MBH
ANALYTICAL LTD

HOLLAND HOUSE • QUEENS ROAD • BARNET • EN5 4DJ • ENGLAND • TEL: 44(0) 20 8441 2024 • FAX: 44(0)20 8449 0810
E-mail: info@mbh.co.uk Website http://www.mbh.co.uk

March 2003 Supplement

to MBH 2002-03 Reference Materials Catalogue

NEW MATERIALS

The tables below should be read with reference to the full MBH 2002-03 Reference Materials catalogue.
All values are weight % unless stated otherwise. Figures in brackets ( ) are for information only and are not certified.

1.2.3 Low Alloy Steel

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	W	Al	As	Ti	N	Size (mm) Ø	H
Wrought	* **12TI 1750**	0.359	0.246	0.075	0.0128	1.801	0.187	0.227	0.0433	0.320	0.114	(0.004)	0.0175	0.0188	(0.0016)	0.0107 Sb 0.0031	38	25
HIP	* **12DB E035-2**	1.277	0.216	0.0111	0.0038	0.305	0.0190	0.0104	0.0056	0.0085	. . .	. . .	0.0193	0.0017	0.0030	0.0230	35	30
Wrought	* **12DB E179-2(D)**	0.598	0.579	(0.0006)	0.0267	0.539	0.078	1.08	0.070	0.111	0.188	1.87	. . .	. . .	(0.0014)	0.0068 + Ga, Sb, Zn	35	30
	* **12DB E187-1(D)**	0.195	0.026	0.025	0.014	1.354	0.096	1.186	0.035	0.161	. . .	. . .	0.046	0.018	. . .	0.014 + B, Co, Sn		
	* **12DB E192-1(D)**	0.1875	0.219	0.0010	0.0029	1.377	0.755	0.0717	0.482	0.0453	(0.003)	. . .	0.0308	(0.003)	(0.0009)	0.0118 + Co		
	* **12DB E193-1(D)**	0.139	0.404	0.0086	0.0063	0.972	1.178	0.182	0.347	0.598	(0.0019)	. . .	0.0257	0.0062	(0.0013)	0.0108 + Co, Nb		
Wrought	* **12M BS CCS-2**	0.200	0.310	0.040	0.046	0.885	0.314	0.269	0.100	0.096	0.080	0.042	0.038	0.016	0.037	(0.0006) + B, Co, Nb,Pb, Sb, Sn, Ti	38	19

1.2.4 Calcium Treated Steel

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	Al	As	B	Ti	Ca	N	Size (mm) Ø	H
Wrought	* **12DB E194-1(D)**	0.1532	0.431	0.00059	0.0097	1.188	0.3417	0.733	0.2857	0.0751	0.0243	0.0837	0.0042	0.0020	. . .	0.0026	0.0115	35	30
Wrought	* **12TI 1667**	0.679	0.240	0.0017	0.0135	0.668	0.0188	0.235	(0.0013)	0.0115	0.0012	0.0216	0.0016	(0.0002)	0.0014	0.0019	0.0048	37	25

1.3.2 Austenitic Stainless Steel

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	V	Nb	Sn	Ag	N	Typical Alloy Type	Size (mm) Ø	H
Wrought	**13MT 304**	0.063	0.56	0.023	0.026	0.78	9.60	18.57	0.33	0.34	0.20	0.037	0.043	0.017	0.0007	. . .	AISI 304	38	14
	13MT 305	0.067	0.55	0.022	0.025	1.85	11.95	18.58	0.45	0.29	0.22	0.078	. . .	. . .	. . .	. . .	AISI 305		
	13MT 316	0.061	0.69	0.023	0.029	1.67	12.61	17.60	2.45	0.25	0.14	0.051	. . .	0.006	0.0005	. . .	AISI 316		
Wrought	* **13S 650-13**	0.053	0.30	(0.0048)	0.024	0.48	0.18	16.70	0.013	0.020	0.017	. . .	. . .	. . .	. . .	0.0084		35	30
	* **13S 651-13**	0.018	0.42	0.0027	0.026	1.81	10.20	18.42	0.24	0.16	0.13	. . .	. . .	. . .	. . .	0.0507			
	* **13S 652-13**	0.044	0.42	0.0027	0.031	1.73	11.38	16.56	2.13	0.20	0.18	. . .	. . .	. . .	. . .	0.0084		set only	
	* **13S 653-13**	0.044	0.40	0.0006	0.033	1.80	13.96	22.43	0.20	0.16	0.20	. . .	. . .	. . .	. . .	0.0554			
	* **13S 654-13**	0.046	0.40	0.0006	0.026	1.69	19.42	24.79	0.23	0.15	0.15	. . .	. . .	. . .	. . .	0.0200			
	* **13S 655-13**	0.036	0.62	0.0043	0.028	1.81	9.52	17.34	0.22	0.20	0.17	. . .	0.55	. . .	. . .	0.0101			

1.3.3 Co/Ni and Maraging Steels

		C	Si	S	P	Mn	Ni	Cr	Mo	Co	Al	Ti	B	Cu	Fe	Alloy Type	Size (mm) Ø	H
Wrought	**13MT 250**	0.002	0.008	0.002	0.003	0.006	18.44	0.008	4.88	7.54	0.058	0.41	0.0024	0.008	. . .	Maraging 250	38	14
	13MT 300	0.005	0.030	0.004	0.005	0.032	18.51	0.034	4.97	9.07	0.12	0.69	0.0020	0.047	. . .	Maraging 300		
	* **13MT 045A**	0.228	<0.010	0.0004	0.001	0.002	11.38	3.12	1.18	13.39	. . .	. . .	. . .	0.006	70.70	Aermet 100-type	38	14

1.3.4 Martensitic Stainless Steel

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	V	Ti	W	Sn	Typical Alloy Type	Size (mm) Ø	H
Wrought	**13MT 410**	0.11	0.27	0.023	0.015	0.48	0.34	12.04	0.053	0.079	0.023	0.025	0.015	. . .	0.006	AISI 410	38	14
Wrought	* **13DB E288-1(D)**	2.08	0.260	(0.0012)	0.024	0.292	0.298	12.00	0.103	0.060	0.018	0.055	0.020	(0.682)	(0.0043)		35	30
	* **13DB E291-1(D)**	0.903	0.907	0.0087	0.0168	0.808	0.563	17.10	2.10	0.0711	0.0233	0.388	. . .	. . .	. . .			

1.3.6 Precipitation Hardening Steel

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Ti	Nb	B	N	Typical Alloy Type	Size (mm) Ø	H
Wrought	**13MT 450**	0.036	0.29	0.006	0.014	0.39	6.36	15.20	0.80	1.49	0.16	. . .	0.67	. . .	0.028	Custom 450 Stainless	38	19
	13MT 455	0.012	0.13	0.005	0.010	0.074	8.22	11.37	0.027	2.32	. . .	1.18	0.28	0.0024	0.002	Custom 455 Stainless		
	13MT 630	0.036	0.63	0.013	0.018	0.39	4.20	15.94	0.11	3.25	0.11	. . .	0.36	0.0018	0.028	Custom 630		

1.3.7 High-Nitrogen Stainless Steel

		C	Si	S	Mn	Ni	Cr	Mo	Cu	Al	Nb	V	N	Size (mm) Ø	H
Chill Cast	***13X NSC5**	0.495	1.15	0.0095	2.45	4.17	22.5	0.002	0.735	0.32	2.30	0.025	0.260	40	17

1.3.8	Various High Alloy Steels	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	V	Ti	B	Others	Typical Alloy Type	Size (mm) Ø	H
	* 13MT 123A	0.003	0.031	<0.0005	0.007	0.035	11.10	11.67	0.92	0.010	0.016	0.014	1.58	0.0021	Fe 74.72	Custom 465 Stainless	38	x 19
Wrought	13MT 20Cb-3	0.034	0.38	0.003	0.017	0.19	33.55	19.63	2.25	3.28	0.035	0.053	. . .	0.0023	Nb 0.86	20 Cb-3 Stainless	38	x 19
Wrought	* 13DB E289-1(D)	0.0489	0.531	0.0027	0.0114	1.016	24.68	14.63	1.102	. . .	0.065	0.260	2.01	0.0044	Al 0.199, Sn 0.111		35	x 30

1.4.1	Tool Steel	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	W	V	Size (mm) Ø	H
Wrought	14MT A2	0.95	0.40	0.004	0.010	0.72	0.10	5.13	1.05	0.06	. . .	. . .	0.22	38	x 19
	14MT D2	1.53	0.40	0.005	0.013	0.48	0.10	11.46	0.75	0.04	0.02	<0.01	0.89		
	14MT H13	0.39	1.05	0.005	0.015	0.30	0.10	5.23	1.36	0.061	. . .	. . .	1.02		
	14MT M1	0.80	0.22	0.005	0.012	0.30	0.12	3.91	8.22	0.087	. . .	1.58	1.05		
	14MT M10	0.88	0.30	0.004	0.015	0.27	0.14	3.97	7.89	0.061	0.012	<0.05	1.99		
	14MT M2	0.82	0.27	0.004	0.012	0.33	0.25	4.03	4.96	0.06	0.05	6.47	1.81		
	14MT M7	1.00	0.34	0.003	0.012	0.29	0.10	3.60	8.49	0.066	. . .	1.78	2.02		
	14MT O1	0.91	0.36	0.004	0.009	1.27	0.06	0.49	0.07	0.05	. . .	0.51	0.25		

1.4.2	High Speed Steel	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	W	V	N	Size (mm) Ø	H
Wrought	* 14DB E290-1(D)	0.911	0.072	0.0160	0.0160	0.244	0.329	4.18	4.83	0.081	5.12	6.27	1.91	0.0325	35	x 30

1.4.5	High Manganese Steel	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Al	V	Sn	N	Nb	Fe	Size (mm) Ø	H
	* 14MT 035A	0.102	0.59	0.002	0.023	12.04	1.81	18.48	0.28	0.17	0.037	<0.004	0.058	0.003	0.33	0.004	65.91	38	x 19
	* 14MT 129A	0.030	0.40	<0.001	0.022	9.31	6.86	19.62	0.25	0.152	0.102	0.014	0.144	. . .	0.264	0.025	62.62		

1.4.8	Free Machining Stainless Steel	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Co	V	W	Se	Alloy Type	Size (mm) Ø	H
Wrought	14MT 303	0.070	0.58	0.31	0.029	1.64	9.08	17.78	0.41	0.49	0.007	0.16	0.044	. . .	. . .	AISI 303	38	x 19
	14MT 303-Se	0.048	0.61	0.013	0.14	0.76	8.89	17.84	0.39	0.15	. . .	0.16	. . .	0.42	0.30	AISI 303-Se		
	14MT 416	0.088	0.63	0.36	0.018	0.52	0.24	13.15	0.065	0.004	0.005	0.019	0.025	. . .	. . .	AISI 416		

1.4.9	Silicon Steel	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Al	As	Ti	N	Size (mm) Ø	H
Wrought	* 12DB E191-1(D)	0.013	3.140	0.0017	0.011	0.025	0.018	0.025	(0.0021)	0.0080	0.397	0.0031	0.009	0.0026	35	x 30

1.4.11	High Ni Calibration Series	C	Si	S	P	Ni	Co	Cr	Cu	Al	Fe	Size (mm) Ø	H
Chill Cast	14X FeNi20	0.012	1.59	0.0024	0.006	19.9	0.98	(0.015)	0.06	(0.002)	(rem)	40	x 15
	14X FeNi25	0.014	(0.009)	0.64	0.010	24.9	0.789	0.033	0.027	0.53	(rem)		
	14X FeNi35	0.056	0.149	0.093	0.030	34.7	0.345	0.08	0.039	(0.001)	(rem)		
	14X FeNi40	0.074	0.068	1.22	0.014	40.3	1.02	0.05	0.063	2.61	(rem)		
	14X FeNi45	0.0056	1.04	0.021	0.041	46.0	0.62	0.11	0.077	1.10	(rem)		

2.2	Ni/Cr 'Nimonic' Type	C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	Ti	V	Nb	Al	B	Ni	Size (mm) Ø	H
	*22MT 122A	0.061	0.012	<0.001	0.001	0.007	0.007	1.31	19.89	0.015	0.007	2.55	0.118	0.01	1.62	0.0036	74.07	38	x 19

3.1.7	Leaded Brass	Sn	Pb	Zn	Fe	Ni	Al	P	As	Sb	Mn	Ag	Bi	Te	Cd	Co	Cu	Size (mm) Ø	H
	*31DB 375	0.2090	2.90	38.02	0.207	0.1053	0.0270	(0.00086)	0.0231	0.0122	0.0222	0.0166	0.00686	0.00538	0.00859	0.01964	58.32	40	x 30

3.2.9	Bronze	Sn	Pb	Zn	Fe	Ni	Al	Si	As	Mn	Sb	P	S	Cr	Co	Cd	Cu	Size (mm) Ø	H
	* 32DB 374	7.60	0.00083	0.00404	0.0040	0.00327	(<0.0001)	(<0.001)	(0.00043)	0.00043	(0.00063)	0.1697	(0.0013)	(<0.0001)	(<0.0001)	(<0.0001)	92.22	40	x 30
	* 32DB 377	5.92	0.00449	0.01006	0.01042	0.01074	0.00451	(0.0134)	(<0.001)	0.00921	0.00130	(<0.001)	(0.00068)	0.00669	(<0.0002)	(<0.0001)	94.04		
	* 32DB 378	5.74	0.00042	(0.00074)	0.0182	0.00183	(<0.0001)	(<0.001)	0.00995	(0.000074)	0.00861	0.00602	0.00091	0.0311	0.0089	0.01007	94.13		

3.7.1	Various Copper Base Alloys	Sn	Pb	Zn	Fe	Ni	Cu	Size (mm) Ø	H
	37X Alloy7	2.30	5.32	0.38	1.72	30.7	59.3	40	x 11
	37X Alloy8	10.4	21.0	0.17	0.23	5.01	63.2	40	x 10

3.8	Residuals in Pure Copper - Rod	Pb	Zn	Fe	Ni	As	Bi	Sb	Ag	Te	Sn	Se	S	O	Size (mm) Ø	H
	*38A SSC-1	0.00653	0.00333	0.00392	0.00176	0.000116	0.00011	0.000264	0.00188	0.000457	0.00549	0.000728	0.00196	0.0216	8	x 300

3.8	Residuals in Pure Copper - Discs	All elements ppm													
		Sn	Pb	Zn	Fe	Ni	As	Bi	Sb	Co	Ag	Cd	Si	Mn	Al
	39FO Cu166	1.2	1.3	1.2	(9.5)	2.3	1.8	1.1	1.3	1.0	10.8	0.93	3.2	1.3	1.5
	39FO Cu167	1.3	1.6	1.0	2	1.5	1.6	1.6	1.9	0.8	11.9	0.4	1.4	1.5	1.5
	39FO Cu168	4	4.2	3.2	5.3	6.2	4.8	3.5	4.6	4	14	3.8	5.8	3.0	3.1
	39FO Cu169	4	4.0	2.9	5.1	4.9	3.5	3.6	3.8	2.9	13	2.3	4.1	3.0	3.7
	39FO Cu170	10	11	8.4	12	13.5	11.1	11	9.3	9.5	14	5.8	12.4	10	8.4
	39FO Cu171	100	93	<0.1	99	2.4	100	0.11	33.5	<0.02	33	<0.05	<1	0.2	25
	39FO Cu172	<0.1	32	32	33	32	4.7	97	94	<0.02	104	<0.05	96	<0.2	<0.2
	39FO Cu173	30	1.6	0.4	3.7	3.0	3.5	28	0.85	30	18	<0.05	4	0.3	91
	39FO Cu174	0.08	1.1	60	1	99	29	0.1	0.54	0.05	11	77	31.4	100	1.2
	39FO Cu175	0.30	0.91	1.3	0.8	2.5	2.4	0.1	0.70	99	16	15	1	1.3	3.1
	39FO Cu176	0.22	0.32	0.17	1.3	0.5	1.0	0.2	1.39	<0.02	21	0.01	<1	<0.2	<0.3
	39FO Cu182	<0.05	0.05	1.14	2.7	0.35	0.28	<0.02	0.25	0.02	10.9	<0.01	<1	0.11	0.5

continued

3.8	Residuals in Pure Copper - Discs (Continued)	All elements ppm														
		Sn	Pb	Zn	Fe	Ni	As	Bi	Sb	Co	Ag	Cd	Si	Mn	Al	
	39PN CS1	52.93	60.48	24.13	18.39	46.79	2.27	1.08	3.03	0.58	53.05	0.99	(3.0)	28.98	. . .	
	39PN CS2	33.65	38.64	8.91	30.54	26.65	7.85	6.23	7.51	3.60	45.62	7.37	(9.38)	35.28	. . .	
	39PN CS3	13.34	13.26	31.30	28.27	11.11	13.83	12.17	12.97	7.36	38.90	13.40	(22.2)	12.58	. . .	continued
	39PN CS4	6.21	7.58	44.02	82.0	7.15	42.18	39.64	36.76	24.29	237	35.48	(46.48)	8.32	. . .	
	39PN CS5	0.85	4.99	100.6	90.9	4.39	70.5	59.7	63.9	37.5	320	66.1	(54.8)	4.25	. . .	
	39PN CS6	10.6	(0.36)	1.43	20.83	0.80	0.22	<0.2	1.02	(0.19)	8.48	(0.059)	. . .	0.71	. . .	continued
	39PN CS7	0.49	0.86	1.24	4.90	4.37	0.81	<0.9	0.93	0.093	13.70	(0.019)	<1	2.15	. . .	
	***39DB 366**	111	10.8	15.6	23.4	3.2	1.11	(<0.3)	0.99	. . .	7.9	0.27	. . .	. . .	. . .	continued
	***39DB 376**	247.3	236	217.3	234.6	209	199.9	200	202	207.9	163.0	186.1		205.9	(181.5)	

	Continuation	All elements ppm											Size (mm)	
	from above	Mg	S	P	Cr	Se	Te	B	Zr	Li	Ti		Ø	H
	39FO Cu166	1	2	1.1	1.3	1.2	1.3	1.2	0.8	2.4	1.1		40 x 25	
	39FO Cu167	1.9	12	1.5	1.5	9.7	7.2	2.6	0.7	(6.4)	<0.5			
	39FO Cu168	3.7	3.5	3.4	3.4	4	3.2	3.7	2.3	7.8	4			
	39FO Cu169	3.1	3.5	3.1	4.5	2.9	3.6	3.1	2.1	(9)	1			
	39FO Cu170	7.9	12	11	9.6	7.9	(10)	5.2	8	8	<0.5			
	39FO Cu171	0.4	6	<0.5	100	<0.5	33	. . .	23	. . .	. . .			
	39FO Cu172	0.2	7	<0.5	0.7	<0.5	<0.1	. . .	<0.05	. . .	78			
	39FO Cu173	100	3.8	89	29	<0.5	0.1	. . .	0.10	69	. . .			
	39FO Cu174	0.8	35	0.35	0.48	38	0.2	. . .	(80)	. . .	20			
	39FO Cu175	26	89	31.5	0.25	90	85	30	0.12	125	2.5			
	39FO Cu176	1.0	10.5	<0.5	0.08	<0.5	0.12	. . .	4.3	. . .	. . .			
	39FO Cu182	0.2	2	<0.1	0.19	0.16	0.05	. . .	(0.03)	<0.1	. . .			
	39PN CS1	. . .	65.91	57.66	0.33	61.53	2.11	(1.1)	. . .	. . .	. . .		40 x 25	
	39PN CS2	. . .	44.88	33.75	35.83	38.99	5.62	(2.83)	. . .	. . .	. . .			
	39PN CS3	. . .	18.79	12.11	10.93	15.41	10.56	(4.19)	. . .	. . .	. . .	set only		
	39PN CS4	. . .	41.33	6.28	6.96	6.68	32.86	(21.73)	. . .	. . .	. . .			
	39PN CS5	. . .	12.00	2.04	1.03	0.94	49.8	(35.2)	. . .	. . .	. . .			
	39PN CS6	. . .	5.39	(1.47)	0.24	<1	<0.05	<0.5	. . .	. . .	. . .		40 x 25	
	39PN CS7	. . .	7.02	(2.4)	19.72	<1	<0.05	<0.5	. . .	. . .	. . .			
	39DB 366	. . .	8.7	263	. . .	(<1.1)	(<0.3)	. . .	. . .	. . .	. . .		40 x 30	
	39DB 376	124	133	203	(400)	210	215		42.2		(4.5)			

4.1	Zinc with Impurities																	Size (mm)	
		Pb	Mg	Al	Cd	Fe	Sn	Cu	Mn	Ni	Cr	Sb	Bi	In	Tl	Ag	As	Ø	H
Cast	***41X 0336 Zn6**	1.82	0.0008	0.106	0.0140	0.08	0.0025	0.021	0.0010	0.0019	0.230	0.123	0.012	0.013	0.0055	0.0019	. . .	50 x	20
Cast	***41X Z6**	0.033	<0.0001	0.0100	0.0090	0.002	0.0035	0.0092	0.0002	0.0002	<0.0005	. . .	0.0122	0.0225	(0.0004)	. . .	. . .	50 x	20
Cast	***41X GLV7**	0.083	. . .	0.402	0.0006	0.003	0.0007	0.024	0.0026	0.0060	0.0010	0.003	0.011	. . .	. . .	. . .	0.0015	50 x	20

4.1	Zinc/Aluminium/Copper							Size (mm)	
		Pb	Mg	Al	Cd	Fe	Sn	Cu	Ø H
Cast	***43A NZA-1**	0.0030	0.020	28.70	0.00098	0.046	0.0069	1.51	50 x 12
	***43A NZA-2**	0.0076	0.029	23.81	0.0047	0.021	0.0045	3.00	
	***43A NZA-3**	0.0045	0.0049	25.99	0.0064	0.066	0.0034	2.00	
	***43A NZA-4**	0.0101	0.0106	26.65	0.0029	0.027	0.0087	2.45	
	***43A NZA-5**	0.0012	0.021	10.85	0.0095	0.016	0.0017	1.04	
	***43A NZA-6**	0.0809	0.00037	7.54	0.0147	0.0105	0.0051	3.17	
	***43A NZA-7**	0.0136	0.052	13.17	0.00020	0.016	0.0116	0.212	

5.2	Residuals in Al													Size (mm)	
		Cu	Mg	Si	Fe	Mn	Zn	Ti	Cr	Ga	V	B	Others	Ø	H
	***52DB 310**	0.00169	0.994	0.0797	0.0705	0.00307	0.0086	0.00301	0.00090	0.01152	0.00444	(0.0006)	Be, Ca, Cd, Li, Pb, Sn, Zr	60 x	25
	***52DB 312**	0.0419	0.410	0.415	0.185	0.0416	0.0290	0.0288	0.0276	0.0115	0.00615	. . .	Bi, Cd, Pb, Sr, Zr		

5.5	Al/Si/Cu												Size (mm)	
		Cu	Mg	Si	Fe	Mn	Ni	Zn	Sn	Ti	Pb	Others	Ø	H
	***55DB 306**	2.636	0.293	8.57	1.140	0.330	0.296	0.887	0.096	0.152	0.180	. . .	60 x	25
	***55DB 314**	2.071	0.1805	11.49	0.757	0.400	0.221	1.195	0.199	0.1638	0.221	As, Be, Bi, Cd, Co, Ga, Sb, V, Zr		

5.9	Al/Zn/Mg/Cu												Size (mm)	
		Cu	Mg	Si	Fe	Mn	Ni	Zn	Ti	Cr	Zr	Be	Ø	H
	***59DB 308**	1.315	2.290	0.0707	0.1634	0.0342	0.0122	5.67	0.0285	0.1962	0.0078	0.00022	60 x	25

5.15	Aluminium Master Alloys							Size (mm)	
		Ti	B	Si	Fe	Zn	V	Ø	H
Cast	**515X AlTi8**	7.4	<0.005	0.35	0.49	0.0055	0.19	40 x	15
	515X TiB-1	4.2	0.76	0.07	0.115	0.010	0.075		
	515X TiB-2	3.9	0.11	0.25	0.65	0.0085	0.065		

6.5	Mg/Al/Zn														Size (mm)	
		Al	Zn	Mn	Zr	Cu	Si	Fe	Ni	Sn	Pb	Ag	Sr		Ø	H
Cast	*65X MGA7	9.38	0.66	0.285	(0.0008)	0.0010	0.006	0.0103	0.0009	<0.002	<0.002	<0.0005	0.015		40	x 17

6.9	Mg/Y/Rare Earths															
		Al	Zn	Mn	Cu	Fe	Ni	Pb	Li	Zr	Y	Nd	Ce	La	Pr	
Cast	*69X MGY1	(0.0019)	0.121	0.0108	0.0015	0.0021	(0.0005)	0.014	0.119	0.38	4.64	2.26	0.029	0.166	0.059	continued

	Continuation from above	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Size (mm) Ø	H
	69X MGY1	0.09	(0.004)	0.284	0.045	0.313	0.065	0.13	(0.013)	0.078	0.007	40	x 16

7.1	Tin with Impurities														Size (mm)	
		Sb	As	Bi	Pb	Cu	Fe	Ni	Al	Cd	Zn	In	Co	Ag	Ø	H
Cast	71 MF NF54-1	0.0065	0.0105	0.0026	0.023	0.0107	0.003	0.0018	(0.0003)	0.0003	(0.0002)	0.0053	(0.002)	0.006	37	x 12
	71 MF NF54-2	0.011	0.082	0.0046	0.148	0.047	0.014	0.0033	(0.008)	0.0006	. . .	0.013	0.002	0.010		
	71 MF NF54-3	0.020	0.13	0.010	0.41	0.15	(0.018)	0.012	(0.018)	0.0009	(0.001)	0.02	0.008	0.032	set only	
	71 MF NF54-4	0.045	0.27	0.022	0.72	0.29	(0.023)	0.024	. . .	0.005	(0.0003)	0.043	0.02	0.063		
	71 MF NF54-5	0.095	0.47	0.038	1.0	0.52	. . .	. . .	. . .	0.01	(0.016)	0.098	. . .	0.10		

7.4	Tin-base (Lead-Free) Solders								Size (mm)	
		Cu	Ag	Pb	Sb	Bi	Au	Al	Ø	H
Cast	*74X CA1 *	0.69	0.41	0.075	0.015	0.012	0.0045	0.013	40	x 15
	*74X CA3 *	0.06	3.10	0.040	0.025	0.020	0.0085	0.005		

* the values for these products are approximate, as certification is still underway.

Cast	74 MF NF46-3X	0.19	3.1	0.043	0.205	0.05	(0.015)			37	x 12
	74 MF NF46-4X	0.096	4.1	0.059	0.11	0.095	(0.007)		set only		
	74 MF NF46-5X	0.030	5.0	0.21	0.059	0.25	(0.017)				

8.2	Lead/Silver								Size (mm)	
		Sn	Sb	Bi	Cu	As	Ag	Zn	Ø	H
Cast	82 MF NF32-30X	0.63	0.43	0.045	0.22	(0.005)	1.96	(0.001)	37	x 12
	82 MF NF32-31X	1.04	0.24	0.10	0.067	0.016	1.57	(0.0025)	set only	
	82 MF NF32-32X	1.25	0.11	0.30	0.52	0.023	0.55	(0.005)		
Cast	82 MF NF33-1.5X	0.043	0.43	0.05	0.25	0.0040	1.5	0.011	37	x 12
	82 MF NF33-2.5X	0.09	0.20	0.10	0.04	0.010	2.3	0.0084	set only	
	82 MF NF33-3.5X	0.005	0.09	0.20	0.08	0.017	3.47	0.0063		
Cast	82 MF NF34-4.5X	0.049	0.42	0.051	0.25	(0.005)	4.54	(0.001)	37	x 12
	82 MF NF34-5.5X	0.081	0.28	0.10	0.14	(0.01)	5.43	(0.0025)	set only	
	82 MF NF34-6.5X	0.19	0.11	0.22	0.81	(0.02)	6.65	(0.005)		

8.3	Lead with Impurities													Size (mm)	
		Sn	Sb	Bi	Cu	As	Ag	Zn	Cd	Ni	Fe	In	Cu	Ø	H
Wrought	83 MF NF44-A	<0.003	<0.003	0.00086	0.00088	0.00072	0.0013	0.0005	0.0021	0.00072	<0.005	<0.001	0.00037	37	x 12
	83 MF NF44-B	0.0030	0.0054	0.0051	0.0058	0.0059	0.0050	. . .	0.00070	0.0036	<0.005	0.0014	. . .		
	83 MF NF44-C	0.059	0.018	0.021	0.016	0.015	0.015	. . .	0.016	0.0013	<0.005	0.0026	0.0009	set only	
	83 MF NF44-D	0.13	0.059	0.053	0.027	0.055	0.033	. . .	0.036	. . .	. . .	0.021	. . .		
	83 MF NF44-E	0.56	0.60	0.49	0.042	0.53	0.19	0.0025	0.12	. . .	. . .	. . .	. . .		
	83 MF NF44-F	1.05	0.89	0.77	0.064	. . .	0.65	0.0015	0.53	. . .	. . .	0.30	. . .		

8.4	Lead/Tin/Calcium Battery Alloys							Size (mm)	
		Sn	Bi	Cu	Ag	Al	Ca	Ø	H
Cast	*84DB 101	0.293	0.0167	0.00173	0.00288	0.0257	0.1436	50	x 30
	*84DB 102	0.895	0.0148	0.00109	0.00248	0.0124	0.0705		

8.5	Various Lead Alloys														Size (mm)	
		Sn	Sb	Bi	Cu	As	Ag	Ni	Cd	Zn	Te	Se	Fe	S	Ø	H
Cast	*85X CADH	0.196	2.03	0.0174	0.029	0.191	0.0043	0.0023	2.06	0.0035	0.0021	0.004	0.0003	<0.001	40	x 15

9.1	Tin/Lead Solders															Size (mm)	
		Sn	Sb	Bi	Cu	As	Ag	Fe	Zn	Cd	Ni	Au	In	Al	Pb	Ø	H
Cast	91 MF NF43-9X	9.5	0.015	0.011	0.001	0.0009	0.002	(0.0002)	(0.0002)	0.0007	(0.0002)	0.005	0.005	(0.0005)	(rem)	37	x 12
	91 MF NF43-10X	10.0	0.11	0.012	0.002	0.003	0.004	(0.0003)	(0.0001)	0.002	(0.0003)	0.009	0.011	(0.002)	(rem)	set only	
	91 MF NF43-11X	11.3	0.20	0.040	0.003	0.004	0.010	(0.010)	(0.010)	0.009	(0.0004)	0.012	0.036	(0.004)	(rem)		
	91 MF NF1-60X	60.0	0.0034	<0.0005	0.0006	<0.0005	0.0006	0.0031	0.006	0.0006	<0.0005	0.00096	<0.001	<0.0005	(rem)	37	x 12
	91 MF NF1-62X	62.3	0.021	0.0057	0.0012	0.00084	0.0012	0.012	0.0095	0.0020	0.0006	0.0056	0.0010	<0.001	(rem)	set only	
	91 MF NF1-63X	63.4	0.050	0.0095	0.0045	0.0065	0.0050	0.0052	0.015	0.0049	0.0085	0.0090	0.0091	<0.001	(rem)		
	91 MF NF1-64X	64.5	0.095	0.019	0.0090	0.010	0.0085	0.010	0.065	0.010	0.0042	0.019	0.040	<0.001	(rem)		
	91 MF NF2-A10	63.1	0.11	0.040	0.047	0.009	0.015	(0.005)	(<0.003)	0.004	0.001	0.047	0.005	<0.002	(rem)	37	x 12
	91 MF NF2-A11	62.6	0.31	0.098	0.091	0.028	0.031	(0.012)	(<0.003)	0.011	0.006	0.11	0.018	<0.002	(rem)	set only	
	91 MF NF2-A12	63.4	0.45	0.22	0.28	0.032	0.12	(0.021)	(0.015)	0.018	0.015	0.23	0.030	<0.002	(rem)		
	91 MF NF31-33X	8.6	0.20	0.0079	0.02	. . .	2.50	. . .	. . .	. . .	. . .	. . .	. . .	. . .	(rem)	37	x 12
	91 MF NF31-34X	10.0	0.085	0.010	0.014	. . .	2.15	. . .	. . .	. . .	. . .	. . .	. . .	. . .	(rem)	set only	
	91 MF NF31-35X	10.7	0.048	0.032	0.0045	. . .	1.10	. . .	. . .	. . .	. . .	. . .	. . .	. . .	(rem)		

10.1	Titanium Alloy	Al	Mo	Mn	Sn	Zr	V	Fe	Nb	B	Cr	Cu	W	Ni	Co	Size (mm) Ø H
	*101F 089	5.97	. . .	. . .	. . .	. . .	3.976	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	40 x 20
	*101F 090	(0.074)	0.0488	0.0314	(0.071)	(0.0436)	(0.057)	0.0563	(0.0492)	0.00282	0.0533	0.0513	(0.050)	0.0667	0.0501	40 x 20

11.2	Cobalt with Cr & Mo	C	Si	Mn	Ni	Cr	W	Mo	Fe	Cu	V	P	S	B	N	Typical Alloy Type	Size (mm) Ø H
	*112MT 074A	0.089	0.59	0.78	0.150	27.12	<0.01	5.47	(0.93)	0.005	0.005	0.002	0.002	(<0.001)	0.17	CCM-type	38 x 14

16.1	Cast Iron Setting-up Samples	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	Ti	Al	Sn	Mg	Ca	Size (mm) Ø H
	161M BS SUCCA	3.53	1.99	0.012	0.020	0.64	0.048	0.045	0.005	0.13	0.010	0.003	0.011	0.003	0.033	0.0023	34 x 17
	161M BS SUCCB	3.45	2.05	0.011	0.021	0.60	0.059	0.069	0.006	0.098	0.010	0.003	0.013	0.003	0.031	0.0032	34 x 17

16.2	Low-Alloy Steel Setting-up Samples	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Sn	Al	Nb	W	
	162M BS LAS11	0.005	0.060	0.007	0.077	1.60	0.062	1.26	0.80	0.024	0.20	0.048	0.18	0.10	0.10	continued
	162M BS LAS12	0.71	1.00	0.062	0.007	0.31	1.30	0.057	0.042	0.42	0.023	0.006	0.045	0.007	0.018	

	Continuation from above	As	Ti	V	Zr	B	Ca	Pb	N	Ta	Sb	Size (mm) Ø H
	162M BS LAS11	0.033	0.074	0.40	0.009	0.0078	(0.0001)	(0.0001)	(0.0012)	0.07	0.004	40 x 30
	162M BS LAS12	0.007	0.010	0.010	0.002	0.0015	(<0.0001)	0.0002	(0.0020)	0.010	0.022	38 x 30

16.5.2	Copper Setting-up Sample	Sn	Pb	Zn	Fe	Ni	Bi	Se	As	Co	Sb	Mn	P	S	Cr	B	Size (mm) Ø H
	165X SEBSUS	11	0.5	10	0.4	1.4	6.4	1.2	0.15	0.5	0.2	0.002	0.1	0.02	0.005	0.001	42 x 20

16.8	Lead Setting-up Samples with Precious Metals	ppm Pt	ppm Pd	ppm Au	ppm Rh	ppm Ru	ppm Ir	ppm Ag	ppm Fe	ppm Bi	ppm Te	ppm As	ppm Sb	ppm Tl	ppm S	Size (mm) Ø H
Cast	168X PBSUSPM1	30	10	25	6	1	3	25	5	120	3	2	2	7	<1	44 x 40

C1.1.5	Various Cast Iron Chippings	C	Si	S	P	Mn	Ni	Cr	Cu	Mo	V	W	Co	Ti	Sn	Pb	N	Size
	*C11S 120-1	2.85	1.32	0.0095	0.053	0.70	0.12	0.28	0.29	. . .	0.007	. . .	. . .	0.006	. . .	. . .	0.0058	150g
	*C11X 152940	2.15	0.49	0.072	0.081	0.52	4.20	31.02	0.174	0.278	0.024	0.301	1.05	. . .	0.072	0.023	. . .	100g

C1.2.1	Plain Carbon Steel Chippings	C	Si	S	P	Mn	Cu	Al	N	Size
	*C12S 023-8	0.112	0.22	0.0067	0.020	0.48	0.010	(0.015)	(0.0037)	150g
	*C12S 030-7	0.196	0.24	0.0076	0.024	0.75	0.024	0.023	0.0033	150g
	*C12S 050-6	0.38	0.19	0.0057	0.013	0.50	0.008	0.023	0.0029	150g
	*C12S 057-6	0.52	0.19	0.0057	0.017	0.55	0.006	0.030	0.0030	150g
	*C12S 065-5	0.80	0.20	0.0060	0.0095	0.73	0.008	0.022	(0.0037)	150g

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	Al	Ti	Nb	As	N	Size
	*C12DB E030-4	0.456	0.318	0.021	0.018	0.603	0.042	0.117	. . .	0.061	. . .	0.042	. . .	. . .	0.012	0.0051	100g
	*C12DB E031-3	0.055	0.037	0.021	0.014	0.329	. . .	. . .	. . .	0.020	. . .	0.054	. . .	. . .	0.013	0.0050	100g
	*C12DB E032-2	0.271	0.282	0.0254	0.0129	0.556	(0.040)	(0.088)	. . .	0.085	. . .	. . .	. . .	. . .	0.020	0.0044	100g
	*C12DB E036-1	0.858	0.194	0.0095	0.0074	0.327	(0.058)	(0.091)	. . .	0.065	(0.019)	(0.015)	. . .	. . .	0.0233	0.0100	100g
	*C12DB E042-1	0.108	0.037	0.024	0.0057	0.666	0.029	0.016	. . .	0.041	. . .	0.010	. . .	0.054	. . .	0.0078	100g

C1.3.2	Austenitic Stainless Steel Chippings	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	V	Ti	Al	Nb	B	N	Size
	*C13S 651-14	0.046	0.67	0.0058	0.027	1.19	9.03	18.26	0.11	0.12	0.17	. . .	. . .	(0.002)	. . .	. . .	(0.0426)	150g
	*C13S 652-14	0.044	0.61	0.0020	0.032	1.34	10.62	16.86	2.07	0.086	0.20	. . .	. . .	(0.003)	. . .	. . .	0.0239	150g
	*C13S 654-10	0.042	0.82	0.0007	0.015	0.97	19.12	24.87	0.039	0.038	0.16	. . .	. . .	0.017	. . .	. . .	0.0393	150g
	*C13S 655-10	0.045	0.63	(0.0005)	0.024	0.96	9.75	17.53	0.033	0.045	(0.073)	. . .	. . .	(0.003)	0.49	. . .	0.0072	150g
	*C13DB E237-1	0.068	0.482	0.012	0.032	1.443	10.32	17.24	0.306	0.123	0.221	0.057	. . .	. . .	0.660	. . .	0.035	100g
	*C13DB E284-2	0.0201	0.537	0.0237	0.0258	1.745	10.72	16.811	2.111	0.1831	0.0525	0.0425	0.191	0.0027	(0.0028)	0.0026	0.0151	100g

C1.3.4-6	Other Stainless Steel Chippings	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	Ti	Co	Nb	Al	As	N	Size
	*C13S 670-3	0.008	0.55	(0.0005)	0.020	0.53	0.21	11.23	0.020	0.044	. . .	0.26	. . .	. . .	(0.055)	. . .	0.0064	150g
	*C13DB E226-1	0.416	0.514	0.0094	0.0207	0.434	0.139	13.67	0.024	. . .	0.022	. . .	. . .	. . .	. . .	. . .	0.0362	100g
	*C13DB E327-2	0.152	2.052	0.0046	0.0228	1.289	19.72	24.35	0.174	0.060	0.044	. . .	0.159	. . .	0.070	. . .	0.059	100g
	*C13X PH10	0.107	0.236	0.031	0.053	1.49	5.21	16.17	0.172	3.11	(0.006)	. . .	0.004	0.071	. . .	0.003	0.238	100g

C1.4.1 Tool Steel Chippings

	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	W	V	N	Size
* C14S 603-8	0.30	0.32	0.012	0.012	0.31	0.084	2.23	0.13	0.055	5.47	0.46	0.0250	150g

C1.4.2 High Speed Steel Chippings

	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	W	V	N	Size
* C14S 606-8	0.76	0.28	0.0008	0.016	0.31	0.065	4.00	0.58	0.027	0.12	17.16	0.83	0.0290	150g
* C14S 607-8	0.78	0.30	0.0031	0.026	0.35	0.052	3.97	0.54	0.025	4.59	17.48	0.84	0.0270	150g
* C14S 608-8	0.80	0.36	0.0028	0.025	0.33	0.044	3.99	0.41	0.017	9.09	17.03	0.99	0.0320	150g
* C14S 609-9	0.92	0.32	(0.0007)	0.026	0.30	0.16	4.01	4.84	0.048	4.66	6.11	1.85	0.0248	150g
* C14S 610-9	1.24	0.30	0.0029	0.018	0.32	0.100	4.04	3.06	0.040	9.61	9.07	3.26	0.0354	150g
* C14DB E227-1	0.950	0.272	0.022	0.016	0.236	0.114	4.25	2.64	0.124	...	3.03	2.44	0.040	100g

C1.4.3 Manganese Steel Chippings

	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	N	Size
* C14DB E235-1	0.912	0.094	0.0072	0.045	12.73	(0.08)	0.354	0.032	0.073	(0.012)	0.020	100g

C1.4.7 Leaded Steel Chippings

	C	Si	S	P	Mn	Ni	Cr	Cu	As	Pb	Sn	N	Size
* C14DB E039-2	0.107	0.011	0.310	0.083	1.274	0.051	0.048	0.117	0.018	0.207	0.016	0.0113	100g

C2.3/2.8 Nickel Alloy Chippings

	C	Si	S	P	Mn	Ni	Cr	Cu	Co	Ti	Al	Fe	Mg	Size
* C23S 680-3	0.051	0.44	0.0018	(0.0009)	0.95	32.80	20.96	0.20	0.40	0.42	0.51	(43.2)	...	150g
* C28S 683-2	0.049	0.39	0.0013	(0.0008)	0.32	73.43	15.82	0.051	(0.011)	0.013	0.12	9.66	0.013	150g

C3.1-3.9 Various Copper Alloy Chippings

	Sn	Pb	Zn	Fe	Ni	As	Mn	Sb	Bi	P	S	B	Se	Al	Ag	Cu	Size
*C31DB 223	0.089	2.13	38.82	0.091	0.0214	0.0084	(<0.001)	0.0040	0.0018	0.0003	0.0011	...	(<0.0001)	...	...	58.74	100g
*C31DB 224	0.066	1.13	39.40	0.136	0.038	0.0025	1.70	0.0026	0.0006	0.0112	0.0004	...	...	...	...	57.40	100g
*C31DB 229	0.00485	0.0192	36.63	0.01061	0.01114	0.00217	...	0.00072	...	(0.00106)	...	...	0.0034	...	...	63.334	100g
*C31X B40K	0.0075	0.0071	30.40	0.016	0.0119	(0.0015)	(0.0003)	(0.0009)	(0.0009)	...	...	0.0015	...	...	...	69.46	100g
*C31X 783520	0.202	2.08	32.88	0.077	0.0088	0.046	...	0.053	...	0.0149	...	...	...	0.199	...	64.34	100g
*C31X MNB10	0.105	1.44	29.37	0.268	0.053	...	0.188	...	...	...	...	...	...	0.596	...	67.77	100g
*C32DB 211	10.60	0.74	0.56	0.110	0.122	0.0213	0.0019	0.033	0.0020	0.0267	0.0211	...	0.00114	...	0.059	87.71	100g
*C32X SN10	11.75	5.18	0.804	0.0034	2.17	...	0.0018	0.006	...	0.0025	0.0064	...	...	(<0.002)	...	79.96	100g
*C33DB 227	6.01	4.12	3.46	0.129	0.284	0.081	...	0.160	0.0088	(0.0002)	0.122	...	0.0028	...	...	85.57	100g
*C33DB 228	9.76	1.24	3.32	0.036	0.109	0.024	(<0.001)	0.078	0.0086	0.019	0.036	...	0.0012	...	...	85.34	100g
*C39DB 365	(<0.0005)	0.00288	...	0.00223	0.01753	0.00298	(<0.0001)	0.00088	0.00294	...	(0.00077)	...	...	...	0.01027	99.937	100g

	Sn	Pb	Zn	Fe	Ni	Co	Al	Si	Mn	Bi	P	S	Ag	Mg	C	Cu	Size
* C33X GM80	4.03	6.78	6.21	0.298	0.115	...	0.0067	(0.0010)	0.0010	0.0138	0.0213	0.0055	0.105	...	...	82.3	100g
* C34X NS30	0.031	0.155	17.94	0.201	14.86	0.102	0.038	0.018	0.129	...	0.013	0.063	0.108	0.0011	0.014	66.30	100g

C4.1-4.3 Various Zinc Alloy Chippings

	Pb	Mg	Al	Cd	Fe	Sn	Cu	Mn	Ni	Cr	Sb	Bi	Si	Ti	Ag	As	Size
* C41X 0336Zn40B	2.87	0.179	1.39	0.638	(0.018)	2.38	0.874	0.038	0.0074	...	0.048	0.027	...	...	0.0023	0.0005	50g
* C42X Z30H	0.0060	0.0287	3.74	0.0048	(0.047)	0.0030	0.159	0.0256	0.0102	0.0020	0.003	...	0.015	...	...	...	50g
* C43X Z40B	(0.0022)	0.044	4.79	0.0025	(0.064)	(0.0023)	3.22	0.088	0.0286	0.0063	0.005	0.012	(0.0065)	0.0020	...	...	50g

17.1 N, O & H in Steel

	ppm N	ppm O	ppm H		Sample Type	Quantity
17S SS-1	5-10	410-450	...		0.5g pin	100
17S SS-2	10-20	100-120	...	Nominal ranges.	1.0g pin	100
17S SS-3	55-70	165-185	...	Exact values will be	1.0g pin	100
17S SS-4	135-145	10-15	...	supplied with product	1.0g pin	100
17S SS-8	10-20	580-640	...		1.0g pin	100
17S SS-5	...	...	6.5-8	Nominal range.	10g rod	10 rods
17S SMN-11	4-6	...	...	Nominal range.	chippings	150g
17S SMO-10	...	1691	...		0.5g pin	100
* 17S GS-3c	32	34.6	...		rod, 5mm Ø x 230mm	8 rods

17.3 Non-Metals in Copper	ppm O	ppm S	ppm P	Sample Type	Quantity
173DB 379/1	38	...	...	disc, 40mm Ø x 30mm	1
173DB 379/2	212	...	...	disc, 40mm Ø x 30mm	1
173DB 379/3	378	...	...	disc, 40mm Ø x 30mm	1
*173PN Cu10/I	3.8	...	...	6mm Ø Rod	240g
*173PN Cu600/I	581	...	...	6mm Ø Rod	220g
*173PN CuS-10	...	7.5	...	chippings	150g
*173PN CuS-20	...	23.1	...	chippings	150g
*173F 017A	...	...	6.9	disc, 42mm Ø x 30mm	1
*173F 017B	...	10.4	...	chippings	50g
173DB 373/1	...	...	33.8	disc, 50mm Ø x 30mm	
173DB 373/2	...	...	226.5	disc, 50mm Ø x 30mm	set only
173DB 373/3	...	...	455.7	disc, 50mm Ø x 30mm	

18.3 C, S & N in Steel	% C	% S	% N	Sample Type	Steel Type	Quantity
*18MT 088A	0.0151	0.00045	...	pin	T-302 HQ	200g
18S CS-01	0.93	0.006	...	0.5g ring, 8mm Ø		200 x 0.5g
18S CS-11	0.93	0.006	...	1.0g double ring, 8mm Ø		100 x 1.0g

19.2 Rocks	SiO_2	Al_2O_3	Fe_2O_3	MgO	CaO	Na_2O	K_2O	TiO_2	P_2O_5	L.O.I.	Type	Size
*192A 375/1	69.24	17.88	0.291	0.180	0.78	8.89	1.47	0.312	0.226	0.72	Soda Feldspar	100g

19.3 Soils	ppm Al	ppm Sb	ppm As	ppm Ba	ppm Be	ppm Cd	ppm Ca	ppm Cr	ppm Co	ppm Cu	ppm Fe	ppm Pb	ppm Mg	ppm Mn	
193GL 021-100	2725	4955	24.6	588	...	1.2	8427	10.7	(2.7)	4782	6481	(144742)	(2367)	174.2	
193GL 027-050	8537	3.28	12.4	166	2.73	12.0	5970	26.9	4.7	9.87	11173	51.9	2755	259	continued
193GL 6135	22700	...	70	305	1.4	...	23400	455	20	107	47500	411	9400	390	

Continuation from above	ppm Hg	ppm Mo	ppm Ni	ppm K	ppm Se	ppm Ag	ppm Na	ppm Sr	ppm Tl	ppm Sn	ppm V	ppm Zn	Type	Size
193GL 021-100	4.7	...	12.8	1006	...	6.5	380	...	(0.6)	(304)	(8.7)	545	Metals in Natural Soil	50g
193GL 027-050	3.80	(1.05)	10.5	2115	14.0	5.88	241	43.0	(4.81)	...	21.4	61.3	Metals in Natural Soil	50g
193GL 6135	2.9	...	291	16300	0.9	...	1700	...	...	...	139	345	Brick Works Soil	50g

19.4 China Clay	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	Na_2O	K_2O	Size
194GC AN41	54.8	41.5	0.71	0.05	0.16	0.41	<0.05	1.81	100g

20.2 Iron Ore	Total Fe	FeO	SiO_2	TiO_2	CaO	MgO	Al_2O_3	Na_2O	K_2O	Mn	P	S	Ni	Cr	V	Zn	Size
*202S 851-4	56.16	5.95	5.41	0.31	9.91	1.62	2.01	...	...	0.26	0.060	0.012	0.008	0.028	0.031	0.013	100g
*202S 853-1	65.41	(0.74)	2.29	0.14	2.49	0.49	0.54	0.030	0.098	0.042	0.043	(0.003)	0.009	0.018	0.19	(0.002)	100g

20.6 Noble Metal Ore	ppm Pt	ppm Pd	ppm Au	ppm Rh	ppm Ru	ppm Ir	% Cu	% Co	% Ni	Ore Type	Size
206SI MIM-C1	51.9	35.3	6.83	3.55	3.40	1.75	3.57	0.12	4.37	Pyroxenite Concentrate	120g
206SI MIM-O1	1.97	1.55	0.31	0.16	0.18	0.11	0.1134	0.0117	0.2104	Pyroxenite Ore	120g
206SI MIM-T1	0.51	0.43	0.14	0.054	0.065	0.08	0.0176	0.0083	0.0743	Pyroxenite Tailings	120g

20.6 Zinc Ore	Zn	Cu	Pb	Fe	Cd	Mg	F	Hg	Ore Type	Size
*206F 108	...	0.073	0.904	7.21	0.079	0.075	0.0063	0.00109	blende	200g
*206F 109	...	0.946	0.738	14.51	0.46	0.020	0.0081	0.000096	blende	200g
*206F 110	...	1.628	9.78	0.55	1.051	0.136	0.0055	0.01484	blende	200g
*206F 026	48.50	...	...	...	...	...	...	...	blende	10g
*206F 027	44.01	...	...	...	...	...	...	...	blende	10g
*206F 028	51.16	...	...	...	...	...	...	...	blende	10g
*206F 029	35.18	...	...	...	...	...	...	...	blende	10g
*206F 030	49.10	...	...	...	...	...	...	...	calcined calamine	10g
*206F 031	36.73	...	...	...	...	...	...	...	natural silicate	10g

22.6.2 Chrome Magnesite Refractory	SiO_2	Al_2O_3	Fe as Fe_2O_3	TiO_2	CaO	MgO	Na_2O	K_2O	Cr_2O_3	Li_2O	Mn_3O_4	Size
226GC AN11	8.85	13.5	11.6	0.11	1.46	39.5	0.10	0.06	24.2	0.03	0.16	100g

24.2 Coal

	C	H	S	N	P	Ash	Volatile Matter	GCV MJ/Kg	Specific Gravity	Size
*24SA CMT-001	...	...	0.50	...	...	14.50	24.50	...	...	150g
*24SA CMT-002	...	...	0.64	...	...	7.05	32.26	...	...	150g
*24SA CMT-003	67.35	3.83	0.93	1.64	0.120	17.51	28.02	...	...	150g
*24SA CMT-004	68.59	2.48	1.32	1.71	0.080	23.98	8.13	...	...	150g
*24SA CMT-005	72.72	4.46	0.81	1.87	0.070	10.94	32.02	...	...	150g
*24SA CMT-006	71.63	3.82	0.89	1.90	0.031	13.50	26.67	...	...	150g
*24SA CMT-007	73.13	4.04	0.54	1.77	0.100	13.24	26.75	...	...	150g
*24SA CMT-008	84.46	2.62	0.85	1.75	0.025	8.90	5.11	...	...	150g
*24SA CMT-009	73.60	3.91	0.70	1.76	0.114	13.48	25.21	...	...	150g
*24SA CMT-010	72.74	4.32	0.84	1.91	0.070	11.50	32.41	...	...	150g
*24SA CMT-011	77.20	3.45	1.60	2.17	0.029	13.72	11.73	...	...	150g
*24SA CMT-012	64.75	3.30	0.80	1.49	0.051	20.05	24.04	...	...	150g
*24SA CMT-013	73.83	4.64	0.70	1.93	0.005	10.90	32.48	...	...	150g
*24SA CMT-014	74.11	3.83	0.93	1.68	0.017	12.35	22.00	...	...	150g
*24SA CMT-015	72.02	3.56	0.33	1.62	0.051	14.41	23.34	...	...	150g

24.9 Coal Ash

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	TiO_2	K_2O	Na_2O	MnO_2	P_2O_5	SO_3	Size
* 24SA SABS101	41.00	22.80	12.11	9.31	2.52	1.32	1.03	1.18	0.06	0.90	5.80	30g
* 24SA SABS102	69.92	17.41	5.11	1.28	0.60	1.60	1.10	0.16	0.06	0.12	0.89	30g
* 24SA SABS103	39.88	34.35	2.34	9.30	2.05	1.94	0.82	0.22	0.06	2.69	4.32	30g
* 24SA SABS104	44.80	28.34	2.77	10.80	2.93	1.60	0.55	0.14	0.07	1.91	4.67	30g
* 24SA SABS105	66.85	25.48	1.60	1.05	0.77	1.25	1.38	0.13	0.01	0.11	0.32	30g

25.3 Metallo-Organic Concentrates

Sulfonate Stabilized			Sulfur-Free		
Element	Concentration %	Product Code	Element	Concentration %	Product Code
Aluminium	1%	**253 X AL**	Aluminium	3%	**2533 X AL S-F**
Antimony	6%	**253 X SB**	Antimony	2%	**2533 X SB S-F**
Barium	7%	**253 X BA**	Barium	13%	**2533 X BA S-F**
Bismuth	28%	**253 X BI**	Bismuth	5%	**2533 X BI S-F**
Boron	1%	**253 X B**	Boron	3%	**2533 X B S-F**
Cadmium	6%	**253 X CD**	Cadmium	10%	**2533 X CD S-F**
Calcium	2%	**253 X CA**	Calcium	5%	**2533 X CA S-F**
Cerium	12%	**253 X CE**	Cerium	5%	**2533 X CE S-F**
Chromium	2%	**253 X CR**	Chromium	3%	**2533 X CR S-F**
Cobalt	6%	**253 X CO**	Cobalt	8%	**2533 X CO S-F**
Copper	3%	**253 X CU**	Copper	6%	**2533 X CU S-F**
Iron	6%	**253 X FE**	Iron	4%	**2533 X FE S-F**
Lanthanum	3%	**253 X LA**	Lanthanum	3%	**2533 X LA S-F**
Lead	10%	**253 X PB**	Lead	20%	**2533 X PB S-F**
Lithium	1%	**253 X LI**	Lithium	2%	**2533 X LI S-F**
Magnesium	1%	**253 X MG**	Magnesium	3%	**2533 X MG S-F**
Manganese	6%	**253 X MN**	Manganese	8%	**2533 X MN S-F**
Molybdenum	5%	**253 X MO**	Molybdenum	5%	**2533 X MO S-F**
Nickel	8%	**253 X NI**	Nickel	5%	**2533 X NI S-F**
Phosphorus	11%	**253 X P**	Phosphorus	5%	**2533 X P S-F**
Potassium	4%	**253 X K**	Potassium	5%	**2533 X K S-F**
Silicon	18%	**253 X SI**	Silicon	18%	**2533 X SI S-F**
Silver	3%	**253 X AG**	Silver	3%	**2533 X AG S-F**
Sodium	2%	**253 X NA**	Sodium	3%	**2533 X NA S-F**
Strontium	9%	**253 X SR**	Strontium	10%	**2533 X SR S-F**
Tin	13%	**253 X SN**	Tin	5%	**2533 X SN S-F**
Titanium	10%	**253 X TI**	Titanium	5%	**2533 X TI S-F**
Vanadium	1%	**253 X V**	Vanadium	2%	**2533 X V S-F**
Yttrium	7%	**253 X Y**	Yttrium	3%	**2533 X Y S-F**
Zinc	2%	**253 X ZN**	Zinc	6%	**2533 X ZN S-F**
Zirconium	24%	**253 X ZR**	Zirconium	5%	**2533 X ZR S-F**

Stabilizer	**254X STAB -2**	**2544X STAB(SF)4**
Notes:	All concentrates are supplied in volume sufficient to contain 1g of the metal.	These concentrates are compatible with most petroleum-base solvents. A stabilizer is required when diluting or mixing these products