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## RM BISMUTH BASE AND FUSIBLE SOLDER ALLOYS

cast

40 mm Ø x 15 mm

Number	Bi	Cd	In	Pb	Sn	Ag	Al	As	Cu	Fe	Sb	Zn	Nominal Melting Temp °C
95X 174	57.1	0.0089	26.08	0.082	16.70	0.0075	.	.	0.0030	.	0.086	0.037	79
95X BIS40 P1	56.5	0.011	0.051	0.085	42.9	0.033	(0.0009)	0.005	0.106	0.002	0.10	0.014	138
95X 255	55.7	0.0065	0.010	43.7	0.220	0.0020	.	.	0.041	.	0.312	0.035	124
95X 158	50.1	9.50	0.0058	26.9	13.38	0.0021	.	.	0.049	.	0.056	0.043	70
95X 136	48.8	0.0092	21.49	18.0	12.05	0.0056	.	.	0.0028	.	0.022	0.031	58
95X 117	45.3	4.95	18.72	23.1	8.02	0.0043	.	.	0.010	.	0.010	0.0056	47
95X CDS50 P1	0.13	18.1	0.092	31.0	50.1	0.030	<0.002	0.027	0.26	(0.0022)	0.113	0.007	145

## CRM CADMIUM

AVAILABLE IN SETS ONLY, AS GROUPED

Number	As	Cu	Ni	Pb	Sb	Sn	Ti	Set Size
VS 18-95	.	0.0023	0.0010	0.0060	.	.	0.0011	
VS 19-95	.	0.0039	0.0018	0.011	.	.	0.0021	
VS 20-95	.	0.0068	0.00044	0.022	.	.	0.0047	40 mm x 40 mm x 25 mm
VS 21-95	.	0.013	0.0043	0.047	.	.	0.0091	
VS 22-95	.	0.024	0.011	0.12	.	.	0.023	
IMN K1	(0.00030)	.	0.0086	.	0.0064	0.0061	.	
IMN K2	0.0012	.	0.018	.	0.0038	0.0032	.	
IMN K3	0.0010	.	0.063	.	0.0010	0.00065	.	40 mm Ø x 25 mm
IMN K4	0.0056	.	0.11	.	0.0011	0.00091	.	
IMN K5	0.0014	.	0.0054	.	0.00017	.	.	

## CRM CHROMIUM ALLOY

Number	Cr	Ni	C	Co	Cu	Fe	Mn	Mo	N	P	S	Si	Units
219X 20500	51.09	45.68	0.025	(0.008)	(0.007)	1.24	0.239	0.006	0.122	(0.0026)	0.0052	1.35	43 mm Ø x 20 mm



**LEAD**

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

#	Number	Ag	As	Bi	Cd	Cu	Ni	Sb	Se	Sn	Te	Zn
1	83X PR1	0.111	0.043	0.0525	0.0759	0.0021	0.0003	0.0081	(0.0002)	0.0062	0.0011	.
1	83X PR2	0.053	0.018	0.0177	0.0021	0.039	0.0010	0.053	0.004	0.095	0.0064	(0.0004)
2	83X PR4	0.014	(0.002)	0.014	0.010	0.015	0.013	0.012	0.003	0.009	0.025	0.005
2	L01.4	0.0085	0.00024	0.0265	0.0015	0.00010	0.00026	0.00057	.	0.00019	0.00079	0.00022
2	L01.3	0.0052	0.00013	0.0006	0.00062	0.00243	0.00051	0.00027	.	(0.00007)	0.00061	0.00045
1	BCR 288A	0.00305	0.00557	0.02158	0.00333	0.00193	0.000457	0.00325	<0.00002	0.00306	0.00328	0.00082
1	BAM 101	0.00288	.	0.0165	.	0.00173	.	.	.	0.293	.	.
1	BAM 102	0.00248	.	0.0148	.	0.00109	.	.	.	0.895	.	.
2	L01.1	0.0024	0.00067	0.0199	0.00016	0.00093	<0.00005	0.0002	.	0.00052	<0.0002	0.00077
1	BCR 287A	0.00152	<0.0000003	0.00673	0.000036	0.000098	0.0000024	0.0000040	<0.000005	<0.000005	<0.00002	<0.00001
1	83X PR3	0.001	0.003	0.10	0.050	0.060	0.003	0.10	.	0.050	.	0.010
2	83X PR5	0.0008	0.0003	0.0041	(0.0001)	0.00038	0.00046	0.00023	0.00018	0.00028	0.00023	0.0005
1	85X BAHC	0.0005	(0.00015)	0.0130	<0.0001	0.0005	(<0.0001)	(0.0001)	<0.0001	<0.0005	(0.0001)	(0.00017)
2	L01.2	0.00013	0.000095	0.0101	0.00226	0.00180	0.0008	0.0003	.	(0.00007)	0.00074	0.0004
2	BCS 210e *	0.0001	.	0.0008	.	0.0006	<0.001	<0.002	.	<0.002	.	<0.005
1	BCR 286A	0.0000015	<0.0000002	0.00215	0.0000125	0.000149	0.0000041	0.000010	<0.000005	<0.000005	<0.00001	<0.00001
2	83X PBTE/2	(<0.001)	(<0.001)	(<0.001)	.	(<0.001)	.	(<0.001)	.	(<0.001)	0.06	(<0.001)

Number	Al	Au	Ca	Fe	Hg	In	Mn	Na	Ti	Tl	Units
83X PR1	.	.	.	.	.	0.038	.	.	.	.	Disc 40 mm Ø x 15 mm
83X PR2	.	(0.0011)	(0.0010)	<0.0005	0.0024	0.0015	.	(0.0003)	.	(0.0010)	Disc 40 mm Ø x 15 mm
83X PR4	0.001	0.002	0.0026	<0.005	(0.001)	0.005	.	0.001	.	.	Disc 40 mm Ø x 15 mm
L01.4	.	.	.	.	.	.	.	.	.	.	Block 50 mm x 50 mm x 20 mm
L01.3	.	.	.	.	.	.	.	.	.	.	Block 50 mm x 50 mm x 20 mm
BCR 288A	.	.	.	.	.	.	.	.	.	0.00023	Block 60 mm x 60 mm x 12 mm
BAM 101	0.0257	.	0.1436	.	.	.	.	.	.	.	Disc 50 mm Ø x 30 mm
BAM 102	0.0124	.	0.0705	.	.	.	.	.	.	.	Disc 50 mm Ø x 30 mm
L01.1	.	.	.	.	.	.	.	.	.	.	Block 50 mm x 50 mm x 20 mm
BCR 287A	.	.	.	.	.	.	.	.	.	0.000073	Block 60 mm x 60 mm x 12 mm
83X PR3	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
83X PR5	.	.	.	.	0.00046	0.00013	.	.	.	.	Disc 40 mm Ø x 15 mm
85X BAHC	0.0305	.	0.140	(<0.0001)	.	.	(<0.0001)	.	.	.	Disc 55 mm Ø x 12 mm
L01.2	.	.	.	.	.	.	.	.	.	.	Block 50 mm x 50 mm x 20 mm
BCS 210e *	<0.001	.	.	0.0005	.	.	<0.001	.	0.001	.	Block 500 g(10.5 x 2 x 2 cms)
BCR 286A	.	.	.	.	.	.	.	.	.	0.00025	Block 60 mm x 60 mm x 12 mm
83X PBTE/2	.	.	.	(<0.001)	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm

\* BCS 210e has a certified melting point of 327.3 °C and Pb: 99.996

**CRM HARD LEAD**

wrought	SOLD IN SET/6 ONLY 40 mm Ø x 12 mm		
Number	Sn	Sb	Pb
IMN PE 1	0.59	0.053	Remainder
IMN PE 2	0.50	0.27	Remainder
IMN PE 6	0.40	0.53	Remainder
IMN PE 3	0.38	0.49	Remainder
IMN PE 4	0.31	0.70	Remainder
IMN PE 5	0.21	0.89	Remainder

**LEAD BINARY**

cast	40 mm Ø x 15 mm			
Number	Sb	As	Bi	Pb
CRM				
81X PA12.5	12.72	.	.	Remainder
81X PA10.0	9.60	.	.	Remainder
81X PA7.0	7.02	.	.	Remainder
81X PA3.5	3.53	.	.	Remainder
81X PA2.0	1.996	.	.	Remainder
81X PA1.0	0.989	.	.	Remainder
81X PA0.5	0.481	.	.	Remainder
RM	typical analysis			
81X PAs1	(0.02)	1.25	(0.03)	Remainder

**CRM HARD LEAD**

AVAILABLE IN SET/6 ONLY 40 mm Ø x 12 mm							
Number	Ag	As	Bi	Cd	Cu	Sb	Sn
IMN PG 1	0.020	0.019	0.082	0.078	0.059	0.76	0.56
IMN PG 2	0.013	0.015	0.071	0.064	0.030	0.23	0.28
IMN PG 3	0.011	0.0096	0.053	0.040	0.030	0.52	0.10
IMN PG 4	0.0076	0.0044	0.032	0.026	0.021	0.042	.
IMN PG 5	0.0024	.	0.017	0.011	0.0078	0.97	.
IMN PG 6	0.0006	.	0.005	0.0074	0.0011	1.45	.

**LEAD BASE BINARY ALLOYS**

cast	40 mm Ø x 15 mm										
Number	Sn	Ag, Al, As, Au, Bi, Cd, Cu, Fe, In, Ni, Sb, Zn									
CRM 91X S63P	63.30	Other elements on each disk is less than 0.05%									
RM 91X S50P	50.0	Balance of the composition is Pb.									
RM 91X S40P	40.0										
RM 91X S30P	30.0										
CRM 91X S10P	10.07										

LEAD ALLOYS CONTINUED ON THE NEXT PAGE

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

#	Number	Sn	Sb	Ag	As	Bi	Ca	Cd	Cu	Fe	Ni	Te	Zn
1	91X S63PR4	66.8	0.093	0.030	<0.002	0.030	.	0.021	0.021	<0.005	<0.005	0.006	<0.001
1	91X S63PR3	64.27	0.253	0.0222	0.0190	0.255	.	0.0015	0.133	0.0054	0.0196	(0.0002)	(0.002)
1	91X S63PR2	62.38	0.479	0.0605	0.0262	0.147	.	0.0106	0.0846	0.012	0.0080	0.0016	0.0041
1	91X S63PR1	61.30	0.075	0.0065	(0.001)	0.062	.	0.0057	0.252	0.012	0.0010	0.0008	0.0032
1	91X S63PR0	59.8	0.013	0.010	0.008	0.007	.	0.012	0.023	(0.002)	<0.005	<0.001	<0.001
1	91X S50PR4	54.6	0.098	0.045	0.044	0.097	.	0.0118	1.58	(0.0034)	0.0114	.	0.0105
2	93X S50APR3	51.5	2.3	0.02	0.02	0.25	.	0.01	0.1	0.005	0.01	.	0.01
2	91X S50PR3	51.5	0.25	0.020	0.01	0.25	.	0.001	0.10	0.005	0.015	.	0.003
2	91X S50PR2	50.5	0.60	0.050	0.03	0.15	.	0.010	0.05	0.020	0.001	.	0.025
2	93X S50APR2	50.0	2.8	0.05	0.03	0.15	.	0.005	0.05	0.02	0.005	.	0.025
2	91X S50PR1	49.5	0.05	0.005	0.005	0.05	.	0.005	0.20	0.015	0.006	.	0.001
2	93X S50APR1	48.5	3.3	0.005	0.005	0.05	.	0.001	0.2	0.015	0.001	.	0.002
2	93X S40APR3	41.5	1.7	0.02	0.02	0.25	.	0.01	0.1	0.005	0.01	.	0.01
2	91X S40PR3	41.5	0.25	0.020	0.02	0.25	.	0.009	0.10	0.005	0.010	.	0.008
2	93X S40APR2	40.0	2.2	0.05	0.03	0.15	.	0.005	0.05	0.02	0.005	.	0.025
2	91X S40PR2	40.0	0.60	0.050	0.03	0.15	.	0.005	0.05	0.020	0.005	.	0.025
1	SRM 1131	39.3	0.43	0.01	0.01	0.06	.	.	0.011	.	0.012	.	.
2	91X S40PR1	39.0	0.05	0.005	0.005	0.05	.	0.001	0.20	0.015	0.001	.	0.002
2	93X S40APR1	38.5	2.7	0.005	0.005	0.05	.	0.001	0.2	0.015	0.001	.	0.002
1	93X S30APR3	33.0	0.96	0.021	0.018	0.28	.	0.009	0.008	0.003	0.010	.	0.0053
1	91X S30PR3	30.88	0.269	0.024	0.0126	0.294	.	0.0115	0.102	0.0016	0.0269	.	(0.003)
1	93X S30APR2	30.68	1.80	0.049	0.0178	0.168	.	0.0061	0.062	0.0026	0.042	0.0102	0.028
2	91X S30PR2	30.2	0.60	0.044	0.028	0.15	.	0.0070	0.076	0.04	0.007	.	0.031
1	91X S30PR1	29.3	0.047	0.007	0.006	0.057	.	0.0024	0.19	(0.08)	0.0023	.	0.0013
1	93X S30APR1	28.58	2.54	0.0144	0.010	0.059	.	0.0014	0.192	(0.012)	0.0010	.	(0.0004)
2	91X S10PR3	11.5	0.25	0.020	0.02	0.25	.	0.010	0.10	0.001	0.005	.	0.008
1	86X PSS4	10.69	16.97	(0.006)	0.278	0.120	.	0.047	0.328	(0.0013)	0.0031	.	<0.002
2	91X S10PR2	10.0	0.60	0.050	0.03	0.15	.	0.005	0.05	0.001	0.001	.	0.025
1	85X SSBC	9.70	2.14	0.456	0.075	0.413	.	0.455	.	.	.	0.0037	0.00218
1	86X PSS3	9.01	14.02	0.006	0.10	0.031	.	0.020	0.608	(0.0016)	0.0040	.	<0.001
2	91X S10PR1	9.0	0.02	0.003	0.005	0.02	.	0.002	0.02	0.001	0.010	.	0.002
1	86X PSS2	6.33	8.16	0.004	1.42	0.054	.	0.069	0.118	<0.001	0.0080	.	<0.002
1	SRM 1132	5.84	10.26	.	0.057	0.052	.	.	0.054	<0.001	0.003	.	.
1	86X PSS1	4.42	12.11	0.003	0.59	0.21	.	0.006	0.028	(0.0005)	0.0014	.	<0.001
1	84X BA9	2.97	0.0008	0.0018	(0.0008)	0.0160	0.098	<0.0005	0.0009	.	.	<0.0005	(0.0002)

#	Number	Sn	Sb	Ag	As	Bi	Ca	Cd	Cu	Fe	Ni	Te	Zn
1	85X PSn2	1.97	0.0269	0.0033	0.0047	0.0508	.	0.0012	0.0344	.	0.0010	0.0041	0.0005
1	85X ANTH	1.45	6.05	0.0071	0.217	0.0194	.	0.0046	0.0291	(0.010)	0.0062	0.0071	(0.0007)
2	84X BA5	1.18	<0.001	0.002	<0.001	0.01	0.093	(0.0002)	(0.0007)	.	.	.	<0.0005
1	84X BA1	0.905	0.0003	0.0078	(0.0003)	0.0169	0.099	0.0030	0.0009	.	0.00015	0.0004	0.0033
1	85X HRH	0.87	1.14	0.247	0.73	0.090	0.0001	0.0002	0.080	.	0.001	0.002	.
2	84X BA6	0.73	0.001	0.002	<0.001	0.008	0.095	(0.0002)	0.0010	<0.005	<0.001	<0.001	<0.001
1	84X BACM	0.649	(0.0003)	0.0004	(0.0001)	0.0025	0.102	(0.0001)	0.0003	<0.0005	(0.0001)	(0.0002)	0.0002
2	84X BA7	0.61	0.002	0.002	<0.001	0.009	0.036	<0.0002	0.0009	<0.005	<0.0005	<0.001	<0.0005
2	83X PR8	0.556	0.262	0.490	0.155	1.155	.	0.220	0.0695	.	0.0044	0.0059	(0.0015)
1	82X PAG6.0R	0.50	0.48	5.93	0.021	0.52	.	0.010	0.18	<0.001	.	.	0.007
1	84X BA2	0.490	0.0010	0.0107	0.0008	0.0319	0.0754	0.0040	0.0033	.	0.00025	.	0.0129
2	L21.04	0.43	0.001	0.0006	0.0003	0.0008	0.11	0.0007	0.001	.	0.0004	0.0003	0.002
1	84X BA8	0.346	0.0009	0.0064	0.0006	0.0198	0.141	0.00096	0.0009	.	0.00015	.	0.0028
1	85X 0494 Pb3	0.344	3.10	0.0142	0.301	0.0433	.	.	0.101	(0.0007)	.	0.0151	.
2	L21.03	0.34	0.0003	0.01	<0.0001	0.01	0.10	0.001	0.001	.	0.0001	0.0003	0.0004
1	84X BA 20	0.299	0.0030	0.0290	.	0.0194	0.334	0.0057	.	.	.	.	0.0438
1	82X PAG3.5R	0.25	0.106	3.54	0.020	0.290	.	0.0027	0.073	<0.001	.	.	(0.0004)
1	85X PSb3	0.248	2.63	0.0055	0.177	0.0236	.	0.0021	0.0420	.	0.0022	0.0038	0.0004
1	84X BA3	0.233	0.0049	0.0044	(0.0007)	0.034	0.017	0.0032	0.0042	.	.	(0.0003)	0.0069
2	L21.02	0.23	0.0007	0.007	<0.0001	0.01	0.02	0.0002	0.003	.	0.0001	0.0003	0.0007
2	85X PSb12	0.21	11.4	0.0015	0.11	0.007	.	<0.001	0.30	<0.001	0.0016	<0.005	0.087
1	83X PR7	0.208	0.83	0.302	0.052	0.507	(0.0012)	0.496	0.23	(0.0009)	0.006	0.0014	0.0021
1	85X CADH	0.196	2.03	0.0043	0.191	0.0174	.	2.06	0.029	0.0003	0.0023	0.0021	0.0035
1	BAM 103	0.183	1.64	0.0066	0.097	0.0158	.	0.000020	0.00097	.	0.00302	.	.
1	84X BA 23	0.170	0.0020	0.0039	.	0.0163	1.21	0.00014	.	.	.	.	0.00218
1	84X BA 21	0.161	0.0091	0.0122	.	0.0224	0.608	0.0057	.	.	.	.	0.0136
1	85X 0494 Pb2	0.155	2.07	.	0.128	0.0018	.	.	0.054	.	.	.	.
2	L21.01	0.11	0.0005	0.004	<0.0001	0.02	0.06	0.001	0.007	.	0.0001	0.0003	0.001
1	84X BA4	0.108	0.061	0.003	(0.0008)	0.074	(0.0014)	0.010	0.031	.	0.0007	0.030	(0.0003)
1	84X BA 22	0.108	0.00114	0.0059	.	0.0162	0.911	0.00139	.	.	.	.	0.0053
1	85X PSb5	0.094	4.68	0.0023	0.180	0.0204	.	0.0013	0.0251	.	0.0017	0.0018	(0.0019)
2	85X PSb8	0.085	8.43	0.0016	0.02	0.010	.	<0.001	0.032	<0.001	0.0014	<0.001	(0.0002)
1	82X PAG2.5R	0.082	0.25	2.21	0.010	0.13	.	.	0.26	.	.	.	0.002
2	85X PSb10	0.080	10.2	0.0015	0.11	0.007	.	<0.001	0.13	<0.001	0.0013	<0.002	0.014
1	85X 0616 Pb1	0.065	1.756	0.0048	0.077	0.0395	.	0.0029	0.0496	.	0.0009	0.0048	0.0005
1	85X 0494 Pb1	0.051	0.95	.	0.049	0.0017	.	.	0.012	.	.	.	.
1	82X PAG1.5R	0.038	0.39	1.55	0.006	0.062	.	.	0.27	.	.	.	0.004

#	Number	Sn	Sb	Ag	As	Bi	Ca	Cd	Cu	Fe	Ni	Te	Zn
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## LEAD ALLOYS CONTINUED FROM THE PREVIOUS

Number	Al	Au	Hg	In	Mg	Mn	Na	Pd	S	Se	Tl	Units
91X S63PR4	.	0.05	.	0.014	.	.	.	.	.	<0.005	.	Disc 40 mm Ø x 15 mm
91X S63PR3	.	0.175	.	0.0087	.	(0.0001)	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S63PR2	(0.0012)	0.0771	.	0.0031	.	.	.	.	.	.	.	Disc 40 mm Ø x 17 mm
91X S63PR1	.	0.040	.	0.028	.	<0.0001	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S63PR0	.	0.018	.	0.01	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S50PR4	<0.001	0.029	.	0.052	.	.	.	.	.	0.003	.	Disc 40 mm Ø x 15 mm
93X S50APR3	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S50PR3	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S50PR2	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
93X S50APR2	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S50PR1	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
93X S50APR1	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
93X S40APR3	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S40PR3	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
93X S40APR2	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S40PR2	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
SRM 1131	.	.	.	.	.	.	.	.	.	.	.	Disc 32 mm Ø x 19 mm
91X S40PR1	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
93X S40APR1	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
93X S30APR3	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S30PR3	.	0.0063	.	0.0085	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
93X S30APR2	.	.	.	0.0199	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S30PR2	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S30PR1	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
93X S30APR1	.	.	.	0.0094	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
91X S10PR3	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
86X PSS4	<0.001	.	.	0.013	.	.	.	(0.007)	.	.	.	Disc 40 mm Ø x 15 mm
91X S10PR2	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
85X SBC	.	0.0079	.	0.209	.	.	.	.	(0.0008)	(0.0029)	0.0196	Disc 40 mm Ø x 15 mm
86X PSS3	<0.001	.	.	0.004	.	.	.	(0.003)	.	.	.	Disc 40 mm Ø x 15 mm
91X S10PR1	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
86X PSS2	<0.0005	.	.	(0.002)	.	.	.	(0.001)	.	.	.	Disc 40 mm Ø x 15 mm
SRM 1132	.	.	.	.	.	.	.	.	.	.	.	Disc 32 mm Ø x 19 mm
86X PSS1	<0.001	.	.	0.008	.	.	.	(<0.0005)	.	.	.	Disc 40 mm Ø x 15 mm
84X BA9	0.0189	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm

Number	Al	Au	Hg	In	Mg	Mn	Na	Pd	S	Se	Tl	Units
85X Psn2	.	.	.	.	.	.	.	.	(0.0008)	0.0011	.	Disc 40 mm Ø x 15 mm
85X ANTH	.	.	.	.	.	.	.	.	(0.0036)	0.0149	.	Disc 40 mm Ø x 15 mm
84X BA5	.	.	.	.	.	.	.	.	.	.	.	Disc 52 mm Ø x 14 mm
84X BA1	0.021	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
85X HRH	.	.	.	.	.	.	.	.	(0.0008)	0.035	.	Disc 55 mm Ø x 12 mm
84X BA6	.	.	.	.	.	.	.	.	.	<0.001	.	Disc 52 mm Ø x 14 mm
84X BACM	0.0124	.	.	.	(0.00008)	<0.0001	.	.	<0.0001	<0.0001	.	Disc 55 mm Ø x 12 mm
84X BA7	.	.	.	.	.	.	.	.	.	<0.001	.	Disc 52 mm Ø x 14 mm
83X PR8	0.0008	0.0083	0.049	0.664	.	.	0.0057	.	.	0.0038	.	Disc 40 mm D x 15 mm
82X PAG6.0R	<0.001	.	.	0.008	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
84X BA2	0.0127	.	(0.003)	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
L21.04	.	.	.	.	.	.	.	.	.	.	.	Block 50 mm x 50 mm x 20 mm
84X BA8	0.0298	.	(0.002)	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
85X 0494 Pb3	.	.	.	.	.	.	.	.	(0.015)	0.077	.	Disc 40 mm Ø x 15 mm
L21.03	.	.	.	.	.	.	.	.	.	.	.	Block 50 mm x 50 mm x 20 mm
84X BA 20	0.0483	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
82X PAG3.5R	0.0015	.	.	0.037	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
85X Psb3	.	.	.	.	.	.	.	.	(0.004)	0.019	.	Disc 40 mm Ø x 15 mm
84X BA3	0.0051	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
L21.02	.	.	.	.	.	.	.	.	.	.	.	Block 50 mm x 50 mm x 20 mm
85X Psb12	.	.	.	.	.	.	.	.	.	<0.001	.	Disc 52 mm Ø x 14 mm
83X PR7	.	(0.0016)	(0.011)	0.076	.	.	0.004	.	.	.	.	Disc 40 mm D x 15 mm
85X CADH	.	.	.	.	.	<0.0005	.	.	<0.001	0.004	.	Disc 40 mm Ø x 15 mm
BAM 103	.	.	.	.	.	.	.	.	.	0.0180	0.00152	Disc 40 mm D x 30 mm
84X BA 23	0.0229	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
84X BA 21	0.0067	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
85X 0494 Pb2	.	.	.	.	.	.	.	.	.	0.023	.	Disc 40 mm Ø x 15 mm
L21.01	.	.	.	.	.	.	.	.	.	.	.	Block 50 mm x 50 mm x 20 mm
84X BA4	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
84X BA 22	0.033	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
85X Psb5	.	.	.	.	.	.	.	.	0.0075	0.0024	.	Disc 40 mm Ø x 15 mm
85X Psb8	.	.	.	.	.	.	.	.	(0.0011)	0.0007	.	Disc 52 mm Ø x 14 mm
82X PAG2.5R	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm
85X Psb10	.	.	.	.	.	.	.	.	.	<0.001	.	Disc 52 mm Ø x 14 mm
85X 0616 Pb1	.	.	(0.0003)	.	.	.	.	.	.	0.0149	.	Disc 40 mm Ø x 15 mm
85X 0494 Pb1	.	.	.	.	.	.	.	.	.	0.004	.	Disc 40 mm Ø x 15 mm
82X PAG1.5R	.	.	.	.	.	.	.	.	.	.	.	Disc 40 mm Ø x 15 mm

Number	Al	Au	Hg	In	Mg	Mn	Na	Pd	S	Se	Tl	Units
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**MAGNESIUM**

cast 61, 63X: unsuitable for glow discharge analysis NH: OES only

#	Number	Zn	Al	Cu	Fe	Mn	Ni	Pb	Si	Sn
2	NH R5-88	0.0520	0.0473	0.0150	0.0274	0.0061	0.0012	.	0.0362	.
1	63X MgE1	0.0514	0.056	0.0486	0.0045	0.492	0.0091	0.0113	0.040	0.0033
2	NH R4-88	0.0271	0.0259	0.0098	0.0359	0.0111	0.0016	.	0.0227	.
1	61X MgP3	0.0196	0.096	0.0296	0.014	0.0135	0.0049	0.0148	0.046	0.0154
1	61X MgP4	0.0158	0.0247	0.0108	(0.0044)	0.0100	0.0028	0.0066	0.037	0.0067
2	NH R3-88	0.0153	0.0194	0.0067	0.0298	0.0197	0.0013	.	0.0139	.
1	61X MgP2	0.0122	0.065	0.0109	0.0061	0.0118	0.0029	0.0061	0.031	0.0073
2	NH RMGL-88	0.0112	0.0535	0.0055	0.0222	0.0012	0.0041	.	0.0209	.
2	NH RMGL-88	0.0073	0.0055	0.0008	0.0031	0.0298	0.0003	.	0.0004	.
2	NH R0-90	0.0037	0.0020	0.0006	0.0098	0.0014	0.0013	0.0004	0.0015	.
2	NH RTC-90	0.0027	0.0055	0.0011	0.0309	0.0702	0.0012	0.0020	0.0013	0.0000
1	61X MgP1	(0.0017)	0.0144	0.0008	0.027	0.0035	(0.0006)	<0.002	0.005	<0.002
2	NH RMGL-93	0.0013	<0.0005	0.0012	0.0032	0.0005	0.0005	.	0.0002	.
2	NH R2-88	0.0011	0.0118	0.0028	0.0294	0.0272	0.0027	.	0.0091	.
2	NH RT400-95	0.0009	0.0139	0.0032	0.0401	0.0159	0.0012	0.0015	0.0065	0.0008
2	NH RPD-89	0.0003	0.0069	0.0009	0.0318	0.0145	0.0003	0.0052	0.0046	0.0047
2	NH R1-88	0.0003	0.0059	0.0013	0.0251	0.0542	0.0006	.	0.0044	.

Number	Ag	Be	Ca	Cd	Ce	K	La	Na	P	Ti	Zr	Units
NH R5-88	.	.	.	.	.	.	.	.	.	.	.	60 mm Ø x 15 mm
63X MgE1	0.0197	0.00036	(0.014)	.	0.0010	.	0.0006	.	.	0.00012	<0.001	40 mm Ø x 18 mm
NH R4-88	.	.	.	.	.	.	.	.	.	.	.	60 mm Ø x 15 mm
61X MgP3	0.0125	<0.0001	0.053	0.0154	0.0055	.	0.0038	.	.	.	(0.0014)	45 mm Ø x 20 mm
61X MgP4	0.0203	<0.0001	0.028	0.0071	0.0041	.	0.0030	.	.	.	0.030	45 mm Ø x 20 mm
NH R3-88	.	.	.	.	.	.	.	.	.	.	.	60 mm Ø x 15 mm
61X MgP2	0.003	<0.0001	0.0138	0.0063	0.0019	.	0.0014	.	.	.	(0.0007)	45 mm Ø x 20 mm
NH RMGL-88	.	.	.	.	.	.	.	.	.	.	.	60 mm Ø x 15 mm
NH RMGL-88	.	.	.	.	.	.	.	.	.	.	.	60 mm Ø x 15 mm
NH R0-90	.	.	<0.00005	<0.00005	.	.	.	0.0000	<0.0001	.	.	60 mm Ø x 15 mm
NH RTC-90	.	.	0.0004	<0.0001	.	.	.	0.0001	0.0027	.	.	60 mm Ø x 15 mm
61X MgP1	<0.0002	<0.0002	<0.001	<0.0002	<0.0005	.	<0.0005	.	.	.	<0.0005	45 mm Ø x 20 mm
NH RMGL-93	.	.	.	.	.	.	.	.	.	.	.	60 mm Ø x 15 mm
NH R2-88	.	.	.	.	.	.	.	.	.	.	.	60 mm Ø x 15 mm
NH RT400-95	.	.	0.0002	<0.0001	.	<0.0001	.	0.0033	0.0017	.	.	60 mm Ø x 15 mm
NH RPD-89	.	.	0.0014	0.0024	.	<0.00005	.	0.0008	0.0057	.	.	60 mm Ø x 15 mm
NH R1-88	.	.	.	.	.	.	.	.	.	.	.	60 mm Ø x 15 mm

**MAGNESIUM ALLOYS WITH ZINC AND MANGANESE**

# = class, where 1 = CRM and 2 = RM

NH samples are suitable for OES only

#	Number	Zn	Al	Cu	Fe	Mn	Ni	Pb	Si	Sn
1	66X MgC4 *	6.81	0.039	0.0024	0.006	0.166	0.0009	0.0030	0.06	0.021
1	66X MgC3	4.97	0.011	0.009	(0.001)	0.020	0.006	0.003	(0.003)	<0.002
1	66X MgC2	4.82	<0.003	0.037	0.0009	0.0036	0.0044	0.0074	(0.0013)	0.0007
1	66X MgD4	2.77	0.0012	0.0041	0.0010	0.0053	(0.0003)	(0.0009)	<0.001	(0.0008)
1	66X MgC1	2.54	<0.002	0.056	(0.0014)	0.010	(0.0005)	0.010	<0.005	<0.002
2	66X MgD3 *	1.97	0.041	0.058	0.023	0.28	0.002	0.009	0.020	0.007
2	66X MgD2	1.13	0.30	0.08	0.014	0.74	0.008	0.012	0.07	0.011
2	NH M12-X91	0.251	0.094	0.0271	0.0015	2.181	0.0050	0.0169	0.012	0.0457
1	63X MgE3 *	0.022	0.015	0.012	0.004	2.36	0.0023	0.005	(0.009)	0.0055
1	63X MgE2	0.02	0.07	0.02	0.02	1.47	0.005	0.007	0.01(5)	0.01

Number	Ag	Be	Ca	Cd	Ce	La	Sr	Ti	Zr	Units
66X MgC4	0.0074	(0.0001)	(<0.001)	.	.	.	(0.00014)	.	<0.001	50 mm Ø x 20 mm or 40 mm D x 15 mm
66X MgC3	0.001	(0.0002)	.	.	.	.	.	.	0.13	40 mm Ø x 15 mm
66X MgC2	0.0048	<0.0001	.	.	0.0206	0.0164	.	.	0.47	40 mm Ø x 15 mm
66X MgD4	(0.0017)	<0.0002	.	.	0.015	0.014	.	.	0.69	40 mm Ø x 15 mm
66X MgC1	0.006	<0.0002	.	.	.	.	.	.	0.74	40 mm Ø x 15 mm
66X MgD3 *	0.005	0.0003	(0.07)	.	0.004	0.004	.	.	0.029	45 mm Ø x 20 mm
66X MgD2	.	.	<0.005	.	.	.	.	.	<0.01	40 mm Ø x 15 mm
NH M12-X91	.	0.0003	.	.	.	.	.	.	.	60 mm Ø x 15 mm
63X MgE3	0.0048	.	0.13	0.0009	.	.	.	<0.001	<0.001	45 mm Ø x 20 mm or 40 mm D x 15 mm
63X MgE2	.	.	0.01	.	.	.	.	.	<0.002	40 mm Ø x 15 mm

\* Unsuitable for Glow Discharge

MAGNESIUM WITH RARE EARTHS

# = class, where 1 = CRM and 2 = RM all cast except 69X MGY4 which is chill cast

#	Number	Nd	R.E.*	Ag	Al	Be	Ca	Ce	Cu	Dy	Er	Fe	Gd	Ho	La	Li
1	68X MGH1	3.05	.	3.21	<0.002	.	.	0.040	0.0046	.	.	<0.002	.	.	0.034	.
1	69X MGF2	2.96	.	.	(0.0014)	.	.	0.047	0.0013	0.085	0.0174	0.0014	0.082	0.0037	0.0352	0.012
1	69X MGY3	2.82	.	.	(0.0010)	.	.	0.020	0.0010	0.225	0.041	0.0015	0.221	0.0049	0.023	0.014
1	68X MGH2	2.70	.	2.94	<0.002	.	.	0.055	0.0050	.	.	(0.0006)	.	.	0.044	.
1	69X MGY4	2.36	.	.	(0.0023)	.	.	0.011	0.0011	.	.	0.0012	1.54	.	0.0078	.
1	69X MGY1 **	2.26	.	.	(0.0019)	.	.	0.029	(0.0015)	0.313	0.13	0.0021	0.284	0.065	0.166	0.119
1	67X MGF2	0.29	.	<0.001	0.0038	.	.	1.42	0.0033	.	.	(0.001)	.	.	0.98	.
1	67X MGF3	0.212	.	<0.001	(0.001)	.	.	1.17	0.0010	.	.	<0.002	.	.	0.84	.
1	67X MGF1	(0.05)	.	<0.001	0.0176	.	.	1.88	0.0048	.	.	0.0024	.	.	1.12	.
1	67X MGF4	0.048	.	<0.0005	0.079	.	.	0.81	0.0302	.	.	<0.002	.	.	0.47	.
1	67X MGF5	0.011	.	<0.0005	0.094	.	.	0.412	0.0735	.	.	0.0290	.	.	0.239	.
2	NH AEL-93	0.000025	.	.	1.45	0.0005	.	0.000079	0.0121	.	.	0.0058	.	.	0.000037	.
2	NH AEH-93	0.000061	.	.	4.96	0.0013	.	0.000229	0.0575	.	.	0.0018	.	.	0.000090	.
2	68X MgL4	.	1.33	<0.005	0.023	.	0.006	.	0.049	.	.	0.017	.	.	.	.
2	68X MgL3	.	1.23	2.91	0.003	.	0.003	.	0.029	.	.	0.002	.	.	.	.
2	68X MgL2	.	1.02	2.32	0.003	.	0.003	.	0.012	.	.	<0.001	.	Temporarily Unavailable		
2	68X MgH6	.	(1.0)	1.13	0.23	.	.	.	0.11	.	.	0.03	.	.	.	.
2	67X MgG3	.	.	.	0.001	.	0.005	.	0.02	.	.	0.002	.	.	.	.

#	Number	Nd	R.E.*	Ag	Al	Be	Ca	Ce	Cu	Dy	Er	Fe	Gd	Ho	La	Li
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\* R.E. = The Rare Earths in were added as Neodymium rich R.E.  
 \*\* 69X MGY1 also contains Eu: (0.004) and Tm: (0.013)

Number	Lu	Mn	Ni	Pb	Pr	Si	Sm	Sn	Tb	Th	Y	Yb	Zn	Zr	Units
68X MGH1	.	0.0027	(0.0006)	<0.002	(0.014)	<0.005	.	<0.002	.	.	.	.	0.053	0.47	40 mm Ø x 15 mm
69X MGY2	0.0005	0.0026	0.0011	(0.002)	0.016	.	0.013	.	0.0046	.	1.98	0.0094	0.354	0.41	40 mm Ø x 15 mm
69X MGY3	0.0005	0.0028	0.0012	(0.006)	0.015	.	0.020	.	0.0057	.	3.46	0.0168	0.315	0.43	40 mm Ø x 15 mm
68X MGH2	.	0.0038	(0.0006)	(0.0021)	(0.013)	<0.002	.	<0.005	.	.	.	.	0.123	0.46	40 mm Ø x 15 mm
69X MGY4	.	0.0104	0.0009	(0.001)	0.0056	.	0.0083	.	.	.	.	.	0.495	0.29	60 mm Ø x 6 mm
69X MGY1 **	0.007	0.0109	(0.0005)	0.014	0.059	.	0.09	.	0.045	.	4.64	0.078	0.121	0.38	40 mm Ø x 16 mm
67X MGF2	.	0.0047	0.0008	0.019	0.112	<0.002	.	<0.002	.	.	.	.	1.71	0.30	40 mm Ø x 17 mm
67X MGF3	.	0.0040	(0.0006)	0.0140	0.106	(0.001)	.	<0.002	.	.	.	.	3.34	0.53	40 mm Ø x 17 mm
67X MGF1	.	0.0039	(0.0003)	<0.001	0.48	<0.005	.	<0.002	.	.	.	.	0.501	0.022	40 mm Ø x 17 mm
67X MGF4	.	0.0023	(0.0003)	<0.001	0.195	(0.0014)	.	<0.001	.	.	.	.	5.04	0.024	40 mm Ø x 17 mm
67X MGF5	.	0.171	0.0004	<0.0005	0.100	0.0026	.	<0.001	.	.	.	.	6.29	<0.001	40 mm Ø x 17 mm
NH AEL-93	.	0.161	0.0025	.	0.000009	0.0172	.	.	.	OES ONLY		.	0.053	.	60 mm Ø x 15 mm
NH AEH-93	.	0.30	0.0084	.	0.000028	0.0376	.	.	.	OES ONLY		.	0.40	.	60 mm Ø x 15 mm
68X MgL4	.	0.17	0.012	<0.001	.	0.01	.	0.009	.	1.32	.	.	0.19	<0.005	40 mm Ø x 15 mm
68X MgL3	.	0.008	<0.002	<0.001	.	<0.005	.	<0.005	.	1.22	.	.	<0.002	0.39	40 mm Ø x 15 mm
68X MgL2	.	0.008	<0.002	<0.001	.	<0.005	.	<0.005	.	0.69	.	.	<0.002	0.54	40 mm Ø x 15 mm
68X MgH6	.	0.17	0.01	<0.005	.	0.01	.	<0.002	.	.	.	.	0.21	<0.01	40 mm Ø x 15 mm
67X MgG3	.	<0.01	<0.005	<0.001	.	.	.	<0.005	.	3.0	.	.	2.7	0.5	40 mm Ø x 15 mm

Number	Lu	Mn	Ni	Pb	Pr	Si	Sm	Sn	Tb	Th	Y	Yb	Zn	Zr	Units
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**CRM MOLYBDENUM**

analysis listed in mg/kg

40 mm Ø x 20 mm

Number	Ag	Al	Be	Bi	C	Cd	Co	Cr	Cu	Fe	Mg	Mn	Ni	Pb	S	Se	Te	Ti	V	Zn
VC Mo	<2	<3	<1	<1	<2	<1	<5	<5	<2	<1	<2	<2	<5	<2	<1	<4	<1	<5	<1	<2

**CRM SILVER AND SILVER ALLOYS**

samples are mounted in 30 mm diameter Bakelite

XRF ONLY

25 mm Ø x 3 mm

Number	Au	Cu	Pb	As	Bi	Fe	Mn	Pd	Pt	Sb	Se	Sn	Te	Zn
131X AGP1	0.0529	0.0522	0.0465	0.0308	0.0485	0.0150	0.0242	0.0517	0.0514	0.0465	0.0287	0.0489	0.0483	0.0312
131X AGP2	0.0138	0.0137	0.0112	0.0048	0.0113	0.0073	0.0020	0.0130	0.0127	0.0093	0.0068	0.0129	0.0121	0.0077
131X AGP3	0.0036	0.0044	0.0031	0.0019	0.0029	0.0046	0.0012	0.0032	0.0032	0.0024	0.0017	0.0026	0.0030	0.0020
131X AGP4	0.0010	0.0020	0.0005	0.0005	0.0006	0.0024	0.0002	0.0008	0.0010	0.0005	0.0006	<0.0001	0.0007	0.0007
133X AGQ3	2.008	10.186	0.868	.	.	.	.	.	.	.	.	.	.	.
133X AGQ2	1.000	6.022	0.423	.	.	.	.	.	.	.	.	.	.	.
133X AGQ1	0.266	2.611	0.214	.	.	.	.	.	.	.	.	.	.	.

**RM TIN**

typical analysis listed in mass %

Number	Sn	C	Cu	Fe	Ni	Pb	Zn	Melting Pt. °C	Units
BCS 192g	99.997	0.001	0.00007	0.0002	0.00005	0.00007	0.00006	231.9	300 g block (9.5 x 2.5 x 2 cms) or 100 g chips

**CRM TIN**

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

40 mm Ø x 15 mm

Number	Ag	Al	As	Au	Bi	Cd	Cu	Fe	In	Ni	Pb	Sb	Te	Zn	Hg	Ga*	S*	Se*
71X SR2	0.0209	0.0010	0.043	0.0084	0.060	0.0435	0.060	0.0160	0.055	0.0192	0.112	0.061	0.030	0.007	0.144	166	(23)	97
71X SR1	0.009	0.0007	0.003	0.003	0.010	0.007	0.009	0.0017	0.014	0.001	0.030	0.013	0.003	0.007	.	.	.	.
71X SR3	0.0069	0.001	0.061	0.0033	0.105	0.021	0.10	0.0034	0.028	0.0009	0.30	0.15	0.008	0.014	.	.	.	.
71X SR0	0.0024	0.0138	0.0005	.	0.0135	0.0013	0.0020	.	0.0097	0.0025	0.035	0.0185	.	0.0075	.	29	8	5

**CRM SPECIALTY TIN LOW-LEAD SOLDERS**

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

40 mm Ø x 15 mm

Number	Ag	Cu	Sb	As	Bi	Cd	Fe	Ni	Pb	Zn	Al	Au	Hg	In*	P	S*	Se
74X CA7	4.21	0.333	0.0103	0.0095	0.0081	0.0045	0.0047	0.0007	0.0965	.	.	.	0.053	26	0.003	.	.
74X CA5	4.00	1.094	0.133	0.0353	0.0207	0.0025	0.0019	0.0147	0.0116	0.0009	0.0003	0.0049	0.0006	111	0.0108	6	0.003
74X CA2	3.49	0.782	0.0734	0.0100	0.0329	0.0010	0.0021	0.0308	0.0331	0.0003	0.0002	0.0014	0.0007	62	0.0055	.	0.0015
74X CA3	3.11	0.055	0.027	.	0.017	.	.	.	0.036	.	<0.001	0.0100	.	.	.	.	.
74X CA4	2.95	0.470	0.0409	0.0171	0.0638	(0.00009)	0.007	0.0650	0.0621	0.0008	0.0002	0.0021	0.0015	39	(0.0013)	.	0.0065
74X HA	2.60	0.558	1.79	(0.0014)	0.0505	0.0015	0.0034	0.0024	0.088	2.56	0.118	.	.	0.007%	.	.	.
74X CA8	2.44	0.947	0.0045	0.0100	0.0032	0.0103	0.0037	0.0007	0.0403	.	.	.	0.101	41	0.0077	.	.
74X E	0.67	3.33	0.029	0.012	0.0111	0.0013	0.0113	0.0079	0.0095	0.0030	0.0100	.	.	.	.	.	0.0009
74X AM	0.552	3.19	1.04	(0.002)	0.174	0.0074	0.0147	0.0125	0.118	0.0053	0.024	.	.	.	.	.	0.0009
74X CA1	0.406	0.696	0.016	.	0.013	.	.	.	0.077	.	0.0101	0.0069	.	.	.	.	.
74X WS	0.298	4.58	1.49	0.0105	0.0063	0.00140	(0.0036)	0.0048	0.037	0.0009	(0.0007)	(0.0002)	.	32	0.0122	.	.
74X CA6	0.282	0.629	0.0078	0.0086	0.008	0.00033	0.0061	0.0194	0.0176	0.0006	0.0006	0.0106	0.0064	218	0.0046	.	0.0007
74X HN	0.140	4.16	0.0292	0.013	0.124	0.0066	0.0064	0.155	0.0495	0.0020	0.014	.	.	.	.	.	0.0010
74X OA	0.100	3.41	0.0098	0.080	1.065	0.00063	0.007	0.0025	0.128	(0.002)	(0.0007)	(0.0001)	.	34	0.0072	.	.
74X HB	0.070	4.57	5.40	0.028	(0.007)	0.0095	0.014	1.27	0.036	0.0117	0.0014	.	.	.	(0.002)	.	<0.001
74X TC	0.0103	5.00	0.049	0.0253	0.039	0.0146	(0.025)	0.0051	0.174	0.009	(0.0006)	.	.	.	.	.	0.104

**TIN-ANTIMONY ALLOYS**

cast # = class, where 1 = CRM and 2 = RM

40 mm Ø x 15 mm

#	Number	Sb	Cu	Ag	Al	As	Bi	Cd	Co	Fe	In	Ni	P	Pb	S	Zn
1	73X SC7	14.01	6.51	0.006	0.001	0.047	0.009	0.0018	0.0160	0.046	0.014	0.008	.	0.356	(<0.001)	(0.003)
1	73X SC11	12.01	11.18	0.066	0.0025	0.292	0.560	1.75	.	0.011	.	0.452	0.019	0.061	.	0.063
1	73X SC8	9.65	3.89	(0.0015)	0.004	0.121	0.037	0.133	0.017	0.073	0.017	0.014	.	0.037	(0.011)	(0.008)
1	73X SC9	8.18	8.47	0.004	<0.001	0.53	0.066	0.078	0.0030	0.037	0.010	0.008	.	0.20	(0.008)	(0.003)
1	73X SC12	8.05	7.72	0.83	<0.002	0.024	0.020	0.625	.	0.051	.	0.384	.	0.024	.	0.020
1	73X SC5	7.03	0.57	0.063	0.003	0.013	0.43	0.008	0.011	0.004	0.036	0.0058	.	0.136	(0.001)	0.001
1	73X SC4	6.02	3.05	0.042	0.005	0.005	0.218	0.052	0.0035	0.011	0.011	0.017	.	0.514	(0.003)	0.008
2	72X SA6R	6.0	0.10	.	.	0.050	0.25	0.01	.	0.050	.	.	.	0.25	.	0.02
2	72X SA5R	5.0	0.005	.	.	0.020	0.005	0.02	.	0.003	.	.	.	0.025	.	0.001
1	73X SC3	4.60	0.222	0.013	0.001	0.029	0.020	0.024	0.006	0.017	0.031	0.0136	.	0.040	(0.002)	0.001
2	72X SA4R	4.0	0.020	.	.	0.030	0.10	0.003	.	0.10	.	.	.	0.080	.	0.007
1	73X SC2	3.07	1.06	0.006	(0.002)	0.035	0.62	0.036	0.021	0.030	(0.002)	0.0048	.	0.029	<0.001	0.003
1	73X SC1	1.48	2.02	0.010	0.002	0.008	0.084	0.006	<0.001	0.0025	0.008	0.0041	.	0.067	<0.002	0.003
1	73X SC6	0.092	5.17	0.08	(0.003)	0.204	0.115	0.0125	0.0050	0.007	0.058	0.013	.	0.100	(0.004)	0.01

**CRM PURE TITANIUM BY POWDER METALLURGY**

Available in 2 Forms: (disc) 090A: 40 mm Ø x 20 mm or (cubes) 090B: 0.2g cubes, approx. 25g

Number	Al	B	Co	Cr	Cu	Fe	Mn	Mo	Nb	Ni	Sn	V	W	Zr
BCR 090	(0.074)	0.00282	0.0501	0.0533	0.0513	0.0563	0.0314	0.0488	(0.0492)	0.0667	(0.071)	(0.057)	(0.050)	(0.0436)

**CRM TITANIUM ALLOYS**

Number	Al	V	Mn	method of manufacture	Units
BCR 089	5.97 +/- 0.04	3.976 +/- 0.029	.	powder metallurgy	40 mm Ø x 20 mm
SRM 641	.	.	6.6	triple arc vacuum	32 mm Ø x 19 mm
SRM 642	.	.	9.0	triple arc vacuum	32 mm Ø x 19 mm
SRM 643	.	.	11.6	triple arc vacuum	32 mm Ø x 19 mm

**TITANIUM ALLOYS**

# = class, where 1 = CRM and 2 = RM

#	Number	Al	Cr	Fe	Mn	Mo	Nb	Sn	V	W	Zr	C	H	O	N	S
1	SRM 2062	30.31	.	.	.	.	10.78	.	.	4.38	.	.	.	.	.	.
1	BS T-5A	6.33	0.013	0.170	<0.002	0.004	.	0.009	4.10	<0.01	0.003	0.011	(0.0028)	0.190	0.008	<0.001
2	BS T-15	6.23	1.02	1.02	0.02	3.1	.	0.015	(0.01)	(0.52)	<0.002	0.007	.	(0.08)	(0.007)	(0.002)
1	IARM 175B	6.16	0.003	0.153	0.001	0.004	.	0.019	4.00	.	.	0.031	0.008	0.165	0.006	<0.003
1	IARM 177B	6.04	<0.005	0.031	(0.001)	1.93	.	1.95	0.006	.	3.97	0.008	0.014	0.098	0.0033	.
1	IARM 176B	5.86	0.013	0.111	0.001	0.006	.	0.009	3.87	.	(0.002)	0.010	0.0036	0.109	0.0051	.
2	BS T-14	4.94	1.98	1.90	0.02	1.72	.	0.03	0.013	0.48	(<0.01)	(0.010)	.	(0.091)	0.006	(0.003)
1	SRM 1128	3.06	2.96	0.134	.	.	.	3.04	15.13	.	.	0.011	.	.	.	.
1	BS T-80	0.0746	0.0050	0.0093	0.0244	0.0100	0.0367	0.0257	0.0446	0.0174	0.0178	0.0166	0.0059	0.0768	0.0041	.
1	BS T-81	0.0664	0.0294	0.1144	0.0404	0.0279	0.0191	0.0155	0.0186	0.0372	0.0163	0.0161	0.0035	0.0669	0.0037	.
1	BS T-4A	0.040	0.026	0.19	0.003	0.0006	.	0.005	(0.001)	<0.002	<0.002	0.014	(0.0027)	(0.37)	0.005	(0.0004)
1	IARM 174B	0.016	0.016	0.132	0.002	<0.002	.	0.004	<0.005	.	<0.001	0.007	0.0018	0.335	0.013	.
1	BS T-2A	0.005	0.018	0.156	0.003	0.002	.	0.006	<0.002	<0.002	(0.007)	(0.0020)	(0.12)	(0.0044)	(0.0004)	(0.0004)
2	BS T-22	0.004	1.22	1.19	2.02	1.15	.	0.019	0.50	0.51	(<0.01)	0.005	.	(0.09)	(0.01)	(0.002)
2	BS T-23	0.003	0.91	0.93	3.70	0.91	.	0.025	0.93	0.87	(0.002)	0.006	.	(0.13)	(0.007)	(0.002)
2	BS T-24	0.002	0.54	0.54	4.7	0.51	.	0.019	1.22	0.37	(0.001)	0.005	.	(0.09)	0.006	(0.002)
2	BS T-26	0.002	0.037	0.055	0.006	0.028	.	0.025	0.020	0.57	0.005	0.005	.	(0.069)	(0.005)	(0.001)

Number	B	Co	Cu	Ni	P	Pd	Ru	Si	Ti	Y	Units
SRM 2062	.	.	.	.	.	.	.	.	53.92	.	24 mm Ø x 2 mm (thin)
BS T-5A	.	.	0.0025	0.012	.	.	.	0.02	.	.	38 mm Ø x 12 mm
BS T-15	.	.	0.03	0.007	.	.	.	0.02	.	.	32 mm Ø x 12 mm
IARM 175B	.	.	0.002	0.002	.	.	.	0.011	.	.	31 mm Ø x 2 or 18 mm
IARM 177B	.	.	0.005	0.003	.	.	.	0.083	.	.	31 mm Ø x 2 or 18 mm
IARM 176B	.	.	0.003	0.012	.	.	.	0.017	.	.	31 mm Ø x 2 or 18 mm
BS T-14	.	.	0.022	0.012	.	.	.	0.04	.	.	32 mm Ø x 12 mm
SRM 1128	.	.	.	.	.	.	.	.	.	.	35 mm Ø x 19 mm
BS T-80	0.0040	0.0146	0.0375	0.0156	.	0.1424	0.0469	(0.0035)	.	0.0010	40 mm Ø x 12 mm
BS T-81	0.0082	0.0395	0.0244	0.0090	.	0.0398	0.0310	0.0474	.	0.0017	40 mm Ø x 12 mm
BS T-4A	.	.	(0.001)	0.014	(0.001)	.	.	0.011	.	.	38 mm Ø x 12 mm
IARM 174B	.	.	0.003	0.015	.	.	.	0.003	.	.	31 mm Ø x 2 or 18 mm
BS T-2A	.	.	(0.001)	0.021	.	.	.	0.002	.	.	38 mm Ø x 12 mm
BS T-22	.	.	0.04	0.008	.	.	.	(0.02)	.	.	32 mm Ø x 12 mm
BS T-23	.	.	0.012	0.004	.	.	.	(<0.01)	.	.	32 mm Ø x 12 mm
BS T-24	.	.	0.020	(0.007)	.	.	.	(0.01)	.	.	32 mm Ø x 12 mm
BS T-26	.	.	0.037	0.002	.	.	.	(0.01)	.	.	32 mm Ø x 12 mm

**RM TITANIUM ALLOY XRF SAMPLES**

cast	typical analysis	XRF ONLY		32 mm Ø x 8 mm buttons						
Number	Al	Cu	Fe	Mo	Nb	Pd	Si	Sn	V	Zr
101P 811	8.0	.	0.03	1.0	.	.	.	.	1.0	.
101P 6242	6.12	.	0.014	2.06	.	.	0.08	2.01	.	3.98
101P 6246	6.05	.	0.055	5.99	.	.	0.06	2.00	.	3.92
101P 685	6.0	.	0.03	0.5	.	.	0.3	.	.	5.0
101P 318	6.0	.	0.2	.	.	.	.	.	4.0	.
101P 367	6.0	.	0.1	.	7.0	.	.	.	.	.
101P 829	5.53	.	0.005	0.28	1.01	.	0.29	3.50	.	3.03
101P 317	5.0	.	0.2	.	.	.	.	2.5	.	.
101P 550	4.09	.	0.036	4.18	.	.	0.41	2.09	.	.
101P 551	4.0	.	0.05	4.0	.	.	0.5	4.0	.	.
101P 679	2.42	.	0.018	1.07	.	.	0.22	11.08	.	4.92
101P 205	.	.	<0.01	15.3	.	.	.	.	.	.
101P 230	.	2.30	0.065	.	.	.	.	.	.	.
101P 260	.	.	0.05	.	.	0.15	.	.	.	.

ZINC

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

#	Number	Pb	Al	Cd	Cu	Fe	In	Mg	Mn	Ni	Sb	Sn	Tl
1	41X Z6	0.031	0.0096	0.0093	0.0088	(0.002)	0.0228	<0.0005	0.0002	0.0002	.	0.0038	.
1	41X Z5	0.0275	0.041	0.0310	0.0296	0.011	0.0050	0.0098	0.0138	0.00054	0.0098	0.0275	0.0073
1	ERM-EB325	0.0142	.	0.00947	0.00475	0.00561	.	.	.	.	.	0.00461	0.00368
1	41X Z4	0.0091	0.0096	0.0066	0.0047	0.003	0.0015	0.0019	0.0012	0.0069	0.005	0.0070	(0.003)
1	41X Z3	0.0080	0.0164	0.0050	0.0066	0.0022	0.0010	0.0138	0.0029	0.0029	0.0045	0.0029	0.0012
1	41X Z11	0.0077	0.0261	0.0155	0.0116	0.0019	0.0345	.	.	.	0.0026	0.0072	(0.0010)
2	BS SP-5	0.005	0.0003	<0.0004	<0.001	<0.001	.	<0.002	.	.	<0.001	0.0010	.
1	ERM-EB323	0.00486	.	0.000651	0.00189	0.00113	.	.	.	.	.	0.00187	0.00108
1	BCR 327	0.004094	.	0.03014	(0.00056)	0.01440	.	.	.	.	.	.	.
1	BCR 326	0.003070	(<0.0007)	0.02030	0.01048	0.02648	.	.	.	.	.	.	.
1	41X Z2	0.003	0.017	0.0017	0.016	0.0028	(0.0002)	0.0064	0.0017	0.0014	(0.0011)	0.0017	(0.0023)
2	BS SP-A	0.003	0.051	.	<0.0005	0.011	.	.	.	.	.	<0.001	.
1	ERM-EB324	0.00261	.	0.00489	0.000987	0.00585	.	.	.	.	.	0.00098	0.00199
1	41X Z1	0.00232	0.0014	0.00066	0.00060	0.00059	0.0003	0.00028	0.00044	0.0002	0.0004	0.00059	0.0002
2	BCS 194e	0.002	.	.	.	0.001	.	.	.	.	.	.	.
1	BAM M601	0.00157	<0.00005	0.000055	0.000189	0.000220	<0.000005	.	.	.	.	.	0.000225
1	ERM-EB322	0.00150	.	0.001508	0.000589	0.00191	.	.	.	.	.	0.00056	0.000528
1	BCR 321	0.000485	<0.00007	(0.000023)	(0.000097)	(0.000222)	<0.00002	.	.	.	.	<0.00005	0.000078

Number	Bi	Cr	Hg	Si	Ti	Zn	Melt 'C	Units
41X Z6	0.0122	(0.0001)	.	.	.	.	.	50 mm Ø x 20 mm
41X Z5	.	.	.	(0.002)	0.00044	.	.	50 mm Ø x 20 mm
ERM-EB325	.	.	.	.	.	.	.	60 mm Ø x 30 mm
41X Z4	.	.	.	(0.0014)	<0.0005	.	.	50 mm Ø x 20 mm
41X Z3	0.0022	.	(0.0013)	.	.	.	.	50 mm Ø x 20 mm
41X Z11	0.0189	.	(0.0009)	.	.	.	.	50 mm Ø x 20 mm
BS SP-5	.	.	.	.	.	.	.	37 mm Ø x 12 mm
ERM-EB323	.	.	.	.	.	.	.	60 mm Ø x 30 mm
BCR 327	.	.	.	.	.	.	.	80 mm Ø x 20 mm
BCR 326	.	.	.	.	.	.	.	80 mm Ø x 20 mm
41X Z2	.	.	.	(0.0011)	(0.0002)	.	.	50 mm Ø x 20 mm
BS SP-A	.	.	.	.	.	.	.	38 mm Ø x 14 mm
ERM-EB324	.	.	.	.	.	.	.	60 mm Ø x 30 mm
41X Z1	0.0007	.	(0.0003)	.	.	.	.	50 mm Ø x 20 mm
BCS 194e	.	.	.	.	.	99.99	419.5	300 g(4.5 x 3.5 x 3 cms)
BAM M601	.	.	.	.	.	.	.	45 mm Ø x 30 mm
ERM-EB322	.	.	.	.	.	.	.	60 mm Ø x 30 mm
BCR 321	.	.	.	.	.	.	.	80 mm Ø x 20 mm

ZINC BINARY

# = class, where 1 = CRM and 2 = RM cast

#	Number	Mg%	Mn%	Sb%	Zn	Size
2	41X ZMg1	1.13	.	.	Remainder	40 mm Ø x 15 mm
2	41X ZMg3	2.80	.	.	Remainder	40 mm Ø x 15 mm
1	41X ZMn1	.	1.07	.	Remainder	50 mm Ø x 20 mm
2	41X ZSb1	.	.	1.03	Remainder	40 mm Ø x 15 mm
2	41X ZSb4	.	.	3.78	Remainder	40 mm Ø x 15 mm
2	41X ZSb8	.	.	7.68	Remainder	40 mm Ø x 15 mm

CRM ZAMAK ALLOYS

cast analysis listed in mg/kg except % which is mass % 80 mm Ø x 20 mm

Number	Al%	Cu%	Cd	Fe	In	Mg	Ni	Pb	Sn	Tl
ZAMAK 3										
BCR 351	4.355	0.001213	(0.21)	.	<0.2	131.0	(1.9)	4.50	<1	0.74
BCR 352	4.150	0.003126	2.88	.	3.02	283.0	6.74	(6.4)	3.0	3.2
BCR 353	3.95	0.01000	10.44	.	2.55	452.5	.	24.4	5.6	3.95
BCR 354	3.727	0.03123	29.7	.	9.8	602	83.1	30.8	14.1	11.01
BCR 355	3.443	0.1035	58.1	.	24.6	786	268	56.9	29.1	23.25
ZAMAK 5										
BCR 356	4.434	0.3944	0.73	31.5	<0.2	132.3	3.43	9.87	(0.32)	0.79
BCR 357	4.227	0.5849	2.83	25.7	3.30	273	9.82	13.8	3.51	2.76
BCR 361	4.068	0.798	(0.80)	10.34	<0.2	.	.	5.31	46.3	37.4
BCR 358	3.946	0.793	10.22	40.5	7.04	403	26.98	22.5	7.87	6.09
BCR 359	3.711	0.989	29.8	119.7	15.5	557	92.6	36.2	16.93	13.34
BCR 360	3.427	1.234	59.5	.	29.8	705	267	73.9	33.0	25.9

**CRM ZINC ROHS MONITOR**

cast 50 mm Ø x 20 mm

Number	Cd	Cr	Hg	Pb
41X ZSC6	0.215	<0.0002	0.029	0.0077
41X ZSC3	0.119	0.0148	0.0021	0.0273
41X ZSC5	0.0502	<0.0002	0.147	0.0137
41X ZSC1	0.0288	0.0039	0.026	0.0621
41X ZSC4	0.0131	0.0299	0.050	0.156
41X ZSC2	0.0016	0.0036	0.0053	0.111

**CRM ZINC-CADMIUM ALLOY**

cast 40 mm Ø x 15 mm

Number	Ag	Bi	Cd	Cu	Fe	Ni	Pb	Sb	Sn	Zn
44X ZnCd30	0.046	0.051	31.0	0.046	0.0015	0.0014	0.089	1.03	0.053	Rem.

**ZINC ALLOYS**

Number	Al	Bi	Cd	Cu	Fe	Mg	Pb	Sb	Sn	Units
CRM	AVAILABLE INDIVIDUALLY OR SET/7									
CAN NZA-1	28.70	.	0.00098	1.51	0.046	0.020	0.0030	.	0.0069	50 mm Ø x 12 mm
CAN NZA-2	23.81	.	0.0047	3.00	0.021	0.029	0.0076	.	0.0045	50 mm Ø x 12 mm
CAN NZA-3	25.99	.	0.0064	2.00	0.066	0.0049	0.0045	.	0.0034	50 mm Ø x 12 mm
CAN NZA-4	26.65	.	0.0029	2.45	0.027	0.0106	0.0101	.	0.0087	50 mm Ø x 12 mm
CAN NZA-5	10.85	.	0.0095	1.04	(0.016)	0.021	0.0012	.	0.0017	50 mm Ø x 12 mm
CAN NZA-6	7.54	.	0.0147	3.17	(0.0105)	0.00037	0.0809	.	0.0051	50 mm Ø x 12 mm
CAN NZA-7	13.17	.	0.00020	0.212	(0.016)	0.052	0.0136	.	0.0116	50 mm Ø x 12 mm
CRM	SOLD IN SET/5 ONLY									
GBW 02705	4.72	.	0.00081	0.165	.	0.0224	0.0026	.	0.00058	30 mm x 35 mm x 45 mm
GBW 02706	3.92	.	0.0014	0.256	.	0.159	0.0032	.	0.00104	30 mm x 35 mm x 45 mm
GBW 02707	3.91	.	0.0031	0.412	.	0.075	0.0057	.	0.0021	30 mm x 35 mm x 45 mm
GBW 02708	2.92	.	0.0072	0.773	.	0.0368	0.0120	.	0.0040	30 mm x 35 mm x 45 mm
GBW 02709	2.64	.	0.0138	1.37	.	0.0085	0.0235	.	0.0077	30 mm x 35 mm x 45 mm
CRM	SOLD IN SET/5 ONLY									
NCS HS52701a-1	.	.	0.000062	0.00012	0.00068	.	0.00089	.	0.00057	28 mm Ø x 26 mm
NCS HS52701a-2	.	.	0.0021	0.00018	0.0018	.	0.0021	.	0.0010	28 mm Ø x 26 mm
NCS HS52701a-3	.	.	0.0041	0.00040	0.0034	.	0.0040	.	0.0013	28 mm Ø x 26 mm
NCS HS52701a-4	.	.	0.0067	0.00074	0.0068	.	0.0068	.	0.0022	28 mm Ø x 26 mm
NCS HS52701a-5	.	.	0.0099	0.0016	0.011	.	0.010	.	0.0028	28 mm Ø x 26 mm
RM	AVAILABLE INDIVIDUALLY cast some Sb segregation in below series, typical analysis listed									
44X Z5	20.4	0.004	0.001	0.001	0.010	<0.001	0.010	5.2	0.003	40 mm Ø x 15 mm
44X Z4	20.3	0.016	0.011	0.007	0.011	0.008	0.032	6.7	0.018	40 mm Ø x 15 mm
44X Z3	17.8	0.013	0.012	0.011	0.009	0.005	0.020	8.1	0.019	40 mm Ø x 15 mm
44X Z2	12.6	0.030	0.005	0.003	0.007	0.035	0.053	9.5	0.018	40 mm Ø x 15 mm
44X Z1	8.0	0.024	0.027	0.028	0.007	0.001	0.019	10.6	0.024	40 mm Ø x 15 mm
Number	Al	Bi	Cd	Cu	Fe	Mg	Pb	Sb	Sn	Units

**=>> MORE ZINC SAMPLES ARE LISTED ON THE NEXT PAGE =>>****RM ZIRCONIUM BASE XRF MATERIALS**

cast typical analysis 32 mm Ø x 8 mm buttons

Number	Sn	Ni	Cr	Cu	Fe	Mo
121P Zr 20	1.50	0.05	0.10	.	0.15	.
121P Zr 30	.	.	.	0.50	0.05	0.50
121P Zr 40	1.50	.	0.10	.	0.15	.

These materials have only been analyzed by X-Ray Fluorescence. They are not recommended for Spark Optical Emission Spectrometers due to segregation.

CRM ZINC ALLOYS

41X CGL: 42 - 48 mm D x 20 mm other X: 50 mm D x 20 mm CAN: 50 mm Ø x 12 mm SRW: 44 mm x 44 mm x 19 mm

Number	Al	Bi	Cd	Ce	Cu	Mg	Mn	Ni	Pb	Sb	Si	Sn	Ti	As	Ce	Fe	In	La	Tl	Other
43X Z23	30.9		0.0043	0.0144	3.15	0.0207	0.0132	0.0156	0.0045		0.061	0.0055	0.0030			0.16				
CAN NZA-1	28.70		0.00098		1.51	0.020	0.0069	0.0030	0.0069			0.0069				0.046				
43X Z22	27.4		0.0050	0.019	2.32	0.022	0.0096	0.027	0.0060		0.038	0.0061	0.0065							
CAN NZA-4	26.65		0.0029		2.45	0.0106			0.0101			0.0087				0.027				
CAN NZA-3	25.99		0.0064		2.00	0.0049			0.0045			0.0034				0.066				
CAN NZA-2	23.81		0.0047		3.00	0.029			0.0076			0.0045				0.021				
43X Z21	23.5		0.027	0.0087	1.81	0.047	0.0104	0.043	0.0136		0.022	0.0140	0.013			(0.016)				
CAN NZA-7	13.17		0.00020		0.212	0.052	0.0089	0.0014	0.0136		0.020	0.0116	0.013			(0.016)				
43X Z11	11.61	0.0035	0.0224	0.0010	0.515	0.021			0.0091			0.0107	0.013			(0.016)				
CAN NZA-5	10.85		0.0095		1.04	0.021			0.0012			0.0017								
43X Z12	10.05	(0.003)	0.0115	0.0022	0.80	0.027	0.0061	0.004	0.0136	(0.004)	(0.006)	0.0089	0.0053							
43X Z13	9.55		0.0037		0.981	0.0204	0.0070	0.0109	0.0125	0.009	(0.0048)	0.0111								
43X Z14	8.23	0.011	0.0067	0.0045	1.23	0.0027	0.0032	0.0052	0.0082	0.012	0.010	0.0051	0.0011			(0.0105)				
CAN NZA-6	7.54		0.0147		3.17	0.0037			0.0809			0.0051								
43X Z15	7.36	(0.005)	0.0030	0.0024	1.54	0.0022	0.0020	0.0019	0.0060	(0.005)	(0.007)	0.004	0.002							
42X Z8	7.03		0.0054	(0.0002)	0.0215	0.0033	0.0014	0.0019	0.0025		0.013	(0.0023)	0.0001		0.0081		0.0079			
42X Z9	5.58		0.0054		0.0070	0.0464	0.0006	0.0003	0.0021		(0.004)	(0.0035)	0.020		0.0047		0.0044			Zr: 0.011
SRM 629	5.15		0.0155	0.0008	1.50	0.094	0.0017	0.0075	0.0135		0.078	0.012			0.053		0.047			
42X Z7	4.8		0.030	(0.0001)	0.0249	0.0095	0.0042	0.0067	0.0097		0.006	0.012	(0.0001)		0.053		0.047			
43X Z4	4.76	0.012	0.0025	0.0063	3.21	0.043	0.088	0.0286	(0.0024)	0.0043	(0.0065)	(0.0023)	0.0017							
42X Z1	4.61		0.0005	<0.0005	0.0019	0.0041	0.0007	0.0017	0.0022	(0.0009)	0.0046	0.0006	0.0014		0.0027		0.0026			
43X Z1	4.50	0.0031	0.0007		0.501	0.0145	0.0005	0.0010	0.0016	(0.0037)	(0.0037)	0.0060	0.0014							
SRM 630	4.30		0.0048	0.0031	0.976	0.030	0.0106	0.0027	0.0083		0.022	0.0040			0.0109		0.0048			
42X Z5	4.22	0.006	0.0021	0.0018	0.098	0.073	0.0068	0.0185	0.0048	(0.0055)	0.0022	0.0022			0.0049		0.0090			0.0056
42X Z2	4.04		0.0010	0.0018	0.0186	0.0147	0.0012	0.0051	0.0052	0.0026	0.0089	0.0021			0.0049		0.0044			
43X Z6	4.02	0.0049	0.0016	0.0006	2.72	0.0256	0.0006	0.0029	0.0016	0.0045	0.012	0.0053	0.0013							
43X Z2	3.53	0.0015	0.0044	(0.00015)	0.949	0.093	0.0025	0.00037	0.0088	0.0112	0.0102	0.0061	0.0010			0.012				
42X Z3	3.72		0.0048	0.0020	0.159	0.0288	0.0252	0.0102	0.0060	0.003	0.015	0.0030			(0.0003)		(0.0003)			
43X Z7	3.68	(0.0009)	0.00092	0.0003	3.14	0.062	0.0025	0.0005	0.0058	0.0016	0.005	0.0031	0.067			0.029				Be: 0.0194
42X Z6	3.67		0.0039	0.0034	0.238	0.177	0.0157	0.00030	0.0093	0.0169	(0.010)	0.0057			(0.012)		0.00191	(0.011)	0.0021	
43X Z3	3.64	0.018	0.0132	0.004	1.58	0.0143	0.0125	0.0061	0.01	(0.0030)	0.005	0.0060			0.020		(0.0019)	0.020	(0.0035)	
42X Z4	3.55		0.0076		0.063	0.058	0.0077	0.0177	0.0113	(0.0029)	0.017	0.0060			0.020		0.0016	0.020	(0.0025)	
SRM 625	3.06		0.0007	0.0128	0.034	0.070	0.031	0.0184	0.0014		0.003	0.0032	0.0009			0.036				
43X Z5	3.05		0.0111	0.0010	6.05	0.041	0.0032	0.0021	0.0045			0.0038				(0.01)				
41X 0336 Zn2	1.55	0.0099	0.145		0.354	0.099	0.0212	0.0137	0.486	0.0007				0.0009						Ag: 0.0102

  

Number	Al	Bi	Cd	Ce	Cu	Mg	Mn	Ni	Pb	Sb	Si	Sn	Ti	As	Ce	Fe	In	La	Tl	Other
41X 0336 Zn4	1.39	0.027	0.638	0.0029	0.874	0.179	0.038	0.0074	2.87	0.048		2.38		0.0005			0.0035		(0.004)	Ag: 0.0023
41X GLV6	0.474	0.0248	0.0053		0.039	0.134	0.0013	0.0008	0.012	0.012		0.111		0.0014						Co: 0.0047
41X 0336 Zn3	0.43		0.0056	0.0010	0.023		0.0025	0.0060	0.019	0.031		0.111		0.0016						
41X GLV7	0.399	(0.0108)	0.00056		0.019		0.0025	0.030	0.080	0.048		0.006		<0.001						
41X GLV3	0.32	0.0011	0.021		0.019		0.0025	0.030	0.080	0.048		0.006		<0.001						
41X 4380 Zn9	0.295	0.00046	0.0032	0.0015	0.0416	0.0153	0.0018	0.0009	0.0139	0.060		0.0008		0.0003		0.0113			(0.0001)	
41X CGL	0.28		(0.0015)		(0.0005)	0.0012	0.0012	0.0006	0.046	0.0037		<0.001				0.0062				
41X GLV8	0.263	0.0005	0.0003	0.0012	0.0139	0.007	0.0015	0.024	0.73	0.016		0.011	0.012			0.038				
41X 4380 Zn8	0.225	0.011	0.0079	0.0019	0.020		0.0015	0.0182	0.0391	(0.0003)		0.0140		(0.0003)						
41X GLV1	0.197	0.0046	0.0119		0.0191		0.0015	0.0182	0.0391	(0.0003)		0.0140		(0.0003)						
41X 4380 Zn4	0.184	0.0053	0.00073	(0.00016)	0.0050	0.0005	0.0010	0.0368	0.0041	0.045	(0.002)	0.0016	0.005	0.0002		(0.006)				
41X 4380 Zn4	0.144	0.011	0.094	(0.0003)	0.0022	0.026	0.0007	0.0040	0.017	0.017		0.038	0.005	0.0002						
41X 4380 Zn7	0.137		0.015	0.0045	0.012	0.0028	0.0008	0.012	1.25	0.090		0.047	0.009	0.0020						
41X 0336 Zn6	0.105	0.123	0.0140	0.0203	0.0203	0.0008	0.0010	0.0018	0.234	0.234		0.0023	0.009	0.0020			0.0123			Ag: 0.0055
41X 2951 Zn3	0.078		0.0062	0.184	1.89	0.0164	0.0018	0.0010	0.0065			(0.006)	0.133							
41X GLV2	0.070	0.017	0.0026		0.0053	0.0011	0.0015	0.0071	0.214	0.007	0.006	0.003		<0.001						
41X 4380 Zn1	0.055	0.0017	0.376	0.002	0.175	0.0011	0.0015	0.0029	0.068	0.002	0.006	0.049		<0.001						
41X 0336 Zn5	0.035	(0.001)	0.056		0.023	<0.0005	(0.0001)	(0.0005)	0.91	0.008		0.21								
41X 2951 Zn2	0.032		0.0037	0.142	1.37	0.0029	0.0011	0.0038	0.0042			(0.0015)	0.209							
41X 2951 Zn1	0.029		0.0005	0.083	0.79	0.0029	0.0013	0.0038	0.0042			(0.0007)	0.278							
41X 4380 Zn5	0.0215	0.0308	0.0071	0.0075	0.071	0.00165	0.035	0.00147	0.140	0.061		0.0101	0.339							
41X 4380 Zn3	0.0203	0.0103	0.0950	0.0029	0.073	0.00220	0.0180	0.0120	0.180	0.046		0.080	0.125							
41X 4380 Zn2	0.0153	0.0076	0.0284	0.0027	0.284	0.0243	0.0087	0.0023	0.268	0.093		0.021	0.0251							
41X GLV5	0.014	0.0105	0.014		0.116	0.0243	0.0087	0.0023	0.019	0.163		0.020	0.0251							
41X 0336 Zn1	0.014		0.0056		0.0070	0.0049	0.0035	(0.0006)	0.95											

These globally recognized standards have been used in national mints and precious metal mines across the world. They originate from the Rand Refinery Ltd. in South Africa.

All of these reference materials will be accompanied by a Certificate of Analysis indicating the values of all elements. The XRF standards are mounted in bakelite TSP with a 31 mm Diameter. Other diameters and sizes are available on request.

Please note that with precious metals, market fluctuations will affect pricing. Quoted prices will be extended for a 30-day period. Prepayment is necessary. Delivery in 8 - 12 weeks.

**HIGH PURITY GOLD - all forms**

These standards contain certified ppm values for 18 elements and are available in the following forms:

Number	RAN AuDHP 1 OES	RAN AuDHP 1 XRF	RAN AuGHP 1
Form	80 g optical emission disc custom sizes available	18 mm x 2 mm XRF disc	15 g or 25 g of small balls each 200 mg +/- 5 mg

Gold Purity 99.9993%																		impurities listed in mg/kg	
Ag	Rh	Pd	Pt	Sn	Pb	Sb	Bi	Zn	Cu	Ni	Cr	Mn	Fe	Ti	Se	Co	Cd	Mg	As
1	<0.1	0.1	<0.1	<0.2	0.3	<0.1	<0.1	0.2	0.7	<0.1	<0.1	<0.1	1	0.1	<0.5	<0.1	<0.1	0.5	<0.5

**REFINED GOLD**

Number	Ag	Rh	Pd	Pt	Sn	Pb	Sb	Bi	Zn	Cu	Ni	Cr	Mn	Fe
RAN REFAuGP1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
RAN REFAuGP2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
RAN REFAuGP3	3.8	3.3	3.1	2.9	3.3	4.0	3.7	4.0	2.9	4.0	4.0	4.0	3.6	4.0
RAN REFAuGP4	7.2	5.8	6.0	5.6	5.3	6.1	7.0	6.2	4.5	6.2	7.5	5.5	5.5	7.0
RAN REFAuGP5	13	10	12	12	10	13	13	13	7.0	12	13	12	11	14
RAN REFAuGP6	25	22	25	24	24	27	27	27	15	24	26	26	24	24
RAN REFAuGP7	42	42	40	41	40	45	45	45	29	45	45	45	40	40

These standards are available in units of 75 globules at 200 mg +/- 5 mg each.

The concentration of each impurity can be custom added and certified. Otherwise the certified impurities fall within 20% of the following values.

**GOLD ALLOYS - XRF only**

Number	Au %	Ag %	Cu
RAN REFADuDP1	98.0	2.0	---
RAN REFADuDP2	96.0	2.0	2
RAN REFADuDP3	91.5	---	8.5
RAN REFADuDP4	88.0	8.0	4
RAN REFADuDP5	75.0	18.0	7
RAN REFADuDP7	50.0	20.0	30
RAN REFADuDP8	37.0	10.0	53

These standards are available individually or as a set of 7 standards. The alloys are composed of high purity gold, silver, and copper in a variety of ranges. The 11 trace elements are then custom added as impurities to the alloys. Certified values will be given for all elements including trace elements. The size is 18 mm D x 2 mm H discs mounted on a 31 mm D bakelite TSP.

The following elements may be customized in mg/kg  
Bi Cd Fe Mn Pd Pt Pb Sb Se Te Zn

**BULLION - disc form**

Optical emission discs are 80 g custom sizes, XRF discs are 21.7 mm D x 2 mm H discs mounted on a 31 mm D bakelite TSP. RAN REFBull is produced from high purity gold, silver, and copper, and are available as 3 different standards:

Certified values for Au, Ag, and Cu  
 Certified values for Au, Ag, and Cu with 6 trace elements (\*) including Pt and Pd  
 Certified values for Au, Ag, and Cu with 19 trace elements

Note that the Au and Ag values for RAN REFBull are mass percent, while Cu and Pd are listed as mg/kg.

Au %	Ag %	Cu	Pd*
99.63	0.329	238	14

The 19 trace elements are all less than 10 mg/kg.

Pt*	Sn	Pb	Sb	Bi*	Zn	Rh*	Ni*	Cr	Mn	Fe*	Ti	Se	Co	Cd	Mg	Zn	As	Al
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**TERNARY ALLOYS - XRF only**

Number	Au %	Ag %	Cu
RAN REFTA1	98.0	1.5	0.5
RAN REFTA2	96.0	3.0	1.0
RAN REFTA3	95.0	2.5	2.5
RAN REFTA4	93.0	4.5	2.5
RAN REFTA5	90.0	4.0	6.0
RAN REFTA6	83.3	4.0	12.7
RAN REFTA7	81.7	7.2	11.1
RAN REFTA8	80.0	12.5	7.5
RAN REFTA9	58.3	8.0	33.7
RAN REFTA10	58.3	20.0	21.7
RAN REFTA11	58.3	30.0	11.7
RAN REFTA12	50.0	20.0	30.0
RAN REFTA13	37.5	2.0	60.5
RAN REFTA14	37.5	10.0	52.5
RAN REFTA15/01	37.5	16.0	46.5
Number	Au %	Ag %	Cu

These standards are available as a set of 15 standards. The concentrations of the 3 major elements and the 10 trace elements will be certified over the ranges specified. The concentrations of major elements Au, Ag, and Cu in each alloy will fall within 1% of the values specified. Values listed are the mean of the range. Concentrations of custom added trace elements will be included and certified over the range of 1 - 150 mg/kg. Standards can be produced to order on receipt of detailed requirements listing concentration ranges of the trace elements.

The size is 18 mm D x 2 mm H discs mounted on a 31 mm D bakelite TSP.

The following elements may be customized in mg/kg: Bi Fe Mn Ni  
Pb Pd Pt Sb Sn Zn

**REFINED SILVER**

Number	Au	Rh	Pd	Pt	Te	Sn	Pb	Sb	Bi	Zn	Cu	Fe	Ni
RAN REFAGGP1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
RAN REFAGGP2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
RAN REFAGGP3	3.5	2.9	3.1	3.0	3.5	3.3	4.5	3.1	3.0	4.0	4.0	4.0	3.0
RAN REFAGGP4	6.4	5.3	5.7	5.9	7.2	5.9	6.1	5.5	6.2	7.8	7.4	8.0	4.5
RAN REFAGGP5	11	7.3	11	12	13	8.7	11	9.6	11	11	14	12	6.0
RAN REFAGGP6	23	16	25	24	25	13	24	16	23	15	30	25	8.9

These standards are available in units of 75 globules at 200 mg +/- 5 mg each.

The concentration of each impurity can be custom added and certified. Otherwise the certified impurities fall within 20% of the following values.

**SILVER ALLOYS - XRF only**

Number	Ag %	Cu
RAN REFAGDP1	97.0	3
RAN REFAGDP2	94.0	6
RAN REFAGDP3	91.5	8.5
RAN REFAGDP4	80.0	20
RAN REFAGDP5	60.0	40

These standards are available individually or as a set of 5 standards. These contain silver and copper in a variety of ranges with certified values for nine custom trace elements. The size is 18 mm D x 2 mm H discs mounted on a 31 mm D bakelite TSP.

The following elements may be customized in mg/kg

Au Pt Pd As Bi Cd Sb Ni Fe

**HALLMARK - XRF only**

Entirely customized, these are made to the customer specifications. Certified values will be given for Au, Ag, and Cu. Discs are 22 mm D x 2 mm H mounted on a 31 mm D bakelite TSP. Any desired mix of Au, Ag, or Cu may be supplied with a certificate of analysis. Chosen compositions do not need to use all three of the possible elements.