660	<0.001	0.034	.	<0.002	<0.001	0.003	<0.001	.	<0.005	0.013	<0.001	0.005

RM PHOSPHORUS DEOXIDIZED COPPER CHIPS

Analysis listed in mass %

except * which is mg/kg

100 g chips

SYLAB Ref	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

CRM COPPER ANODE

Analysis listed in mg/kg

425 g chips

SYLAB Ref	Ag	Au	As	Fe	Pb	Sn	Te
CAN CUAR-1	294	2.3	145	76	864	113	33

CRM SEBILOY / ENVIROBRASS / FEDERALLOY CHIPS

Analysis listed in mass %

C32X: 50 g units

typical analysis

IARM: 100 g units

SYLAB Ref	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	.
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	.
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	.

SYLAB Ref	Ag	Al	B	C	Cd	Cr	Mn	N	O	S
C32X SEB10
C32X SEB20
C32X SEB40	.	.	0.0021	.	0.0004	.	.	.	.	.
C32X SEB50	.	.	0.0028	.	0.0067	.	.	.	.	.

COPPER BASE CHIPS

= class, where 1 = CRM and 2 = RM

C3x, DH: typical analysis 50 g

GBW: 95 g SRM: 50 g

others: 100 g

#	SYLAB Ref	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	C37X2180	0.018	0.0025	0.075	0.084	2.51	0.0025	0.029	.	.	.	.
2	C36XCBC40	0.01	0.06	0.09	0.003	0.04	0.30	0.02	1.82	.	2.44	.
1	SRM 460	0.006	0.048	0.098	.	0.031	0.258	0.004	1.86	.	0.217	.
1	SRM 459	0.005	0.044	0.079	.	0.039	0.001	0.002	1.82	.	0.221	.

#	SYLAB Ref	Sn	Al	Fe	Mn	Ni	Pb	Zn	Be	Bi	Co	Se
1	SRM 458	0.004	0.030	0.060	.	1.60	0.002	0.002	0.360	.	0.076	.
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	.	.	.	.

SYLAB Ref	Ag	As	C	Cr	Mg	O	P	S	Sb	Si	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
C37X2180	.	.	(0.002)	0.033	.	.	0.0015	0.006	.	0.56	.	96.60
C36XCBC40	.	.	.	0.01	.	.	.	.	.	0.09	.	.
SRM 460	.	.	.	0.005	0.005	.	.	.	.	0.077	.	(97.5)
SRM 459	.	.	.	0.005	0.007	.	.	.	.	0.077	.	(97.7)
SRM 458	.	.	.	0.004	0.003	.	.	.	.	0.035	.	(97.9)
C36XCBC20	.	.	.	0.005	.	.	.	.	.	0.05	.	.
C37X2260	.	.	0.006	0.003	.	.	0.0025	0.0005	.	3.54	.	91.58
C36XCBC30	.	.	.	0.005	.	.	.	.	.	0.06	.	.

CUPRO-NICKEL AND COPPER-NICKEL-SILVER CHIPS

= class, where 1 = CRM and 2 = RM

C3x: 50 g units, typical analysis

others: 100 g units

#	SYLAB Ref	Ni	Zn	Ag	Al	C	Co	Cr	Cu	Fe	Mg	Mn	P	Pb	S	Si
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	BCS 180/2	30.35	.	.	.	0.04	.	.	68.12	0.68	.	0.75	.	(0.003)	0.006	(0.018)

#	SYLAB Ref	Ni	Zn	Ag	Al	C	Co	Cr	Cu	Fe	Mg	Mn	P	Pb	S	Si
2	C36XCN40	30.2	.	.	.	.	0.04	.	.	0.50	0.003	0.33	.	0.015	.	0.54
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	SRM 880	18.13	27.3	.	.	.	.	.	54.51	(0.004)	.	<0.001	.	(0.002)	.	.
1	C34XNS50	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
1	SRM 875	10.42	0.11	.	.	(0.0035)	.	.	87.83	1.45	(0.0010)	<0.0007	0.0020	0.0092	(0.0011)	(0.0008)
1	SRM 874	10.18	(0.002)	.	.	(0.0023)	.	.	88.49	1.22	(0.0002)	0.0020	(0.002)	<0.0005	(0.0011)	(0.0006)
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

SYLAB Ref	As	B	Bi	N	Nb	O	Sb	Sn	Ti	Zr
C36XCN60	.	(0.0015)	0.0058	.	0.514	.	.	0.0307	0.0066	.
BCS 180/2
C36XCN40
C36XCN100	.	0.0029	0.014	.	0.89	.	.	.	0.03	(0.055)
C36XCN90	.	0.005	<0.01	.	.	.	.	.	0.12	0.13
SRM 880
C34XNS50	0.194	.	.
GBW 02104	0.0098	.	0.0019	.	.	.	0.0020	.	.	.
SRM 875	(0.0010)	.	(0.003)	Cd:	0.0022	(0.14)	<0.001	(0.009)	(<0.0002)	Se:(0.0004)
SRM 874 (<0.0006)	.	.	<0.0002	Cd:<0.0002	.	(0.06)	<0.001	0.007	(0.0001)	Se:0.00015
C36XCN10
CURM 62.12	0.111	.	.
C34XNS10

GUN METAL CHIPS

= class, where 1 = CRM and 2 = RM

C3X: 50 g units, typical analysis

100 g units

#	SYLAB Ref	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)
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
1	C33XGM50	4.47	0.697	4.81	5.80	83.38	0.0419	0.084	0.0342	0.0493	Cd:0.0034	0.254	Co:0.0453	0.042	0.0697	0.0505	0.0283
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	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

BRASS CHIPS

= class, where 1 = CRM and 2 = RM

C31X: 50 g units

typical analysis

GBW: 50-100 g

all others: 100 g

#	SYLAB Ref	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	BAM 223	38.82	(<0.002)	0.0084	0.0018	58.74	0.091	(<0.001)	0.0214	0.0003	2.13	0.0021	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	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	C31X B40	28.39	.	0.046	0.0076	71.10	0.026	0.0074	0.0571	(0.023)	0.064	0.0091	0.0076	0.025	0.073
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	C31X B70	14.51	0.0015	0.0030	0.060	85.17	0.100	0.0010	0.0251	.	0.0338	.	0.0089	0.013	0.0876

#	SYLAB Ref	Zn	Al	As	Bi	Cu	Fe	Mn	Ni	P	Pb	S	Sb	Si	Sn
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

SYLAB Ref	Ag	B	C	Cd	Co	Cr	Se
GBW 02101
BAM 224
IPT 40	0.002	.	.	0.049	.	.	.
BAM 223
BCS 390	.	.	.	(0.011)	.	.	.
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	.	.	.	0.0330	0.033	0.087	.
CURM 48.04	.	.	.	<0.0003	.	.	.
C31X B70	.	0.0029	.	0.0011	0.0124	0.0006	.
C31XB80	.	0.0021	.	.	.	.	.
C31XB950

BRASS CHIPS

= class, where 1 = CRM and 2 = RM

C31X: 50 g units

typical analysis

others: 100 g units

#	SYLAB Ref	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
2	CURM 30.05	69.48	30.53	<0.001	<0.003	<0.0005	<0.0005	<0.002	<0.001	<0.001	<0.003	<0.005	<0.001
1	BCS 344	68.98	30.98	.	.	.	.	.	.	.	.	.	.

#	SYLAB Ref	Cu	Zn	Al	Fe	Mn	Ni	Pb	Sn	As	Bi	Sb	Si
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
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 30.24	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

C31X: 50 g units

typical analysis

others: 100 g units

#	SYLAB Ref	Pb	Mn	Zn	Al	As	Fe	Ni	P	Sb	Si	Sn	Cu
2	CURM H30.24	3.02	<0.001	37.92	<0.001	<0.001	0.005	<0.001	.	<0.001	<0.001	<0.001	58.87
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	NM 241	2.64	0.005	38.92	.	.	0.11	0.04	0.004	.	.	0.14	58.1
1	NM 412	2.56	.	38.99	.	.	0.09	.	.	.	.	0.12	58.18
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
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

SYLAB Ref	Ag	B	Bi	C	Cd	Co	Cr	S	Se
CURM H30.24	.	.	<0.001	.	.	.	.	O:(0.2)	.
C31X 783510	.	0.0005	0.0141	.	.	0.029	.	(0.001)	(0.0045)
NM 241

SYLAB Ref	Ag	B	Bi	C	Cd	Co	Cr	S	Se
NM 412
BCS 385
C31X 783520
C31X 783550
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

C31X: 50 g units

typical analysis

others: 100 g units

#	SYLAB Ref	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
1	IARM Cu486-18	0.692	1.31	36.5	61.2	(0.0030)	(0.025)	(0.0004)	Cd:0.0009	0.036	(0.0003)	0.032	(0.004)	(0.0030)	(0.0050)	(0.0020)
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
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

50 g units

#	SYLAB Ref	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

#	SYLAB Ref	Si	Zn	Cu	Al	Fe	Mn	Ni	Pb	Sn	As	Co	Cr	Mg	P	S	Sb	Bi*	Cd*
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	.	.
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	100g	last
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

BRONZE CHIPS

= class, where 1 = CRM and 2 = RM

SRM: 150 g chips

all others: 100 g chips

#	SYLAB Ref	Sn	Al	Bi	Cu	Fe	Mn	Ni	P	Pb	Si	Zn
1	BAM 227	6.01	(<0.0001)	0.0088	85.57	0.129	.	0.284	(0.0002)	4.12	(<0.01)	3.46
1	SRM 158A	0.96	0.46	.	90.93	1.23	1.11	0.001	0.026	0.097	3.03	2.08

SYLAB Ref	Ag	As	C	Co	Cr	S	Sb
BAM 227	Se:0.0028	0.081	.	Te:0.0012	.	0.122	0.160

ALUMINUM BRONZE CHIPS

= class, where 1 = CRM and 2 = RM

C32X: typical analysis

#	SYLAB Ref	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	.	.	.	.	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

# SYLAB Ref	Al	Cu	Fe	Mn	Ni	P	Pb	Si	Sn	Zn	As	C	Cr	Mg	Sb	Units
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

# SYLAB Ref	C32X: typical analysis 50 g chips							IPT 74: 60 g chips			IPT 10B: 80 g chips			all others: 100 g chips	
	Pb	Sn	Zn	Cu	Al	As	Bi	Fe	Mn	Ni	P	S	Sb	Si	Other
1 GBW 02140	17.62	4.24	5.37	72.25	.	.	.	.	.	.	.	.	.	.	.
2 CURM 50.01	11.13	9.01	0.91	75.38	<0.0005	.	0.024	0.074	<0.001	1.93	0.069	0.188	0.50	<0.001	Ag: 0.19
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	0.10	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	.	<0.01	0.02	0.025	<0.01	<0.01	1.52	0.006	0.020	0.04	.	
1 BCS 364	9.24	9.36	0.13	80.7	(<0.002)	(0.07)	(<0.01)	(<0.005)	.	0.28	0.057	(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 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	.	.	.	.	.	.	.	.	.	.
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 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	.	

PHOSPHOR BRONZE CHIPS

mass %

except * which is mg/kg

C32X: 50g typical analysis

GBW, BCS: 150 g

others: 100 g

# SYLAB Ref	P	Sn	Zn	Cu	Al	As	C	Fe	Mg	Mn	Ni	Pb	S	Sb	Se*	Si
2 <0.0003	CURM	54.03	0.954	7.30	0.003	91.74	<0.001	0.006	0.005	<0.0005	0.0019	0.003	<0.001	0.0007	.	<0.002
2 C32XPB10	0.84	11.0	0.02	.	<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

# SYLAB Ref	P	Sn	Zn	Cu	Al	As	C	Fe	Mg	Mn	Ni	Pb	S	Sb	Se*	Si
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)
1 GBW 02133	0.423	5.79	.	93.72	.	.	.	.	.	.	.	.	.	.	.	100g
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 SRM 872	0.26	4.16	4.0	87.36	.	.	.	(0.003)	.	.	.	4.13	.	.	.	.
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 0.0020	CURM	54.02	0.107	5.53	0.410	92.87	0.020	0.023	0.102	0.101	0.109	0.663	0.030	0.026	.	0.012
1 GBW 02135	0.106	7.92	.	91.73	.	.	.	.	.	.	.	.	.	.	.	.
1 SRM 871	0.082	8.14	0.025	91.68	.	.	.	<0.001	.	.	.	0.010	.	.	.	.
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
Analysis listed in mg/kg

SYLAB Ref	Type	Ag	As	Au	Bi	Cd	Cu	Ni	Sb	Se	Sn	Te	Tl	Zn	Units
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: 100g powder

CX: 50g chips

SRM: 150-200g powder

others: 100g chips

SYLAB Ref	Type	Ag	As	Au	Bi	Cd	Cu	Ni	Sb	Se	Sn	Te	Tl	Zn	Units
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

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

C83X-86X, C93X: typical analysis

LEAD-SILVER ALLOY CHIPS

typical analysis

Class	SYLAB Ref	Ag	Al	As	Bi	Cd	Cu	Fe	In	Sb	Sn	Zn	Units
RM	C82X Ag6.0	6.0	0.002	0.025	0.54	0.010	0.19	0.001	0.006	0.48	0.50	0.008	50 g
RM	C82X Ag3.5	3.48	<0.001	0.022	0.27	0.004	0.075	0.001	0.045	0.11	0.24	0.001	50 g
CRM	C82X Ag1.5	1.55	.	0.006	0.06	.	0.27	.	.	0.39	0.04	0.004	50 g

RM LEAD BASE BATTERY ALLOY CHIPS

typical analysis

50 g units

SYLAB Ref	Sn	Ag	As	Bi	Ca	Cd	Cu	Sb	Te	Zn
C84X BA60	0.73	0.002	<0.001	0.008	0.095	(0.002)	0.0010	0.001	<0.001	<0.001
C84X BA70	0.61	0.002	<0.001	0.009	0.036	<0.002	0.0009	0.002	<0.001	<0.0005

CRM MAGNESIUM CHIPS

typical analysis

SYLAB Ref	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	50 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	50 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	50 g

MAGNESIUM BASE CHIPS

= class, where 1 = CRM and 2 = RM

BCS: 100 g units

CX: typical analysis 50 g units

#	SYLAB Ref	Al	RE	Ag	Mn	Zn	Be	Ca	Cd	Cu	Fe	Ni	Pb	Si	Sn	Zr	Other
1	BCS 316	8.01	.	.	0.28	0.68	.	.	.	0.040	0.009	0.004	0.024	0.055	0.005	.	
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	.	

#	SYLAB Ref	Al	RE	Ag	Mn	Zn	Be	Ca	Cd	Cu	Fe	Ni	Pb	Si	Sn	Zr	Other
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	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

RE = Total Rare Earths

CRM NICKEL CHIPS

= class, where 1 = CRM and 2 = RM

100 g units

#	SYLAB Ref	Ag	Al	As	B	Be	Bi	C	Ca	Cd	Co	Cr	Cu	Fe
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

SYLAB Ref	Ga	Mg	Mn	Mo	N	Ni	O	P	Pb	S	Sb	Se
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

SYLAB Ref	Si	Sn	Te	Ti	Tl	V	W	Zn
BAM RS 4	(<0.0002)	<0.00003	(<0.00002)	.	<0.00002	(<0.00002)	(<0.00001)	<0.0004

NICKEL ALLOY CHIPS

= class, where 1 = CRM and 2 = RM

#	SYLAB Ref	Al	C	Co	Cr	Cu	Fe	Mg	Mn	Mo	Nb	Ni	Si	Ti	V	W
1	SRM 882	2.85	(0.006)	(0.007)	(0.0001)	31.02	(0.009)	(0.001)	0.0007	.	.	65.25	(0.006)	0.57	(0.0001)	.
1	VS N2/3	0.20	0.018	.	5.59	0.083	Rem	.	0.84	.	.	76.3	1.40	.	.	.
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	BCS 371	.	0.30	0.39	.	.	.	0.060	.	.	.	.	0.34	.	.	.
1	VS N10/4	.	0.0074	.	.	(0.005)	0.399	.	0.237	27.04	.	.	0.093	0.085	1.57	.
1	VS N3/4	.	0.0064	.	2.16	4.98	Rem	.	0.424	.	.	.	0.264	.	.	.

# SYLAB Ref	Al	C	Co	Cr	Cu	Fe	Mg	Mn	Mo	Nb	Ni	Si	Ti	V	W
1 VS N4/3	.	0.0057	.	0.070	5.65	5.80	.	0.762	4.87	.	.	0.81	.	.	.
1 NCS HC20502	.	0.0015	0.043	0.466	0.027	Rem	.	0.983	4.13	.	80.07	0.317	0.004	.	.

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

= class, where 1 = CRM, 2 = RM, and 3 = RM with no uncertainties

IARM 718P-18 is powder

all others chips

SYLAB Ref	B	N	O	P	Pb	S	Sn	Zr	Units				
SRM 882	(0.0001)	.	.	.	(0.0006)	0.0014	(0.003)	(0.0005)	100 g	Ag:(0.0004)	As:(0.0001)	Se:(0.0002)	
VS N2/3	.	.	.	0.0034	.	0.0025	.	.	100 g				
BCS 363/1	(0.002)	.	.	100 g				
BCS 371	0.013	.	.	100 g				
NCS HC20502	.	.	.	0.0007	.	0.0024	.	.	100 g	last of stock			

* Provisional Analysis

** SRM 864 also contains, in mg/kg, Pb: 2.27 Tl:0.0029

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

IARM 718P-18 is powder

all others chips

# SYLAB Ref	Cr	Mo	Al	C	Co	Cu	Fe	Mn	Nb	Ni	Si	Ti	W
1 SRM 867	23.4	2.73	(0.062)	(0.021)	0.089	1.74	26.6	0.39	(0.45)	43.5	0.32	0.75	(0.006)
1 SRM 865	21.9	8.6	0.21	0.037	(0.072)	0.36	4.5	0.18	3.5	59.5	0.41	0.28	(0.007)
1 NCS HC41501	20.69	8.37	0.016	0.043	(0.011)	.	3.50	0.124	3.19	63.72	0.071	0.011	.
1 NCS HC23504	20.30	2.06	0.635	0.059	.	.	.	0.442	.	.	0.631	0.613	.
1 SRM 866	20.1	0.36	0.29	0.082	0.075	0.49	46.1	0.92	(0.09)	30.8	0.17	0.31	(<0.002)
1 BCS 478	19.69	0.0061	0.54	0.071	.	.	.	0.51	.	30.9	0.290	0.479	.
1 BCS 310/1	19.45	.	1.06	0.068	17.0	.	0.25	0.35	.	58.6	0.46	2.43	.
1 SRM 349a	19.3	4.25	1.23	0.035	12.46	(0.007)	1.15	0.019	(0.05)	58.1	0.018	3.06	(0.06)
1 BCS 351/1	19.14	3.04	0.554	0.0255	0.145	0.0222	17.20	0.0562	5.31	53.35	0.080	0.938	0.0209
1 NCS HC41502	18.56	3.28	0.635	0.027	0.111	0.023	18.54	0.057	5.15	52.27	0.080	1.03	.
3 C22X 8030	17.7	0.50	1.84	0.03	1.99	0.08	1.88	0.21	.	rem	1.09	1.81	.

#	SYLAB Ref	Cr	Mo	Al	C	Co	Cu	Fe	Mn	Nb	Ni	Si	Ti	W
1	BAM 326-1	16.37	(0.025)	.	0.092	0.223	(0.027)	.	0.406	.	61.16	1.46	.	.
1	SRM 864 **	15.74	0.204	0.252	(0.063)	0.0602	0.255	9.63	0.288	(0.126)	73.09	(0.114)	(0.251)	(<0.002)
1	IARM NiS-18	15.62	15.4	0.388	0.012	0.416	.	0.81	0.65	.	65.6	0.49	(0.0023)	0.36
1	NCS HC23505	14.28	.	1.88	0.038	.	.	.	0.28	.	37.83	0.19	2.89	5.87
1	BCS 350	13.43	4.29	5.97	0.138	0.338	.	1.50	0.019	2.17	70.8	0.110	0.87	0.094
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	.

* Provisional Analysis

** SRM 864 also contains, in mg/kg, Pb: 2.27 Tl:0.0029

CRM IN 100 TYPE NICKEL ALLOY CHIPS

Analysis listed in mass %

SYLAB Ref	Al	Co	Cr	Mo	Ti	V	B	C	Zr	Units
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

continued

analysis listed in mg/kg

SYLAB Ref	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

CRM TRACE ELEMENTS IN SUPERALLOY CHIPS

Analysis listed in mg/kg

SYLAB Ref	Analysis listed in mg/kg														HC11520-4: 150 g chips				others 100 g powder			
	Ag	As	B	Bi	Ca	Cd	Ce	Cu	Hf	Ga	Ge	In	P	Mg	Pb	Sb	Sc	Se	Sn	Te	Tl	Zn
NCS HC11529	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 HC11522	5.3	15	(90)	0.4	11	1.8	(110)	.	.	108	.	30	(40)	15	11	59	.	11	72	2.1	51	105
NCS HC11521	4.6	11	(100)	0.4	21	4.6	(40)	.	.	32	.	2.6	(40)	16	4.1	95	.	16	53	11	22	32
NCS HC11528	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 HC11520	3.5	17	(100)	4.2	42	7.3	(30)	.	.	29	.	11	(40)	82	12	204	.	43	103	3.0	8.5	24

SYLAB Ref	Ag	As	B	Bi	Ca	Cd	Ce	Cu	Hf	Ga	Ge	In	P	Mg	Pb	Sb	Sc	Se	Sn	Te	Tl	Zn
NCS HC11527	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 HC11526	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 HC11525	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 HC11524	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 HC11523	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

CRM TRACE ELEMENTS IN SUPERALLOY CHIPS

Analysis listed in mg/kg

analysis listed in mass %

35 g units

SYLAB Ref	Bi	Pb	Se	Te	Tl	Al	B	C	Co	Cr	Hf	Nb	Ni	Ta	Ti	W	Zr
SRM 897	(0.5)	11.7	9.1	1.05	0.51	(2)	(0.01)	(0.12)	(8.5)	(12)	(1.2)	(0.9)	Rem	(1.75)	(2)	(1.75)	(0.1)
SRM 899	(0.3)	3.9	9.5	5.9	0.252	(2)	(0.01)	(0.12)	(8.5)	(12)	(1.2)	(0.9)	Rem	(1.75)	(2)	(1.75)	(0.1)

RM TIN CHIPS

Analysis listed in mass %

analysis listed in mg/kg

100 g chips

SYLAB Ref	C	Sn	Melting Point °C	As	Bi	Cd	Cu	Fe	In	Ni	Pb	S	Sb	Zn	
BCS 192h	0.001	99.998	231.9	<1	<1	<1	<1	<1	<1	<1	6	2	<5	<1	last of stock
BCS 192j	0.001	99.996	231.9	<1	<1	<1	<1	<1	<1	<1	<10	2	<10	<1	

CRM TIN POWDER

Analysis listed in mass %

SYLAB Ref	Ag	As	Cu	Fe	Pb	S	Sb	Zn	SiO2	Sn	WO3	Units
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

= class, where 1 = CRM and 2 = RM

BCS: 100 g powder

GBW: 100 g chips

SRM: 75 g powder

all others: typical analysis 50 g chips

#	SYLAB Ref	Sb	Ag	Cd	Cu	Ni	Pb	Sn	Zn	Al	As	Au	Bi	Co	Fe	In	Te
2	C73XSC70La: 0.013	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	.

#	SYLAB Ref	Sb	Ag	Cd	Cu	Ni	Pb	Sn	Zn	Al	As	Au	Bi	Co	Fe	In	Te
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	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 *	0.0156	0.0121	0.0104	0.0111	0.0041	0.0324	.	0.0146	(0.0016)	0.0102	0.0014	0.0107	.	(0.0021)	0.0120	0.0112

* C71XSR10 also contains Ga: 0.0049 and Hg: 0.0142

CRM TIN-LEAD SOLDER CHIPS AND POWDER

SYLAB Ref	BAM, BCS: powder										all others: typical analysis chips				Units
	Sn	Pb	Ag	As	Au	Bi	Cd	Cu	Fe	In	Ni	Sb	Te	Zn	
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	50 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	50 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	50 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	50 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)	50 g

* Provisional Analysis

RM TITANIUM POWDER

typical analysis

powder 50 g

SYLAB Ref	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

SYLAB Ref	Ti	Al	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	Pb	Si	W	Zn	Zr	
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	last

CRM TITANIUM ALLOY CHIPS AND POWDER, chart 1 of 2

SYLAB Ref	Al	V	C	Cr	Cu	Fe	Mn	Mo	N	Nb	Si	Sn	Zr
SRM 2433	7.63	0.98	.	.	.	0.063	.	0.99	.	.	.	.	.
C58A BT13008	6.79	2.25	0.006	.	.	0.04	.	1.71	.	.	.	.	.
TL 3001C	6.471	4.330	0.0098	0.0024	.	0.1993	0.0025	.	.	.	.	.	.
C58A CP13005	6.46	5.1	0.01	0.02	0.0099	0.231	0.0064	.	.	.	0.031	0.001	.
C58A BT13002	6.29	4.1	0.078	.	.	0.044	.	.	.	.	.	.	.
NCS HC57909a	6.29	4.10	0.078	.	.	0.044	.	.	.	.	.	.	.
C58A CP13001	6.25	4.1	.	.	.	.	.	.	.	.	.	.	.
BCS 356	6.25	4.05	(0.0085)	0.0112	0.0055	0.124	.	0.0020	0.0103	.	(0.0200)	.	.
SRM 173C	6.245	4.154	0.027	0.0165	0.0040	0.2130	(0.002)	0.0068	(0.028)	.	(0.019)	(0.010)	0.0053
C58A CP13004	5.88	1.61	0.017	0.028	0.0085	0.074	0.027	3.58	.	.	0.059	0.0085	.
C58A FG13003	5.85	3.92	.	.	.	0.09	.	.	0.022	.	0.026	.	.
BCS 357	5.46	3.53	(0.0072)	0.0521	0.0537	0.202	.	0.053	0.0148	.	(0.0500)	.	.
C58A CP13003	5.21	4.89	0.014	0.997	.	1.01	.	4.87	.	.	0.038	.	.
SRM 2432	3.15	10.00	0.008	(<0.01)	(<0.005)	1.77	(<0.01)	.	.	.	0.029	.	(<0.01)
C58A BT13007	3.13	14.99	0.015	2.95	.	0.077	.	.	.	.	.	3.15	.
SRM 649	3.08	15.1	0.011	2.96	(<0.001)	0.133	(<0.01)	.	(0.01)	(<0.01)	.	3.04	.

SYLAB Ref	B	Co	H	Ni	O	P	Pd	Ru	S	Ta	Ti	W	Y	Units
SRM 2433	50 g chips
C58A BT13008	50 g chips
TL 3001C	50 g chips
C58A CP13005	50 g chips
C58A BT13002	50 g chips
NCS HC57909a	50 g chips
C58A CP13001	50 g chips
BCS 356	.	.	.	0.0070	.	.	.	.	.	.	.	.	.	50 g chips

SYLAB Ref	B	Co	H	Ni	O	P	Pd	Ru	S	Ta	Ti	W	Y	Units
SRM 173C	(0.000045)	(0.002)	(0.006)	0.0203	0.164	.	.	(0.0006)	.	.	(89.15)	(0.002)	.	50 g chips
C58A CP13004	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g chips
C58A FG13003	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g chips
BCS 357	.	.	.	0.0511	.	.	.	.	.	.	.	.	.	50 g chips
C58A CP13003	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g chips
SRM 2432	(<0.001)	.	.	(<0.01)	.	.	.	.	.	.	.	(<0.001)	(<0.001)	50 g chips
C58A BT13007	.	.	.	.	.	.	.	.	.	.	.	.	.	50 g chips
SRM 649	(<0.001)	.	.	(<0.01)	.	.	.	.	.	.	.	.	.	50 g chips

TITANIUM ALLOY CHIPS, chart 2 of 2

C101 are RM

all others CRM

C58A FG13002: 25g

IARM: 65g

all others: 50g

SYLAB Ref	Al	V	C	Cr	Cu	Fe	Mn	Mo	N	Nb	Si	Sn	Zr
C58A SY13001-6	7.15	.	0.0098	.	.	0.051	.	2.0	.	2.02	0.253	.	.
C58A BT13003	6.66	.	0.0084	.	.	0.048	.	3.41	.	.	0.293	.	.
C58A BT13001	6.56	.	0.076	.	.	0.05	.	3.41	.	.	0.281	.	.
C58A SY13001-5	6.45	.	0.02	.	.	0.122	.	1.49	.	2.46	0.202	.	.
C58A FG13002	6.43	.	0.019	.	.	0.067	.	3.79	0.014	.	0.29	.	.
C58A FG13005	6.42	.	0.013	1.55	.	0.473	.	2.53	0.01	.	0.28	.	.
C58A ZB13001	6.38	.	0.0074	.	<0.005	0.08	.	3.22	0.01	.	0.26	.	.
C58A FG13004	6.33	.	0.012	.	.	0.057	.	3.4	0.021	.	0.275	.	.
C58A BT13004	6.33	.	0.018	1.49	.	0.464	.	2.66	.	.	0.303	.	.
C101 P6850	6.11	.	.	.	.	0.02	.	0.48	.	.	0.21	.	5.05
C58A SY13001-4	6.03	.	0.049	.	.	0.187	.	1.02	.	2.76	0.149	.	.
C58A HC13002	5.95	.	.	.	.	0.049	.	1.93	.	.	0.023	2.03	.
SRM 647	5.88	(<0.02)	0.006	(<0.01)	(<0.002)	0.075	(<0.01)	1.96	(<0.01)	(<0.01)	(0.04-0.07)	2.02	3.90
SRM 2431	5.73	(<0.01)	0.006	(<0.01)	(<0.01)	0.056	(<0.01)	6.01	.	.	0.088	1.98	4.06
C58A BT13009	5.6	.	0.0093	.	.	0.235	.	.	.	.	.	2.74	.
C58A SY13001-3	5.55	.	0.06	.	.	0.246	.	0.595	.	3.3	0.1	.	.
C58A CP13002	5.15	.	.	.	.	.	.	.	.	.	.	2.47	.
SRM 648	5.13	(<0.02)	0.011	3.84	(<0.01)	0.15	(<0.01)	3.75	(0.01)	.	0.027	1.98	1.84

SYLAB Ref	Al	V	C	Cr	Cu	Fe	Mn	Mo	N	Nb	Si	Sn	Zr
IARM 345A	5.12	0.005	0.010	3.89	(0.002)	0.121	0.0009	4.09	0.0025	(0.002)	0.013	1.99	1.90
C58A SY13001-2	5.1	.	0.084	.	.	0.313	.	0.297	.	3.63	0.043	.	.
C58A SY13001-1	4.62	.	0.124	.	.	0.347	.	0.103	.	3.94	0.007	.	.
C58A BT13006	1.82	.	0.0063	.	.	0.041	1.2	.	.	.	.	.	.

SYLAB Ref	B	Co	H	Ni	O	P	Pd	S	Ta	Ti	W	Y
C58A SY13001-6
C58A BT13003
CC8A BT13001
C58A SY13001-5
C58A FG13002
C58A FG13005
C58A ZB13001	.	<0.001	.	.	.	.	.	.	.	.	.	.
C58A FG13004
C58A BT13004
C101 P6850
C58A SY13001-4
C58A HC13002	0.004
SRM 647	(<0.002)	(<0.001)	.	(<0.004)	(0.1)	.	.	.	.	.	.	.
SRM 2431	(<0.001)	.	.	(<0.01)	.	.	.	.	.	.	(<0.001)	(<0.001)
C58A BT13009
C58A SY13001-3
C58A CP13002
SRM 648	(0.001)	.	.	(<0.005)	.	.	.	.	.	.	.	.
C58A SY13001-2
C58A SY13001-1
C58A BT13006

CRM TUNGSTEN POWDER

Analysis listed in mg/kg

except % which is mass %

SYLAB Ref	Al	Bi%	Ca	Co	Cr	Cu	Fe	K	Mg	Mn	Mo	Na	Ni	P	Si	Sn	WO3%	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

CRM ZINC PELLETS

SYLAB Ref	Cd	Cu	Fe	Pb	Units
GBW 02701	0.0010	0.00010	0.0010	0.0030	50 grams of 3 mm Ø pellets last of stock

CRM ZINC PELLETS

Analysis listed in mg/kg

450g of 3mm Ø pellets

SYLAB Ref	Ag	Al	As	Au	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	Hg	In	Ir	K	Mg	Mn
SRM 728	1.08	(0.07)	(<0.005)	(<0.02)	(<0.005)	(0.02)	1.14	(1.0)	(<0.03)	5.68	1.84	(<0.05)	(0.05)	(<0.005)	(<0.005)	(<0.01)	(<0.001)	(0.07)

continued

SYLAB Ref	Mo	Na	Nb	Ni	Pb	Pd	Pt	Rh	Ru	Sb	Sc	Si	Sn	Ti	Tl	V	W	Zr
SRM 728	(<0.01)	(0.01)	(<0.01)	(0.45)	11.13	(<0.05)	(<0.01)	(<0.05)	(<0.01)	(0.5)	(<0.001)	(<0.01)	(0.02)	(0.04)	(0.2)	(<0.001)	(0.4)	(<0.01)

CRM ZINC POWDER

listed in mg/kg

certified analysis

informational analysis

powder 200 g

SYLAB Ref	Ag	Cd	Cu	Fe	Ni	Pb	Ti	Al	As	Bi	Co	In	Sb	Sn	V
BAM M603	1.00	1.69	3.69	2.18	0.43	15.8	3.81	0.22	<1	0.102	0.041	<0.5	0.04	<0.1	<0.2

ZINC SPELTER CHIPS

BS: 50 g units

SRM: 100 g units

SYLAB Ref	Al	Cu	Fe	Pb	Sb	Sn
RM BS SP-D	0.25	<0.0005	0.060	0.038	0.006	<0.001
CRM SRM 2139	0.2049	.	.	0.0302	.	.
RM BS SP-B	0.141	<0.002	0.025	0.021	0.061	<0.001
RM BS SP-C	0.185	<0.0005	0.041	0.005	0.031	<0.001

SYLAB Ref	Al	Cu	Fe	Pb	Sb	Sn
RM BS SP-A	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

#	SYLAB Ref	C41X-43X: 50 g														
		typical analysis					FNE: 100 g			NCS, SRM: 150 g			others: 50 g units			
		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	NCSHC28974-Zn	4.85	.	.	.	0.083	.	.	.	.	.	.	.	.	.
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	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	
1	C42XZ30	3.72	0.159	0.0048	(0.047)	0.0288	0.0252	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	.	.	.	.

#	SYLAB Ref	Al	Cu	Cd	Fe	Mg	Mn	Ni	Pb	Sb	Sn	Bi	Cr	Si	Ti
2	C41X0336Z40	1.39	0.874	0.638	(0.018)	0.179	0.038	0.0074	2.87	0.048	2.38	0.027	.	.	.

#	SYLAB Ref	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	NCSHC28974-Zn	.	.	.	.	.	.
1	C43XZ40	.	.	.	.	.	.
1	C42XZ70	.	.	0.053	.	0.047	.
2	C42XZ10	.	.	.	.	.	.
1	C42XZ50	.	.	0.011	0.0048	0.009	0.006
1	C43XZ60	.	.	.	.	.	.
1	C42XZ30	.	.	(0.0003)	.	(0.0003)	.
1	C43XZ30	.	.	.	(0.0019)	.	(0.0035)
1	C42XZ40	.	.	0.020	0.001	0.019	0.003
2	C43XZ20	.	.	.	.	.	.
2	C41X0336Z40	0.0023	0.0005	.	.	.	.

ZINC ALLOY CHIPS, chart 2 of 2

= class, where 1 = CRM and 2 = RM

typical analysis

50 g units

#	SYLAB Ref	Al	Cu	Cd	Fe	Mg	Mn	Ni	Pb	Sb	Sn	Bi	Cr
1	C41XGLV40	0.514	0.0321	0.0006	0.0028	0.0034	0.0089	0.0441	0.0062	0.0287	0.0024	0.0061	0.0007
1	C41XGLV60	0.474	0.0394	0.0053	0.0047	.	0.0013	0.0008	0.120	0.0112	0.0152	0.0249	0.0029
1	C41X0336Z30	0.43	0.361	0.341	0.270	0.134	0.0058	.	0.019	.	0.111	.	.
1	C41XGLV70	0.399	0.023	0.00056	0.0031	.	0.0025	0.0060	0.082	0.0031	(0.006)	0.0108	0.0010
1	C41XGLV30	0.334	0.0260	0.0188	0.0031	0.00145	0.0111	0.0300	0.0091	0.058	0.0060	0.0016	0.00084
2	C41X4380Z80	0.225	0.020	0.0079	0.003	0.007	0.0015	0.024	0.73	0.016	0.011	0.011	0.0019
1	C41X4380Z40	0.144	0.0022	0.094	0.056	0.126	0.0007	0.0040	0.325	0.017	0.038	0.011	(0.0003)
1	C41X4380Z70	0.137	0.012	0.015	(0.0044)	0.0028	.	0.012	1.25	0.090	0.0047	.	0.0045
1	C41XZ50	0.13	0.023	0.024	(0.02)	0.012	0.004	0.0116	0.0235	0.006	0.0213	.	.
2	C41XGLV10	0.115	0.0028	0.0093	0.059	.	.	0.0141	0.056	<0.001	0.010	0.0025	.
1	C41X2951Z30	0.078	1.89	0.0062	0.029	0.0164	0.0018	0.0010	0.0065	.	(0.006)	.	0.184
2	C41XGLV20	0.070	0.0053	0.0026	0.048	.	.	0.0071	0.214	0.007	0.003	0.017	.
1	C41X4380Z10	0.055	0.175	0.376	0.01	0.0012	0.0015	0.0029	0.068	0.002	0.049	0.0017	0.002
1	C41X0336Z50	0.035	0.023	0.058	0.016	<0.0005	(0.0001)	(0.0005)	0.91	0.008	0.21	(0.001)	.
1	C41X2951Z10	0.029	0.79	0.0005	0.011	0.0029	0.0013	0.0038	0.0042	.	(0.0007)	.	0.083
1	C41X0336Z10	0.014	0.007	0.0056	0.0124	0.0049	0.0035	(0.0006)	0.95	.	0.005	.	.
2	C41XGLV50	0.014	0.0116	0.014	0.077	.	.	0.0029	0.019	0.163	0.020	0.0105	.
1	C41XZ40	0.0096	0.0047	0.0066	0.003	0.0019	0.0012	0.0069	0.0092	0.005	0.0070	.	.
1	C41XZ30	0.0083	0.0019	0.0044	0.002	0.0009	0.0007	0.0031	0.0052	0.0037	0.0039	.	.
1	C41X Z20	0.00082	0.00168	0.00179	0.0077	0.00014	0.00053	0.00131	0.00264	0.00057	0.00159	0.00052	.

#	SYLAB Ref	Ag	As	Co	In	Si	Ti	Tl
1	C41XGLV40	.	(0.0003)	0.0037	.	.	.	.
1	C41XGLV60	.	0.0014	0.0047	.	.	.	.
1	C41X0336Z30	.	.	.	.	.	.	.

#	SYLAB Ref	Ag	As	Co	In	Si	Ti	Tl	
1	C41XGLV70	.	0.0016	(0.0001)	.	.	.	.
1	C41XGLV30	.	(0.0007)	0.00150	.	.	.	.
2	C41X4380Z80	.	.	.	.	(0.005)	0.012	.	
1	C41X4380Z40	.	.	.	.	(0.002)	0.005	.	
1	C41X4380Z70	.	.	.	.	.	0.009	.	
1	C41XZ50	.	.	.	0.004	.	.	0.003	
2	C41XGLV10	<0.001	.	.	.	.	.	.
1	C41X2951Z30	.	.	.	.	.	.	0.133	
2	C41XGLV20	.	<0.001	.	.	.	.	.
1	C41X4380Z10	.	.	.	.	0.006	.	.	
1	C41X0336Z50	.	.	.	.	.	.	.
1	C41X2951Z10	.	.	.	.	.	.	0.278	
1	C41X0336Z10	.	.	.	.	.	.	.
2	C41XGLV50	.	0.004	.	.	.	.	.
1	C41XZ40	.	.	.	0.0015	.	<0.005	0.003	
1	C41XZ30	.	.	.	0.0007	.	0.0012	0.002	
1	C41X Z20	.	.	.	0.00057	.	.	0.00117	Hg: 0.00029

CRM ZIRCALOY-4 CHIPS

certified values listed in mass %

SYLAB Ref	B	Cr	Cu	Fe	Hf	Ni	Sn
SRM 360b	0.191	0.1043	0.00125	0.2138	0.00785	0.00225	1.555
BCR 098	.	0.0906	.	0.2143	.	.	1.4600

informational values listed in mg/kg

SYLAB Ref	Al	C	Co	H	Mn	N	O	P	S	Si	Ti	Units
SRM 360b	57	109	0.97	11	9.2	45	1430	8.7	30	80	15.5	100 g
BCR 098	.	.	.	.	.	.	.	.	.	.	.	10 g