

MBH

Reference Materials



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Reference Materials Index

Each material within this catalogue has a unique identifier which incorporates the manufacturer's reference material number..

Catalogue numbers are displayed in the format [group] space [group] space {manufacturer's code} e.g., 11 M BSCC-3. The manufacturer's code is BSCC-3. This code will appear on the certificate of analysis.

The alpha-numeric string preceding the manufacturer's code is to assist with placement of the material in the relevant section of the catalogue.

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Please Note: If you are unable to locate materials within this catalogue to meet your needs please send the specification of the materials you require. We will search our extensive database of existing materials and offer options for your consideration.

We will quote to manufacture and certify materials to your specification - subject to discussion and feasibility.

1. Iron Base

Irons

Blocks/Discs

1.1.1 Low-impurity		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Al	Ti	N	Size (mm)					
															Ø	H				
CRM	11 DB E098-1(D)	0.0005	0.0005	0.0003	<0.0001	0.00008	...	0.0057	0.0008	...	...	...	...	0.00024	36-39 x 26					
	11 MI 27C	0.0012	(0.001)	0.0021	0.002	(0.001)	0.001	0.001	0.001	0.002	0.0008	<0.001	0.001	0.0005	continued					
CRM	11 A E097-1(D)	0.00025	<0.01	0.0022	0.0016	0.0064	0.0025	0.0016	<0.001	0.0020	<0.0025	...	<0.0015	0.0007	continued					
Continuation from above		V	Nb	B	Co	As	O	Pb	Ca	Size (mm)										
											Ø	H								
	11 MI 27C	0.0006	0.001	(0.0004)	0.002	<0.001	0.045	(0.0004)	<0.005	31 x 18		W								
	11 A E097-1(D)	<0.001	<0.001	0.0003	0.0037	0.0051	(0.05)	<0.0005	<0.0005	38 x 30		W								
1.1.2 Low P		C	Si	S	P	Mn	Cr	Size (mm)												
								W	D H											
CRM	11 A 651/4	2.66	0.541	0.100	0.249	0.92	(1)	50 x 42 x 12												
CRM	11 A 652/4	2.34	0.878	0.129	0.071	1.19	(1)	50 x 42 x 12												
CRM	11 A 653/4	3.10	1.22	0.050	0.023	0.110	(1)	50 x 42 x 12												
CRM	11 A 654/4	2.28	1.635	0.170	0.130	0.74	(1)	50 x 42 x 12												
CRM	11 A 655/4	1.90	2.110	0.076	0.180	0.44	(1)	50 x 42 x 12												
CRM	11 A 656/8	2.61	2.59	0.107	0.062	0.823	(1)	50 x 42 x 12												
CRM	11 A 657/8	2.93	3.02	0.024	0.100	0.062	(1)	50 x 42 x 12												
CRM	11 A 658/9	3.429	1.982	0.071	0.179	0.508	...	50 x 42 x 12												
CRM	11 A 659/8	3.96	1.40	0.039	0.025	1.00	(1)	50 x 42 x 12												
CRM	11 A 660/8	3.62	1.72	0.089	0.146	0.425	(1)	50 x 42 x 12												
1.1.3 High P		C	Si	S	P	Mn	Cr	B	Size (mm)											
									W	D H										
CRM	11 A 661/4	2.56	2.96	0.068	0.84	0.30	(1)	...	50 x 42 x 12											
CRM	11 A 662/4	2.95	2.33	0.087	0.30	0.76	(1)	...	50 x 42 x 12											
CRM	11 A 663/4	3.28	1.97	0.024	0.13	1.04	(1)	...	50 x 42 x 12											
CRM	11 A 664/4	2.84	2.71	0.112	0.44	0.57	(1)	...	50 x 42 x 12											
CRM	11 A 665/4	3.25	1.66	0.053	1.09	0.24	(1)	...	50 x 42 x 12											
									Ø	H										
	11 X HPC 1F	3.19	2.37	0.019	0.81	0.48	...	(0.003)	40 x 15											
CRM	11 X HPC 2J	3.15	1.55	0.055	1.85	0.88	...	...	40 x 15											
	11 X HPC 3G	3.54	0.91	0.064	2.17	0.83	...	(0.005)	40 x 15											
CRM	11 X HPC 4N	3.59	1.00	0.115	1.63	0.943	...	(0.001)	40 x 15											
1.1.4 Nodular/Ductile		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Mg	Ti	Al	V	Nb	Co	Others	Size (mm)		
																			W	D H
CRM	11 A 666/9	3.39	1.76	(0.005)	...	0.101	1.61	(1)	0.095	0.067	0.079	0.066	...	0.056	...	...	...	40 x 37 x 12		
CRM	11 A 667/9	2.85	2.77	(0.003)	...	0.190	1.38	(1)	0.003	0.499	0.068	<0.005	...	0.086	...	...	...	40 x 37 x 12		
CRM	11 A 668/9	3.75	1.48	(0.007)	...	0.679	0.15	(1)	0.031	0.772	0.010	0.011	...	0.21	...	...	...	40 x 37 x 12		
CRM	11 A 669/11	2.973	2.509	...	...	0.540	0.489	0.992	0.0492	0.201	0.0274	0.0453	...	0.479	...	...	Ce 0.038	40 x 37 x 12		
CRM	11 A 670/11	3.387	2.195	...	...	0.339	0.846	0.498	0.012	0.949	0.0385	0.0161	...	0.0174	...	...	...	40 x 37 x 12		
																			Ø	H
	11 A SIMO 1	2.60	4.05	0.008	0.029	0.323	0.026	0.917	0.740	0.028	0.043	0.003	0.017	0.008	...	0.009	...	40 x 37 x 12		
	11 A SIMO 2	2.13	4.73	0.007	0.025	0.356	0.024	0.930	0.459	0.009	0.024	0.004	0.010	0.006	...	0.003	...	40 x 37 x 12		
																			Ø	H
	11 MBS 28	2.88	2.16	0.001	0.034	0.22	1.04	0.068	0.002	0.009	0.095	0.01	0.02	0.006	0.036	0.001	...	32 x 17		
1.1.5 Grey		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Ti	V	Al	Co	As	Size (mm)			
																	Ø	H		
	11 MBS 20E	3.24	2.29	0.044	0.042	0.80	0.156	0.088	0.042	0.23	0.093	0.017	0.007	0.006	0.006	(0.003)	44 x 19			
	11 MBS 20G	3.33	3.02	0.029	0.028	0.58	0.38	0.086	0.19	0.54	0.12	0.012	0.018	0.008	0.022	0.004	38-47 x 13			
	11 MBS 20K	3.21	2.47	0.025	0.060	0.68	0.28	0.117	0.21	0.56	0.058	0.019	0.013	0.004	0.013	0.004	38-47 x 13			
	11 MBS 20P	3.22	2.62	0.044	0.032	0.63	0.14	0.079	0.033	0.067	0.099	0.018	0.017	0.008	0.018	(0.004)	38-47 x 13			
	11 MBS 20R	3.25	2.72	0.034	0.047	0.62	0.096	0.094	0.053	0.35	0.104	0.015	0.007	0.005	0.006	0.004	38-47 x 13			
	11 MBS 20W	3.27	2.64	0.036	0.045	0.62	0.082	0.092	0.054	0.29	0.086	0.015	0.007	0.004	0.005	0.004	38-47 x 13			

1. Iron Base

Irons

Blocks/Discs

1.1.7 Low Alloy (continued)

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Al	Ti	V	Nb	Co		
CRM	11 X C1N	2.85	1.37	0.045	0.099	1.24	0.592	0.301	0.0213	0.291	0.0253	0.009	0.218	0.120	0.149	0.082		
CRM	11 X C2R *	3.25	1.42	0.080	0.33	1.60	1.53	1.21	0.14	0.105	0.055	0.020	0.033	0.30	(0.05)	0.10		
CRM	11 X C3Y	3.46	0.87	0.108	0.41	0.60	3.22	2.14	0.20	0.032	0.18	(0.007)	0.025	0.65	0.13	0.28		
	11 X C4P	1.81	3.08	0.060	0.12	0.59	2.57	1.57	0.105	0.10	0.01	0.026	0.074	0.029	0.088	0.022	continued	
CRM	11 X C5T	2.78	1.80	0.062	0.102	0.774	1.04	1.22	0.50	0.71	0.043	0.219	0.125	0.045	0.010	0.036		
CRM	11 X C6U	3.60	0.464	0.034	0.057	0.934	0.123	0.493	1.54	0.87	0.061	(0.014)	0.141	0.0622	0.008	0.086		
	11 X C7M	2.38	0.87	0.022	0.023	1.94	0.23	0.46	0.05	0.056	0.009	0.009	0.014	0.016	(0.05)	0.02		
CRM	11 X C8S	3.06	1.42	0.205	0.117	0.371	0.613	0.310	0.201	0.443	0.111	0.010	0.082	0.0374	0.027	0.409		
CRM	11 X C9A	3.18	1.31	0.025	0.053	2.05	1.57	1.20	0.147	0.11	0.048	0.023	0.06	0.30	0.06	0.10		
* Target values																		
Continuation from above		W	Pb	As	Zr	Sb	Bi	Se	Te	Zn	B	Ce	La	N	Size (mm)			
																	Ø H	
	11 X C1N	0.014	0.011	0.0049	0.0105	0.058	0.018	0.022	0.0055	0.0101	0.039	...	...	(0.0046)		40 x 15	cc	
	11 X C2R *	(0.03)	(0.002)	0.04	(0.007)	0.009	0.02	...	(0.022)	(0.003)	0.008	(0.014)	<0.005	0.014		40 x 15		
	11 X C3Y	(0.04)	...	0.084	(0.003)	0.21	(0.0007)	...	(0.0013)	0.021	...	...	...	0.006		40 x 18		
	11 X C4P	0.14	<0.01	0.009	(0.01)	0.01	0.028	...	0.01	0.003	0.020	(0.01)	(0.006)	0.015		40 x 15		
	11 X C5T	...	0.010	0.019	(0.016)	0.030	(0.011)	0.021	(0.002)	0.011	(0.010)	...	...	0.008		40 x 17		
	11 X C6U	0.016	(0.0007)	0.052	0.0161	0.0024	0.022	0.0179	0.0165	0.029	0.0052	...	...	(0.0034)		40 x 15		
	11 X C7M	0.05	(0.004)	0.01	<0.01	0.02	0.02	...	(0.013)	(0.003)	0.008	(0.016)	<0.005	0.01		40 x 15		
	11 X C8S	0.041	0.025	0.078	0.0006	0.073	0.023	0.022	0.005	(0.0038)	0.046	...	...	(0.0046)		40 x 15		
	11 X C9A	(0.035)	(0.002)	0.038	...	0.10	0.018	...	(0.019)	(0.002)	...	...	...	0.015		40 x 15		
* Target values																		
		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	V	Al	Ti	As	Size (mm)		
																	Ø H	
	11 CM 5081	3.08	1.52	0.058	0.102	1.15	1.51	1.13	0.731	0.632	...	0.17	...	...	...		30 x 30	
	11 CM 5082	3.33	1.42	0.099	0.264	1.38	1.02	1.4	0.937	1.04	...	0.112	...	...	...		each	
	11 CM 5083	2.8	2.19	0.055	0.07	0.868	2.01	1.71	0.525	0.419	...	0.205	...	...	...		Set Only	
	11 CM 5084	2.34	2.59	0.037	0.04	0.609	2.51	0.527	0.215	0.215	...	0.313	...	...	...			
	11 CM 5085	2.14	3.19	0.015	0.025	0.23	3.11	2.04	0.377	0.049	...	0.436	...	...	...			
	11 CM 5086	3.6	0.84	0.12	0.288	1.74	0.52	0.865	1.11	1.55	...	0.06	...	...	...			
	11 RU ChG1/3	3.38	1.04	0.029	0.161	1.09	...	(0.08)	...	(0.04)	...	0.050	...	0.0052	(0.002)		38 x 40	
	11 RU ChG2/3	3.42	0.257	0.058	0.38	0.127	...	0.066	...	0.071	...	0.023	...	0.046	0.0037		38 x 40	
	11 RU ChG3/3	3.85	0.31	0.043	0.041	0.32	...	0.13	...	0.084	...	0.29	...	0.090	0.015		38 x 40	
	11 RU ChG4/3	4.05	0.26	0.015	0.020	1.37	...	0.14	...	0.025	...	0.111	...	0.056	(0.002)		38 x 40	
	11 RU ChG5/3	2.83	0.52	0.023	0.66	1.04	...	0.04	...	0.050	...	0.030	...	0.017	0.044		38 x 40	
		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Ti	V	Te	Co	As	Others	
	11 T F01	2.1	3.1	0.075	0.062	0.52	0.108	0.08	0.035	0.017	0.33	0.017	0.006	...	...	...	45 x 5 (2 pcs)	
	11 T F02	2.3	2.37	0.056	0.050	1.20	0.110	0.062	...	0.400	0.067	0.020	0.018	...	...	...	45 x 5 (2 pcs)	
	11 T F04	2.81	1.51	0.009	0.58	0.64	0.32	0.17	0.095	0.31	0.013	0.075	0.049	...	...	...	45 x 5 (2 pcs)	
	11 T F05	3.01	1.08	0.024	1.39	0.26	0.215	0.285	0.43	0.18	0.17	0.053	0.075	...	...	...	45 x 5 (2 pcs)	
	11 T F06	3.54	0.57	0.087	0.84	0.74	0.16	0.50	0.205	0.13	0.17	0.042	0.103	...	...	...	45 x 5 (2 pcs)	
	11 T F07	2.47	0.675	0.085	0.84	0.71	0.15	0.455	0.26	0.125	...	0.070	0.13	...	...	...	45 x 5 (2 pcs)	
	11 T F08	3.80	1.03	0.020	0.101	0.32	...	0.255	...	0.029	...	0.048	0.01	...	...	...	45 x 5 (2 pcs)	
	11 T F09	2.94	1.58	0.013	0.040	0.74	0.44	0.18	0.12	0.315	0.145	...	0.006	...	...	...	45 x 5 (2 pcs)	
	11 T F10	3.50	0.67	0.093	0.17	1.01	0.12	0.407	0.25	0.152	...	0.063	0.108	...	...	...	45 x 5 (2 pcs)	
	11 T F11	3.42	1.5	0.10	0.055	0.69	0.235	0.325	0.22	0.215	0.067	0.115	0.11	...	...	...	45 x 5 (2 pcs)	
	11 T F12	3.75	1.86	0.004	0.038	0.44	...	...	...	0.77	0.011	...	...	...	...	...	45 x 5 (2 pcs)	
	11 T F17	3.01	2.48	0.168	0.470	0.475	0.021	(0.016)	...	(0.006)	0.024	0.032	0.018	...	0.032	...	45 x 5 (2 pcs)	
	11 T F18	3.28	1.33	0.132	1.11	0.52	0.18	0.087	0.16	0.09	0.15	0.18	0.17	...	...	...	45 x 5 (2 pcs)	
	11 T F19	4.04	1.05	0.057	0.032	1.05	...	...	...	...	...	...	...	0.0005	...	...	45 x 5 (2 pcs)	
	11 T FL 1	2.1	3.2	0.0765	0.118	0.8	0.245	0.06	0.038	0.0195	0.305	0.020	0.015	...	...	...	43 x 5 (2 pcs)	
	11 T FL 3	2.3	2.1	(0.013)	0.729	0.27	0.553	0.107	0.106	0.102	0.111	0.05	0.049	...	(0.022)	...	N 0.008 45 x 5 (2 pcs)	
	11 T FL 4	2.7	2.9	0.12	0.3	0.5	0.05	0.45	0.09	0.0168	0.0011	0.0296	0.116	...	...	0.05	N 0.007 45 x 5 (2 pcs)	
	11 T FL 5	2.8	2.3	0.004	0.024	0.4	0.05	0.34	0.012	0.52	0.07	0.10	0.012	...	0.012	...	B 0.002 45 x 5 (2 pcs)	
	11 T FL 6	3.1	1.4	0.19	0.01	0.6	1.0	0.15	0.5	0.08	<0.01	0.15	0.03	...	...	...	B 0.006 45 x 5 (2 pcs)	
	11 T FL10	3.1	1.3	0.066	0.323	0.85	0.10	(0.07)	0.0335	0.104	0.028	0.045	0.048	(0.001)	...	(0.022)	Sb 0.032 45 x 5 (2 pcs)	
	11 T FPA1	3.08	0.030	0.0008	0.002	0.108	0.048	0.070	0.0107	0.065	...	0.0015	0.0009	...	0.0095	0.0111	43 x 5 (2 pcs)	
	11 T FT1	3	2.14	0.022	0.105	0.685	0.11	0.045	...	0.015	...	0.205	0.625	...	...	...	43 x 5 (2 pcs)	
	11 T FT2	3.4	1.42	0.095	0.045	0.80	0.07	0.03	...	0.01	...	0.10	0.405	...	...	...	45 x 5 (2 pcs)	
	11 T FT3	3.2	1.55	0.051	0.063	0.345	0.092	0.685	...	0.015	...	0.23	0.016	...	...	...	45 x 5 (2 pcs)	
	11 T FAL1	3.0	1.0	<0.01	0.04	0.2	0.06	0.04	0.015	0.2	...	0.01	...	...	...	...	Al 2.1 43 x 5 (2 pcs)	
		C	Si	Mn	Ni	Cr	Mo	Cu	Sn	Al	Ti	V	As	Ce	B	Bi	Pb	
	11 A LARM1	(3.0)	(2.0)	(0.3)	0.49	0.50	...	2.49	...	...	0.14	0.11	...	0.005	0.006	0.011	...	40 x 37 x 12
	11 A LARM2	(3.0)	(2.0)	(0.3)	...	2.50	0.22	...	0.22	0.066	0.33	...	0.044	0.008	...	...	0.007	40 x 37 x 12
	11 A LARM3	(3.0)	(2.0)	(0.3)	1.80	...	...	1.20	...	0.042	...	0.55	0.092	...	0.003	0.022	...	40 x 37 x 12
	11 A LARM4	(3.0)	(2.0)	(0.3)	...	1.19	1.00	0.26	0.11	0.014	0.17	...	...	0.008	...	...	0.018	40 x 37 x 12
	11 A LARM5	(3.0)	(2.0)	(0.3)	2.46	...	0.62	...	0.025	...	...	0.24	0.018	...	0.0012	0.0010	0.0005	40 x 37 x 12

1. Iron Base

Irons

Blocks/Discs

1.1.7 Low Alloy (continued)																
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Al	Ti	V	Nb	Co	
11M BS 1C	2.36	2.02	0.060	0.029	1.79	1.99	0.52	0.43	0.133	0.054	0.033	0.083	0.12	0.025	0.24	continued
11M BS 4C	3.82	0.52	0.001	0.003	0.21	0.068	0.111	0.105	0.014	(0.0004)	0.003	0.002	0.0005	(0.0005)	0.014	
Continuation from above																Size (mm)
	Pb	As	Zr	Sb	Ce	B	W	Ca	La	Mg	N	O	Te	Zn		Ø H
11M BS 1C	0.019	0.036	0.014	0.019	0.011	0.0022	0.12	0.0024	0.0020	0.0013	0.0115	(0.002)	(0.002)	(0.0003)		32 x 17
11M BS 4C	(0.0004)	0.007	0.010	0.0012	0.010	0.0002	(0.006)	0.0013	0.002	0.0002	0.008	(0.004)	0.0011	<0.0003		32 x 17
1.1.8 Abrasion Resistant																
	C	Si	S	P	Mn	Ni	Cr	Mo	Al	Cu	Ti	V	Nb	Pb	Typical Alloy Type	Size (mm)
																Ø H
11 X AR1L	2.76	1.79	0.062	0.044	1.24	4.1	7.7	...	...	...	...	...	...	...	Ni Hard	40 x 15
CRM 11 X AR2L	3.69	0.92	0.173	0.314	0.76	7.17	9.63	...	...	...	...	...	...	...		40 x 15
CRM 11 X AR3G	3.13	0.95	0.046	0.066	0.58	5.08	6.88	...	...	...	...	...	...	...		40 x 15
11 X AR4H	2.95	1.28	0.024	0.061	0.50	5.04	7.81	...	...	...	...	...	...	...		40 x 15
CRM 11 X AR5J	3.10	1.70	0.0316	0.0299	0.57	5.16	9.73	0.12	(0.018)	0.032	0.0147	0.0586	0.030	(0.003)		40 x 15
1.1.9 Corrosion Resistant																
	C	Si	S	P	Mn	Ni	Cr	Cu	Mo	Sn	Al	Pb	V	Ti	Typical Alloy Type	Size (mm)
																Ø H
11 X S/1 Cr1J	2.71	2.42	0.008	0.010	1.73	14.0	1.72	7.55	...	...	...	...	...	...	Ni Resist	40 x 15
11 X S/1 Cr2G	2.7	0.87	0.037	0.063	0.41	18.0	2.5	5.1	...	...	...	...	...	...	BS 3486 F1	40 x 15
CRM 11 X S/1 Cr3H	2.92	1.20	0.035	0.093	0.86	14.91	0.96	6.09	...	...	...	...	...	...	ASTM A436/439	40 x 15
11 X S/1 Cr4D	2.58	2.48	0.10	0.257	0.94	15.9	2.39	6.34	...	...	...	...	...	...	DIN 1694	40 x 15
CRM 11 X S/1 Cr5F	2.54	1.26	0.035	0.108	0.75	16.27	3.36	6.31	...	...	...	...	...	...	NFA 32.301	40 x 15
11 X S/2 Cr1E	2.83	2.85	0.011	0.31	1.68	16.5	2.48	0.02	...	...	...	...	...	...	Ni Resist	40 x 15
11 X S/2 Cr2D	3.03	1.23	0.046	0.14	0.53	18.0	2.35	0.23	...	...	...	...	...	...	BS 3486 F2/S2	40 x 15
11 X S/2 Cr3E	2.64	2.44	0.012	0.044	0.90	20.9	2.47	0.48	...	...	...	...	...	...	ASTM A436/439	40 x 15
11 X S/2 Cr4D	2.82	2.59	0.010	0.049	0.97	20.7	1.10	0.24	...	...	...	...	...	...	DIN 1694	40 x 15
11 X S/2 Cr5D	3.01	2.51	0.042	0.14	0.83	19.5	3.99	0.24	...	...	...	...	...	...	NFA 32.301	40 x 15
11 X S/2 Cr6D	2.65	3.59	0.009	0.254	0.81	18.0	4.39	0.27	...	...	...	...	...	...		40 x 15
11 X S/3 Cr1D	2.61	2.52	0.011	0.046	0.7	31.7	0.15	0.19	...	...	...	...	...	...	Ni Resist	40 x 15
11 X S/3 Cr2C	2.30	2.59	0.010	0.045	0.85	31.0	2.62	0.21	...	...	...	...	...	...	BS 3486 F3/S5S	40 x 15
11 X S/3 Cr3B	2.49	2.44	0.050	0.053	0.66	29.4	4.06	0.23	...	...	...	...	...	...	ASTM A436/439	40 x 15
11 X S/3 Cr4C	2.51	2.37	0.056	0.081	0.65	29.5	5.30	0.23	...	...	...	...	...	...	DIN 1694	40 x 15
11 X S/3 Cr5E	2.36	0.99	0.010	0.043	1.15	32.2	2.91	0.04	...	...	...	...	...	...	NFA 32.301	40 x 15
11 X S/3 Cr6D	2.51	4.50	0.022	0.056	0.42	26.8	3.42	0.25	...	...	...	...	...	...		40 x 15
11 X 20001J	2.90	1.01	0.143	0.005	0.58	21.4	1.50	0.01	...	...	...	...	...	...	Ni Resist	40 x 15
11 X 20002J	2.67	2.04	0.045	0.060	1.06	20.0	2.03	0.30	...	...	...	...	...	...		40 x 15
11 X 20003K	3.01	3.13	0.013	0.193	1.46	18.0	2.49	0.54	...	...	...	...	...	...		40 x 15
CRM 11 X 0331.1G	2.68	2.02	0.17	0.090	1.61	13.31	1.58	7.58	0.294	0.038	0.452	0.056	...	...		40 x 13
CRM 11 X 0331.2H	2.54	2.78	0.126	0.062	1.32	15.61	1.50	7.42	0.085	0.0220	0.049	0.029	...	...		40 x 13
CRM 11 X 0331.3F	2.10	2.46	0.061	0.040	1.08	18.03	2.57	6.49	0.061	0.0091	0.055	0.0112	...	...		40 x 13
11 X 0331.4D	2.09	1.40	0.010	0.015	0.41	19.0	2.1	3.9	0.01	<0.01	0.004	0.002	...	...		40 x 13
11 X 0331.5A	2.82	1.20	0.27	0.09	0.72	12.8	0.45	7.46	0.096	0.08	(0.006)	0.02	...	...		40 x 13
CRM 11 X 0331.6A	2.71	2.05	0.0197	0.0473	1.144	14.03	1.13	6.57	0.011	(0.0020)	...	(0.0006)	0.0106	0.025		35 x 6
Note: items which are not chill cast may contain some primary carbon.																
1.1.10 Austenitic Iron																
	C	Si	S	P	Mn	Ni	Cr	Cu	Mg	Mo	Nb	Ce			Typical Alloy Type	Size (mm)
																Ø H
11 T NR1.2S	2.58	3.02	0.0015	0.19	1.54	20.60	2.00	0.11		...	...	...			Spheroidal	43 x 5 (2 pcs)
11 T NR2.2S	2.32	1.43	...	0.062	0.53	36.3	0.51	0.21	0.003	...	...	...				43 x 5 (2 pcs)
11 T NR3.2S	2.92	2.91	...	0.024	0.77	24.63	3.05	0.33		...	...	...				43 x 5 (2 pcs)
11 T NR4.2S	2.47	4.87	...	0.145	1.71	18.30	1.50	0.63	to	...	...	...				43 x 5 (2 pcs)
11 T NR5.2S	1.67	1.97	...	0.035	1.23	27.05	0.24	0.50		...	...	...				43 x 5 (2 pcs)
11 T NR6.2S	1.81	2.44	...	0.019	0.99	30.75	1.06	0.03	0.25	...	...	...				43 x 5 (2 pcs)
11 T NR8.2S	3.05	1.41	...	0.124	4.39	14.20	0.191	0.071		...	...	...				43 x 5 (2 pcs)
Note: Mg levels vary from disc to disc. Actual value will be given on certificate																
11 T NR1.2L	2.50	2.99	0.10	0.125	1.34	25.87	1.74	0.49	...	...	...	...			Lamellar	43 x 5 (2 pcs)
11 T NR3.2L	2.99	3.04	0.052	0.088	0.72	21.58	2.97	0.26	...	...	...	...				43 x 5 (2 pcs)
11 T NR4.2L	2.41	5.89	0.014	0.155	1.495	15.90	1.403	0.758	...	...	...	...				43 x 5 (2 pcs)
11 T NR5.2L	1.77	2.99	0.083	0.037	1.207	33.89	0.27	0.48	...	...	...	...				43 x 5 (2 pcs)
11 T NR6.2L	1.76	2.07	0.063	0.031	0.70	30.37	3.49	0.020	...	...	...	...				43 x 5 (2 pcs)
11 T NR8.2L	2.89	1.74	0.025	0.054	5.19	13.33	0.165	0.075	...	...	...	...				43 x 5 (2 pcs)
11 T NRCU 1	3.15	1.01	0.076	0.165	1.61	18.2	1.03	5.09	...	...	...	...				43 x 5 (2 pcs)
11 T NRCU 2	2.52	2.07	0.049	0.115	1.07	15.9	2.05	6.50	...	...	...	...				43 x 5 (2 pcs)
11 T NRCU 3	1.94	3.12	0.016	0.046	0.60	13.3	3.50	8.05	...	...	...	...				43 x 5 (2 pcs)
11 A NIRM 1	2.05	3.15	0.005	0.055	6.72	11.80	0.246	0.20	0.021	...	...	0.018				40 x 37 x 12
11 A NIRM 2	2.91	1.53	0.011	0.100	2.01	13.88	1.49	5.86	0.037	...	...	0.017				40 x 37 x 12
11 A NIRM 3	2.51	2.21	0.096	0.208	0.51	17.8	2.43	1.00	...	...	0.09	0.007				40 x 37 x 12
11 A NIRM 4	1.97	3.03	0.008	0.051	2.37	20.2	3.56	0.52	0.014	...	0.37	0.011				40 x 37 x 12
11 A NIRM 5	2.93	1.73	0.004	0.126	1.09	22.1	0.50	0.22	0.040	...	0.20	<0.002				40 x 37 x 12
11 A NIRM 6	2.44	2.43	0.062	0.217	4.00	26.7	1.07	0.10	...	0.45	...	0.003				40 x 37 x 12
11 A NIRM 7	2.05	3.05	0.020	0.058	0.71	32.9	3.53	0.52	0.019	0.99	...	0.005				40 x 37 x 12
11 A NIRM 8	1.41	5.47	0.009	0.096	1.56	35.4	2.45	0.20	0.046	0.73	...	0.012				40 x 37 x 12

Blocks/Discs

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Blocks/Discs

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1. Iron Base

Steels

Blocks/Discs

1.2.3 Low Alloy (continued)		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Al	V	Ti	Nb	Others	Size (mm)			
																Ø	H		
CRM	12 HY K3	1.03	0.32	0.010	(0.02)	0.46	0.18	1.63	...	0.09	...	...	...	...		32-35 x 19			
CRM	12 HY K4	0.52	0.46	0.025	(0.02)	0.84	(0.1)	1.23	...	0.28	...	0.20	...	...		32-35 x 19			
CRM	12 HY K6	0.51	0.30	0.026	(0.02)	0.79	1.72	0.96	0.37	0.26	...	...	...	...		32-35 x 19			
CRM	12 HY K9	0.096	0.59	0.018	(0.01)	1.53	0.97	0.64	0.56	0.73	(0.01)	0.27	0.11	(0.04)		32-35 x 19			
	12 T 1749	0.4	0.19	0.015	0.01	0.733	0.19	1.734	0.257	0.188	1.034	(0.003)	0.003	...		41 x 25	c		
	12 CM 5127	0.076	1.64	0.0094	0.0072	1.1	0.025	0.013	0.02	0.034	0.019	0.391	0.272	0.012		35 x 25			
	12 CM 5128	0.222	1.18	0.037	0.023	0.95	0.224	0.254	0.532	0.148	0.235	0.34	0.574	0.088		each			
	12 CM 5129	0.316	0.568	0.013	0.047	0.613	0.782	1.46	0.116	0.239	0.19	0.451	0.299	0.022		Set Only			
	12 CM 5130	0.625	0.548	0.034	0.045	0.758	0.742	1.06	0.212	0.378	0.019	0.195	0.65	0.067					
	12 CM 5131	0.42	0.127	0.019	0.015	1.39	1.5	0.465	0.333	0.135	0.092	0.029	0.076	0.033					
	12 CM 5132	0.847	0.752	0.013	0.027	0.29	0.441	0.753	0.484	0.233	...	0.132	...	0.041					
	12 CM 5133	0.17	0.248	0.025	0.016	1.73	0.077	0.416	0.062	0.116	0.055	0.061	0.12	0.072					
	12 CM 5124	1.12	0.815	0.04	0.038	0.1	2.45	1.05	0.03	0.043	0.492	0.479	0.407	...	Sn	35 x 30			
	12 CM 5125	0.015	0.098	0.013	0.071	2.06	0.048	2.6	1.06	0.498	0.0038	0.0051	0.666	...	Sn	each			
	12 CM 5126	0.654	1.57	0.059	0.0066	1.06	1.05	0.095	0.532	0.894	0.203	1.02	0.0029	...	Sn	Set Only			
	12 CM 5112	0.542	0.194	0.007	0.018	0.56	0.011	0.018	...	0.015	0.005	...	...	...	N, As	32 x 28			
	12 CM 5113	0.07	0.029	0.023	0.011	1.04	0.375	0.355	...	0.382	0.019	...	...	...	N, As	each			
	12 CM 5114	0.025	0.85	0.0185	0.008	0.134	0.023	0.047	...	0.017	0.02	...	...	...	N, As				
	12 CM 5115	0.531	0.123	0.022	0.033	1.35	0.192	0.202	...	0.197	0.028	...	...	...	N, As				
	12 CM 5116	0.108	0.545	0.059	0.049	0.337	0.474	0.512	...	0.48	0.033	...	...	...	N, As	Set Only			
	12 CM 5117	0.336	0.283	0.01	0.019	0.6	0.312	0.314	...	0.316	0.013	...	...	...	N, As				
	12 CM 5118	0.549	0.39	0.012	0.02	1.21	0.018	0.41	...	0.302	0.036	...	...	...	N, As				
	12 CM 5119	0.224	0.7	0.061	0.063	1.02	0.117	0.139	...	0.13	0.034	...	...	...	N, As				
	12 CM 5120	0.475	0.261	0.03	0.019	0.7	0.0041	0.0077	...	0.0064	...	...	...	...	N, As				
	12 CM 5099	0.367	0.621	0.019	0.026	0.86	0.242	0.901	0.35	0.253	...	...	...	...		32 x 28			
	12 CM 5100	0.265	0.378	0.04	0.03	1.12	0.135	1.27	0.44	0.303	...	...	...	...		each			
	12 CM 5101	0.105	0.113	0.01	0.043	1.75	0.064	1.76	0.601	0.113	...	...	...	...		Set Only			
	12 CM 5102	0.658	1.55	0.025	0.0042	0.271	0.403	0.313	0.093	0.576	...	...	...	...					
	12 CM 5103	0.454	1.03	0.046	0.012	0.66	0.391	0.597	0.255	0.513	...	...	...	...					
	12 CM 5011	0.158	1.6	0.038	0.051	1.69	0.271	0.535	0.116	0.492	...	0.128	...	...	W	35 x 30			
	12 CM 5012	0.471	0.98	0.051	0.026	0.855	0.386	0.042	0.223	0.301	...	0.209	...	...	W	each			
	12 CM 5013	0.294	1.43	0.028	0.039	1.08	0.178	0.146	0.029	0.106	...	0.065	...	...	W				
	12 CM 5014	0.221	1.18	0.006	0.014	1.37	0.104	0.31	0.034	0.102	...	0.016	...	...	W	Set Only			
	12 CM 5038	0.483	0.194	0.041	0.01	0.343	1.09	0.717	1.02	0.497	0.484	0.3	0.141	0.212	Co, B, Zr, As, Pb	35 x 25			
	12 CM 5039	0.658	0.069	0.0018	0.0044	0.12	0.774	0.35	0.266	0.358	1.51	0.447	0.483	0.025	Co, Zr, As, Sn	each			
	12 CM 5040	0.106	0.481	0.014	0.022	0.107	1.46	1.45	1.21	0.108	0.08	0.083	0.099	...	Co, B, Zr, As, Pb				
	12 CM 5041	0.345	0.41	0.052	0.036	0.674	1.94	1.04	0.116	0.999	0.271	0.198	0.242	0.311	Co, B, Zr, As, Pb	Set Only			
	12 CM 5042	0.211	0.174	0.021	0.046	1.36	0.487	0.124	0.472	0.233	0.866	0.619	0.812	0.139	Co, B, Zr, As, Sn				
	12 CM 5043	0.034	0.663	0.011	0.069	1.96	0.102	1.93	0.674	0.08	0.0093	0.042	0.017	0.218	Co, B, Zr, As, Sn				
	12 CM 5069	0.477	0.351	0.031	0.0193	1.15	0.787	0.05	0.088	0.0117	0.471	0.072	0.046	...	W, B	32 x 28			
	12 CM 5070	0.278	1.7	0.052	0.031	0.295	0.847	1.41	0.58	0.139	0.0092	0.143	0.232	...	W, B	each			
	12 CM 5071	0.0425	0.919	0.021	0.0068	0.429	0.648	0.92	0.22	0.125	0.066	0.135	0.066	...	W, B				
	12 CM 5072	0.425	0.204	0.034	0.042	0.405	1.99	0.416	0.49	0.244	0.57	0.234	0.177	...	W, B	Set Only			
	12 CM 5073	0.541	0.452	0.0036	0.0107	0.63	1.29	0.313	0.38	0.029	0.434	0.15	0.164	...	W, B				
	12 CM 5074	0.163	0.367	0.04	0.036	1.31	0.521	1.52	0.46	0.179	0.287	0.21	0.126	...	W, B				
	12 CM 5075	0.347	1.37	0.013	0.046	0.385	3.18	0.62	0.31	0.03	0.281	0.037	0.077	...	W, B				
		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Al	V	W	Ti	Sn	N	Size (mm)	
																		Ø	H
CRM	12 A 404/1	0.74	0.87	0.024	0.057	0.31	0.40	0.48	0.31	0.34	...	...	0.11	...	...	...	...	38 x 19	w
CRM	12 A 401/2	0.935	0.602	0.0078	0.0265	1.197	0.019	0.138	0.495	0.101	0.0042	0.074	0.496	...	...	...	(0.015)	38 x 19	w
CRM	12 A 402/2	1.311	0.111	0.0138	0.0161	0.228	0.808	0.652	0.140	0.302	...	0.161	0.194	...	...	...	0.0069	38 x 19	
CRM	12 A 403/2	0.750	0.209	0.0381	0.055	1.677	0.223	0.463	0.088	0.221	...	0.0485	0.341	...	...	...	(0.01)	38 x 19	
CRM	12 A 404/2	0.696	1.121	0.0228	0.0479	0.532	0.393	0.774	0.307	0.427	...	0.017	0.107	...	...	...	0.0089	38 x 19	
CRM	12 A 405/2	0.044	0.947	0.058	0.0095	0.903	0.102	0.206	0.025	0.022	(0.009)	0.330	0.411	...	...	...	(0.011)	38 x 19	
CRM	12 A 406/2	0.173	0.342	0.043	0.0102	0.447	1.62	2.001	0.98	0.289	(0.006)	0.013	0.010	...	...	(0.001)	(0.009)	38 x 19	w
CRM	12 A 407/2	0.490	0.66	0.0105	0.038	0.195	0.527	3.03	0.83	0.397	0.0068	0.040	0.19	...	...	...	(0.011)	38 x 19	
CRM	12 A 408/2	0.289	0.237	0.030	0.056	0.557	4.13	0.111	0.098	0.694	...	0.154	0.067	...	...	(0.002)	0.0075	38 x 19	
CRM	12 A 409/2	0.086	1.18	0.0179	0.0141	0.559	3.02	1.318	0.599	0.205	...	0.094	0.008	...	...	...	0.0108	38 x 19	
CRM	12 A 410/2	0.428	1.10	0.041	0.074	0.419	2.07	1.684	0.432	0.436	0.0248	0.046	0.44	...	...	...	0.0155	38 x 19	
CRM	12 A 612/1	0.12	0.28	(0.02)	...	0.60	0.97	4.14	0.80	(0.06)	...	...	0.21	...	...	...	...	44 x 19	c
CRM	12 A 613/1	0.20	0.58	(0.02)	...	0.96	2.01	1.99	1.04	(0.06)	...	...	0.30	...	...	...	...	44 x 19	
CRM	12 A 614/1	0.41	0.39	(0.02)	...	1.30	3.05	1.18	0.60	(0.06)	...	...	0.27	...	...	...	...	44 x 19	
CRM	12 A 615/1	0.30	0.17	(0.02)	...	1.68	4.01	0.49	0.21	(0.06)	...	...	0.1	...	...	...	...	44 x 19	
	12 CM 2111	0.125	0.484	0.0434	0.0103	1.19	0.413	0.63	...	0.154	...	...	...	0.90	0.132	...	...	32 x 28	
	12 CM 2112	0.0226	0.581	0.037	0.0104	0.807	0.294	1.40	...	0.040	...	...	...	1.22	0.276	...	...	each	
	12 CM 2113	0.345	0.688	0.0226	0.0210	0.554	0.145	0.095	...	0.018	...	...	...	1.73	0.066	...	...		
	12 CM 2114	0.500	0.967	0.0059	0.0289	0.420	0.045	0.303	...	0.061	...	...	...	2.28	0.060	...	...	Set Only	
	12 CM 2115	0.691	1.098	0.0031	0.0361	0.340	0.044	0.96	...	0.017	...	...	...	2.88	0.057	...	...		

Blocks/Discs

See page 63 for materials in Chippings form For Setting-Up Samples see section 16

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1.4.2 High Speed Steel (continued)																	Typical	Size (mm)	
		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	W	V	N	Sn	Others	Alloy Type	Ø	H
CRM	14 X HS 1C	0.72	0.23	0.020	0.018	0.29	0.28	4.00	0.36	0.07	0.25	17.2	1.04	0.023	(0.035)		T-1	40 x 15	W
CRM	14 X HS 2C	0.78	0.21	0.014	0.020	0.24	0.20	4.15	0.44	0.105	5.10	18.1	1.20	0.021	(0.03)		T-4	40 x 15	W
CRM	14 X HS 3K	0.92	0.35	0.031	0.016	0.632	0.354	5.60	1.33	0.128	10.73	19.6	1.31	0.030	(0.014)	As 0.017	T-5/6	40 x 15	C
	14 X HS 4B	1.01	0.11	0.012	0.010	0.13	0.05	3.68	0.42	0.03	2.04	9.8	0.47	...	...			40 x 15	W
	14 X HS 5C	0.59	0.30	0.022	0.015	0.29	0.16	3.4	3.54	0.13	8.02	6.0	1.37	...	...		M-36	40 x 15	W
	14 X HS 6B	0.70	0.14	0.032	0.026	0.17	0.06	3.94	5.47	0.08	0.26	6.63	1.95	...	...		M-2	40 x 15	W
	14 X HS 7B	1.33	0.38	0.028	0.032	0.32	0.07	4.19	5.00	0.10	0.77	14.28	1.83	...	...			40 x 15	C
	14 X HS 8C	0.97	0.14	0.022	0.020	0.28	0.16	3.55	9.47	0.09	9.04	1.81	1.20	...	...		M-33	40 x 15	W
	14 X 14944D	0.62	0.17	0.011	0.016	0.23	0.19	2.87	0.14	0.10	0.15	15.5	1.00	...	...			40 x 15	C
	14 X 14945D	0.67	0.26	0.041	0.033	0.72	0.33	3.97	0.23	0.12	0.22	16.84	0.55	...	...			40 x 15	
	14 X 14946D	0.85	0.46	0.048	0.051	0.53	1.06	5.06	0.21	0.25	0.44	16.9(7)	1.03	...	...		T-1	40 x 15	
	14 X 14948C	0.83	0.26	0.017	0.011	0.65	0.29	4.04	0.14	0.04	0.16	18.8	0.65	...	...			40 x 15	
	14 X 14952D	0.90	0.32	0.054	0.054	0.64	0.34	4.93	0.32	0.02	0.02	18.0	1.24	...	...			40 x 15	
	14 X 14890K	0.81	0.69	0.028	(0.012)	0.58	0.08	3.60	5.59	0.09	0.32	5.30	1.99	...	...			40 x 15	C
	14 X 14891L	0.67	0.43	0.043	0.014	0.23(5)	1.02	4.83	4.49	0.14	0.07	7.22	1.47	...	...		M-2	40 x 15	
	14 X 14892K	0.83	0.23	0.047	0.054	0.23	0.23	3.99	4.99	0.20	0.16	6.30	1.76	...	...			40 x 15	
	14 M BS 30C	0.76	0.28	0.022	0.026	0.29	0.27	4.19	0.35	0.10	0.39	17.58	1.09	0.025	0.021	As 0.03	T-1	37-41 x 12	
	14 M BS 32D	0.85	0.25	0.0022	0.027	0.30	0.053	4.14	4.92	0.039	0.01	6.15	1.82	0.018	(0.005)		M-2	37-41 x 12	
CRM	14 S 606-8	0.76	0.28	0.0008	0.016	0.31	0.065	4.0	0.58	0.027	0.12	17.16	0.83	0.0290	...		SKH2	35 x 30	W
CRM	14 S 607-8	0.78	0.3	0.0031	0.026	0.35	0.052	3.97	0.54	0.025	4.59	17.48	0.84	0.0270	...		SKH3	each	
CRM	14 S 608-8	0.8	0.36	0.0028	0.025	0.33	0.044	3.99	0.41	0.017	9.09	17.03	0.99	0.0320	...		SKH4A		
CRM	14 S 609-8	0.89	0.32	0.0007	0.027	0.31	0.12	3.98	4.85	0.053	4.63	6.10	1.87	0.0465	...		SKH55	Set Only	
CRM	14 S 610-8	1.23	0.28	0.0015	0.026	0.31	0.18	3.96	3.09	0.066	9.60	8.94	3.25	0.0348	...		SKH57		
CRM	14 S 611-8	0.86	0.37	0.0013	0.025	0.30	0.13	3.97	4.88	0.046	0.40	6.27	1.88	0.0548	...		SKH9		
CRM	14 A 481/1	0.68	0.15	0.022	0.023	0.25	(0.09)	3.40	0.28	...	0.31	14.0	0.56	...	...			38 x 19	W
CRM	14 A 482/1	0.67	0.14	0.027	0.027	0.26	(0.16)	3.95	0.40	...	0.29	17.8	1.04	...	...			38 x 19	
CRM	14 A 483/1	0.65	0.16	0.023	0.023	0.22	(0.08)	2.90	0.18	...	2.06	9.28	0.22	...	...			38 x 19	
CRM	14 A 485/1	0.94	0.3	0.039	0.043	0.41	(0.14)	4.02	0.66	...	4.97	17.8	1.02	...	0.019			38 x 19	
CRM	14 A 486/1	0.74	0.27	0.021	0.029	0.21	(0.06)	4.54	5.20	...	0.08	5.80	1.82	...	0.014			38 x 19	
CRM	14 A 487/1	1.02	0.18	0.029	0.022	0.26	(0.14)	3.91	9.41	...	7.95	1.80	1.14	...	(0.006)			38 x 19	
CRM	14 DB 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	W
1.4.4 Case Hardening Steel																	Typical	Size (mm)	
		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Al	V					Alloy Type	Ø	H
CRM	14 S 512-6	0.106	0.16	0.021	0.015	0.43	0.023	0.039	0.008	0.009	0.024	...					S9CK	35 x 30	W
CRM	14 S 513-6	0.151	0.19	0.0162	0.010	0.76	0.019	1.12	0.005	0.008	0.031	0.006					SCr415	each	
CRM	14 S 514-6	0.21	0.22	0.0153	0.013	0.78	0.020	1.02	0.21	0.009	0.038	(0.004)					SCM420		
CRM	14 S 515-6	0.171	0.25	0.0094	0.009	0.59	2.24	0.30	0.011	0.022	0.029	(0.002)					SNC415	Set Only	
CRM	14 S 516-6	0.21	0.28	0.130	0.012	1.03	3.05	1.70	0.41	0.083	0.031	0.011					SNCM24		
CRM	14 S 517-6	0.171	0.25	0.0118	0.013	1.11	3.00	1.60	0.52	0.072	0.029	0.008					SNCM616		
1.4.5 High Manganese Steel																		Size (mm)	
		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Al	V	Sn	N	Nb	Others		Ø	H
	14 M BS 17A	0.588	0.22	0.005	0.043	19.38	0.060	1.37	0.52	0.135	0.052	0.016	0.012	0.038	0.06			32 x 17	C
	14 M BS 18A	1.13	0.64	0.043	0.019	11.3	0.36	0.22	0.049	0.029	0.019	0.32	0.007	0.042	0.05			32 x 17	
	14 M BS 19A	1.57	1.46	0.009	0.092	8.76	1.48	3.75	1.97	0.51	0.057	0.10	0.037	0.039	0.040			32 x 17	
	14 M BS 190	0.022	0.46	0.001	0.015	9.72	6.74	19.57	0.15	0.072	(0.004)	0.11	0.003	0.255	(0.004)	Ca, Co, B, Ti, W, O.		38 x 12	W
	14 M BS 191	0.098	3.66	0.023	0.024	5.71	5.34	16.33	0.36	0.33	(0.002)	0.083	(0.006)	0.117	0.024	Co, Ca, O, Ta, Ti, W.		38 x 12	
	14 M BS 193	0.104	0.66	0.002	0.018	12.11	1.82	18.48	0.21	0.088	(0.003)	0.107	0.004	0.37	0.014	B, Ca, Co, Ti.		38 x 12	
CRM	14 X MN1AF	0.500	0.610	0.0069	0.019	17.95	0.308	1.587	0.543	0.055	0.024	0.015	(0.0023)	0.076	0.168			40 x 15	C
CRM	14 X MN2P	0.70	1.00	0.014	0.013	8.84	0.49	0.29	1.45	0.034	(0.007)	0.07	0.08	0.018	...			40 x 15	
CRM	14 X MN3P	1.10	0.88	0.009	0.07	11.01	0.23	0.44	0.18	0.09	<0.005	0.05	0.024	0.02	...			40 x 15	
CRM	14 X MN4W	1.303	0.77	0.019	0.046	15.35	1.16	2.14	0.805	0.320	0.055	0.034	0.028	0.038	0.054			40 x 15	
CRM	14 X MN5Q	1.58	1.55	0.040	0.042	7.70	1.60	3.64	2.00	0.55	0.105	0.018	0.009	0.026	...			40 x 15	
	14 X 15195P	1.64	1.45	0.018	0.062	12.06	0.09	0.11	0.30	0.12	0.08	0.33	0.05	...	...			40 x 15	C
	14 X 15196S	1.08	1.64	0.012	0.037	10.16	0.25	0.26	0.22	0.22	0.13(5)	0.21	0.10(5)	...	...			40 x 15	
	14 X 15197Q	1.25	1.43	0.041	0.093	13.7	0.42	0.25	0.12	0.32	0.39	0.11	0.18	...	...			40 x 15	
CRM	14 A 491/2	0.994	1.101	0.0112	0.0494	16.73	0.0745	1.482	0.608	(0.04)	0.110	0.0839	...	0.0215	...			50 x 10	C
CRM	14 A 492/2	1.165	0.133	0.0042	0.0468	9.18	3.833	1.059	1.295	...	0.186	(0.01)	...	...	...			50 x 10	
CRM	14 A 493/2	0.875	0.782	0.0118	0.098	11.74	3.010	0.178	0.955	...	0.0375	(0.017)	...	...	...			50 x 10	
CRM	14 A 494/2	1.398	0.373	0.0032	0.0421	13.37	0.732	0.668	0.101	0.166	0.0022	(0.025)	...	0.0146	...			50 x 10	
CRM	14 A 495/3	0.813	0.595	0.0203	0.079	14.05	1.585	2.03	0.304	...	0.0093	(0.028)	...	...	...			50 x 10	
CRM	14 MT 035A	0.102	0.59	0.002	0.023	12.04	1.81	18.48	0.28	0.17	<0.004	0.058	0.003	0.33	0.004	Fe 65.91		various	
CRM	14 MT 129A	0.030	0.40	<0.001	0.022	9.31	6.86	19.62	0.25	0.152	0.014	0.144	...	0.264	0.025	Fe 62.62			

1. Iron Base

Special Steels

Blocks/Discs

1.4.7 Lead Steel																	Typical	Size (mm)
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Al	Pb	W	Others			Alloy Type	Ø H
14 M BS 70B	0.40	0.27	0.022	0.009	0.90	0.25	1.00	0.205	0.13	...	(0.024)	0.135	...	Te 0.034			AISI 41L40	41 x 13 w
14 M BS 72B	0.497	0.26	0.029	0.029	0.87	0.17	0.98	0.19	0.21	0.014	0.020	0.174	...	N 0.0081			AISI 41L50	41 x 13
14 M BS 73B	0.020	0.250	0.030	0.009	0.83	0.416	0.512	0.170	0.141	0.008	0.022	0.139	<0.002	N 0.0113			AISI 86L20	41 x 13
14 M BS 74E	0.079	0.002	0.308	0.065	1.04	0.007	0.020	0.002	0.006	(0.001)	(0.001)	0.234	<0.002	Te 0.045			AISI 12L 14+Te	41 x 13
14 M BS 74 is recommended for XRF spectrometry only; unsuitable for O.E. spectrometry due to high S and Pb.																		
CRM 14 MI 182A	0.20	0.25	0.023	0.028	0.90	0.50	0.56	0.18	0.23	0.012	0.020	0.14	(0.008)	Co, Nb, N			86L20	31 x 18 w
CRM 14 MI 183A	0.072	(0.01)	0.31	0.070	1.01	0.006	0.010	0.002	0.006	<0.005	(0.002)	0.24	<0.01	Co, N, O			12L 14	31 x 18
1.4.8 Free-machining and Resulfurised Steel																	Typical	Size (mm)
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Co	V	N	Others			Alloy Type	Ø H
14 M BS 65C	0.150	0.24	0.115	0.007	1.19	0.063	0.066	0.012	0.24	0.02	(0.007)	0.002	0.0084				AISI 1117	41-44 x 19 w
14 M BS 66B	0.418	0.02	0.11	0.018	1.57	0.033	0.094	0.014	0.031	0.001	0.005	0.002	(0.006)				AISI 1141	41-44 x 19
CRM 14 X MSFM1H	0.032	0.65	0.34	0.09	1.58	0.27	1.75	0.21	0.20	0.03	0.25	0.23	0.007					40 x 15 c
CRM 14 X MSFM2H	0.269	0.505	0.193	0.060	1.83	0.040	0.060	0.291	0.0085	(0.003)	0.0033	(0.0008)	(0.003)					40 x 15
CRM 14 X MSFM3F	0.55	0.52	0.087	0.060	2.10	...	...	0.27	...	...	...	...	...					40 x 15
CRM 14 A E058-2(D)	0.424	0.1080	0.1712	0.0098	1.186	0.199	0.1211	0.0589	0.261	...	...	...	0.0107					38 x 19 w
CRM 14 A E085-1(D)	0.067	0.008	0.336	0.062	0.977	...	...	...	0.291	...	0.019	0.0021	...					38 x 19
CRM 14 MI 10C	0.128	0.37	0.29	0.026	0.35	0.24	12.25	0.08	0.155	0.009	0.022	0.024	0.015	Al, Nb, O			AISI 416	31 x 18 w
CRM 14 MI 29C	0.18	0.28	0.13	0.011	1.20	0.075	0.076	0.016	0.15	0.008	(0.01)	0.003	0.010	Al, As, O			C-1117	31 x 18
CRM 14 MI 29D	0.17	0.050	0.1153	0.018	1.07	0.042	0.076	0.016	0.085	0.0072	(0.023)	0.0018	0.0057	Al, As			C-1117	31 x 18
CRM 14 MI 199A	0.44	0.16	0.27	0.008	1.47	0.10	0.10	0.031	0.11	0.007	0.007	0.003	0.0071	Nb, O			C-1144	31 x 18
CRM 14 MI 199B	0.45	0.18	0.29	0.009	1.45	0.035	0.048	0.008	0.089	0.005	0.007	0.003	0.0059	Al, As, B			C-1144	31 x 18
CRM 14 MI 206A	0.068	(0.019)	0.26	0.069	0.90	0.044	0.041	0.012	0.098	0.005	0.009	0.002	0.0119	Al, As, B			C-1215	31 x 18
CRM 14 MI 253A	0.041	0.50	0.0089	0.140	1.50	9.17	17.90	0.348	0.223	0.01	0.088	0.106	0.0373	Se 0.21			AISI 303 Se	31 x 18
14 M BS 90F	0.085	0.58	0.328	0.023	0.53	0.3	13.01	0.14	0.12	0.005	0.021	0.076	0.037				AISI 416	31-45 x 12 w
14 M BS 150	0.048	0.43	0.33	0.020	1.71	0.19	18.61	1.97	0.042	(0.003)	0.024	0.054	0.029				182FM	31-45 x 12
14 M BS 151	0.090	0.65	0.018	0.021	0.41	0.24	13.19	0.088	0.11	0.005	0.018	0.046	0.022	Se 0.328			AISI 416 Se	31-45 x 12
14 M BS 152	0.320	0.44	0.275	0.022	0.36	0.14	13.41	0.061	0.050	0.003	0.015	0.051	0.020				AISI 420F	31-45 x 12
14 M BS 153	0.026	0.53	0.28	0.018	0.41	0.14	17.38	0.30	0.052	0.002	0.017	0.045	0.021				AISI 430F	31-45 x 12
14 M BS 154	0.030	1.26	0.302	0.027	0.40	0.25	17.58	0.31	0.063	(0.005)	0.019	0.046	0.039				AISI 430F mod	31-45 x 12
14 M BS 155	1.00	0.40	0.145	0.014	0.35	0.13	16.64	0.46	0.035	(0.003)	0.019	0.10	0.032				AISI 440F	31-45 x 12
14 M BS 156	1.06	0.47	0.007	0.022	1.15	0.35	16.87	0.50	0.09	(0.004)	0.047	0.13	0.041	Se 0.142			AISI 440F Se	31-45 x 12
14 M BS 4142Se	0.428	0.17	0.031	0.015	0.85	0.081	0.84	0.164	0.13	0.015	0.012	0.003	0.0087	Se 0.042			AISI 4142 Se	31-45 x 12
14 M BS 53Mod	1.01	0.26	0.012	0.011	0.36	0.072	1.37	0.024	0.07	0.008	0.007	0.005	0.0086	Bi 0.102			AISI E52100	38 x 12 w
14 M BS 4140A	0.40	0.21	0.076	0.021	0.84	0.15	0.97	0.16	0.15	0.011	0.010	0.004	0.0098	Bi 0.105			AISI 4140 + Bi	38 x 12
14 M BS 4140B	0.43	0.20	0.037	0.027	0.76	0.012	0.84	0.16	0.006	(0.002)	0.005	0.005	0.0064	Bi 0.087			AISI 4140 + Bi	38 x 12
14 M BS 4150Mod	0.47	0.21	0.079	0.024	0.90	0.15	1.01	0.21	0.19	0.013	0.012	0.008	0.0087	Bi 0.070			AISI 4150 + Bi	38 x 12
14 M BS 8620A	0.184	0.21	0.079	0.008	0.80	0.44	0.48	0.16	0.15	0.009	0.010	0.004	0.0107	Bi 0.073			AISI 8620 + Bi	38 x 12
14 M BS 8620B	0.202	0.23	0.029	0.014	0.84	0.44	0.59	0.17	0.135	0.009	0.011	0.003	0.0100	Bi 0.105			AISI 8620 + Bi	38 x 12
14 MT 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 w
14 MT 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	38 x 19
1.4.9 Silicon Steel																	Typical	Size (mm)
	C	Si	S	P	Mn	Ni	Cr	Cu	Ti	Al	As	Ca	N				Alloy Type	Ø H
CRM 14 HY T1	0.10	5.29	0.013	0.014	0.14	0.036	0.065	<0.03	0.02	...	...	...	...					32-35 x 19 w
CRM 14 HY T2/1	0.026	3.24	0.017	0.009	0.18	0.11	0.03	0.09	...	...	...	...	...					32-35 x 19
CRM 14 HY T2/2	0.039	3.84	0.020	0.012	0.28	0.074	0.065	0.075	0.037	...	...	...	...				Transformer Steel	32-35 x 19
CRM 14 HY T3	0.090	0.66	0.033	0.058	0.60	0.11	0.40	0.10	<0.01	...	...	...	...					32-35 x 19
CRM 14 HY T4	0.17	1.97	0.041	0.012	0.23	0.077	0.24	0.16	<0.005	...	...	...	...					32-35 x 19
CRM 12 DB E191-1(D)	0.013	3.140	0.0017	0.011	0.025	0.018	0.025	0.0080	0.009	0.397	0.0031	...	0.0026					35 x 30 w
CRM 14 J E196-1(D)	0.0039	1.908	0.0005	0.0076	0.365	...	...	...	...	0.201	...	0.0005	0.002					38 x 25 w
1.4.10 Special Alloys																	Typical	Size (mm)
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Al	Ti	Nb	Others			Alloy Type	Ø H
14 M BS 203Mn	0.048	0.46	0.30	0.026	5.99	5.50	16.75	0.18	1.88	0.06	(0.001)	(0.002)	(0.004)					38 x 12 w
14 M BS 9-4-30	0.316	0.06	<0.002	0.008	0.22	7.25	1.00	1.01	0.088	4.46	0.004	(0.002)	(0.007)	V 0.09			AMS 6526	35 x 12
CRM 14 MI 98A	0.019	0.10	0.002	(0.002)	0.24	(29.09)	0.12	0.05	0.05	(17.50)	0.04	<0.01	<0.01				Kovar	31 x 18 w
14 X ALNICO 1A	0.08	0.31	0.007	...	0.26	17.1	...	...	6.1	15.1	9.03	0.50	...	Zr 0.2			AlNiCo	40 x 15 c
14 MT 070A	0.014	0.32	<0.001	0.003	0.015	24.47	5.54	0.006	0.010	29.00	0.47	0.82	4.63					various
14 MT 098A	0.025	0.39	<0.0005	0.003	0.037	37.53	0.099	0.021	0.026	14.46	0.050	1.54	5.06					
1.4.11 High-Ni Calibration Series																		Size (mm)
	C	Si	S	P	Ni	Co	Cr	Cu	Al	Fe								Ø H
14 X FeNi20	0.012	1.59	0.0024	0.006	19.9	0.98	(0.015)	0.06	(0.002)	rem								40 x 15 cc
14 X FeNi35	0.056	0.149	0.093	0.030	34.7	0.345	0.08	0.039	(0.001)	rem								40 x 15 c
14 X FeNi40	0.074	0.068	1.22	0.014	40.3	1.02	0.05	0.063	2.61	rem								40 x 15 cc
14 X FeNi45	0.0056	1.04	0.021	0.041	46.0	0.62	0.11	0.077	1.10	rem								40 x 15 cc
14 X FeNi50	0.149	0.47	0.137	0.016	51.1	0.53	0.089	0.107	0.40	rem								40 x 15 cc

2. Nickel Base

Blocks/Discs

2.3 Fe/Ni/Cr															Typical Alloy Type	Size (mm)	
	C	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Ni	P	S			Ø	H
23 X 8001F	0.09	0.21	1.07	0.07	rem	20.43	0.52	1.03	0.51	0.47	31.4	...	...	'Incoloy 800'		40 x 15	c
23 X 8002E	0.06	0.47	0.68	0.28	rem	20.48	0.34	0.54	0.32	0.29	32.1	...	...			40 x 15	
23 X 8003F	0.01	0.79	0.28	0.51	rem	20.17	0.12	0.12	0.11	0.08	32.7	...	...			40 x 15	
23 X 8004E	0.06	0.53	0.70	0.30	rem	19.72	0.33	0.53	0.34	0.31	31.8	...	...			40 x 15	
23 X 8005E	0.07	0.46	0.73	0.28	rem	20.81	0.34	0.50	0.35	0.22	32.2	...	...			40 x 15	
23 X DS 1E	0.10	2.47	1.59	0.08	rem	17.87	0.08	1.04	0.09	0.07	36.4	...	...	Incoloy 800DS		40 x 15	c
23 X DS 2E	0.06	2.07	1.00	0.30	rem	17.81	0.30	0.48	0.17	0.04	37.4	...	...			40 x 15	
23 X DS 3E	0.05	1.61	0.58	0.63	rem	17.95	0.63	0.13	0.35	(0.02)	38.1	...	...			40 x 15	
23 X DS 4E	0.08	1.99	1.06	0.41	rem	16.88	0.32	0.56	0.20	0.035	37.15	...	...			40 x 15	
23 X DS 5E	0.080	1.98	1.04	0.30	rem	18.64	0.30	0.50	0.17	0.08	36.6	...	...			40 x 15	
23 RI INC 1	0.037	0.30	0.20	0.67	...	22.89	...	0.022	0.45	0.36	31.36	0.018	0.003			35 x 20	
23 RI INC 2	0.068	0.67	0.51	0.84	...	23.92	...	0.021	0.73	0.68	30.21	0.020	0.003			35 x 20	
23 RI INC 3	0.188	1.11	0.83	0.5	...	21.14	...	0.023	0.67	0.33	33.42	0.017	0.010			35 x 20	
23 RI INC 4	0.129	0.72	1.17	0.28	...	18.73	...	0.033	0.161	0.054	28.48	0.028	0.027			35 x 20	
23 RI INC 5	0.137	0.50	1.47	0.40	...	17.31	...	0.035	0.075	0.009	36.67	0.047	0.015			35 x 20	
2.4 Ni/Cr/Co/Mo															Typical Alloy Type	Size (mm)	
	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Ni	C	P				Ø	H
24 X 14939E	0.42	0.63	0.52	0.57	21.0	6.62	19.58	1.88	0.76	rem	...	...		C263		40 x 15	c
24 X 10999D	0.15	0.47	0.15	0.52	20.38	5.84	19.53	2.50	0.46	rem	...	...				40 x 15	
24 X 11001D	0.57	0.53	0.17	0.51	20.44	6.06	19.67	2.06	0.58	rem	...	...				40 x 15	
24 X 11002F	0.40	0.21	0.11	0.20	20.32	6.29	20.48	2.65	0.37	rem	...	...				40 x 15	
24 X 11005F	0.39	0.65	0.72	0.81	20.21	5.93	18.74	2.45	0.41	rem	...	...				40 x 15	
24 M BS 263	0.26	0.38	0.029	0.47	19.84	5.66	19.96	2.25	0.47	...	0.071	0.005				38-50 x 12	w
Waspalloys																	
	C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Nb	B			
24 X WASP 1B	0.01(3)	0.59	0.011	0.019	0.13	0.08	2.16	16.64	6.14	12.8	3.13	1.64	0.055	0.007			
24 X WASP 2B	0.09	0.35	0.018	0.009	0.24	0.11	1.66	18.5	4.22	14.6	3.53	1.00	0.12	0.008			
24 X WASP 3D	0.118	0.208	0.026	0.014	0.542	0.735	0.96	20.84	1.96	13.77	5.52	2.99	0.163	0.0087	continued		
24 X WASP 4C	0.052	0.21	(0.01)	<0.005	0.53	(0.004)	1.48	19.7	7.51	11.01	2.25	2.16	0.25	0.014			
24 M BS 199A	0.033	0.05	<0.001	0.006	0.014	0.022	1.05	19.25	3.99	13.47	3.07	1.26	0.040	(0.004)	continued		
Continuation from above																	
	V	W	Zr	Ta	Ni	Mg	Pb	Sn	As	Ag	Sb				Typical Alloy Type	Size (mm)	
24 X WASP 1B	0.03	0.18	0.12	...	...	...	...	...	...	...	...				Waspalloy	40 x 15	c
24 X WASP 2B	0.06	0.14	0.07	...	...	...	...	...	...	...	...					40 x 15	
24 X WASP 3D	0.123	0.064	0.059	0.021	51.76	(0.002)	0.008	0.014	0.007	0.010	0.022					43 x 20	
24 X WASP 4C	0.145	0.25	0.08	...	54.3	...	0.004	(0.005)	...	...	...					43 x 20	
24 M BS 199A	0.020	...	...	...	57.8	...	...	...	...	...	...					38-50 x 12	
2.5 Ni/Cr/Nb/Mo															Typical Alloy Type	Size (mm)	
	Si	Mn	Cu	Fe	Cr	Mo	Co	W	Nb	Ni						Ø	H
25 X 10221F	0.45	0.28	0.11	0.62	20.0	6.57	0.26	2.23	7.43	rem				PE 10 MC 102		40 x 15	c
25 X 10225G	0.25	0.29	0.12	0.55	18.27	5.95	0.30	1.74	7.00	rem						40 x 15	
25 X 10230G	0.34	0.35	0.12	0.76	21.9	6.06	0.59	3.83	7.04	rem						40 x 15	
25 X 10231D	0.14	0.13	0.06	0.55	20.58	6.00	0.11	2.67	6.76	rem						40 x 15	
25 X 10235E	0.56	0.53	0.26	1.26	19.87	5.85	0.53	3.14	7.25	rem						40 x 15	
25 X 10219E	0.20	0.33	0.13	0.65	20.36	5.01	0.25	2.67	6.62	rem						40 x 15	
2.6 Ni/Cr/Mo															Typical Alloy Type	Size (mm)	
	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Ni						Ø	H
26 X 11381D	0.30	0.43	0.008	0.70	19.76	9.47	(0.047)	2.48	0.41	rem				C130 ANC12		40 x 15	c
26 X 11383D	0.29	0.19	0.08	0.49	22.50	9.37	0.05(5)	2.84	0.67	rem						40 x 15	
26 X 11384E	0.15	0.13	0.12	0.98	20.5(3)	10.2	0.30	2.6(1)	0.50	rem						40 x 15	
26 X 14182D	(0.01)	<0.005	0.006	0.09	21.61	10.11	0.06	2.75	0.76	rem						40 x 15	
2.7 Ni/Cr/Mo/Co															Typical Alloy Type	Size (mm)	
	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Ni						Ø	H
27 X 14184F	0.38	0.38	0.064	0.35	21.64	10.8	10.6	0.01	<0.01	rem				C242 ANC11		40 x 15	c
27 X 14188D	0.33	0.30	(0.003)	0.44	21.17	10.3	10.4	0.03	<0.01	rem						40 x 15	
27 X 14386C	0.38	0.39	0.02	1.50	20.73	10.47	10.51	0.06	0.02	rem						40 x 15	
27 X 14387E	0.21	0.30	(0.005)	1.00	21.0	10.7	9.9	<0.01	<0.01	rem						40 x 15	
2.8 Ni/Cr/Fe															Typical Alloy Type	Size (mm)	
	C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Mg	Nb		Ø	H
28 X 6001G	...	0.95	...	...	0.12	0.83	6.33	16.38	...	1.02	0.58	0.02	0.01	...	Inconel 600	40 x 15	c
28 X 6002F	...	0.25	...	...	0.65	0.02	8.24	16.23	...	0.22	0.12	0.18	0.004	...		40 x 15	
28 X 6003E	...	0.74	...	...	0.47	0.42	7.1	15.56	...	0.62	0.22	0.025	0.01	...		40 x 15	
28 X 6004E	...	0.65	...	...	0.38	0.42	7.17	16.21	...	0.77	0.27	0.05	0.008	...		40 x 15	
28 X 6005E	...	0.60	...	...	0.39	0.39	6.98	16.93	...	0.62	0.28	0.06	0.002	...		40 x 15	
28 X X7501F	0.15	0.55	...	...	1.56	0.51	5.08	15.22	0.54	...	2.35	1.00	...	1.57	Inconel X750	40 x 15	c
28 X X7502D	0.10	0.33	...	...	1.03	0.22	6.70	14.93	0.35	...	2.60	0.74	...	0.96		40 x 15	
28 X X7503E	0.08	0.14	...	...	0.56	0.06	9.24	15.02	0.11	...	2.90	0.56	...	0.63		40 x 15	
28 X X7504D	0.03	0.39	...	...	1.09	0.22	6.42	14.22	0.46	...	2.59	0.70	...	0.95		40 x 15	
28 X X7505D	0.11	0.34	...	...	1.04	0.22	6.25	16.08	0.33	...	2.33	0.80	...	1.07		40 x 15	

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2.8 Ni/Cr/Fe (Continued)																		Typical	Size (mm)			
		C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Mg	Nb	V	Ni	Alloy Type	Ø	H		
	28 M BS 600-2	0.071	0.23	0.004	0.006	0.31	0.089	6.8	16.36	0.007	0.1	0.37	0.16	0.012	(0.02)	0.028	...	Inconel 600	38-50 x 12		w	
	28 M BS 600-3	0.020	0.19	0.005	0.008	0.28	0.24	8.88	14.77	0.007	0.1	0.2	0.09	0.012	(0.02)	0.02	...	Inconel 600	38-50 x 12			
	28 M BS 600-4	0.034	0.22	0.004	0.007	0.20	0.08	8.4	14.72	(0.002)	0.09	0.2	0.06	0.02	(0.015)	0.023	...	Inconel 600	38-50 x 12			
	28 M BS 600-5	0.047	0.26	<0.002	0.005	0.21	0.10	8.36	15.59	0.049	0.029	0.23	0.19	0.004	(0.03)	0.054	...	Inconel 600	38-50 x 12			
	28 M BS 600-6	0.083	0.31	0.001	0.007	0.21	0.24	7.33	14.86	0.12	0.066	0.24	0.278	0.022	0.14	0.03	...	Inconel 600	38-50 x 12			
	28 M BS 600C	...	0.39	0.001	0.009	0.50	0.05	9.31	15.64	0.03	0.033	0.21	0.21	...	...	0.03	...	Inconel 600	38-50 x 12			
	28 M BS 617	0.079	0.14	<0.001	0.007	0.057	0.062	1.76	22.44	9.64	12.42	0.28	1.20	(0.02)	0.123	0.022	...	Inconel 617	38-50 x 12			
	28 M BS 625B	0.023	0.12	<0.003	0.010	0.10	0.22	4.51	21.28	9.58	0.24	0.20	0.33	0.003	3.53	0.015	...	Inconel 625	38-50 x 12			
	28 M BS 718B	0.036	0.12	0.001	(0.006)	0.125	0.044	19.64	17.60	2.93	0.19	0.95	0.57	...	5.29	(0.03)	52.1	Inconel 718	38-50 x 12			
	28 M BS 800	0.075	0.55	0.0006	0.016	0.79	0.32	(45.8)	19.92	0.19	0.056	0.475	0.28	(0.0028)	0.020	0.073	...	Inconel 800	38-50 x 12			
	28 M BS 825C	0.024	0.24	0.0004	0.013	0.49	1.64	35.1	20.06	2.70	0.13	0.74	(0.10)	(0.002)	(0.04)	(0.03)	38.7	Inconel 825	38-50 x 12			
CRM	28 A 351	0.025	0.14	0.0006	(0.006)	0.037	0.016	18.26	18.12	3.06	0.136	1.06	0.55	...	5.20	...	...	IN 718	41 x 13		w	
CRM	28 TI E377-1(D)	0.0202	0.077	0.0006	0.0036	0.0225	0.0110	3.77	21.72	8.94	0.0348	0.255	0.216	...	3.50	...	...		40 x 20			
CRM	28 X 6251K	0.039	0.47	(0.0013)	(0.0014)	0.172	0.051	3.12	20.52	9.88	0.023	(0.01)	0.16	...	2.70	...	...					
CRM	28 X 6252L	0.077	0.61	0.0039	(0.010)	0.281	0.145	4.13	21.49	8.77	0.197	(0.025)	0.21	...	3.39	...	...					
CRM	28 X 6253M	0.122	1.28	0.013	(0.018)	0.54	0.30	5.43	21.90	7.86	0.39	0.044	0.32	...	4.25	...	...	continued				
CRM	28 X 6254K	0.037	0.53	0.0046	0.004	0.093	0.027	6.46	21.1	5.89	0.22	0.30	0.05	...	3.53	...	...					
CRM	28 X 6255K	0.045	0.15	0.024	0.022	0.405	0.423	1.06	22.46	8.57	0.309	0.12	0.11	(0.0025)	4.35	...	...					
	28 X 7181H	0.008	0.71	0.005	(0.003)	0.108	0.013	(19.5)	18.71	2.94	0.01	0.025	(0.007)	...	4.97	0.02	...					
CRM	28 X 7182L	0.035	0.47	0.0066	0.004	0.184	0.117	17.0	21.30	0.88	0.64	1.13	0.34	...	4.76	0.05	...					
CRM	28 X 7183S	0.296	0.52	0.0023	0.003	0.36	0.26	(19.6)	18.85	1.31	0.94	1.21	1.21	...	6.25	0.047	...	continued				
CRM	28 X 7184J	0.149	0.36	0.023	0.012	0.192	0.11	18.2	16.65	3.41	0.211	(0.28)	0.34	...	5.67	0.101	...					
CRM	28 X 7185J	0.050	0.13	0.0109	0.008	0.34	0.30	16.95	21.80	2.54	0.320	(0.16)	0.32	0.021	4.88	0.05	...					
	28 X 7186H	0.007	0.65	0.014	0.016	0.253	0.091	(16.5)	17.85	2.88	0.40	0.20	0.32	...	5.15	0.012	...					
CRM	28 MI 53B	0.064	0.11	0.0008	0.008	0.25	0.13	9.75	14.55	0.12	0.057	0.33	0.17	0.005	0.073	0.024	...					
CRM	28 MI 53C	0.070	0.33	<0.001	0.006	0.21	0.045	7.16	14.95	0.047	0.035	0.34	0.21	0.008	0.024	0.029	...					
CRM	28 MI 54B	0.022	0.083	0.0009	0.006	0.051	0.11	2.32	21.64	9.43	0.29	0.21	0.37	0.003	3.55	0.011	...					
CRM	28 MI 56C	0.025	0.049	0.0003	0.009	0.064	0.016	18.39	18.02	2.94	0.011	0.99	0.521	0.0007	5.18	0.027	...					
CRM	28 MI 56D	0.041	0.119	0.0003	0.010	0.200	0.063	18.10	18.37	3.06	0.298	0.99	0.60	0.0051	5.22	0.033	...	continued				
CRM	28 MI 58A	0.076	0.26	<0.001	0.011	0.65	0.03	(44.90)	20.71	0.17	0.10	0.49	0.53	<0.001	(0.03)	0.03	...					
CRM	28 MI 59B	0.032	0.23	0.0028	0.010	0.45	2.48	31.25	21.20	3.05	0.049	0.96	0.18	(0.002)	(0.005)	0.048	...					
CRM	28 MI 60B	0.063	0.87	0.0003	0.013	1.54	0.05	17.7	25.3	2.9	3.02	(0.005)	0.05	0.0022	(0.01)	0.069	...					
CRM	28 MI 201A	0.019	0.15	(0.0004)	0.005	0.19	0.008	9.09	29.9	0.018	0.009	0.30	0.37	0.006	0.009	0.011	...					
Continuation from above			Ta	W	B	Zr	As	Sn	Sb	Pb	Bi	Ag	Zn	Ni	N	O		Typical Alloy Type	Size (mm)			
	28 X 6251K	...	...	0.0047	...	(0.003)	(0.004)	...	(0.003)	...	(0.0024)	(0.001)	62.3	0.211	...				43 x 20		c	
	28 X 6252L	...	...	0.014	...	(0.009)	(0.009)	...	...	(0.010)	(0.0086)	(0.008)	59.9	0.322	...				43 x 20			
	28 X 6253M	...	...	0.023	...	(0.019)	0.022	(0.028)	(0.022)	(0.017)	(0.020)	(0.019)	56.67	0.35	...			Inconel 625	43 x 20			
	28 X 6254K	(0.012)	...	0.0014	...	(0.003)	...	...	...	...	...	...	(61.3)	0.065	...				43 x 20			
	28 X 6255K	0.25	...	(0.009)	...	...	...	...	...	...	...	...	...	61.67	0.194	...				43 x 20		
	28 X 7181H	...	...	0.0010	...	(0.005)	0.003	...	(0.005)	...	...	...	...	52.6	0.233	...				43 x 20		c
	28 X 7182L	0.011	0.10	(0.0010)	...	...	(0.005)	...	...	...	...	...	...	52.7	0.033	...				43 x 20		
	28 X 7183S	0.02	0.08	0.0016	...	...	(0.006)	...	...	...	...	...	...	48.96	0.04	...			Inconel 718	43 x 20		
	28 X 7184J	0.08	0.20	0.0062	0.017	(0.005)	0.011	(0.007)	(0.007)	...	(0.007)	...	...	54.00	...	...				43 x 20		
	28 X 7185J	0.035	0.096	0.012	(0.024)	...	(0.004)	(0.002)	(0.005)	...	...	...	...	51.84	0.24	...				43 x 20		
	28 X 7186H	...	...	0.0047	...	(0.008)	(0.014)	0.025	0.016	...	...	...	...	54.84	0.077	...				43 x 20		
	28 MI 53B	...	0.018	0.005	<0.01	...	0.0007	...	...	...	...	...	...	74.2	0.0095	...			Inconel 600	31 x 18		w
	28 MI 53C	...	(0.008)	0.004	<0.01	...	...	...	...	...	...	...	...	76.5	0.0079	...			Inconel 600	31 x 18		
	28 MI 54B	(0.004)	0.12	0.002	<0.01	...	...	...	...	...	...	...	...	61.6	0.0142	...			Inconel 625	31 x 18		
	28 MI 56C	0.008	0.02	0.0029	(0.004)	...	<0.002	...	...	...	...	...	...	53.68	0.0089	0.0004			Inconel 718	31 x 18		
	28 MI 56D	0.007	0.064	0.0044	(0.001)	...	0.0019	...	...	...	...	...	...	52.8	0.0084	0.0014			Inconel 718	31 x 18		
	28 MI 57B	<0.01	0.013	0.0015	0.020	...	...	...	...	...	...	...	...	71.2	0.0054	0.0032			Inconel 750	31 x 18		
	28 MI 58A	...	<0.01	<0.001	<0.01	...	...	...	...	...	...	...	...	32.01	...	...			Inconel 800	31 x 18		
	28 MI 59B	...	(0.012)	...	(0.005)	...	...	...	...	...	...	...	...	40.01	0.0079	0.0030			Alloy 825	31 x 18		
	28 MI 60B	...	3.1	0.0018	...	...	...	...	...	...	...	...	...	45.1	0.029	0.0035			RA 333	31 x 18		
	28 MI 201A	...	<0.01	<0.002	<0.01	...	...	...	...	...	...	...	...	59.9	0.0053	...			Inconel 690	31 x 18		

2. Nickel Base

Blocks/Discs

2.10 Ni/Co/Cr/Al/Ti		C	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Zr	V	Ni	N	Typical Alloy Type	Size (mm) Ø H		
CRM	210 X 11774F	0.09	0.16	0.04	0.16	0.23	10.25	3.41	13.67	5.30	5.56	0.08	0.94	rem	...	IN100 AMS 5397	40 x 15	c	
	210 X 11775G	0.024	0.36	0.127	(0.008)	1.02	10.42	3.19	14.83	5.76	7.0	0.070	0.47	(56.6)	(0.003)		45 x 20		
	210 X 11979G	0.025	0.30	0.13	0.07	0.56	8.07	3.28	14.32	5.22	3.76	0.04	0.82	rem	...		40 x 15		
	210 X 11980G	0.013	0.38	0.18	0.015	0.67	9.47	3.02	14.98	4.07	3.97	0.02	0.83	rem	...		40 x 15		
	210 X 11981F	0.09	0.33	0.21	0.10	0.93	11.81	3.66	14.65	4.83	5.07	0.11	0.73	rem	...				
		C	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Zr	V	Ni	B				
	210 X 11982D	0.15	0.30	0.19	0.07	0.84	9.54	3.09	14.50	5.7	5.07	0.04	1.20	rem	0.027	continued			
	210 X 11999A	0.014	0.40	0.18	0.012	0.66	9.42	3.03	14.96	4.20	4.08	0.033	0.82	rem	...				
CRM	210 A 345	0.153	...	...	...	...	9.95	3.01	14.71	(5)	5.58	0.044	1.00	rem	...	continued			
CRM	210 A 346A	(0.15)	...	...	...	...	(10)	(3)	(15)	(5)	(5.5)	...	(1)	rem	...				
Continuation from above		ppm Ag	ppm Mg	ppm Pb	ppm Sn	ppm Cd	ppm Zn	ppm As	ppm Se	ppm Bi	ppm Sb	ppm Te	ppm Ca	ppm Ga	ppm Ti	Typical Alloy Type	Size (mm) Ø H		
	210 X 11982D	<1	60	5	6	<0.5	9	76	<2	<0.5	2	<1	...	...	...	IN 100	40 x 15	c	
	210 X 11999A	1.3	5.5	3.7	6.2	0.1	7.8	<5	<1	<1	1	<1	...	...	...		40 x 15		
	210 A 345	<0.2	5	0.2	6	<0.1	<0.5	(2)	<0.5	<0.2	<2	<0.2	<5	8	<0.2	IN 100	41 x 13	c	
	210 A 346A	42	130	22	93	0.4	29	51	6	10	45	9	(20)	(50)	(2)		41 x 13		
2.11 Ni/Cr/Al		Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Nb	Ta	Zr	B	C	Ni	Typical Alloy Type	Size (mm) Ø H	
	211 X 11221F	0.08	0.27	0.09	0.22	13.83	3.80	1.27	1.22	6.26	2.76	0.08	0.08	...	...	rem	IN 713 AMS 5377	40 x 15	c
	211 X 11222F	0.23	0.32	0.11	0.17	14.18	4.03	0.12	1.05	5.47	2.89	0.08	0.12	...	...	rem		40 x 15	
	211 X 11224F	0.24	0.09	0.34	0.46	14.03	4.02	0.32	1.27	6.07	2.92	0.32	0.12	...	...	rem		40 x 15	
	211 X 11233E	0.14	0.20	0.21	0.39	12.67	4.10	0.63	1.32	6.03	2.61	0.23	0.13	...	...	rem		40 x 15	
	211 X 11236E	0.21	0.21	0.16	0.46	15.98	4.02	0.64	1.33	6.14	2.73	0.10	0.05	...	...	rem		40 x 15	
CRM	211 A 350	0.110	0.019	...	1.50	13.43	4.29	0.338	0.87	5.97	2.17	...	0.072	0.013	0.138	70.8	IN 713	41 x 13	
2.12 Ni/Cu		C	Si	S	Mn	Cu	Fe	Cr	Pb	Co	Ti	Al	Mg	Zr	P	Ni	Typical Alloy Type	Size (mm) Ø H	
	212 X 4001L	0.090	1.45	0.020	3.01	27.4	0.50	0.04	0.06	0.11	0.11	0.11	0.12	...	...	(66.8)	Monel 400 Monel 500 Monel 505 Monel 506	40 x 15	c
	212 X 4002K	0.046	0.10	0.071	1.99	31.5	0.99	0.023	0.05	0.09	0.06	0.055	0.017	...	...	(64.8)		40 x 15	
	212 X 4003H	0.02	0.27	0.024	1.04	30.6	2.00	0.07	0.05	0.03	0.03	0.03	0.04	...	...	65.7		40 x 15	
	212 X 4004J	0.12	0.52	0.010	0.55	30.1	3.11	0.13	0.03	0.10	0.60	1.03	0.07	...	...	63.6		40 x 15	
	212 X 4005D	0.074	2.44	0.0255	1.45	21.31	3.36	0.350	0.020	0.107	0.613	1.85	(0.0002)	...	(0.0025)	68.38		43 x 20	
	212 X 4006D	0.064	4.62	0.054	0.78	24.7	2.02	0.113	0.02	0.06	1.32	3.99	0.04	...	...	(62.3)		40 x 15	
CRM	212 A 363/1	0.140	0.028	(0.002)	1.26	31.90	1.86	(0.05)	...	0.032	(0.03)	0.027	...	...	...	64.7	Monel 400	38 x 19	w
	212 M BS 400C	0.160	0.18	0.001	1.05	31.68	1.61	0.48	0.0007	0.053	0.056	0.056	0.009	...	0.012	64.55	Monel 400	38-50 x 12	
	212 M BS 500D	0.15	0.07	<0.002	0.69	29.7	0.73	0.21	...	0.033	0.45	2.98	0.01	...	0.009	(64.9)	Monel 500	38-50 x 12	
	212 M BS 400-1	0.109	0.16	0.008	1.07	30.97	1.27	0.033	0.002	0.37	0.007	0.004	0.048	...	0.022	66.0		38-50 x 12	
	212 M BS 400-2	0.170	0.17	0.008	1.17	30.75	1.42	0.091	(0.001)	0.46	0.0011	0.006	0.033	...	0.027	65.9		38-50 x 12	
	212 M BS 400-3	0.153	0.063	0.006	0.85	31.25	1.6	0.21	(0.0015)	0.46	0.004	0.001	0.012	...	0.026	65.4		38-50 x 12	
	212 M BS 405	0.13	0.04	0.041	1.03	31.80	1.34	0.006	...	0.025	0.003	0.1	0.026	...	0.010	65.49		38-50 x 12	
CRM	212 MI 51B	0.16	0.105	0.002	1.01	31.70	1.60	0.32	...	0.029	0.05	0.004	0.015	<0.01	0.011	64.9	Monel 400	31 x 18	w
CRM	212 MI 52B	0.154	0.09	0.0010	0.77	30.22	0.77	0.047	0.0002	0.004	0.50	3.02	0.012	0.039	0.009	64.3	Monel 500	31 x 18	
CRM	212 MI 202A	0.13	0.046	0.032	1.03	32.3	1.31	0.008	...	0.020	0.005	0.080	0.024	0.010	0.011	64.8	Monel R405	31 x 18	
		C	Si	S	P	Mn	Cu	Fe	Mg	Pb							Typical Alloy Type	Size (mm) Ø H	
	212 X NA2G	0.07	2.50	0.023	0.019	1.06	29.6	1.53	0.008	0.02							Monel H	40 x 15	c
	212 X NA3G	0.37	3.66	0.008	0.022	0.52	29.2	1.42	0.74	0.05								40 x 15	
2.14 Ni/Cu/Sn		C	Si	S	P	Mn	Cu	Fe	Mg	Sn	Zn	Ni							Size (mm) Ø H
	214 N N50.02	0.22	0.02	0.30	2.0	1.1	28.2	3.9	0.006	14.0	0.39	rem							50 x 10
	214 N N50.03	0.10	0.02	0.16	0.9	0.80	33.2	2.3	0.02	11.0	0.36	rem							50 x 10
	214 N N50.05	0.02	0.03	0.19	0.05	2.0	42.0	<0.01	0.06	10.1	<0.01	rem							50 x 10

2. Nickel Base

Blocks/Discs

2.15 Ni/Co/Cr/Fe/Mo		C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	V	W	Ni	N	Others	Typical Alloy Type	Size (mm)	
																		Ø	H
CRM	215 X HB1M	0.068	0.246	0.049	0.005	1.25	0.035	7.46	2.04	33.9	1.12	0.63	...	rem	0.031	Al, Ti, Sn	BS 3146	43 x 20	c
CRM	215 X HB2F	0.045	0.48	0.039	0.011	0.925	(0.004)	2.43	1.63	32.1	0.51	0.52	...	61.2	0.006		ANC 15	43 x 20	
	215 X HB3F	0.10	1.26	0.020	0.004	1.09	...	4.98	0.675	29.1	0.83	0.51	...	rem	...		AMS 5396	40 x 15	
	215 X HB4E	0.138	1.38	(0.008)	(0.026)	0.89	...	6.07	0.70	26.6	1.76	0.34	...	rem	...		ASTM A494	40 x 15	
	215 X HB5J	0.147	1.30	0.002	0.053	0.44	0.05	3.05	0.03	26.0	2.47	0.14	...	rem	0.008	Al, Ti	Hastelloy B	43 x 20	
CRM	215 X HC1K	0.031	0.58	0.006	0.003	1.18	0.057	4.31	15.2	19.5	2.44	0.144	3.22	53.2	0.121	Ti	BS 3146	43 x 20	c
	215 X HC2H	0.066	1.02	0.003	0.012	0.97	0.023	3.62	15.7	18.9	1.7	0.38	3.91	rem	0.18	Al, Ti	ANC 16	43 x 20	
CRM	215 X HC3J	0.105	1.06	0.027	0.025	0.79	0.157	5.38	17.2	18.0	0.97	0.40	4.31	51.3	0.146	Al, B, Ti	AMS 5388	43 x 20	
CRM	215 X HC4H	0.245	1.86	0.032	0.035	0.56	0.025	8.15	20.85	17.35	0.495	0.745	5.78	43.8	...	Al, Ti, B	A 494	43 x 20	
CRM	215 X HC5R	0.243	1.35	0.033	0.053	0.322	0.265	6.81	18.81	14.37	0.093	0.53	4.87	50.09	0.162	Al, Ti, Mg	Hastelloy C	43 x 20	
	215 M BS H1B	0.006	0.049	0.0005	0.003	0.81	(0.01)	1.00	<0.01	26.52	<0.02	<0.01	...	(71.4)	...				
	215 M BS H3B	0.078	0.63	0.0005	0.013	0.11	0.27	19.92	22.23	8.84	1.96	0.06	0.49	44.9	...	continued			
	215 M BS H6A	0.005	(0.03)	<0.002	0.010	0.31	0.070	4.34	21.37	13.37	1.11	0.17	3.09	rem	...				
CRM	215 MI 55B	0.004	0.021	0.0010	0.005	0.323	0.013	1.12	8.25	24.62	0.036	0.005	0.12	65.4	...				
CRM	215 MI 65B	0.0054	0.030	0.0005	0.006	0.29	0.054	3.63	21.32	13.02	0.59	0.155	2.87	57.3	...				
CRM	215 MI 66B	0.0044	0.028	0.0003	0.008	0.47	0.086	5.80	15.86	16.06	0.90	0.16	3.42	56.65	...	continued			
CRM	215 MI 67B	0.008	0.24	0.0010	0.012	1.12	1.74	14.26	28.54	4.98	3.69	0.054	3.10	41.1	...				
CRM	215 MI 69B	0.074	0.38	0.0004	0.013	0.68	0.11	17.84	21.90	8.78	1.58	0.10	0.78	47.37	...				
Continuation from above			Nb	Al	Ti	Ta	Zr	B	Sn	Mg	N	O					Typical Alloy Type	Size (mm)	
																		Ø	H
	215 M BS H1B	<0.005	0.12	0.11	(0.005)	...	0.003	...	...	...	...	...					Hastelloy B-2	38-41 x 12	w
	215 M BS H3B	0.28	0.14	0.020	(0.005)	...	0.0052	...	...	...	...	...					Hastelloy X	38-41 x 12	
	215 M BS H6A	0.029	0.24	0.007	...	...	0.0012	0.003	...	...	...	...					Hastelloy C-22	38-41 x 12	
	215 MI 55B	0.08	0.09	0.002	(0.08)	(0.005)	0.002	<0.001	0.011	0.016	0.0009						Haynes 242	31 x 18	w
	215 MI 65B	0.029	0.283	0.005	(0.06)	<0.001	(0.002)	(0.001)	0.009	0.046	0.0013						Hastelloy C22	31 x 18	
	215 MI 66B	0.019	0.40	0.006	...	0.02	0.0020	...	0.004	0.0108	0.0010						Hastelloy C276	31 x 18	
	215 MI 67B	0.73	0.26	0.005	(0.03)	(0.002)	(0.001)	(0.002)	0.007	0.060	0.0014						Hastelloy G30	31 x 18	
	215 MI 69B	0.11	0.20	0.011	...	0.005	(0.0007)	...	0.006	0.0155	0.0011						Hastelloy X	31 x 18	
2.19 Various Nickel Alloys		C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Ni	Nb	Y		Size (mm)	
																		Ø	H
	219 X NY1A	...	1.10	...	...	...	...	...	29.2	...	...	1.12	9.9	rem	...	0.24		40 x 15	c
	219 X NY2A	...	1.64	...	...	...	...	...	20.8	...	...	0.6	13.1	rem	...	0.69		40 x 15	
CRM	219 X 20500A	0.025	1.48	0.004	0.002	0.22	0.002	1.26	51.2	0.002	0.002	...	...	45.7	...	...		43 x 20	c
	219 M BS 197A	0.050	0.96	<0.001	0.021	1.56	0.12	18.07	25.11	2.99	3.06	0.017	0.18	...	0.20	...			
	219 M BS 725	0.010	0.02	0.002	0.004	0.08	0.014	8.0	20.72	7.97	0.02	1.52	0.13	58.0	3.52	...	continued		
	219 M BS 750B	0.052	0.14	<0.001	0.006	0.09	0.05	7.23	15.7	0.21	0.35	2.58	0.72	71.92	1.06	...			
	219 M BS 925	0.011	0.11	0.0020	0.016	0.50	1.74	26.92	20.82	3.0	0.34	2.2	0.17	43.53	0.23	...			
	219 X 1837A	0.004	0.053	0.001	0.002	0.003	...	0.1	9.98	3.0	10.04	5.28	5.63	rem	<0.01	...	continued		
	219 X 1867B	0.12	0.15	0.024	0.014	0.195	0.04	(1.78)	7.2	6.0	10.7	2.5	7.9	rem	0.1	...			
CRM	219 MI 203A	0.005	0.41	0.0009	0.006	0.023	0.050	40.6	0.72	0.090	12.88	1.58	0.066	38.44	5.00	...	continued		
CRM	219 MI 207A	0.007	0.053	0.0027	0.002	0.015	0.017	0.64	19.98	9.62	33.46	0.91	0.040	35.19	0.043	...			
CRM	219 MT 133A	0.014	0.145	<0.001	0.003	0.51	4.41	13.75	0.037	4.17	0.003	...	...	76.99	...	...		32 X 19	
Continuation from above			V	Ta	W	Zr	Mg	B	Re	Hf	N						Typical Alloy Type	Size (mm)	
																		Ø	H
	219 M BS 197A	0.051	...	2.79	...	(0.003)	0.0019	...	...	(0.052)							RA 333	38 x 12	w
	219 M BS 725	(0.01)	...	...	...	(0.002)	(0.002)	...	...	0.0051							Inconel 725	38 x 12	
	219 M BS 750B	0.04	(0.01)	(0.05)	(0.01)	...	0.003	...	...	(0.002)							Nickel 750	38 x 12	
	219 M BS 925	0.03	...	0.47	...	...	0.002	...	...	0.0042							Inconel 925	38 x 12	
	219 X 1837A	...	<0.01	0.012	0.027	...	0.11	...	...	...							High B Alloy	40 x 15	c
	219 X 1867B	...	3.4	0.63	0.45	...	...	0.31	(0.008)	...							B1900-type	40 x 15	
	219 MI 203A	<0.01	...	(0.02)	<0.01	<0.002	...	...	...	0.001							Inconel 909	31 x 18	w
	219 MI 207A	0.011	0.007	0.028	0.003	...	0.011	...	...	0.0031							MP35N	31 x 18	
2.21 Ni/B Hardfacing Alloys		C	Si	S	Mn	Cr	Mo	Cu	B	Fe	Ni							Size (mm)	
																		Ø	H
	221 X HF1A	0.144	4.61	0.006	0.130	13.1	0.018	0.029	2.12	0.33	rem							40 x 15	c
	221 X HF2A	0.91	2.29	0.0095	0.32	9.5	0.16	0.70	2.83	0.33	rem							40 x 15	
	221 X HF3A	1.24	3.34	0.004	0.036	10.6	0.06	0.095	1.80	1.21	rem							40 x 15	
	221 X HF4A	0.54	5.97	0.014	0.109	14.7	0.09	0.044	1.26	6.58	rem							40 x 15	

3. Copper Base

Blocks/Discs

3.1 Brass - Cu/Zn Binaries															Size (mm)			
		Sn	Pb	Zn	Fe	Ni	Al	Si	Mn	Cu	As	Bi	Sb	B	Ø	H		
CRM	31 X B1M	(0.003)	(0.007)	43.4	(0.01)	(0.005)	<0.002	<0.005	<0.001	56.6	<0.005	<0.001	<0.005	...	40 x 15	cc		
CRM	31 X B2K	(0.005)	(0.006)	37.70	(0.016)	(0.007)	<0.0005	<0.001	<0.0005	62.18	<0.0005	<0.0005	<0.0005	...	40 x 15			
CRM	31 X B3J	(0.007)	(0.034)	33.64	(0.017)	(0.008)	<0.002	<0.001	<0.0005	66.27	<0.0005	<0.0005	<0.0005	...	40 x 15			
CRM	31 X B4K	0.0075	0.0071	30.40	0.016	0.0119	<0.002	<0.005	0.0003	69.46	0.0015	(0.0009)	(0.0009)	0.0015	42 x 18			
CRM	31 X B5J	(0.015)	(0.016)	23.90	(0.015)	(0.015)	<0.002	<0.001	<0.0005	76.01	<0.0005	<0.0005	<0.0005	...	40 x 15			
	31 X B6J	<0.005	<0.005	19.4	(0.01)	<0.005	<0.005	<0.005	<0.005	80.6	<0.005	<0.005	<0.005	...	40 x 15			
CRM	31 X B7J	0.101	0.010	15.01	0.018	0.020	<0.005	<0.005	0.0002	84.80	0.0016	0.066	0.0019	0.0030	42 x 18			
CRM	31 X B8H	0.035	0.072	9.52	0.0267	0.0083	(0.0013)	0.0051	0.0012	90.28	0.0081	0.031	0.0108	0.0021	42 x 18			
CRM	31 X B9K	(0.0025)	0.0051	4.79	0.0028	0.0101	<0.002	(0.0006)	(0.0001)	95.20	(0.0005)	<0.001	<0.001	(0.0007)	42 x 18			
	31 X B95	0.45	<0.001	4.99	(0.007)	<0.001	<0.005	(0.01)	<0.001	94.4	(0.008)	(0.007)	<0.001	<0.001	40 x 15	cc		
CRM	31 PN MB1	...	...	39.39	...	...	...	...	...	60.66	...	...	...	...	40 x 20	w		
CRM	31 PN MB2	...	...	32.80	...	...	...	...	...	67.17	...	...	...	...	each			
CRM	31 PN MB3	...	...	26.67	...	...	...	...	...	73.26	...	...	...	...	Set only			
CRM	31 PN MB4	...	...	21.20	...	...	...	...	...	78.77	...	...	...	...				
CRM	31 PN MB5	...	...	15.63	...	...	...	...	...	84.25	...	...	...	...				
CRM	31 PN MB6	...	...	9.95	...	...	...	...	...	90.07	...	...	...	...				
CRM	31 PN MB7	...	...	4.99	...	...	...	...	...	95.00	...	...	...	...				
3.1.1 Alloyed Brass															Size (mm)			
		Sn	Pb	Zn	Fe	Ni	Al	Si	Mn	Cu	As	Bi	Sb	P	S	Ø	H	
CRM	31 X B10K	(0.012)	(0.032)	36.7	1.83	1.51	0.63	(0.003)	0.217	59.3	(0.003)	<0.001	<0.001	...	...	40 x 15	cc	
CRM	31 X B11G	(0.010)	(0.041)	34.2	0.88	1.01	0.334	(0.001)	1.09	62.2	(0.003)	<0.001	<0.001	...	...	40 x 15		
CRM	31 X B12F	(0.008)	(0.053)	35.1	0.45	0.55	0.148	(0.001)	2.16	61.4	(0.002)	<0.001	<0.001	...	...	40 x 15		
CRM	31 X B13F	(0.005)	(0.033)	42.3	0.187	0.196	0.051	(0.001)	2.75	54.4	<0.001	<0.001	<0.001	...	...	40 x 15		
CRM	31 X B14F	0.52	(0.025)	36.2	0.019	0.0049	4.22	0.055	(0.0009)	58.9	<0.005	<0.005	<0.002	...	...	42 x 18	cc	
CRM	31 X B15G	1.04	(0.014)	37.7	0.018	0.005	3.19	0.095	(0.0008)	57.8	<0.005	<0.005	<0.002	...	...	42 x 18		
CRM	31 X B16G	2.17	(0.04)	37.4	(0.02)	(0.01)	2.04	0.20	(0.01)	58.0	(0.006)	<0.001	<0.001	...	...	40 x 15		
CRM	31 X B17F	0.010	(0.05)	(33.9)	(0.02)	(0.01)	6.05	(0.007)	<0.001	60.0	(0.015)	<0.001	<0.001	...	...	40 x 15		
CRM	31 X B18H	<0.01	1.00	39.9	(0.012)	(0.005)	<0.002	<0.02	<0.001	59.0	<0.005	<0.002	<0.005	...	...	40 x 15	cc	
CRM	31 X B19M	<0.005	2.27	37.6	<0.01	(0.003)	<0.002	<0.02	<0.001	60.0	<0.01	<0.005	<0.005	...	...	40 x 15		
	31 X B20M	(0.06)	5.39	(36.4)	<0.01	<0.005	<0.005	<0.005	<0.005	57.9	<0.005	<0.01	<0.005	...	...	40 x 15		
CRM	31 X B21C	0.12	0.14	(28.6)	0.103	0.122	0.029	0.04	0.23	70.6	0.10	0.07	0.06	0.06	(0.0014)	40 x 15	cc	
CRM	31 X B22D	0.186	0.146	14.6	0.098	0.179	0.207	0.15	0.147	83.4	0.136	0.22	0.173	0.140	0.135	40 x 15		
	31 X B23C	0.055	0.039	(10.0)	0.049	0.041	0.081	0.05	0.057	89.1	0.056	0.058	0.054	0.046	0.055	40 x 15		
CRM	31 X B24C	0.016	0.017	4.17	0.017	0.021	0.010	(0.009)	0.013	95.5	0.021	0.022	0.020	0.010	0.051	40 x 15		
	31 X B25A	0.49	0.32	rem	0.08	0.19	0.39	0.09	0.12	58.5	0.037	0.054	0.044	0.01	<0.005	40 x 15		
CRM	31 X B26C	1.566	1.08	29.68	1.29	1.48	1.123	0.46	0.337	62.60	0.108	0.123	0.075	0.0374	(0.0013)	42 x 18		
	31 X B27A	0.92	0.24	(19.9)	0.31	0.042	0.031	0.053	0.045	78.2	0.03	0.055	0.037	0.046	<0.001	40 x 15		
CRM	31 MI 74A	0.50	0.02	38.14	0.01	0.01	<0.01	<0.01	<0.01	rem	<0.01	...	<0.01	0.006	0.001	31 x 18		
CRM	31 MI 74B	0.70	0.017	38.9	0.011	0.006	0.003	0.003	<0.01	60.4	<0.01	<0.005	0.003	(0.008)	(0.003)	31 x 18		
	31 A 43.01-4	0.116	<0.002	22.44	0.008	0.121	2.75	0.063	0.064	74.36	0.118	<0.002	<0.001	...	...	50 x 12		
	31 A 43.02-4	0.060	0.064	20.82	0.128	0.068	2.40	0.038	0.035	76.21	0.083	<0.001	<0.001	...	...	50 x 12		
	31 TL1	0.046	0.06	39.7	0.017	0.106	0.01	0.36	...	59.7	...	...	...	0.08	...	60 x 5	cc	
	31 TL2	0.48	0.408	35.55	0.216	0.71	0.485	0.202	0.350	61.55	...	...	...	...	...	60 x 5		
	31 TL3	1.50	1.02	32.75	0.36	0.90	0.91	0.034	0.205	62.30	...	...	...	...	...	60 x 5		
	31 TL4-1	0.693	2.017	34.60	0.466	0.227	0.104	0.12	0.109	61.70	...	...	...	...	...	60 x 5		
	31 TL5	1.01	3.01	33.65	(0.65)	0.705	0.200	(0.50)	0.395	59.40	0.14	...	0.15	0.16	...	60 x 5		
	31 TL6	0.250	0.205	30.26	0.085	1.21	0.139	1.25	0.055	66.55	...	...	...	...	...	60 x 5		
	31 TL7	0.038	0.71	42.45	0.031	0.020	0.308	0.13	0.62	55.60	...	...	...	...	...	60 x 5		
	31 TL20	0.56	0.27	13.10	0.115	0.205	0.008	0.035	0.043	85.55	0.122	...	...	...	...	60 x 5		
	31 TL21	1.50	0.209	15.40	0.086	0.156	...	0.036	0.004	82.50	0.103	...	...	...	...	60 x 5		
	31 TL22	1.05	0.123	15.0	0.15	0.105	...	0.05	<0.001	83.0	...	...	0.088	0.06	...	60 x 5		
	31 TL23	0.20	0.058	17.90	0.246	0.033	...	0.280	...	81.20	0.051	...	...	...	...	60 x 5		
	31 TLH1	0.15	0.15	17.02	4.55	0.50	7.93	0.17	5.25	64.18	...	...	...	...	...	60 x 5	cc	
	31 TLH2	0.055	0.080	22.05	2.98	3.00	6.20	0.086	3.65	61.88	...	...	...	...	...	60 x 5		
	31 TLH5	0.12	0.18	25.43	1.18	1.57	4.26	0.11	1.23	65.92	...	...	...	...	...	60 x 5		
	31 TLH6.1	0.257	0.25	19.04	3.13	3.19	6.09	0.20	4.54	63.18	...	...	...	...	...	60 x 5		
	31 TLH7.1A	0.227	0.327	26.85	(2.35)	0.70	3.16	0.055	2.96	63.40	...	...	...	...	...	60 x 5		
	31 TLH10	0.203	1.76	28.90	(1.0)	1.49	2.66	1.30	3.57	59.05	...	...	...	...	...	60 x 5		
	31 TLH11	0.44	1.26	26.20	0.36	2.91	0.46	0.88	0.71	66.80	...	...	...	...	...	60 x 5		
	31 TLH12	0.83	0.21	33.15	(1.2)	0.505	1.13	(0.06)	0.125	62.75	...	...	...	...	...	60 x 5		
	31 TLH13	1.19	0.67	31.8	(2.0)	3.22	2.00	0.21	3.14	55.75	...	...	...	...	...	60 x 5		
	31 TLS1	0.243	0.213	16.3	0.448	0.55	(0.02)	4.35	0.039	77.7	...	...	...	0.128	...	all values	60 x 5	cc
	31 TLS3	0.15	0.6	19	0.08	0.1	0.4	3.2	0.15	75	0.07	...	0.1	0.01	...	approximate	60 x 5	

Blocks/Discs

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3. Copper Base

Brasses/Bronzes

Blocks/Discs

3.1.8 Manganese Brass																	Typical	Size (mm)	
																	Alloy Type	Ø	H
CRM	31 X MNB1C	0.105	1.44	29.37	0.268	0.053	0.599	0.128	0.188	...	...	...	67.77					40 x 18	cc
CRM	31 X MNB2C	0.319	1.02	32.19	0.66	0.118	0.268	0.233	2.23	...	...	...	63.02					40 x 15	
CRM	31 X MNB3D	0.53	0.45	24.7	1.35	0.28	0.98	1.37	2.80	0.005	0.005	0.015	67.5					40 x 15	
CRM	31 X MNB4E	1.06	0.63	27.6	1.80	3.12	2.30	1.00	4.05	0.006	0.010	0.020	58.9					40 x 15	
CRM	31 X MNB5L	1.75	0.127	37.91	0.56	1.31	3.35	0.49	0.243	...	...	...	54.14					42 x 18	
	31 X MNB6B	0.007	0.04	(28.0)	0.27	0.26	0.005	(0.007)	0.84	...	...	...	70.8					40 x 15	
	31 M BS 675A	0.80	0.074	39.1	1.12	0.019	<0.002	(0.005)	0.32	0.003	0.0011	0.010	58.5				CDA 675	38 x 12	w
3.1.9 Silicon Brass																	Size (mm)		
																	Cu	Ø	H
CRM	31 X WSB 1H	0.209	0.84	8.96	0.249	0.045	1.82	5.45	0.109	0.049	0.0151	0.0318	0.019	0.405	0.116	0.035	81.61	43 x 20	c
CRM	31 X WSB 2D	0.390	0.62	12.80	0.312	0.150	0.95	4.01	0.069	0.730	0.033	0.018	0.042	0.199	0.018	...	79.6	43 x 20	
CRM	31 X WSB 3C	0.60	0.39	9.66	0.51	0.36	0.70	3.48	0.053	1.44	0.044	0.004	0.067	0.052	0.05	...	(82.4)	43 x 20	
CRM	31 X WSB 4L	0.83	0.204	5.49	0.90	0.255	0.417	4.48	0.025	1.72	0.048	...	0.080	0.074	0.044	...	85.4	43 x 20	
CRM	31 X WSB 5B	1.00	0.068	0.13	0.99	0.49	0.085	7.08	0.03	0.45	0.072	0.002	0.13	0.053	0.022	...	(89.5)	43 x 20	
CRM	31 X WSB 6C	0.053	0.61	1.00	0.048	0.115	0.31	2.42	0.009	0.32	(0.008)	...	0.003	0.25	(0.04)	...	94.7	43 x 20	
CRM	31 X WSB 7A	1.91	0.054	6.80	1.73	3.05	3.83	4.82	0.076	3.19	0.212	...	0.61	(0.002)	0.014	0.191	73.3	43 x 20	
	31 M BS 655A	0.07	0.008	0.02	0.075	0.008	(0.002)	3.14	<0.002	0.91	(0.004)	...	<0.002	...	...	...	95.74	38 x 12	w
CRM	31 MI 151B	0.009	0.013	12.94	0.025	0.011	0.002	3.11	(0.002)	0.002	0.003	...	(0.001)	...	(0.003)	...	84.0	32 x 18	w
CRM	31 PN WB1	0.13	0.20	rem	0.049	0.032	0.062	4.80	0.013	0.69	0.00098	...	0.025	...	...	0.0076	78.41	40 x 28	w
CRM	31 PN WB2	0.0041	0.42	rem	0.13	0.096	0.072	3.86	0.043	0.64	0.0084	...	0.055	...	...	0.0094	78.97	each	
CRM	31 PN WB3	0.22	0.23	rem	0.28	0.025	0.035	3.55	0.026	0.44	0.023	...	0.010	...	...	0.0029	79.45	Set only	
CRM	31 PN WB4	0.018	0.099	rem	0.35	0.051	0.083	3.06	0.020	0.14	0.060	...	0.031	...	...	0.0056	80.48		
CRM	31 PN WB5	0.27	0.012	rem	0.46	0.019	0.018	2.79	0.0075	0.050	0.083	...	0.0038	...	...	0.0023	80.88		
CRM	31 PN WB6	0.049	0.0037	rem	0.66	0.0068	0.0075	1.99	0.0043	0.011	0.12	...	0.0025	...	...	0.0011	81.11		
CRM	31 PN WB7	0.39	0.098	rem	0.033	0.068	0.041	3.95	0.052	0.88	0.017	...	0.031	...	...	0.0084	77.69		
CRM	31 PN BH1	0.044	0.74	2.03	1.67	0.96	0.027	4.77	0.0047	0.25	0.0047	0.0065	0.066	...	...	0.018	rem	40 x 25	w
CRM	31 PN BH2	0.21	0.57	2.99	1.28	0.74	0.079	4.14	0.015	0.54	0.023	0.0066	0.042	...	...	0.014	rem	each	
CRM	31 PN BH3	0.37	0.40	3.84	0.96	0.53	0.14	3.07	0.022	1.00	0.039	0.0075	0.026	...	...	0.0091	rem	Set only	
CRM	31 PN BH4	0.55	0.24	4.91	0.55	0.28	0.22	2.29	0.054	1.46	0.059	0.0057	0.016	...	...	0.006	rem		
CRM	31 PN BH5	0.69	0.015	5.58	0.093	0.047	0.29	1.45	0.071	1.80	0.073	0.0024	0.0054	...	...	0.0019	rem		
CRM	31 PN BH6	0.32	0.017	6.27	0.35	0.39	0.32	1.51	0.078	0.80	0.078	0.01	0.056	...	...	0.018	rem		
3.2.1 Phosphor-Bronze																	Typical	Size (mm)	
																	Alloy Type	Ø	H
CRM	32 X PB10K	11.93	0.054	0.0362	0.009	0.0567	<0.0005	0.0015	0.010	0.0009	0.0050	0.0240	0.0189	0.0035	0.0239	87.77		42 x 18	cc
CRM	32 X PB11D	3.05	1.01	1.10	0.50	1.01	0.0082	0.43	0.200	0.77	0.50	0.86	0.0015	0.064	0.0009	90.41		42 x 18	cc
CRM	32 X PB12C	4.64	0.47	0.49	0.31	0.51	<0.001	0.01	0.098	0.39	0.24	0.42	(0.010)	<0.001	...	(92.0)		43 x 20	c
CRM	32 X PB13B	6.96	0.25	0.27	0.14	0.26	<0.001	<0.005	0.052	0.096	0.12	0.22	(0.03)	<0.001	...	(91.5)		43 x 20	c
CRM	32 X PB14C	8.95	0.086	0.23	0.041	0.099	<0.005	0.050	0.026	0.035	0.039	0.050	0.069	<0.0005	0.15	(90.1)	CDA 521	43 x 20	c
CRM	32 X PB20A	4.54	0.0045	0.0067	0.0016	0.0088	<0.001	0.0048	0.0011	(0.0006)	0.0012	0.197	0.0032	...	...	95.03		38 x 17	w
CRM	32 X PB23A	7.58	0.0042	0.0020	(0.0005)	0.0032	(0.0004)	0.0017	0.0011	<0.001	0.0025	0.325	0.0017	...	...	92.05		45 x 17	
CRM	32 MI 89B	8.17	0.089	3.96	0.013	0.15	<0.01	<0.01	...	<0.01	<0.01	0.087	0.018	...	...	...	CDA 903	31 x 18	
CRM	32 MI 90B	6.44	1.66	2.98	0.019	0.69	<0.01	<0.01	...	<0.01	0.060	0.054	0.035	...	...	...	CDA 922	31 x 18	
	32 M BS 510A	4.6	0.016	0.21	0.005	0.020	<0.002	<0.003	0.0008	<0.002	(0.003)	0.11	0.008	...	...	96.10	CDA 510	38 x 12	w
CRM	32 DB 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)	...	...	92.22		40 x 30	
3.2.2 Lead Bronze																	Typical	Size (mm)	
																	Alloy Type	Ø	H
CRM	32 X LB10C	9.7	12.2	0.32	0.21	1.85	(0.010)	0.05	0.223	0.116	0.066	0.112	0.05	(0.002)	...	(75.0)	CDA 946D	40 x 15	cc
CRM	32 X LB11B	10.6	10.3	0.31	0.019	1.09	<0.002	(0.003)	0.094	0.005	0.034	0.061	0.008	0.047	...	77.3	CDA 937B	40 x 15	
CRM	32 X LB12C *	11.5	9.77	0.29	0.05	0.20	<0.005	<0.005	0.007	0.09	0.013	(0.006)	(0.002)	0.11	...	(78.3)	CDA 935B	40 x 15	
CRM	32 X LB13B	6.03	8.17	0.58	0.025	1.29	0.013	0.022	0.116	<0.001	0.035	0.028	0.063	0.100	...	83.58		40 x 15	
CRM	32 X LB14D	2.84	15.7	0.36	0.027	0.092	0.040	(0.01)	0.102	0.002	1.80	0.039	0.014	0.029	...	rem		40 x 15	
CRM	32 X LB15B	1.89	21.3	0.089	(0.001)	0.103	<0.002	<0.005	0.008	<0.001	0.008	0.053	<0.001	(0.012)	...	(76.5)	CDA 941C	40 x 15	
	* Target values																		
CRM	32 MI 92B	9.75	9.50	0.28	0.009	0.36	<0.01	<0.01	...	<0.01	...	0.35	0.028	0.036	(0.031)	...	CDA 937	31 x 18	
	32 M BS 937B-1	9.7	9.23	0.044	0.004	0.35	<0.003	<0.004	(0.008)	<0.002	...	0.18	0.012	0.032	...	80.2	CDA 937	41 x 12	
	32 M BS 938-1	7.16	14.8	0.26	0.015	0.49	<0.002	<0.004	(0.004)	(0.001)	...	0.033	0.059	0.009	...	77.1	CDA 938	41 x 12	

3. Copper Base

Bronzes

Blocks/Discs

3.2.3 Aluminium Bronze

		Sn	Pb	Zn	Fe	Ni	Al	Si	As	Mn	P	Mg	Cr	Cu	Size (mm)	
															Ø	H
CRM	32 X ALB 1M	0.023	0.223	0.032	3.04	6.03	10.09	0.13	<0.001	0.088	0.017	0.084	0.012	80.2	43 x 20	c
CRM	32 X ALB 2H	0.08	0.09	0.229	4.60	4.64	9.52	0.302	0.0114	0.393	0.027	0.0104	0.0261	80.0	43 x 20	c
CRM	32 X ALB 3Q	0.10	0.11	0.325	4.15	3.72	11.56	0.135	0.0060	0.374	0.025	0.088	0.0089	79.4	43 x 20	c
CRM	32 X ALB 4G	0.093	0.149	0.305	4.68	7.02	7.96	0.335	0.010	1.20	0.028	0.297	0.0275	(77.91)	43 x 20	c
CRM	32 X ALB 5H	0.10	0.20	0.28	2.45	4.10	7.50	0.08	0.008	1.05	0.030	0.008	0.006	(84.2)	43 x 20	c
CRM	32 X ALB 6H	0.126	0.060	0.19	3.06	5.62	8.42	0.30	(0.021)	1.41	0.036	0.0026	(0.004)	80.7	43 x 20	c
CRM	32 X ALB 7B	0.351	0.029	0.513	4.97	4.87	3.97	0.41	0.048	0.575	0.051	0.013	0.094	83.98	43 x 20	c
CRM	32 X ALB 8D *	0.50	0.005	0.75	5.7	6.5	7.2	0.6	0.15	1.5	0.15	0.05	0.05	bal	42 x 18	cc
CRM	32 X ALB 9A	0.032	0.285	0.040	3.79	0.773	12.79	0.160	(0.001)	0.069	0.019	0.0023	0.013	81.3	43 x 20	c
* Target values																
		Sn	Pb	Zn	Fe	Ni	Al	Si	Mn	Mg	Cd	Cu	Size (mm)			
															Ø	H
	32 T CA10	0.16	0.16	0.067	4.55	3.39	10.10	0.46	0.333	0.007	...	80.70	CA11 values are approximate		60 x 6	cc
	32 T CA11	0.25	0.1	0.2	1.3	2.0	10	0.25	0.8	0.07	...	85			60 x 6	
	32 T CA12	0.036	0.047	0.45	2.77	1.385	8.0	0.058	3.09	...	...	84.1			60 x 6	
	32 T CA13	(0.01)	0.0230	0.65	3.82	0.50	11.20	0.11	1.22	...	...	82.45			60 x 6	
	32 T CA20	0.19	0.18	0.41	0.79	1.18	8.00	0.17	1.85	...	0.05	87.15			60 x 6	
	32 T CA21	0.07	0.05	0.100	3.45	3.09	10.82	0.07	0.30	...	0.0095	81.9	CA36 values are approximate		60 x 6	
	32 T CA22	0.30	0.0243	0.605	2.51	4.54	10.45	0.32	0.745	...	...	80.50			60 x 6	
	32 T CA25	0.177	0.03	0.252	6.10	5.74	7.97	0.084	0.51	...	...	79.12			60 x 6	
	32 T CA26	0.005	0.058	0.038	4.36	4.87	9.10	0.035	0.188	...	0.034	81.25			60 x 6	
	32 T CA27	0.054	0.11	0.428	2.81	3.88	10.25	0.127	1.195	...	0.012	81.10			60 x 6	
	32 T CA30	0.099	0.142	0.066	5.2	3.10	7.55	0.15	2.05	...	...	81.6			60 x 6	
	32 T CA31	0.063	0.020	0.145	3.18	7.51	9.15	0.064	3.27	0.02	...	76.5			60 x 6	
	32 T CA35	0.30	0.10	0.56	6.1	3.80	11.4	0.25	1.6	...	...	75.6			60 x 6	
	32 T CA36	0.2	0.02	0.25	3.0	6.5	12.6	0.1	0.12	0.1	...	78			60 x 6	
	32 T 3298-A	0.04	0.04	0.635	6.05	6.90	10.60	0.065	1.60	...	...	74.15			60 x 6	cc
	32 T 3018-F	0.06	0.02	0.06	4.45	4.50	7.25	0.085	1.57	...	...	81.90			60 x 6	
	32 T 4149-G	0.34	0.15	0.37	2.00	1.96	9.84	0.18	0.21	...	...	84.95			60 x 6	
	32 T 4065-P	0.18	0.03	0.03	3.40	3.18	11.85	0.034	0.075	...	...	81.20			60 x 6	
	32 T 3610-Q	0.25	0.23	0.51	3.98	5.40	7.10	0.065	0.045	...	0.090	82.32			60 x 6	
	32 T 2151-R	<0.01	<0.005	<0.01	4.48	0.56	9.43	0.015	0.73	...	...	84.75			60 x 6	
	32 T 2152-S	...	<0.005	<0.01	3.99	0.68	9.78	0.015	0.42	...	...	85.05			60 x 6	
	32 T 2154-V	<0.01	<0.005	0.01	3.05	0.41	11.25	0.015	0.12	...	...	85.00			60 x 6	
	32 T 2158-W	0.01	<0.005	0.01	2.53	0.10	11.95	0.015	0.26	...	...	85.00			60 x 6	
	32 T 3297-Y	0.10	0.11	0.27	1.88	...	10.00	0.15	0.03	...	...	87.45			60 x 6	
	32 T 3301-Z	0.03	0.032	0.06	4.00	0.125	8.10	0.06	0.26	...	...	87.30			60 x 6	
	32 T 2504-E	0.51	0.59	0.55	3.55	6.4	8.1	0.075	0.65	...	...	79.5			60 x 6	
	32 T 3011-G	0.125	0.10	0.25	1.98	2.00	10.35	0.16	0.165	...	...	84.80			60 x 6	
	32 T 2805-X	0.34	0.105	0.26	0.79	1.04	6.95	0.03	6.42	...	...	84.05			60 x 6	
		Sn	Pb	Zn	Fe	Ni	Al	Si	As	Mn	P	Cr	C	Cu	Typical Alloy Type	Size (mm) Ø H
	32 A 51.11-4	0.027	0.33	0.111	0.060	0.012	5.27	0.159	<0.001	<0.001	0.035	0.013	...	93.95		50 x 12
	32 A 51.12-4	0.196	0.219	0.45	2.87	0.112	6.36	0.005	0.111	1.33	<0.001	0.013	...	88.29		50 x 12
	32 A 51.13-4	0.270	0.104	0.335	1.81	0.057	7.30	0.174	0.215	0.898	0.022	0.013	...	88.79		50 x 12
	32 A 51.14-4	0.113	0.003	0.656	0.72	0.219	8.42	0.286	0.44	0.55	0.012	0.013	...	88.57		50 x 12
CRM	32 MI 80B	0.018	0.009	0.078	3.31	4.69	10.19	0.030	(0.004)	0.54	0.009	0.012	(0.01)	81.2	CDA 630	31 x 18
CRM	32 MI 93B	0.009	0.012	0.17	3.87	0.088	10.33	0.024	<0.01	0.024	(0.002)	(0.007)	0.007	85.4	CDA 954	31 x 18
CRM	32 MI 94A	<0.01	0.009	0.09	4.04	4.37	10.63	<0.01	(0.01)	0.16	<0.01	...	(0.014)	(80.68)	CDA 955	31 x 18
CRM	32 MI 94B	(0.003)	0.004	0.14	3.99	4.31	10.80	0.028	<0.01	0.071	0.011	0.017	(0.006)	80.6	CDA 955	31 x 18
CRM	32 MI 204A	0.005	0.004	0.22	3.87	1.95	10.55	0.034	(0.01)	0.052	0.007	0.008	0.006	83.3	CDA 954 mod	31 x 18
	32 M BS 954A	0.07	0.047	0.10	3.90	1.38	10.20	0.07	(0.005)	0.27	0.012	...	(0.005)	83.9	CDA 954	38 x 12
	32 M BS 955B	0.025	0.046	0.10	3.91	4.25	10.08	0.085	<0.002	0.32	0.019	...	0.005	81.1	CDA 955	38 x 12
	32 M BS 955mod	0.096	0.035	1.05	5.46	6.38	10.37	0.054	<0.003	1.61	<0.002	...	...	(74.9)		40 x 17
	32 M BS 623A	0.002	0.001	0.008	2.19	0.146	9.12	0.014	(0.006)	0.273	<0.002	...	(0.002)	88.13	CDA 623	38 x 12
	32 M BS 630A	0.019	0.0069	0.17	3.73	4.81	10.05	0.037	0.002	0.11	<0.01	...	0.005	81.0	CDA 630	38 x 12
	32 M BS 642A	0.018	0.001	0.011	0.17	0.025	6.70	1.80	<0.002	0.005	0.001	...	0.001	91.0	CDA 642	38 x 12

3. Copper Base

Bronzes

Blocks/Discs

3.2.4 Bismuth Bronze																Size (mm)		
	Sn	Pb	Zn	Fe	Ni	As	P	Sb	Co	Se	Bi	Cd	B	Cu		Ø	H	
CRM 32 X SEB 1B	3.83	0.564	11.57	0.059	0.118	0.051	0.025	0.354	0.0108	0.895	5.77	...	...	(76.7)		42 x 18	cc	
CRM 32 X SEB 2C	9.34	0.424	3.73	0.078	0.028	0.0094	0.013	0.0120	0.0121	0.026	4.36	...	...	(81.8)		40 x 15		
CRM 32 X SEB 3C	2.07	0.109	0.85	0.082	1.52	0.0161	0.040	0.054	0.025	1.42	(5.4)	0.0016	0.0021	(88.4)		42 x 18		
CRM 32 X SEB 4C	9.26	0.011	8.60	0.366	0.0091	0.0012	(0.006)	0.0056	0.48	0.105	2.65	0.0004	0.0021	78.6		42 x 18		
CRM 32 X SEB 5B	5.28	0.0149	6.64	0.360	0.308	0.0121	0.183	0.0344	0.0048	0.512	1.17	0.0067	0.0028	85.5		42 x 18		
CRM 32 X SEB 6B *	6.74	0.083	5.21	0.42	0.86	0.082	0.034	0.085	0.202	0.32	0.60	...	...	85.2		40 x 15		
* Target values																		
3.2.5 Si/Mn Bronze																Size (mm)		
	Sn	Pb	Zn	Fe	Ni	Mn	Si	P	Cu							Ø	H	
CRM 32 PN BE1	0.014	0.028	0.52	0.047	0.012	1.69	2.34	0.051	rem							40 x 25	w	
CRM 32 PN BE2	0.041	0.023	0.027	0.078	0.29	1.35	2.82	0.024	rem							each		
CRM 32 PN BE3	0.13	0.012	0.19	0.10	0.10	1.10	3.26	0.039	rem									
CRM 32 PN BE4	0.11	0.0061	0.13	0.19	0.048	0.51	3.91	0.0070	rem							Set only		
CRM 32 PN BE5	0.30	0.0052	0.36	0.23	0.20	1.20	2.08	0.013	rem									
3.2.9 Bronzes																Size (mm)		
	Sn	Pb	Zn	Fe	Ni	Al	Si	As	Mn	Sb	P	S	Cr	Cd	Cu	Typical Alloy Type	Ø	H
CRM 32 X SN1D	11.75	5.17	0.804	0.0034	2.17	<0.002	<0.001	...	0.0018	0.006	0.0025	0.0064	...	...	79.93		42 x 18	cc
CRM 32 X SN2H	13.54	1.97	1.28	0.0332	0.104	0.0004	0.0028	...	0.0043	0.100	0.082	0.0326	...	...	82.80		42 x 18	
CRM 32 X SN3E	16.51	0.270	0.43	0.0782	0.513	0.0004	(0.002)	...	0.0026	0.260	0.297	0.096	...	...	81.32		42 x 18	
CRM 32 DB 377	5.92	0.00449	0.01006	0.01042	0.01074	0.00451	(0.013)	<0.001	0.00921	0.00130	<0.001	...	0.00669	<0.0001	94.04		40 x 30	
CRM 32 DB 378	5.74	0.00042	...	0.0182	0.00183	<0.0001	<0.001	0.00995	...	0.00861	0.00602	0.00091	0.0311	0.01007	94.13		40 x 30	
32 M BS 903B	7.9	0.10	4.39	0.049	0.50	(0.001)	0.002	0.003	0.0004	0.003	0.073	0.006	...	...	86.7	CDA 903	41 x 12	
32 M BS 905A-1	10.25	0.030	2.27	0.015	0.018	<0.003	<0.004	(0.001)	<0.0003	0.004	0.055	...	...	...	87.3	CDA 905	41 x 12	
32 M BS 922B-3	5.8	1.33	3.83	0.008	0.61	(0.001)	(0.001)	0.01	(0.002)	0.002	0.026	...	...	...	88.4	CDA 922	41 x 12	
32 T B1	15.0	0.2	1.0	0.05	0.05	0.15	0.05	...	...	0.4	0.02	0.02	...	...	83.05		60 x 6	cc
32 T B2	13.5	0.02	0.11	0.05	<0.01	<0.01	0.2	...	...	<0.01	0.17	0.05	...	...	85.9		60 x 6	
32 T B3	12.8	1.6	2.2	0.02	1.5	0.10	0.07	...	0.2	0.20	0.45	0.04	...	...	80.2		60 x 6	
32 T B4	10.8	2.5	1.2	<0.05	0.6	...	<0.05	...	...	0.1	0.5	0.02	...	...	84.0		60 x 6	
32 T B5	9.9	0.5	0.4	0.18	2.3	0.04	0.05	...	0.08	0.5	0.04	0.07	...	...	86.0		60 x 6	
32 T B10	6.60	4.03	2.55	0.17	0.97	0.17	<0.001	0.009	<0.001	1.09	0.015	0.05	...	...	83.90		60 x 6	cc
32 T B11	8.04	1.93	2.05	0.168	2.0	...	0.13	...	...	0.70	0.056	0.09	...	...	84.85		60 x 6	
32 T B12	9.6	0.2	0.6	0.2	2.6	0.1	0.05	0.1	0.25	0.1	0.5	0.01	...	...	85.7		60 x 6	
32 T B13	10.05	0.99	1.09	(0.25)	0.5	0.016	0.085	0.065	0.046	0.243	0.215	0.07	...	...	86.35		60 x 6	
32 T B14	11.0	0.5	0.15	0.1	0.302	...	0.07	0.039	<0.02	0.072	0.7	0.021	...	...	87.0		60 x 6	
32 T B20.1	6.35	5.1	3.77	0.165	0.51	0.04	0.055	...	...	0.520	0.072	0.115	...	...	83.35		60 x 6	
32 T B21	5.13	3.79	6.22	0.285	1.21	0.13	...	...	...	0.18	(0.004)	0.047	...	...	83.0		60 x 6	
32 T B22.1	3.5	6.0	4.0	<0.10	2.5	...	<0.1	...	...	0.05	...	0.03	...	...	83.0		60 x 6	
32 T B23.1	7.18	7.20	1.46	(0.040)	0.086	0.020	0.025	...	...	0.384	0.070	0.019	...	...	83.45		60 x 6	
32 T B30	9.80	10.00	1.05	0.115	0.97	0.063	0.066	...	0.150	0.22	0.063	0.048	...	...	77.45		60 x 6	
32 T B31	7.65	11.79	0.79	(0.015)	0.489	(0.031)	(0.047)	...	...	0.475	...	0.028	...	...	78.65		60 x 6	
32 T B32	5.96	16.10	1.21	0.11	1.49	0.085	0.075	0.0056	...	0.13	0.041	0.027	...	...	74.65		60 x 6	
CRM 32 PN WL1	0.22	0.013	3.53	0.072	0.44	0.082	0.057	0.0010	0.0041	...	0.012	0.020	...	0.0017	95.54		40 x 25	
CRM 32 PN WL2	0.32	0.011	1.56	0.13	0.32	0.057	0.046	0.0078	0.0038	0.0050	0.016	0.0070	...	0.0023	97.49		each	
CRM 32 PN WL3	0.37	0.00083	2.21	0.20	0.22	0.0034	0.0037	0.020	0.38	0.0085	0.021	0.0088	...	0.010	96.51			
CRM 32 PN WL4	0.55	0.0066	2.97	0.012	0.019	...	0.0019	0.0034	...	...	...	0.0050	...	0.0068	96.41		Set only	
CRM 32 PN WL5	0.73	0.0030	1.61	0.0025	0.0014	0.0014	0.0009	0.0011	0.00073	0.0006	...	0.0019	...	0.0038	97.62			
CRM 32 PN WL6	0.80	0.016	2.48	0.31	0.091	0.10	0.13	0.024	0.14	0.011	0.032	0.017	...	0.025	95.76			
CRM 32 PN BL1	2.58	0.25	0.68	0.38	0.25	0.11	0.059	0.058	0.062	0.053	0.49	(0.0081)	...	0.060	rem		40 x 27	
CRM 32 PN BL2	4.04	0.14	0.40	0.21	0.37	0.15	0.031	0.039	0.055	0.039	0.29	(0.0063)	...	0.040	rem		each	
CRM 32 PN BL3	6.12	0.065	0.15	0.10	0.13	0.019	0.015	0.025	0.026	0.021	0.084	...	...	0.022	rem			
CRM 32 PN BL4	8.38	0.013	0.017	0.014	0.015	...	0.011	0.0089	0.0092	0.0095	0.010	(0.022)	...	0.0092	rem		Set only	
CRM 32 PN BL5	11.05	0.0069	0.0078	0.0061	0.0074	0.00052	...	0.00057	0.0011	0.0039	0.0042	(0.031)	...	0.0015	rem			
																Size (mm)		
	Sn	Pb	Zn	Fe	Ni	As	Sb	P	Bi	Ag						Ø	H	
CRM 32 PN CM1	0.61	0.012	0.021	0.019	0.0086	0.0098	0.012	0.0088	0.010	0.010						40 x 30	w	
CRM 32 PN CM2	0.84	0.0067	0.0061	0.0064	0.0055	0.0068	0.0068	0.0058	0.0072	0.0061						each		
CRM 32 PN CM3	1.06	0.0038	0.0060	0.012	0.0031	0.0036	0.0040	0.0041	0.0033	0.0029								
CRM 32 PN CM4	1.30	0.0023	0.0020	0.0042	0.0011	0.0011	0.0019	0.0009	0.00093	0.0011						Set only		
CRM 32 PN CM5	1.14	0.019	0.013	0.0094	0.014	(0.015)	0.018	0.015	0.014	...								
Cu Binaries																Size (mm)		
	Sn															Ø	H	
32 X 14953C	1.37															40 x 15	c	
32 X 14954B	3.15															40 x 15		
32 X 14955B	5.25															40 x 15		
32 X 14956B	7.35															40 x 15		
32 X 14957B	9.30															40 x 15		

3. Copper Base

Blocks/Discs

3.6.2 Cu/Al															Size (mm)								
	Sn	Pb	Zn	Fe	Ni	Al	Si	Mn	Cu						Ø	H							
36 T 2794-H	0.105	<0.01	<0.01	0.82	0.69	8.0	0.048	<0.01	90.3						60 x 6	cc							
36 T 3299-J	0.106	0.110	0.19	0.38	0.21	10.10	0.136	1.12	87.60						60 x 6								
36 T 3296-L	0.06	0.30	0.62	0.07	0.41	9.40	0.20	0.37	88.55						60 x 6								
36 T 3300-M	0.205	0.205	0.085	0.45	0.205	8.73	0.415	0.165	89.5						60 x 6								
36 T CA3	0.20	0.15	0.30	0.80	0.80	10.9	...	0.06	86.5						60 x 6	cc							
3.6.3 Cu/Mg															Size (mm)								
	Mg	P	Ag	S	Al	Co	Cr								Ø	H							
CRM 36 X CMG10A	0.379	0.027	0.076	0.0024	0.024	0.042	0.038								36-38 x 16	cc							
CRM 36 X CMG11A	0.771	0.079	0.151	0.0019	0.043	(0.0001)	<0.0005								36-38 x 16								
CRM 36 X CMG12A	1.16	0.09	0.192	0.0020	0.0076	0.089	0.074								36-38 x 16								
3.6.4 Cu/Be/Co															Typical Alloy Type	Size (mm)							
	Sn	Pb	Zn	Fe	Ni	Al	Si	Mn	Cr	Be	Co	Ag	Cu			Ø	H						
CRM 36 X CBC2E	0.009	0.0099	0.0103	0.0208	0.0472	0.0231	0.0205	0.0015	0.0044	0.450	2.47	0.0020	96.96	C17500		40 x 17	cc						
CRM 36 X CBC5A	0.01	0.009	0.038	0.028	1.69	0.021	0.036	(0.001)	0.006	0.32	0.14	...	97.6	C17510		40 x 15							
36 T 4583	0.25	0.084	0.094	(0.15)	2.02	0.029	0.08	0.064	...	0.84	(0.002)	...	96.35			60 x 6							
36 T 4584	0.022	(0.002)	0.022	0.120	0.015	0.033	0.166	(0.002)	...	2.53	0.04	...	97.05			60 x 6							
36 T 4594	(0.002)	(0.003)	(0.004)	(0.10)	0.055	0.030	0.116	...	0.067	0.142	3.00	0.978	95.50			60 x 6							
36 T 4640	0.053	0.056	0.055	0.125	1.07	0.099	0.166	0.063	(0.1)	0.69	1.36	0.495	95.67			60 x 6							
36 T 4763	0.042	0.043	0.058	0.031	0.105	0.048	0.125	...	...	0.79	2.13	1.53	95.10			60 x 6							
36 T 4766	0.100	0.053	0.070	0.160	0.203	0.027	0.110	0.008	(0.2)	1.58	0.64	...	96.83			60 x 6							
36 T 4868	0.022	0.023	0.056	0.204	0.038	0.044	0.211	0.019	...	2.92	0.246	...	96.15			60 x 6							
36 T 4872	0.044	0.019	0.119	0.104	0.103	0.059	0.16	0.008	(0.04)	1.93	0.400	...	97.00			60 x 6							
36 T 4873	(0.007)	(0.003)	(0.003)	0.078	0.049	0.094	0.088	(0.002)	0.105	0.17	0.98	...	98.40			60 x 6							
36 M BS172Be-1	0.033	(0.002)	0.007	0.052	0.039	(0.02)	0.055	0.001	0.003	1.89	0.206	...	97.68	CDA 172		38 x 12							
3.6.5 Cu/Cr															Size (mm)								
	Sn	Fe	Ni	Si	Mn	Cr	Zr	Pb	Zn	Al	S	Mg	Co	Cd	Ag	Cu	Ø	H					
36 X CCR1C	<0.005	0.015	<0.005	0.01	<0.001	0.855	0.11	0.002	0.003	0.014	0.002	0.001	...	...	...	...	45 x 20	w					
CRM 36 X CCZ A	0.0045	0.033	0.0084	0.0031	0.0008	0.667	0.049	0.0023	0.0076	0.0003	0.001	...	0.0012	0.0027	0.0019	99.22	50 x 17						
CRM 36 X 274A	0.014	0.0779	2.54	0.594	0.0148	0.531	<0.005	0.0021	0.0395	0.0013	0.0035	...	0.0028	...	...	96.23	46 x 17						
3.6.6 Cu/Ag															Typical Alloy Type	Size (mm)							
	Ag	Sn	Pb	Zn	Fe	Ni	Al	Si	Mn	Zr	S	P	N	O			Ø	H					
CRM 36 MI 159A	3.48	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	(0.0003)	(0.0006)	NARLOY-A		31 x 18	cc					
CRM 36 MI 160A	3.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.4	<0.003	(0.004)	(0.0002)	(0.003)	NARLOY-Z		31 x 18						
3.6.7 Cu/Cd															Size (mm)								
	Cd	Sn	Zn	Ag											Ø	H							
CRM 36 X CCD 1A	1.01	<0.001	(0.0017)	(0.0014)											30 x 15	w							
CRM 36 X CCD 2A	1.18	0.200	(0.0019)	(0.0012)											30 x 15								
CRM 36 X CCD 3A	1.10	0.473	(0.0018)	(0.0011)											30 x 15								
3.6.8 Cu/Mn															Size (mm)								
	Sn	Pb	Zn	Fe	Mn	Ni	Si	As	P	Sb	Ag						Ø	H					
CRM 36 PN CK1	0.13	0.0021	0.24	0.029	1.06	0.44	0.049	0.013	0.0011	0.0049	0.012						40 x 30	w					
CRM 36 PN CK2	...	0.0062	0.14	0.11	1.51	0.38	0.091	0.010	0.0022	0.0015	0.0094						each						
CRM 36 PN CK3	0.075	0.0098	0.095	0.17	1.78	0.27	0.033	0.0095	0.0043	0.0026	0.0066						set only	cc					
CRM 36 PN CK4	0.042	0.017	0.065	0.26	1.91	0.13	0.0025	0.0055	0.0056	0.0041	0.0041												
CRM 36 PN CK5	0.0048	...	0.033	0.29	2.30	0.011	0.011	0.0015	...	0.0051	...												
CRM 36 PN CK6	0.025	...	0.034	0.40	2.64	0.073	0.21	0.0039	0.013	0.0052	0.0012												
3.7.1 Various Copper Alloys															Size (mm)								
	Sn	Pb	Zn	Fe	Ni	Al	Si	Mn	P	S	C	Cr	Co	Zr	Cu	Ø	H						
CRM 37 X 218A	0.015	0.0025	0.027	0.070	2.51	0.0022	0.58	0.084	0.0014	0.007	0.002	0.030	0.0013	...	96.50	38 x 17	w						
CRM 37 X 226A	0.0032	(0.001)	2.82	1.52	0.0024	0.0023	3.54	0.58	0.0023	0.0005	0.006	0.0024	...	(0.0003)	91.58	57 x 17							
37 T UN 3S	0.215	0.20	1.62	0.30	3.45	0.11	1.24	0.073	...	...	...	...	...	...	92.65	60 x 6	cc						
37 X HK7	2.30	5.32	0.38	1.72	30.7	...	...	...	...	...	...	...	...	...	59.3	40 x 11	cc						
37 X HK8	10.4	21.0	0.17	0.23	5.01	...	...	...	...	...	...	...	...	...	63.2	40 x 10							
These two alloys are for XRF use only																							

3. Copper Base

Blocks/Discs

3.8 Residuals in Pure Copper - Wire		All elements ppm															Size (mm)		
		Pb	Zn	Fe	Ni	As	Bi	Sb	Co	Ag	Cd	Te	Mn	Sn	Cr	Se	S	O	
																			Ø H
CRM	38 X C1A	0.4	1.5	2	0.8	<1.0	0.2	<1.0	<1.0	7.8	<0.1	0.4	<1.0	0.7	<1.0	0.7	...	...	3 X 400 in packs of 5 x 80mm pcs
	38 X C1B	0.8	0.45	1.2	1.0	0.8	0.1	0.6	0.03	13	<0.01	0.3	1.2	<0.3	0.06	...	...	...	
	38 X C1C	(0.05)	<0.1	1.7	0.27	0.19	0.10	0.10	...	11	<0.01	(0.21)	(0.005)	(0.01)	<0.005	(0.25)	2.0	266	
	38 X C2A	2.7	3.6	9.1	1.4	3.8	1.5	2.6	2.6	12	2.5	1.6	3.1	1.1	1.0	...	...	...	
	38 X C4	23.0	22.0	19.0	29.0	19.0	5.0	9.0	3.0	21.0	8.0	8.0	2.7	21.0	3.0	...	...	...	
	38 X C6	111.0	40.0	107.0	166.0	98.0	22.0	45.0	33.0	104.0	32.0	30.0	0.3	120.0	1.0	...	...	...	
These reference materials are in wire form, intended for globule arc work.																			
CRM	38 PN CF1	33.0	57.0	42.0	29.0	6.7	12.5	24.0	...	45.0	...	...	...	21.0	...	...	...	...	6 x 100
CRM	38 PN CF2	0.6	2.2	2.8	0.7	1.1	...	1.4	...	9.0	...	...	...	...	...	...	...	...	each
CRM	38 PN CF3	8.9	3.4	20.0	6.4	1.8	...	2.2	...	3.2	...	...	...	3.2	...	...	...	...	Set only
CRM	38 PN CF4	1.1	31.0	3.7	7.8	43.0	1.2	11.0	...	18.0	...	...	...	1.0	...	...	...	...	
CRM	38 PN CF5	3.2	4.7	98.0	3.0	2.3	0.25	1.9	...	12.0	...	...	...	1.3	...	...	...	...	
CRM	38 PN CF6	1.8	...	1.0	(0.4)	0.32	(0.012)	0.2	...	12.0	...	...	...	(0.06)	...	...	...	...	
CRM	38 A SSC-1	65.3	33.3	39.2	17.6	1.16	1.1	2.64	...	18.8	...	4.57	...	54.9	...	7.28	19.6	216	8 x 300
3.9 Residuals in Pure Copper - Discs		All elements ppm																	
		Sn	Pb	Zn	Fe	Ni	As	Bi	Sb	Co	Ag	Cd	Si	Mn	Al				
CRM	39 X 17866AD	2100	240	340	101	548	400	63	58	229	61	327	(7)	1.6	<10				continued
CRM	39 X 17867AA	450	290	440	270	440	430	290	46	720	62	550	1150	221	390				
CRM	39 X 17868AD	350	380	390	470	330	294	430	330	480	250	330	1000	580	1390				
CRM	39 X 17869AC	150	500	100	180	150	130	450	380	125	430	85	80	15	8				
CRM	39 X 17870AE	170	590	130	440	70	43	750	470	120	460	97	(20)	200	<10				
CRM	39 X 17871A	...	92	(8)	(20)	270	290	690	170	8	250	31	...	10	<5				
	39 M BS 110A	20	30	(10)	30	20	(10)	...	4	...	...	...	10	<3	20				continued
	39 FO 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				continued
	39 FO 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				
	39 FO 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				
	39 FO 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				
	39 FO Cu170	10	11	8.4	12	13.5	11.1	11	9.3	9.5	14	5.8	12.4	10	8.4				
	39 FO Cu171	100	93	<0.1	99	2.4	100	0.11	33.5	<0.02	33	<0.05	<1	0.2	25				
	39 FO Cu172	<0.1	32	32	33	32	4.7	97	94	<0.02	104	<0.05	96	<0.2	<0.2				
	39 FO Cu173	30	1.6	0.4	3.7	3.0	3.5	28	0.85	30	18	<0.05	4	0.3	91				
	39 FO Cu174	0.08	1.1	60	1	99	29	0.1	0.54	0.05	11	77	31.4	100	1.2				
	39 FO 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				
	39 FO 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				
	39 FO 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				
CRM	39 DB 366	111	10.8	15.6	23.4	3.2	1.11	<0.3	0.99	...	7.9	0.27	...	...	...				continued
CRM	39 DB 376	247.3	236	217.3	234.6	209	199.9	200	202	207.9	163.0	186.1	...	205.9	(181.5)				
Continuation from above		All elements ppm															% Cu		Size (mm)
		Mg	S	P	Cr	Au	Se	Be	Te	B	Zr	In	Li	Ti	C				
	39 X 17866AD	2	510	160	15	...	30	(1)	53	...	...	...	...	(2)	...	...			40 x 17
	39 X 17867AA	49	580	170	2560	85	115	3	210	(10)	(10)	...	...	...	...	...			40 x 17
	39 X 17868AD	470	176	410	2000	220	40	13	320	30	(50)	...	...	...	...	...			40 x 17
	39 X 17869AC	4	130	150.0	4	90	80	1	350	...	...	...	...	(10)	...	...			40 x 17
	39 X 17870AE	4	194	490	(20)	730	76	<1	160	(3)	...	23	...	...	...	...			40 x 17
	39 X 17871A	(2)	80	<5	(3)	48	280	(4)	110	...	<5	...	...	...	...	...			40 x 17
	39 M BS 110A	...	8	10	...	...	...	...	...	...	...	...	...	...	18	99.97			38 x 12
	39 FO Cu166	1	2	1.1	1.3	...	1.2	...	1.3	1.2	0.8	...	2.4	1.1	...	...			40 x 25
	39 FO Cu167	1.9	12	1.5	1.5	...	9.7	...	7.2	2.6	0.7	...	(6.4)	<0.5	...	...			40 x 25
	39 FO Cu168	3.7	3.5	3.4	3.4	...	4	...	3.2	3.7	2.3	...	7.8	4	...	...			40 x 25
	39 FO Cu169	3.1	3.5	3.1	4.5	...	2.9	...	3.6	3.1	2.1	...	(9)	1	...	...			40 x 25
	39 FO Cu170	7.9	12	11	9.6	...	7.9	...	(10)	5.2	8	...	8	<0.5	...	...			40 x 25
	39 FO Cu171	0.4	6	<0.5	100	...	<0.5	...	33	...	23	...	...	...	...	...			40 x 25
	39 FO Cu172	0.2	7	<0.5	0.7	...	<0.5	...	<0.1	...	<0.05	...	...	78	...	...			40 x 25
	39 FO Cu173	100	3.8	89	29	...	<0.5	...	0.1	...	0.10	...	69	...	...	...			40 x 25
	39 FO Cu174	0.8	35	0.35	0.48	...	38	...	0.2	...	(80)	...	...	20	...	...			40 x 25
	39 FO Cu175	26	89	31.5	0.25	...	90	...	85	30	0.12	...	125	2.5	...	...			40 x 25
	39 FO Cu176	1.0	10.5	<0.5	0.08	...	<0.5	...	0.12	...	4.3	...	...	...	...	...			40 x 25
	39 FO Cu182	0.2	2	<0.1	0.19	...	0.16	...	0.05	...	(0.03)	...	<0.1	...	...	...			40 x 25
																			40 x 25
	39 DB 366	...	8.7	263	...	...	<1.1	...	<0.3	...	...	...	...	...	...	...			40 x 30
	39 DB 376	124	133	203	(400)	...	210	...	215	...	42.2	...	...	(4.5)	...	...			40 x 30

3. Copper Base

Blocks/Discs

3.9 Residuals in Pure Copper - Discs (continued)		All elements ppm														
		Ag	As	Bi	Cd	Cr	Fe	Mn	Ni	Pb	Sb	Si	Sn	Al	Be	
CRM	39 F 074A	12.8	0.78	(0.10)	<0.02	<0.1	1.14	1.27	1.04	0.97	0.58	...	<0.07	...	...	continued
CRM	39 F 075A	12.2	3.74	1.44	2.57	0.89	9.0	3.23	1.45	3.27	2.56	...	1.09	...	...	
	39 DK 4700	465	100	66	50	14	93	2	21	656	11	156	1	<1	<1	continued
	39 DK 4701	394	16	27	95	22	35	36	120	6	186	53	568	17	<1	
	39 DK 4702	201	24	<1	10	5	319	3	194	514	137	102	28	<1	<1	
	39 DK 4703	293	41	49	<1	69	686	7	106	418	3	10	36	<1	<1	
	39 DK 4705	66	103	10	<1	58	8	66	563	191	95	41	91	<1	<1	
	39 DK 4707	51	204	<1	1	36	199	1	79	52	29	2	270	<1	72	
	39 DK 4708	39	385	88	44	19	85	12	376	22	3	34	347	38	<1	
	39 DK 4709	22	291	2	17	39	60	107	30	11	11	13	440	16	46	
	39 DK 4711	98	79	7	138	279	49	205	93	3	41	478	4	341	178	
	39 DK 3563	9	<5	<5	<5	<5	7	<5	<5	<5	<5	<5	<5	<5	<5	
	39 DK 4875	586	495	82	411	385	510	287	600	607	222	255	590	324	140	continued
CRM	39 PN CP1	12	0.4	1.0	0.6	0.3	10	1.3	3.4	1.7	11	...	5.6	...	...	
CRM	39 PN CP2	36	140	...	72	0.5	8.1	5.9	20	120	160	(4)	4.8	...	...	
CRM	39 PN CP3	60	63	47	35	45	15	30	13	81	120	(8)	17	...	...	
CRM	39 PN CP4	110	14	13	11	86	44	55	3.4	28	48	(3)	40	...	...	
CRM	39 PN CP5	31	65	9.4	2.5	48	77	49	39	13	27	(82)	2.1	...	...	
CRM	39 PN CP6	20	0.85	...	...	0.3	6.4	0.6	2.7	2.7	0.4	...	0.7	...	...	continued
CRM	39 PN CS1	53.05	2.27	1.08	0.99	0.33	18.39	28.98	46.79	60.48	3.03	(3.0)	52.93	...	...	
CRM	39 PN CS2	45.62	7.85	6.23	7.37	35.83	30.54	35.28	26.65	38.64	7.51	(9.38)	33.65	...	...	
CRM	39 PN CS3	38.90	13.83	12.17	13.40	10.93	28.27	12.58	11.11	13.26	12.97	(22.2)	13.34	...	...	
CRM	39 PN CS4	237	42.18	39.64	35.48	6.96	82.0	8.32	7.15	7.58	36.76	(46.48)	6.21	...	...	
CRM	39 PN CS5	320	70.5	59.7	66.1	1.03	90.9	4.25	4.39	4.99	63.9	(54.8)	0.85	...	...	continued
CRM	39 PN CS6	8.48	0.22	<0.2	(0.059)	0.24	20.83	0.71	0.80	(0.36)	1.02	...	10.6	...	...	
CRM	39 PN CS7	13.70	0.81	<0.9	(0.019)	19.72	4.90	2.15	4.37	0.86	0.93	<1	0.49	...	...	
Continuation from above		All elements ppm									Size (mm)					
		Co	Mg	P	S	Se	Zn	Zr	Te	B	Ø	H				
	39 F 074A	<0.05	...	...	...	0.37	0.46	...	(0.21)	...	40	x 30				
	39 F 075A	2.50	...	...	...	1.26	3.47	...	1.52	...	40	x 30				
	39 DK 4700	202	26	<1	22	126	75	<1	53	87	40	x 35-40				
	39 DK 4701	19	<1	463	47	14	65	<1	9	<1	40	x 35-40				
	39 DK 4702	40	<1	163	210	23	5	<1	2	<1	40	x 35-40				
	39 DK 4703	66	<1	156	94	49	150	<1	25	<1	40	x 35-40				
	39 DK 4705	211	15	9	38	187	139	<1	160	<1	40	x 35-40				
	39 DK 4707	542	93	446	28	93	415	<1	113	<1	40	x 35-40				
	39 DK 4708	636	<1	22	17	9	18	<1	45	<1	40	x 35-40				
	39 DK 4709	312	64	593	14	<1	2	135	76	<1	40	x 35-40				
	39 DK 4711	11	239	23	26	<1	8	181	110	14	40	x 35-40				
	39 DK 3563	<5	<5	<5	8	<5	<5	<5	<5	...	40	x 35-40				
	39 DK 4875	451	270	506	68	172	331	123	290	<2	40	x 35-40				
	39 PN CP1	0.2	...	2.0	6.3	<1	1.9	...	3.0	...	40	x 23				
	39 PN CP2	39	...	11	35	77	92	...	12	...	each					
	39 PN CP3	20	...	44	60	43	33	...	46	...						
	39 PN CP4	4.2	...	130	94	10	17	...	75	...	Set only					
	39 PN CP5	34	...	110	21	35	38	...	7.8	...						
	39 PN CP6	<1	...	1.7	7.5	<1	1.4	...	...	...						
	39 PN CS1	0.6	...	57.66	65.91	61.53	24.13	...	2.11	(1.1)	40	x 25				
	39 PN CS2	3.6	...	33.75	44.88	38.99	8.91	...	5.62	(2.83)	each					
	39 PN CS3	7.4	...	12.11	18.79	15.41	31.30	...	10.56	(4.19)						
	39 PN CS4	24.3	...	6.3	41.3	6.68	44.02	...	32.86	(21.73)	Set only					
	39 PN CS5	37.5	...	2.04	12.00	0.94	100.6	...	49.8	(35.2)						
	39 PN CS6	(0.19)	...	(1.47)	5.39	<1	1.43	...	<0.05	<0.5	40	x 25				
	39 PN CS7	0.093	...	(2.4)	7.02	<1	1.24	...	<0.05	<0.5	40	x 25				

4. Zinc Base

Blocks/Discs

4.1 Residuals in Pure Zinc																Typical	Size (mm)		
		Pb	Mg	Al	Cd	Fe	Sn	Cu	Ni	Mn	In	Ti	Bi	Sb	Ti	Alloy Type	Ø	H	
CRM	41 X Z1M	0.0018	0.00025	...	0.00005	0.0005	<0.0002	0.0005	0.0001	0.00017	<0.0005	...	...	...	...	BS 3436	50 x 20	c	
CRM	41 X Z2L	0.0036	0.0064	0.017	0.0017	0.0028	0.0017	0.016	0.0014	0.0017	(0.0002)	(0.0023)	...	(0.0011)	(0.0005)		50 x 20		
CRM	41 X Z3K	0.0052	0.0009	0.0081	0.0044	0.002	0.0039	0.0019	0.0031	0.0007	0.0007	(0.0025)	...	0.0037	0.0012		50 x 20		
CRM	41 X Z4K	0.0091	0.0019	0.0096	0.0066	0.003	0.0070	0.0047	0.0069	0.0012	0.0015	(0.0037)	...	0.005	<0.0005		50 x 20		
CRM	41 X Z5M	0.0280	0.0105	0.041	0.032	0.011	0.031	0.031	0.0005	0.014	0.0055	0.0005	...	0.009	0.0005		50 x 20		
CRM	41 X Z6A	0.031	<0.0005	0.0096	0.0093	(0.002)	0.0038	0.0088	0.0002	0.0002	0.0228	0.0004	0.0122	...	...		50 x 20		
CRM	41 PN ZE1	0.018	...	0.012	0.0019	0.020	0.0018	0.011	...	...	...	...	...	...	...		40 x 25		
CRM	41 PN ZE2	0.0078	...	0.0035	0.0031	0.0052	0.0074	...	...	...	...	...	...	...	...		each		
CRM	41 PN ZE3	0.0052	...	0.025	0.0050	...	0.015	0.0032	...	...	...	...	...	...	...				
CRM	41 PN ZE4	0.0012	...	...	0.00023	...	0.0017	0.013	...	...	...	...	...	...	...		Set only		
CRM	41 PN ZE5	0.0004	...	0.0011	0.0060	0.011	0.00045	0.0049	...	...	...	...	...	...	...				
CRM	41 F 321	0.00047	...	<0.0001	...	...	<0.0005	...	...	...	<0.00002	0.00008	...	...	...		80 x 20		
CRM	41 F 322 R	0.00150	...	...	0.00151	0.00191	0.00056	0.000589	...	...	...	0.00053	...	...	...		60 x 30		
CRM	41 F 323 R	0.00486	...	...	0.00065	0.00113	0.00187	0.00189	...	...	...	0.00108	...	...	...		60 x 30		
CRM	41 F 324 R	0.00261	...	...	0.00486	0.00585	0.00098	0.000987	...	...	...	0.00199	...	...	...		60 x 30		
CRM	41 F 325 R	0.0142	...	...	0.00947	0.00561	0.00461	0.00475	...	...	...	0.00368	...	...	...		60 x 30		
CRM	41 F 326	0.0307	...	...	0.0203	0.0265	...	0.0105	...	...	...	...	...	...	...		80 x 20		
CRM	41 F 327	0.0409	...	<0.0001	0.0301	0.0144	...	...	...	...	...	...	...	...	...		80 x 20		
	41 CM 4320-1	0.00044	...	...	0.00045	0.00043	0.00022	0.000058	...	...	...	...	...	...	...		28 x 20		
	41 CM 4320-2	0.0015	...	...	0.0011	0.0013	0.00042	0.00018	...	...	...	...	...	...	...		each		
	41 CM 4320-3	0.0030	...	...	0.0031	0.0033	0.00071	0.00047	...	...	...	...	...	...	...				
	41 CM 4320-4	0.0082	...	...	0.0079	0.0065	0.0012	0.00099	...	...	...	...	...	...	...		set only		
	41 CM 4320-5	0.021	...	...	0.020	0.011	0.0019	0.0020	...	...	...	...	...	...	...				
	41 A 194e	0.002	...	...	...	0.001	<0.001	<0.0005	...	...	...	...	...	...	...	Zn 99.99	300g block		
4.1.1 Zinc with Impurities																Size (mm)			
		Pb	Mg	Al	Cd	Fe	Sn	Cu	Mn	Ni	Sb	Bi	In	Ti	Ag	As	Ø	H	
CRM	41 X 0336Zn1K	0.95	0.0049	0.014	0.0056	0.0124	0.0053	0.0070	0.0035	...	...	...	...	...	...	...	50 x 20	c	
CRM	41 X 0336Zn2K	0.46	0.033	0.99	0.171	0.12	0.040	0.196	0.014	0.005	...	...	...	...	...	...	50 x 20		
CRM	41 X 0336Zn3J	0.019	0.134	0.43	0.341	0.27	0.111	0.36	0.0058	...	...	...	...	...	...	...	50 x 20		
CRM	41 X 0336Zn4B	2.87	0.179	1.39	0.638	(0.018)	2.38	0.874	0.038	0.0074	0.048	0.027	0.0035	(0.004)	0.0023	0.0005	50 x 20		
CRM	41 X 0336Zn5A	0.91	<0.0005	0.035	0.056	0.016	0.21	0.023	(0.0001)	(0.0005)	0.008	(0.001)	...	...	...	...	50 x 20		
CRM	41 X 0336Zn6A	1.82	0.0008	0.105	0.0140	0.08	0.0023	0.0203	0.0010	0.0018	0.234	0.123	0.0123	0.0132	0.0055	0.0020	50 x 20		
		Pb	Mg	Al	Cd	Fe	Sn	Cu	Mn	Ni	Ti	Cr	Ce	La	Sb	Bi	Si	Size (mm)	
																		Ø H	
CRM	41 X 4380Zn1C	0.068	0.0011	0.055	0.376	0.01	0.049	0.175	0.0015	0.0029	(0.001)	0.002	...	...	0.002	0.0017	0.006	50 x 20	c
	41 X 4380Zn2B	0.26	0.015	0.030	0.29	0.23	0.0015	0.030	...	...	...	...	...	...	...	...	...	40 x 15	
	41 X 4380Zn3B	0.21	0.052	0.17	0.18	(0.05)	0.087	0.092	...	...	0.18	0.004	0.037	(0.023)	...	...	...	40 x 15	
CRM	41 X 4380Zn4C	0.325	0.126	0.144	0.094	0.056	0.038	0.0022	0.0007	0.0040	0.005	(0.0003)	...	...	0.017	0.011	(0.002)	50 x 20	
CRM	41 X 4380Zn5C	0.15	0.0018	0.022	0.064	0.012	0.009	0.072	0.036	0.0014	0.33	0.0075	...	...	0.0052	0.031	<0.0005	50 x 20	
CRM	41 X 4380Zn6C	0.42	0.0045	0.0048	0.047	0.017	0.110	0.020	0.025	0.0005	0.062	0.0020	...	...	0.034	0.0010	<0.0005	50 x 20	
CRM	41 X 4380Zn7C	1.25	0.0028	0.137	0.015	(0.0044)	0.0047	0.012	...	0.012	0.009	0.0045	...	...	0.090	...	...	50 x 20	
CRM	41 X 4380Zn8C	0.73	0.007	0.225	0.0079	0.003	0.011	0.020	0.0015	0.024	0.012	0.0019	...	...	0.016	0.011	(0.005)	50 x 20	
																		W D H	
CRM	41 B 631	(0.001)	(<0.001)	0.50	0.0002	0.005	0.0001	0.0013	0.00015	<0.0005	...	0.0001	...	...	...	...	(0.002)	44 x 44 x 19	c
4.1.2 Galvanizing Alloys																Size (mm)			
		Pb	Al	Cd	Fe	Sn	Cu	Ni	Bi	Sb	As	Cr	Mn	Co		Ø	H		
CRM	41 X GLV1A	0.056	0.115	0.0093	0.059	0.010	0.0028	0.0141	0.0025	<0.001	<0.001	...	...	...		50 x 20	c		
CRM	41 X GLV2A	0.214	0.068	0.0025	0.048	0.003	0.0052	0.0070	0.017	0.006	<0.001	...	...	...		50 x 20			
CRM	41 X GLV3A	0.0080	0.31	0.021	0.012	0.006	0.0188	0.0301	0.0011	0.048	...	...	...	...		50 x 20			
CRM	41 X GLV4A	0.0038	0.201	(0.0001)	0.017	<0.005	0.0009	0.049	0.0051	0.025	<0.002	...	...	...		50 x 20			
CRM	41 X GLV5A	0.0187	0.014	0.0138	0.076	0.020	0.0116	0.0030	0.0105	0.162	0.0041	...	...	...		50 x 20			
CRM	41 X GLV6A	0.120	0.474	0.0053	0.0047	0.0152	0.039	0.0008	0.0248	0.0112	0.0014	0.0029	0.0013	0.0047		50 x 20			
CRM	41 X GLV7A	0.082	0.399	0.00056	0.0031	...	0.023	0.0060	0.0108	0.0031	0.0016	0.0010	0.0025	(0.0001)		50 x 20			
CRM	41 X CGL F	0.046	0.28	(0.0015)	...	<0.001	(0.0005)	...	...	...	...	...	...	...		42-48 x 20	c		
CRM	41 B 1736	0.0029	0.3076	...	...	...	...	...	...	...	...	...	...	...		51 X 13	c		
CRM	41 B 1737	0.0029	0.6302	...	...	...	...	...	...	...	...	...	...	...		51 X 13			
CRM	41 B 1738	0.0101	0.1014	...	...	...	...	...	...	...	...	...	...	...		51 X 13			
CRM	41 B 1739	0.0302	0.2049	...	...	...	...	...	...	...	...	...	...	...		51 X 13			
CRM	41 B 1740	0.0691	0.4177	...	...	...	...	...	...	...	...	...	...	...		51 X 13			
CRM	41 B 1741	0.1571	0.5242	...	...	...	...	...	...	...	...	...	...	...		51 X 13			
CRM	41 B 1742	0.0081	0.7917	...	...	...	...	...	...	...	...	...	...	...		51 X 13			
4.1.3 Binaries																Size (mm)			
		Mn	Ni	Pb	Mg	Al	Cd	Fe	Cu							Ø	H		
	41 X ZMn1A	1.058	(0.0009)	(0.0026)	(0.0001)	(0.0001)	(0.0002)	(0.0025)	(0.0005)							50 x 20	c		
4.1.4 Specialty Alloys																Typical	Size (mm)		
		Pb	Mg	Al	Cd	Fe	Sn	Cu	Ni	Mn	Ti	Cr				Alloy Type	Ø	H	
CRM	41 X 2951Zn1A	0.0042	0.0029	0.029	0.0005	0.011	(0.0007)	0.79	0.0038	0.0013	0.278	0.083				ILZRO16	50 x 20	c	
CRM	41 X 2951Zn2A	0.0040	0.0123	0.032	0.0037	0.019	(0.0015)	1.37	0.0027	0.0011	0.209	0.142					50 x 20		
CRM	41 X 2951Zn3A	0.0065	0.0164	0.078	0.0062	0.029	(0.006)	1.89	0.0010	0.0018	0.133	0.184					50 x 20		

See page 70 for materials in Chippings form

MBH

For Setting-Up Samples see section 16

5. Aluminium Base

Blocks/Discs

5.1 High Purity		All Elements ppm																Size (mm) Ø H
		Ag	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu	Fe	Ga	Hg	In	
51 S HP1000		<0.5	...	<0.05	<0.01	<0.01	<0.1	0.1	<0.1	...	<0.1	0.3	0.2	0.2	<0.1	...	<0.1	...
51 S HP2000		<1	...	<1	<1	4.4	<1	2.6	<1	...	<1	4.5	5.3	6.6	4.9	...	<1	...
51 S HP3000		5.1	...	5.4	0.7	<1	8.1	<1	4.9	...	4.9	<1	6.6	6.2	<1	...	4.8	continued
51 S HP4000		<1	...	<1	<1	27.0	<1	25.0	<1	...	<1	29.0	31.0	39.0	28.0	...	<1	...
51 S HP5000		30	...	33	6.6	<1	48	1	30	...	29	<1	42.0	37.0	(1.0)	...	28	...
51 ZA 113/03		...	...	100	...	<1	5	1	<2	...	5	<1	2	40	<1	...	...	...
51 ZA 114/02		...	...	210	...	<1	10	1	33	...	9	5	12	55	3	...	...	...
51 ZA 115/02		10	...	6	<1	<1	15	<1	22	...	31	27	41	67	21	...	20	continued
51 ZA 116/03		20	13	3	<1	4	16	<1	10	7	20	52	71	115	23	41	21	13
51 ZA 117/01		...	...	18	1	4	19	3.5	7	22	16	12	23	153	12	...	...	12
51 ZA 122/04		145	53	0.4	(53)	(8)	152	(10)	53	100	150	180	170	590	250	96	154	130
Continuation from above		All Elements ppm																Size (mm) Ø H
		Li	Mg	Mn	Na	Ni	P	Pb	Sb	Si	Sn	Sr	Ti	V	Zn	Zr		
51 S HP1000		<0.1	0.2	0.04	<0.5	<0.1	<0.2	0.1	<0.5	0.6	<0.1	<0.01	0.5	0.05	0.5	<0.01	58 x 25	
51 S HP2000		<1	2.7	5.4	8.8	5.0	<2	<1	<2	5.4	<1	<1	5.3	5.2	5.0	5.2	58 x 25	
51 S HP3000		1.0	<1	<1	<1	<1	0.6	9.0	4.2	5.1	4.5	1.8	<1	<1	<2	<1	58 x 25	
51 S HP4000		<1	26.0	31.0	13.0	29.0	<2	<1	<2	36	<1	<1	31.0	31.0	32.0	30.0	58 x 25	
51 S HP5000		<1	<2	<1	0.9	<1	2.2	54	25	35	27	2.4	<1	<1	<5	<1	58 x 25	
51 ZA 113/03		<0.5	4	<1	<1	<1	7	7	7	12	5	...	<1	6	2	6	60 x 25	
51 ZA 114/02		<0.5	15	27	<1	5	11	14	12	33	10	...	5	12	13	11	60 x 25	
51 ZA 115/02		1	40	33	<1	32	10	10	11	70	10	<1	6	10	34	25	60 x 25	
51 ZA 116/03		0.7	37	52	<1	50	20	15	32	117	22	<1	17	23	56	15	60 x 25	
51 ZA 117/01		(2)	19	12	(7)	12	15	20	17	148	20	2	0	24	12	26	60 x 25	
51 ZA 122/04		(8)	200	160	(47)	175	70	81	99	380	100	<1	180	175	185	150	60 x 25	
5.1.1 Residuals in Al																		Size (mm) Ø H
		Cu	Mg	Si	Fe	Mn	Ni	Zn	Pb	Sn	Ti	Cr	Ga	V	Zr	Be	Others	
CRM 51 X G00H1D		0.0132	0.054	0.143	0.835	0.0074	0.230	0.249	0.0021	0.097	0.0135	0.0062	...	0.0080	0.0008	...	Bi 0.024	40x15 or 50x20
51 X G00H2D		0.18	0.05	0.45	0.4	0.20	0.11	0.18	0.15	0.01	0.10	0.08	...	...	...	...	...	40 x 15
51 X G00H3C		0.29	<0.01	0.75	0.2	0.4	<0.01	0.03	0.06	0.08	<0.01	0.12	...	...	...	...	...	40 x 15
CRM 51 X G00H4A		0.035	0.039	0.12	0.052	0.041	0.039	0.042	0.018	0.028	0.031	0.027	...	0.016	...	0.0004	continued	
CRM 51 X G00H5A		0.173	0.088	0.61	0.49	0.303	0.206	0.219	0.116	0.122	0.136	0.100	...	0.070	...	0.0024	...	
51 S NDC4		0.0005	0.495	0.423	0.197	0.0005	0.0002	0.0004	<0.0001	<0.0001	0.0003	0.0001	0.0002	0.0002	<0.0001	<0.0001	...	
51 S NDC5		0.0021	0.582	0.527	0.3	0.0017	0.001	0.0012	0.0013	0.0018	0.0005	0.0013	0.0044	0.001	0.0008	0.0004	continued	
51 S NDC7		0.0041	0.398	0.209	0.298	0.0055	0.0046	0.0052	0.0007	0.0012	0.016	0.0045	0.01	0.0052	0.044	0.0001	...	
51 ZA 133/02		0.0105	0.0058	0.050	0.20	0.0115	0.021	0.021	0.0015	0.0012	0.0130	0.020	0.031	0.023	0.0048	0.00020	continued	
51 ZA 135/02		0.020	0.020	0.052	0.29	0.020	0.016	0.0080	0.0023	0.0052	0.023	0.015	0.013	0.0062	0.0050	...	...	
51 ZA 136/02		0.050	0.040	0.24	0.36	0.050	0.031	0.041	0.0024	0.0022	0.032	0.032	0.020	0.0340	0.0090	0.0005	...	
51 ZA 141/01		0.020	0.0110	0.41	0.40	0.022	0.0060	0.0140	0.010	0.010	<0.001	0.0040	...	0.0010	...	...	...	
51 ZA 142/02		0.040	0.044	0.50	0.49	0.042	0.041	0.083	0.0052	0.0039	0.043	0.045	(0.010)	0.038	0.0090	...	...	
51 ZA 143/04		0.0028	0.0060	0.150	0.62	0.0069	0.0020	0.0136	0.0032	0.0030	0.0019	0.020	0.014	0.0030	0.0048	0.00010	continued	
51 ZA 144/01		0.20	0.160	0.65	0.73	0.100	0.022	0.055	0.0600	0.0050	0.053	0.034	...	0.036	0.007	...	...	
51 ZA 145/01		0.150	0.059	0.81	0.86	0.050	0.010	0.033	0.0030	0.0023	0.012	0.010	...	0.024	0.0030	...	...	
CRM 51 DB 310		0.00169	0.994	0.0797	0.0705	0.00307	0.00244	0.0086	0.00347	0.00238	0.00301	0.00090	0.01152	0.00444	0.00135	0.000128	continued	
CRM 51 DB 312		0.0419	0.410	0.415	0.185	0.0416	0.00452	0.0290	0.00439	(0.002)	0.0288	0.0276	0.0115	0.00615	0.00101	...	...	
Continuation from above																		Size (mm) Ø H
		Ca	Co	Bi	Ba	Li	Na	Sr	B	Cd	Sb	Ag						
51 X G00H4A		...	0.012	0.011	...	...	...	...	...	...	<0.005	...						40 x 15
51 X G00H5A		...	0.079	0.062	...	...	...	...	...	...	0.057	...						40 x 15
51 S NDC4		<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	0.0001	...	...	...						50-60 x 25
51 S NDC5		0.0003	0.0004	0.0009	0.001	0.0002	0.0005	0.0004	0.0006	...	...	...						50-60 x 25
51 S NDC7		0.0001	0.0002	0.0004	0.0008	0.0002	0.0003	0.0008	0.0022	...	...	...						50-60 x 25
51 ZA 133/02		0.00010	<0.0001	0.00010	...	0.00003	0.0007	<0.0001	0.00005	0.0010	0.0010	...						60 x 25
51 ZA 135/02		...	0.0010	0.0020	...	...	...	...	...	...	...	...						60 x 25
51 ZA 136/02		0.00025	<0.0001	0.00010	...	0.00003	...	<0.0001	0.0002	0.00050	0.0020	...						60 x 25
51 ZA 141/01		...	0.0090	...	...	...	...	...	0.0150	...	0.010	...						60 x 25
51 ZA 142/02		...	0.00010	...	...	...	...	...	...	...	0.0046	...						60 x 25
51 ZA 143/04		<0.0001	...	...	...	0.00010	(0.0003)	...	...	...	...	...						60 x 25
51 ZA 144/01		...	...	...	...	...	...	...	...	...	...	0.010						60 x 25
51 ZA 145/01		...	...	...	...	...	...	...	...	...	...	...						60 x 25
51 DB 310		0.00073	(0.0009)	...	...	0.000366	(0.0003)	...	(0.0006)	0.00237	...	...						60 x 25
51 DB 312		...	...	0.0023	...	...	...	0.00082	...	0.00226	...	...						60 x 25

5. Aluminium Base

Blocks/Discs

5.4	Al/Si	Cu	Mg	Si	Fe	Mn	Ni	Zn	Pb	Sn	Ti	Cr	V	Be	Others	Typical Alloy Type	Size (mm) Ø H		
CRM	54 X G25D1L	0.010	0.67	3.37	0.721	0.815	0.262	0.359	(0.0033)	<0.005	0.099	0.140	0.016	0.0011	Bi 0.112		40x15 or 50x20	c	
CRM	54 X G25D2K	0.130	0.59	3.93	0.576	0.479	0.139	0.169	0.073	0.042	0.152	0.150	(0.006)	0.049	Co, Bi, Cd	LM 8	40x15 or 50x20		
CRM	54 X G25D3R	0.117	0.208	5.97	0.454	0.289	0.111	0.092	0.074	0.054	0.078	0.061	0.011	0.0032	Ga 0.016	LM 16	40x15 or 50x20		
CRM	54 X G25D4M	0.162	0.075	7.34	0.125	0.093	0.098	0.111	0.160	0.092	0.09	0.020	(0.0022)	0.019	Co, Bi, Cd	LM 18	40x15 or 50x20		
CRM	54 X G25D5L	0.273	(0.0011)	8.14	0.191	(0.0046)	0.0082	0.020	0.273	0.130	0.0068	0.0097	(0.0025)	0.022	Co 0.0024	LM 25	40x15 or 50x20		
CRM	54 X G06H1R	0.630	0.489	8.43	1.08	0.022	0.611	0.60	0.082	0.133	0.248	0.084	0.01	...	Co, Bi, Cd		40x15 or 50x20	c	
CRM	54 X G06H2S	0.54	0.40	10.19	0.640	0.234	0.55	0.47	0.213	0.116	0.179	0.130	0.018	...	Co 0.0086, Bi 0.027		40x15 or 50x20		
CRM	54 X G06H3N	0.327	0.179	11.27	0.500	0.445	0.295	0.072	0.065	0.050	0.084	0.069	0.010	...	Co, Ga, Cd	LM 6	40x15 or 50x20		
CRM	54 X G06H4Q	0.237	0.134	13.21	0.138	0.691	0.139	0.131	0.040	(0.007)	0.124	0.120	0.011	...	Co 0.207	LM 9	40x15 or 50x20		
CRM	54 X G06H5L	0.0229	(0.0022)	13.76	0.210	0.85	0.0067	0.225	(0.0020)	0.022	0.0106	0.026	0.008	...	Co <0.0005	LM 20	40x15 or 50x20		
CRM	54 X G13H1N	1.87	2.89	8.91	0.801	0.0137	1.83	0.37	0.240	0.260	0.112	0.062	...	0.0078	Co 0.0051		40x15 or 50x20	c	
CRM	54 X G13H2M	1.29	1.37	10.42	0.767	0.248	1.15	0.530	0.083	0.145	0.166	0.103	...	...	Co 0.004		40x15 or 50x20		
CRM	54 X G13H3M	0.82	0.89	10.2	0.79	0.43	0.95	0.42	0.050	0.092	0.152	0.060	...	0.0075	Co 0.009	LM 13	40x15 or 50x20		
CRM	54 X G13H4N	0.643	0.78	12.55	0.405	0.617	0.84	0.251	0.055	0.068	0.083	0.0264	...	0.0047	Zr, Sb, Sr		40x15 or 50x20		
	54 X G13H5K	0.39	0.35	13.0	0.29	0.80	0.41	0.02	0.02	0.009	0.044	<0.01	...	...			40 x 15		
CRM	54 X G231H1C	1.19	0.45	9.82	0.80	0.029	0.31	0.60	0.145	0.082	0.022	0.089	...	(0.0002)			40x15 or 50x20	c	
	54 X G231H2B	0.91	0.20	11.6	0.84	0.27	0.20	0.47	0.13	0.13	0.07	0.05	...	...			40 x 15		
	54 X G231H3B	0.43	0.08	13.5	0.63	0.55	0.11	0.26	<0.01	0.01	0.12	0.10	...	...		231.0	40 x 15		
	54 X G231H4B	0.24	0.03	13.7	0.34	0.65	0.01	0.13	0.05	0.07	0.18	0.01	...	...		A413	40 x 15		
CRM	54 X GS20J1E	0.308	0.186	18.8	0.79	0.097	0.159	0.43	0.120	0.130	0.129	0.115	...	(0.00012)			40x15 or 50x20	c	
CRM	54 X GS20J2E	0.168	0.178	18.7	0.56	0.059	0.091	0.305	0.066	0.075	0.082	0.066	...	<0.0001			40x15 or 50x20		
CRM	54 X GS20J3D	0.079	0.118	23.9	0.328	0.302	(0.003)	0.030	0.077	(0.012)	0.0055	0.0017	...	<0.0001			40x15 or 50x20		
CRM	54 X GS20J4D	(0.0037)	0.0050	25.5	0.227	0.146	0.265	0.224	0.0014	(0.0021)	0.107	0.194	...	0.0017			40x15 or 50x20		
															Ga				
	54 ZA 411/03	0.0112	0.0125	9.54	0.094	0.0241	0.0112	0.0126	0.0050	0.0050	0.0142	0.0119	0.0132	...	...				
	54 ZA 414/04	0.103	0.544	11.90	0.43	0.25	0.013	0.100	0.0022	0.0015	0.071	0.011	0.013	...	...	continued			
	54 ZA 415/03	0.054	0.500	12.80	0.180	0.096	0.050	0.036	0.051	0.048	0.055	0.0300	0.020	...	0.0088				
	Continuation from above		Ca	Na	Sr	Zr	Sb	P	Co	Bi	Cd						Size (mm) Ø H		
	54 ZA 411/03		0.00054	0.0047	...	0.0095	...	0.0020	...	...	...						60 x 25		
	54 ZA 414/04		0.0030	0.00010	0.054	0.010	0.0026	0.0021	...	...	...						60 x 25		
	54 ZA 415/03		0.018	(0.007)	0.0006	...	0.017	0.0020	0.050	0.0084	...						60 x 25		
5.5	Al/Si/Cu	Cu	Mg	Si	Fe	Mn	Ni	Zn	Pb	Sn	Ti	Cr	Li	Co	V	Others	Typical Alloy Type	Size (mm) Ø H	
CRM	55 X G900J1E	1.02	0.94	0.14	0.81	0.008	0.005	0.26	0.35	0.32	<0.005	0.002	...	...	...			40x15 or 50x20	c
	55 X G900J2F	0.86	0.62	0.44	0.38	0.145	0.133	0.309	0.52	0.34	0.054	0.118	...	...	...	Bi 0.55	HE 9	40x15 or 50x20	
	55 X G900J3F	0.41	0.38	0.82	0.29	0.56	0.21	0.39	0.14	0.15	0.16	0.25	...	0.070	...		HE 20	40x15 or 50x20	
CRM	55 X G900J4F	0.249	0.459	1.39	0.306	0.75	0.351	0.149	0.088	0.153	0.171	0.343	...	...	(0.010)	Bi 0.285	HE 30	40x15 or 50x20	
	55 X G900J5E	0.024	0.009	1.65	0.18	1.16	0.41	0.023	0.014	0.006	0.33	0.46	...	...	...			40x15 or 50x20	
CRM	55 X G04H6E	5.56	0.151	3.30	0.83	0.028	0.77	0.199	0.221	0.181	0.126	0.126	0.019	0.0024	0.014	Bi, Cd		40x15 or 50x20	c
CRM	55 X G04H7E	4.65	0.263	4.43	0.633	0.212	0.500	0.537	0.227	0.174	0.0476	0.035	0.0066	0.030	0.0057	Bi, Sb, Cd		40x15 or 50x20	
CRM	55 X G04H8H	3.34	0.17	5.39	0.663	0.410	0.35	1.28	0.166	0.075	0.18	0.051	...	0.021	0.0105	Cd 0.0056	LM 4	40x15 or 50x20	
CRM	55 X G04H9D	2.62	0.078	6.00	0.303	0.301	0.229	1.89	0.063	0.030	0.31	0.005	...	0.010	0.008	Cd 0.0015	LM 21	40x15 or 50x20	
CRM	55 X G04H10D	1.36	0.004	7.21	0.512	0.532	0.0232	2.26	(0.0074)	<0.01	0.0097	0.090	...	0.043	0.008	Bi, Ga	LM 22	40x15 or 50x20	
	55 ML SS-308	4.50	0.08	5.50	0.65	0.10	0.10	0.25	...	...	0.06	<0.005	...	...	...	Sr 0.02		64 x 25	c
	55 ML SS-319	3.80	0.10	6.20	0.85	0.40	0.20	0.35	0.20	0.20	0.15	0.01	...	...	0.02	Sr, Bi		64 x 25	
	55 ML SS-332	3.20	1.00	9.20	0.70	0.25	0.50	0.25	0.10	0.10	0.14	<0.005	...	...	0.02	Sr 0.02		64 x 25	
	55 ML SS-336	1.00	1.20	12.00	0.65	0.06	2.50	0.05	...	...	0.04	<0.005	...	...	...	Sr, P		64 x 25	
	55 ML SS-390	4.50	0.60	16.50	0.90	0.25	0.10	0.50	0.08	0.08	0.10	0.05	...	...	...	Sr <0.005		64 x 25	
	Note: all values given for this series are nominal. Exact values will be given on the certificate.																		
	55 X G26H1F	4.34	0.29	7.69	1.78	0.015	0.012	1.14	0.24	(0.008)	0.21	0.20	...	0.022	0.012	Bi 0.07		40x15 or 50x20	c
CRM	55 X G26H2F	4.14	1.49	9.36	0.71	0.52	0.41	0.64	0.111	0.110	0.120	0.083	...	0.052	0.011	Bi 0.035		40x15 or 50x20	
	55 X G26H3F	2.19	1.01	9.6	1.07	0.45	0.51	0.79	0.23	0.16	0.147	0.130	0.006	0.076	0.020	Ga 0.011	LM 26	40x15 or 50x20	
CRM	55 X G26H4D	3.75	1.65	10.33	0.51	0.165	0.895	0.285	0.123	0.234	0.295	0.062	...	0.003	0.018	Bi 0.025		40x15 or 50x20	
	55 X G26H5D	1.41	1.48	10.7	0.21	0.58	1.28	0.02	(0.005)	0.073	(0.005)	0.029	...	...	...			40 x 15	
CRM	55 X G02D6J	0.487	0.336	12.3	1.27	0.65	0.027	0.083	0.46	<0.005	0.34	0.035	0.0055	0.018	...	Ca 0.006	LM 2	40x15 or 50x20	c
CRM	55 X G02D7K	1.59	0.52	10.74	0.90	0.45	0.249	0.614	0.219	0.046	0.160	0.094	<0.001	0.093	0.007	Be, Bi		40x15 or 50x20	
CRM	55 X G02D8H	2.26	0.205	9.91	0.94	0.453	0.366	1.29	0.335	0.186	0.240	0.0527	<0.001	0.058	0.024	Be 0.0008	LM 24	40x15 or 50x20	
CRM	55 X G02D9H	3.42	0.206	8.61	0.81	0.114	0.62	2.46	0.106	0.177	0.091	0.109	(0.008)	0.053	0.0059	Be, Ga		40x15 or 50x20	
CRM	55 X G02D10K	4.68	(0.006)	6.52	0.178	0.015	0.95	4.80	(0.0034)	0.87	(0.0020)	0.162	...	0.059	...	Be, Bi		40x15 or 50x20	
CRM	55 X A30J1H	5.75	1.03	14.6	1.07	0.132	0.014	0.233	0.135	0.006	0.194	0.031	...	0.091	0.0114	Be, Bi		40x15 or 50x20	c
CRM	55 X A30J2K	4.51	0.554	14.9	1.27	0.160	0.008	0.360	0.014	0.134	0.110	0.0071	...	0.196	0.0064	Be 0.0058	LM 30	40x14 or 50x18	
CRM	55 X A30J3J	4.02	0.31	16.5	0.29	0.259	0.072	0.048	0.018	0.083	0.144	0.037	...	0.194	0.006	Be, Bi		40x15 or 50x20	
CRM	55 X A30J4G	3.22	0.50	16.5	0.515	0.355	0.162	0.065	0.025	0.018	0.023	0.075	...	0.002	0.020	P (0.003)		40x14 or 50x18	

5. Aluminium Base

Blocks/Discs

5.11 Al/Mg		Cu	Mg	Si	Fe	Mn	Ni	Zn	Pb	Sn	Ti	Cr	Be	Li	Others	Typical Alloy Type	Size (mm) Ø H		
CRM	511 X G05H1H	0.32	2.02	0.42	0.79	0.012	0.125	0.47	0.023	0.178	0.204	0.242	(0.0002)	...	V, Cd		40x15 or 50x20	c	
CRM	511 X G05H2G	0.37	3.12	0.35	0.60	0.186	0.22	0.26	0.068	0.154	0.079	0.30	0.004	...	Cd, Ga		40x15 or 50x20		
	511 X G05H3H	0.093	3.97	0.21	0.41	0.40	0.090	0.092	0.107	0.096	0.25	0.095	0.0074	...		LM 5	40x15 or 50x20		
	511 X G05H4F	0.056	5.1	0.11	0.14	0.55	0.040	0.062	0.15	0.14	0.048	0.029	0.014	...			40x15 or 50x20		
	511 X G05H5E	0.007	7.87	0.05	0.11	0.87	(0.002)	0.010	0.21	(0.004)	<0.005	<0.005	...	...			40 x 15		
	511 X G10H4B	0.052	10.4	0.33	0.19	0.12	0.085	0.21	0.10	0.051	0.097	0.15	0.023	<0.0005	B 0.004	LM 10	40 x 15	c	
	511 X G10H5A	0.02	13.7	0.19	0.18	0.21	0.07	0.02	0.19	<0.01	<0.01	<0.01	0.013	...			40 x 15		
CRM	511 X G3000B1C	0.288	0.250	0.785	0.678	0.750	0.142	0.035	0.148	0.157	0.033	0.097	<0.0001	...	Ga 0.048, V 0.052		40x15 or 50x20	c	
CRM	511 X G3000B2B	0.20	0.68	0.23	0.335	0.81	0.063	0.098	0.137	0.105	0.111	0.200	0.0017	0.017	Co, Ga		40x15 or 50x20		
CRM	511 X G3000B3B	0.120	0.80	0.35	0.376	1.06	0.116	0.140	0.062	0.028	0.22	0.056	0.005	...	Co, Ga	3000	40x15 or 50x20		
	511 X G3000B4B	0.10	1.39	0.12	0.88	1.14	0.04	0.11	0.03	0.04	0.11	0.04	...	...			40 x 15		
	511 X G3000B5B	0.054	1.55	0.05	0.93	0.79	0.007	0.009	<0.01	0.008	0.19	0.003	...	...			40 x 15		
	511 ML SS-3004	0.15	1.1	0.18	0.5	1.1	<0.005	0.05	0.001	<0.001	0.02	<0.005	...	<0.001	V, Bi, Ga, Cd		64 x 25		
	511 ML WA-3004	0.10	1.3	0.22	0.6	1.3	0.01	0.15	0.006	...	<0.005	0.01	...	...	V, Bi, Ga, Cd	3004	64 x 25		
	511 ML WB-3004	0.20	0.9	0.10	0.4	0.9	0.02	0.10	0.020	...	0.05	0.02	...	...	V, Bi, Ga, Cd		64 x 25		
Note: all values given for this series are nominal. Exact values will be given on the certificate.																			
	511 AU E232	0.092	5.44	0.291	0.351	0.365	0.048	0.146	...	...	0.044	0.195	0.0028	...			62 x 30		
	511 AU E233	0.132	6.33	0.361	0.440	0.520	0.073	0.165	...	...	0.082	0.140	0.0051	...			each		
	511 AU E234	0.124	6.83	0.477	0.581	0.688	0.178	0.613	...	...	0.118	0.241	0.00087	...					
	511 AU E235	0.0084	9.96	0.076	0.120	0.060	0.137	0.032	...	...	0.0085	0.014	0.010	...			Set only		
	511 AU E236	0.246	3.93	0.600	0.653	0.879	0.037	0.313	...	...	0.197	0.296	0.00064	...					
5.12 Al/Zn/Si		Cu	Mg	Si	Fe	Mn	Ni	Zn	Ti	Cr	Sr	Size (mm) Ø H							
	512 ZA 871/01	0.011	0.295	9.67	0.155	0.023	0.022	8.94	0.056	0.019	0.0055	60 x 25	c						
	512 ZA 872/01	0.10	0.405	8.76	0.41	0.20	0.011	10.00	0.037	0.011	0.0018	60 x 25							
	512 ZA 873/01	0.049	0.535	7.25	0.26	0.104	0.006	11.0	0.0154	0.032	...	60 x 25							
5.14 Al/Mn		Cu	Mg	Si	Fe	Mn	Ni	Zn	Pb	Sn	Ti	Cr	Zr	Size (mm) Ø H					
CRM	514 X 9091.1C	0.046	(0.001)	0.035	0.081	6.93	(0.0026)	0.029	0.016	0.013	0.0017	<0.005	0.184	40x15 or 50x20	c				
	514 X 9091.2C	0.44	0.03	0.45	0.90	10.8	0.07	0.16	0.10	0.04	0.16	0.06	...	40 x 15					
CRM	514 X 9091.3D	0.62	0.148	0.74	0.94	11.3	0.141	0.223	0.111	0.019	0.424	0.106	<0.005	40x15 or 50x20					
	514 AU E211	0.220	0.011	0.653	0.694	0.919	0.018	0.023	...	...	0.020	...	...	62 x 30					
	514 AU E212	0.109	0.039	0.318	0.534	1.21	0.056	0.112	...	...	0.046	...	...	each					
	514 AU E213	0.157	0.063	0.460	0.312	1.50	0.101	0.054	...	...	0.071	...	...						
	514 AU E214	0.051	0.078	0.170	0.212	1.79	0.135	0.084	...	...	0.104	...	...	Set only					
	514 AU E215	0.255	0.109	0.820	0.886	0.597	0.197	0.157	...	...	0.130	...	...						
	514 AU E216	0.0072	0.0034	0.047	0.133	2.19	0.0032	0.0092	...	...	0.013	...	...						
5.15 Al/Sr Binaries		Sr		Sr		Sr		Sr		Sr		Size (mm) Ø H							
	515 X AlSr1A	1.05		515 X AlSr4A	3.84			515 X AlSr7A	6.67			50 x 20	c						
	515 X AlSr2A	2.2		515 X AlSr5A	5.2			515 X AlSr9A	9.18			50 x 20							
5.16 Al/Fe		Cu	Mg	Si	Fe	Mn	Ni	Zn	Pb	Sn	Ti	Cr	Sb	V	Zr	Ga	B	Size (mm) Ø H	
	516 ZA 155/02	0.100	0.150	0.50	1.00	0.081	0.053	0.062	0.010	0.011	0.065	0.051	...	0.050	0.042	0.007	...	60 x 25	c
	516 ZA 156/02	0.052	0.063	0.31	1.28	0.056	0.022	0.035	0.0007	...	0.042	0.031	...	0.0073	0.0100	...	...	60 x 25	
	516 ZA 157/02	0.0112	0.0203	0.117	1.62	0.0166	0.0025	0.0101	0.0050	0.0019	0.0024	0.0004	...	0.0027	0.0051	...	...	60 x 25	
	516 ZA 158/03	0.0120	0.020	0.053	1.98	0.021	0.0085	0.0075	0.007	0.0050	0.0130	0.0070	...	0.013	0.0055	0.010	0.0010	60 x 25	
CRM	516 ZA 161/01	0.023	0.024	0.12	2.66	0.035	0.013	0.012	0.0110	0.010	0.023	0.012	0.0053	0.022	0.010	...	...	60 x 25	HIP
5.17 Al/Zn Sacrificial Anode		Cu	Si	Fe	Zn	Pb	Ti	Cd	In	Ga	Hg	Size (mm) Ø H							
	517 GO LF30	0.023	...	0.01	4.1	...	0.027	0.028	0.034	0.020	...	55 x 4	CC						
	517 GO LF31	0.013	0.07	0.06	4.3	...	0.020	0.019	0.029	0.010	...	55 x 4							
	517 GO LF32	...	0.09	0.11	4.6	...	0.010	0.010	0.021	0.005	...	55 x 4							
	517 GO LF33	...	0.14	0.20	5.1	...	0.005	0.005	0.014	0.002	...	55 x 4							
	517 GO LF34	0.008	0.05	0.05	0.32	0.007	...	...	...	...	0.030	55 x 4	CC						
	517 GO LF35	0.014	0.10	0.19	0.84	0.018	...	...	...	...	0.037	55 x 4							
	517 GO LF36	0.002	0.18	0.10	1.32	0.014	...	...	...	...	0.029	55 x 4							
	517 GO LF37	0.009	0.05	0.15	2.03	0.008	...	...	...	...	0.044	55 x 4							
	517 GO LF39	0.006	0.02	0.05	3.25	...	...	...	...	...	0.065	55 x 4							
	517 GO LF40	0.004	0.16	0.09	4.47	...	...	...	...	...	0.036	55 x 4							
	517 GO LF41	0.024	0.02		5.55	0.025	...	...	...	...	0.055	55 x 4							
5.18 Pressed Powder Alloys		Cu	Mg	Si	Fe	Mn	Ni	Zn	Pb	Sn	Ti	Cr	Co	V	Zr	Ca	Mo	Size (mm) Ø H	
CRM	518 X 429	1.01	1.46	28.36	0.348	0.016	0.022	0.061	0.002	0.001	0.019	0.0069	2.18	0.009	...	0.0184	...	65 x 25	HIP
CRM	518 X 905	2.52	0.639	0.105	2.54	0.984	5.05	0.006	<0.001	0.003	0.596	0.0085	0.003	0.019	0.80	<0.001	0.804	45 x 40	

6. Magnesium Base

Blocks/Discs

6.1 Residuals in Pure Magnesium		Al	Zn	Mn	Zr	Cu	Si	Fe	Ni	Ca	Sn	Pb	Ag	Be	Cd	Ce	La	P	Na	Size (mm)	
																				Ø	H
CRM	61 X MgP1A **	0.014	...	0.0035	<0.0005	0.0008	0.005	0.027	...	<0.001	<0.002	<0.002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	...	...	45 x 20	c
CRM	61 X MgP2A **	0.065	0.0122	0.0118	(0.0007)	0.0109	0.031	0.0061	0.0029	0.0138	0.0073	0.0061	0.003	<0.0001	0.0063	0.0019	0.0014	...	...	45 x 20	
CRM	61 X MgP3A **	0.096	0.0196	0.0137	(0.0014)	0.0292	0.044	0.014	0.0048	0.054	0.0155	0.0148	0.0125	<0.0001	0.0154	0.0055	0.0038	...	...	45 x 20	
CRM	61 X MgP4A **	0.0243	0.0158	0.0102	0.030	0.0109	0.039	(0.0044)	0.0028	0.028	0.0068	0.0069	0.021	<0.0001	0.0071	0.0043	0.0029	...	...	45 x 20	
Samples marked ** may be unsuitable for use with glow discharge analysis																					
	61 NH R0-90	0.0020	0.0037	0.0014	...	0.0006	0.0015	0.0098	0.0013	0.00005	...	0.0004	...	...	<0.00005	...	...	<0.0001	...	64 x 13	
	61 NH R1-88	0.0059	0.0003	0.0542	...	0.0013	0.0044	0.0251	0.0006	...	...	...	...	...	...	...	...	...	...	64 x 13	
	61 NH R2-88	0.0118	0.0011	0.0272	...	0.0028	0.0091	0.0294	0.0027	...	...	...	...	...	...	...	...	...	...	64 x 13	
	61 NH R3-88	0.0194	0.0153	0.0197	...	0.0067	0.0139	0.0298	0.0013	...	...	...	...	...	...	...	...	...	...	64 x 13	
	61 NH R4-88	0.0259	0.0271	0.0111	...	0.0098	0.0227	0.0359	0.0016	...	...	...	...	...	...	...	...	...	...	64 x 13	
	61 NH R5-88	0.0473	0.0520	0.0061	...	0.0150	0.0362	0.0274	0.0012	...	...	...	...	...	...	...	...	...	...	64 x 13	
	61 NH RMGH-88	0.0535	0.0112	0.0012	...	0.0055	0.0209	0.0222	0.0041	...	...	...	...	...	...	...	...	...	...	64 x 13	
	61 NH RMGL-88	0.0055	0.0073	0.0298	...	0.0008	0.0004	0.0031	0.0003	...	...	...	...	...	...	...	...	...	...	64 x 13	
	61 NH RMGL-93	<0.001	0.0013	0.0005	...	0.0012	0.0002	0.0032	0.0005	...	...	...	...	...	...	...	...	...	...	64 x 13	
	61 NH RTC-90	0.0055	0.0027	0.0702	...	0.0011	0.0013	0.0309	0.0012	0.0004	0.0000	0.0020	...	...	<0.0001	...	...	0.0027	0.0001	64 x 13	
	61 NH RT400-01	0.0161	0.0012	0.0191	...	0.0034	0.0084	0.0329	0.0012	0.0009	0.0018	0.0025	...	...	0.0007	...	...	0.0043	0.0028	64 x 13	
6.3 Mg/Mn		Al	Zn	Mn	Zr	Cu	Si	Fe	Ni	Ca	Sn	Pb	Ag	Be	Cd	Size (mm)					
																Ø	H				
CRM	63 X MgE1C **	0.40	0.033	0.76	(0.0013)	0.044	0.006	0.010	(0.002)	0.04	0.013	0.010	0.015	<0.0005	...	45 x 20	c				
	63 X MgE2A	0.07	0.02	1.47	<0.002	0.02	0.01(5)	0.02	0.005	0.01	0.01	0.007	...	...	...	40 x 15					
CRM	63 X MgE3B	0.015	0.022	2.36	<0.001	0.012	0.01	0.004	0.0023	0.13	0.0057	0.005	0.005	...	0.001	40x15 or 50x20					
Samples marked ** may be unsuitable for use with glow discharge analysis																					
	63 NH K0-87	1.03	0.050	0.489	...	0.0022	0.0076	0.0043	0.0005	...	...	...	...	0.0005	...	64 x 13					
	63 NH M12-X-91	0.094	0.251	2.18	...	0.0271	0.0128	0.0015	0.0050	...	0.0457	0.0169	...	0.0003	...	64 x 13					
	63 CA SMD3A	0.08	0.058	1.69	...	0.032	0.034	...	0.002	...	...	...	...	...	...	60 X 6					
6.4 Mg/Al		Al	Zn	Mn	Cu	Si	Fe	Ni	Ca	Sn	Pb	Be	Cd	P	Na	Size (mm)					
																Ø	H				
	64 NH STD1-85	9.54	0.0009	0.0169	0.0130	1.14	0.0278	0.0127	...	...	...	0.0015	...	...	...	64 x 13					
	64 NH AM2002-91	1.99	0.088	0.440	0.0235	0.0831	0.0036	0.0011	...	...	...	0.0009	...	...	...	64 x 13					
	64 NH AM5002-91	4.92	0.054	0.189	0.0121	0.0722	0.0068	0.0022	...	...	...	0.0004	...	...	...	64 x 13					
	64 NH AM60-T-89	5.86	0.017	0.294	0.0013	...	0.0041	0.0007	<0.0001	0.0004	0.0010	...	<0.00005	0.0012	0.0004	64 x 13					
	64 NH A60-Y-91	5.45	0.070	0.193	0.0013	0.0167	0.0082	0.0005	...	...	...	0.0011	...	...	...	64 x 13					
	64 NH A60-T-00	5.98	0.084	0.37	0.0011	0.0148	0.0021	0.0009	...	0.0015	0.0016	0.0008	...	...	...	64 x 13					
6.5 Mg/Al/Zn		Al	Zn	Mn	Zr	Cu	Si	Fe	Ni	Ca	Sn	Pb	Ag	Be	Cd	Ce	La	Sr	Others	Size (mm)	
																				Ø	H
	65 NH A8-H-98	9.89	2.04	0.074	...	0.0229	0.31	0.0179	0.0115	...	0.0100	0.0100	...	0.0020	...	...	...	...	...	64 x 13	
	65 NH A8-H-99	9.95	1.21	0.067	...	0.0118	0.091	0.0276	0.0109	...	...	...	...	0.0015	...	...	...	...	...	64 x 13	
	65 NH A8-L-98	2.62	0.10	0.50	...	0.0009	0.0070	0.0019	0.0012	...	0.0009	0.0016	...	0.0005	...	...	...	...	...	64 x 13	
	65 NH A8-L-02	4.73	0.206	0.43	...	0.0010	0.0040	0.0032	0.0003	...	0.0002	0.0009	...	0.0004	<0.0001	...	...	...	...	64 x 13	
	65 NH A91-T-00	9.06	0.76	0.203	...	0.0012	0.0095	0.0010	0.0008	...	0.0017	0.0013	...	0.0006	...	...	...	...	...	64 x 13	
	65 NH A91-L-00	6.98	0.19	0.53	...	0.0004	0.0021	0.0004	0.0002	...	0.0009	0.0005	...	0.0001	...	...	...	...	...	64 x 13	
	65 NH AZ61-H-91	7.45	1.466	0.040	...	0.0301	0.32	0.0140	0.0413	...	...	...	...	0.0048	...	...	...	...	...	64 x 13	
	65 NH AZ61-L-91	4.92	0.112	0.502	...	0.0020	0.027	0.0044	0.0038	...	...	...	...	0.0004	...	...	...	...	...	64 x 13	
	65 NH AZ61-T-91	6.23	0.82	0.243	...	0.0184	0.166	0.0088	0.0188	...	...	...	...	0.0013	...	...	...	...	...	64 x 13	
	65 NH AZ61-X-91	6.65	1.223	0.127	...	0.0245	0.243	0.0154	0.0331	...	...	...	...	0.0021	...	...	...	...	...	64 x 13	
	65 NH AZ61-Y-91	5.56	0.476	0.355	...	0.0116	0.087	0.0053	0.0107	...	...	...	...	0.0006	...	...	...	...	...	64 x 13	
	65 NH AZ63-89	6.05	3.71	0.164	...	0.0234	...	0.0082	0.0032	0.0002	0.0055	0.0052	...	0.0012	0.0054	...	...	...	P 0.0069	64 x 13	
	65 NH AZ63-X-90	6.33	3.21	0.160	...	0.0130	0.0616	0.0103	0.0016	...	0.0169	0.0182	...	0.0014	0.0192	...	...	...	...	64 x 13	
	65 NH A31-L-91	1.91	0.202	0.408	...	0.0037	0.020	0.0041	0.0007	...	...	...	...	0.0003	...	...	...	...	...	64 x 13	
	65 NH A31-T-91	3.06	1.098	0.256	...	0.0355	0.151	0.0103	0.0052	...	...	...	...	0.0017	...	...	...	...	...	64 x 13	
	65 NH A31-X-91	3.51	1.455	0.116	...	0.0475	0.263	0.0138	0.0071	...	...	...	...	0.0029	...	...	...	...	...	64 x 13	
	65 NH A31-Y-91	2.37	0.616	0.327	...	0.0124	0.0258	0.0073	0.0040	...	...	...	...	0.0007	...	...	...	...	...	64 x 13	
	65 NH A41-X-91	5.16	0.210	0.410	...	0.0173	0.924	0.0061	0.0029	...	...	...	...	0.0015	...	...	...	...	...	64 x 13	
	65 NH K2-87	6.14	0.32	0.165	...	0.0040	0.018	0.0129	0.0016	...	...	...	...	0.0012	...	...	...	...	...	64 x 13	
	65 NH K3-87	7.36	0.51	0.280	...	0.0084	0.030	0.0097	0.0028	...	...	...	...	0.0010	...	...	...	...	...	64 x 13	
	65 NH K5-87	8.11	1.07	0.351	...	0.0462	0.083	0.0009	0.0116	...	...	...	...	0.0001	...	...	...	...	...	64 x 13	
	65 NH K7-87	9.40	0.62	0.027	...	0.0047	0.046	0.0104	0.0017	...	...	...	...	0.0008	...	...	...	...	...	64 x 13	
	65 NH K8-87	10.32	0.73	0.190	...	0.0041	0.018	0.0127	0.0015	...	...	...	...	0.0007	...	...	...	...	...	64 x 13	
	65 NH APE-89	10.24	1.44	0.058	...	0.0298	0.086	0.0149	0.0055	0.0005	0.0062	0.0057	...	0.0018	0.0060	...	...	...	P 0.0063	64 x 13	
	65 NH LT500-01	9.28	0.86	0.32	...	0.0052	0.0162	0.0050	0.0019	...	0.0025	0.0024	...	0.0013	...	...	...	...	...	64 x 13	
	65 NH LT60-01	5.99	0.15	0.37	...	0.0034	0.0161	0.0059	0.0016	...	0.0020	0.0027	...	0.0014	...	...	...	...	...	64 x 13	

7. Tin Base

Blocks/Discs

7.1 Tin with Impurities																		Size (mm)	
	Sb	As	Bi	Pb	Cu	Fe	Ni	Al	Cd	Zn	In	Te	Ag	Au	Co	S	Sn	Ø	H
CRM 71 X SR0A	0.019	<0.001	0.014	0.034	0.0020	(0.001)	0.0025	0.014	0.0013	0.007	0.0095	...	0.0025	<0.0005	...	0.0008	...	40 x 15	c
CRM 71 X SR1D	0.013	0.003	0.010	0.030	0.009	0.0017	...	...	0.007	0.007	0.014	0.003	0.009	0.003	...	...	...	40 x 15	
CRM 71 X SR2D	0.057	0.041	0.056	0.127	0.054	0.002	0.0096	0.002	0.041	0.015	0.049	0.022	0.025	0.008	...	...	...	40 x 15	
CRM 71 X SR3E	0.145	0.061	0.105	0.29	0.101	0.003	0.0009	...	0.022	0.014	0.028	0.008	0.007	0.003	...	...	...	40 x 15	
71 A 192g	0.0007	...	0.00003	0.0007	0.00007	0.0002	<0.0001	...	...	0.00006	...	...	...	...	...	...	99.997	300g block	c
																		W D H	
CRM 71 B 1727	(0.004)	<0.01	...	0.00333	...	(0.002)	...	...	...	...	(0.002)	...	...	...	...	...	...	30 x 30 x 30	
																		Ø H	
71 MF NF54-1	0.0065	0.0105	0.0026	0.023	0.0107	0.003	0.0018	(0.0003)	0.0003	...	0.0053	...	0.006	...	(0.002)	...	...	37 x 12	c
71 MF NF54-2	0.011	0.082	0.0046	0.148	0.047	0.014	0.0033	(0.008)	0.0006	...	0.013	...	0.010	...	0.002	...	...	37 x 12	
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	...	0.032	...	0.008	...	...	37 x 12	
71 MF NF54-4	0.045	0.27	0.022	0.72	0.29	(0.023)	0.024	...	0.005	...	0.043	...	0.063	...	0.02	...	...	37 x 12	
71 MF NF54-5	0.095	0.47	0.038	1.0	0.52	...	...	...	0.01	(0.016)	0.098	...	0.10	...	...	...	...	37 x 12	
7.2 Tin/Antimony																		Size (mm)	
	Sb	As	Bi	Pb	Cu	Fe	Cd	Zn											Ø H
72 X SA4RB	4.0	0.03	0.10	0.08	0.02	0.10	0.003	0.007											40 x 15
72 X SA5RB	5.0	0.02	0.005	0.025	0.005	0.003	0.02	0.001	A set of Sn/Sb binaries is also available, with certified levels of Sb in the range from 1% to 12%. Please enquire for details.										40 x 15
72 X SA6RB	6.0	0.05	0.25	0.25	0.10	0.05	0.01	0.02											40 x 15
7.3 Tin White Metals (Pewter/Babbitt)																		Size (mm)	
	Sb	As	Bi	Pb	Cu	Fe	Ni	Al	Cd	Zn	In	Ag	Co	S					Ø H
CRM 73 X SC1A	1.48	0.008	0.084	0.067	2.02	0.0025	0.0041	0.0025	0.006	0.003	0.008	0.010	<0.001	<0.002					40 x 15
CRM 73 X SC2A	3.07	0.035	0.62	0.029	1.06	0.030	0.0048	(0.002)	0.036	0.003	(0.002)	0.006	0.021	<0.001					40 x 15
CRM 73 X SC3A	4.60	0.029	0.020	0.040	0.222	0.017	0.0136	0.001	0.024	0.0014	0.031	0.013	0.006	(0.002)					40 x 15
CRM 73 X SC4A	6.02	0.005	0.218	0.514	3.05	0.011	0.017	0.005	0.052	0.008	0.011	0.042	0.0035	(0.003)					40 x 15
CRM 73 X SC5A	7.03	0.013	0.43	0.136	0.57	0.004	0.0058	0.003	0.008	0.001	0.036	0.063	0.011	(0.001)					40 x 15
CRM 73 X SC6A	0.092	0.204	0.115	0.100	5.17	0.007	0.013	(0.003)	0.0125	0.01	0.058	0.08	0.0050	(0.004)					40 x 15
CRM 73 X SC7A	14.01	0.047	0.009	0.356	6.51	0.046	0.008	0.001	0.0018	(0.003)	0.014	0.006	0.0160	<0.001					40 x 15
CRM 73 X SC8A	9.65	0.121	0.037	0.037	3.89	0.073	0.014	0.004	0.133	(0.008)	0.017	(0.0015)	0.017	(0.011)					40 x 15
CRM 73 X SC9A	8.18	0.53	0.066	0.20	8.47	0.037	0.008	<0.001	0.078	(0.003)	0.010	0.004	0.0030	(0.008)					40 x 15
CRM 73 X SC11A	11.63	0.31	0.537	0.040	10.54	0.072	0.49	<0.002	1.63	0.065	...	0.060	...	...					40 x 15
CRM 73 X SC12A	8.05	0.024	0.020	0.024	7.72	0.051	0.384	<0.002	0.625	0.020	...	0.83	...	...					40 x 15
CRM 73 PN LA1	6.79	0.012	0.014	3.18	2.45	0.012	0.011	...	1.41	0.0016	...	...	...	...					40 x 25
CRM 73 PN LA2	7.81	0.092	0.033	2.17	3.84	0.018	0.094	...	0.88	...	...	...	...	...					each
CRM 73 PN LA3	10.22	0.24	0.059	1.19	8.13	0.059	0.28	...	0.50	0.0095	...	...	...	...					
CRM 73 PN LA4	11.66	0.43	0.085	0.41	6.35	0.080	0.45	...	0.096	...	...	...	...	...					Set Only
CRM 73 PN LA5	13.58	0.54	0.099	0.070	5.45	0.096	0.53	...	0.011	0.020	...	...	...	...					
7.4 Tin-base (Lead-Free) Solders																		Size (mm)	
	Cu	Ag	Pb	Sb	Bi	Zn	Ni	Fe	As	Cd	Se	Au	Al	Sn					Ø H
CRM 74 X E A	3.00	0.744	0.0262	0.028	0.0097	<0.001	0.011	0.052	0.088	0.0022	0.0025	...	...	rem					40 x 15
CRM 74 X HN A	3.98	0.156	0.082	0.0256	0.141	0.0011	0.0083	0.028	0.0009	0.0045	0.0057	...	...	(95.6)					40 x 15
CRM 74 X TC A	4.88	0.013	0.183	0.056	0.040	0.011	0.0134	0.062	0.016	0.0112	0.069	...	...	(94.6)					40 x 15
CRM 74 X AM A	3.00	0.55	0.174	1.05	0.196	0.0024	0.028	0.054	0.064	0.0065	...	...	...	rem					40 x 15
CRM 74 X HA A	0.604	2.69	0.025	1.98	0.057	2.59	0.016	0.052	0.0076	0.0025	...	...	...	rem					40 x 15
CRM 74 X HB A	4.76	0.069	0.059	4.97	0.0087	0.018	1.10	0.116	0.027	0.0106	...	...	...	rem					40 x 15
CRM 74 X CA1A	0.696	0.406	0.077	0.016	0.013	...	...	...	...	...	...	0.0069	0.0101	...					40 x 15
CRM 74 X CA3A	0.055	3.11	0.036	0.027	0.017	...	...	...	...	...	...	0.0100	<0.001	...					40 x 15
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)	...	...					37 x 12
74 MF NF46-5X	0.030	5.0	0.21	0.059	0.25	...	...	...	...	...	...	(0.017)	...	...					37 x 12

8. Lead Base

Blocks/Discs

8.1 Binaries. Lead-Antimony, Lead-Arsenic															Size (mm)	
	Sb	As													Ø	H
CRM 81 X PA0.5C	0.481	...													40 x 15	c
CRM 81 X PA1.0C	0.989	...													40 x 15	
CRM 81 X PA2.0D	1.996	...													40 x 15	
CRM 81 X PA3.5D	3.53	...													40 x 15	
CRM 81 X PA7.0D	7.02	...													40 x 15	
CRM 81 X PA10.0C	9.60	...													40 x 15	
CRM 81 X PA12.5D	12.72	...													40 x 15	
81 X PAs1A	...	1.25													40 x 15	c

9. Solders

Blocks/Discs

9.1 Tin/Lead Solders																	Size (mm)	
	Sn	Sb	Bi	Cu	As	Ag	Fe	Zn	Cd	Ni	Au	In	Te	Al	Pb		Ø	H
91 X S10 PR1B	8.81	0.04	0.03	0.015	0.006	0.005	0.003	0.008	0.003	0.009	...	...	...	...	rem	40 x 15	c	
91 X S10 PR2C	10.38	0.51	0.15	0.05	0.04	0.050	0.003	0.030	0.007	0.003	...	...	...	...	rem	40 x 15		
91 X S10 PR3B	11.97	0.26	0.23	0.12	0.02	0.030	0.002	0.003	0.011	(0.02)	...	...	...	...	rem	40 x 15		
91 X S10 P C	10.14	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	...	...	...	...	rem	40 x 15	c	
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	c	
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	37 x 12		
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	37 x 12		
91 MF NF31-33X	8.6	0.20	0.0079	0.02	...	2.50	...	...	...	...	...	...	...	...	rem	37 x 12	c	
91 MF NF31-34X	10.0	0.085	0.010	0.014	...	2.15	...	...	...	...	...	...	...	...	rem	37 x 12		
91 MF NF31-35X	10.7	0.048	0.032	0.0045	...	1.10	...	...	...	...	...	...	...	...	rem	37 x 12		
91 X S30 PR1B	29.3	0.047	0.057	0.19	0.006	0.007	(0.08)	0.0013	0.0024	0.0023	...	...	...	...	rem	40 x 15	c	
91 X S30 PR2B	30.2	0.60	0.15	0.076	0.028	0.044	0.04	0.031	0.0070	0.007	...	...	...	...	rem	40 x 15		
91 X S30 PR3C	30.88	0.269	0.294	0.102	0.0126	0.024	0.0016	(0.003)	0.0115	0.0269	0.0063	0.0085	...	...	rem	40 x 15		
91 X S30 P C	30.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	...	...	...	...	rem	40 x 15	c	
91 X S40 PR1B	39.1	0.059	0.060	0.20	0.006	0.005	<0.005	0.008	0.001	0.002	...	...	...	...	rem	40 x 15	c	
91 X S40 PR2C	40.4	0.60	0.15	0.050	0.026	0.050	(0.003)	0.028	0.0057	0.007	...	...	...	...	rem	40 x 15		
91 X S40 PR3B	41.8	0.25	0.25	0.094	0.018	0.022	0.01	0.002	0.010	0.016	...	...	...	...	rem	40 x 15		
91 X S40 P C	40.3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	...	...	...	...	rem	40 x 15	c	
91 X S50 PR1B	49.5	0.062	0.060	0.214	0.008	0.006	0.01	0.004	0.006	0.007	...	...	...	...	rem	40 x 15	c	
91 X S50 PR2B	50.5	0.56	0.16	0.059	0.026	0.053	0.01	0.023	0.011	0.003	...	...	...	...	rem	40 x 15		
91 X S50 PR3C	51.4	0.26	0.25	0.10	0.015	0.020	0.009	0.008	0.002	0.016	...	...	...	...	rem	40 x 15		
91 X S50 PR4A	54.6	0.098	0.097	1.58	0.044	0.045	(0.0034)	0.0105	0.0118	0.0114	0.029	0.052	...	...	rem	40 x 15		
91 X S50 P D	50.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	...	...	...	...	rem	40 x 15	c	
91 X S63 PR0A	59.8	0.013	0.007	0.023	0.008	0.010	(0.0026)	<0.001	0.012	<0.005	0.018	0.01	<0.001	...	rem	40 x 15	c	
91 X S63 PR1F	61.30	0.075	0.062	0.252	(0.001)	0.0065	0.012	0.0032	0.0057	0.0010	0.040	0.028	0.0008	...	rem	40 x 15		
91 X S63 PR2G	62.6	0.614	0.162	0.052	0.080	0.057	0.030	0.007	0.0168	0.0073	0.090	0.019	0.009	...	rem	40 x 15		
91 X S63 PR3F	64.27	0.253	0.255	0.133	0.0190	0.0222	0.0054	(0.002)	0.0015	0.0196	0.175	0.0087	(0.0002)	...	rem	40 x 15		
91 X S63 PR4A	66.8	0.093	0.030	0.021	<0.002	0.030	<0.005	<0.001	0.021	<0.005	0.05	0.014	0.006	...	rem	40 x 15		
91 X S63 P G	62.6	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	...	...	...	...	rem	40 x 15	c	
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	c	
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	37 x 12		
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	37 x 12		
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	37 x 12		
91 MF NF2-A-10	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	c	
91 MF NF2-A-11	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	37 x 12		
91 MF NF2-A-12	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	37 x 12		
91 PN L1	56.06	0.52	0.17	0.11	0.051	...	...	0.00093	0.0020	...	...	...	...	...	rem	40 x 30	c	
91 PN L2	59.09	0.35	0.11	0.075	0.034	...	(0.011)	0.0019	0.0043	...	...	...	...	...	rem	each		
91 PN L3	60.18	0.14	0.22	0.034	0.092	...	(0.023)	0.0064	0.0065	...	...	...	...	...	rem			
91 PN L4	62.81	0.079	0.055	0.013	0.017	...	(0.0085)	0.0011	0.0080	...	...	...	...	...	rem	Set only		
91 PN L5	64.96	0.011	0.014	0.0037	0.0035	...	...	0.0056	0.0097	...	...	...	...	...	rem			
9.3 Tin/Lead/Antimony Solders																	Size (mm)	
	Sn	Sb	Bi	Cu	As	Ag	Fe	Zn	Cd	Ni	In	Te	Pb				Ø	H
93 X S30 APR1C	28.58	2.54	0.059	0.192	0.010	0.0144	(0.012)	(0.0004)	0.0014	0.0010	0.0094	0.0024	rem		40 x 15	c		
93 X S30 APR2C	30.68	1.80	0.168	0.062	0.0178	0.049	0.0026	0.028	0.0061	0.042	0.0199	0.0102	rem		40 x 15			
93 X S30 APR3C	33.0	0.96	0.28	0.008	0.018	0.021	0.0026	0.005	0.009	0.010	...	...	rem		40 x 15			
93 X S40 APR1A	38.5	2.70	0.06	0.23	0.011	0.007	(0.01)	0.002	0.002	0.003	...	...	rem		40 x 15	c		
93 X S40 APR2A	39.6	2.10	0.19	0.07	0.030	0.052	(0.02)	0.04	0.006	0.006	...	...	rem		40 x 15			
93 X S40 APR3A	41.4	1.70	0.26	0.12	0.024	0.021	(0.03)	0.022	0.011	0.014	...	...	rem		40 x 15			
93 X S50 APR1A	48.4	3.2	0.052	0.18	0.007	0.010	(0.01)	0.002	0.002	0.002	...	...	rem		40 x 15	c		
93 X S50 APR2A	49.6	2.8	0.15	0.049	0.027	0.055	0.01	0.042	0.006	0.014	...	...	rem		40 x 15			
93 X S50 APR3A	51.2	2.3	0.25	0.093	0.023	0.025	(0.02)	0.013	0.010	0.010	...	...	rem		40 x 15			
9.5 Fusible Alloys																	Size (mm)	
	Sn	Sb	Bi	Cu	As	Ag	Fe	Zn	Cd	Al	In	Pb	Nominal Melting Temperature °C				Ø	H
95 X 117A	8.02	0.010	45.3	0.010	...	0.0043	...	0.0056	4.95	...	18.72	23.1	47		40 x 15	c		
95 X 136A	12.05	0.022	48.8	0.0028	...	0.0056	...	0.031	0.0092	...	21.49	18.0	58		40 x 15			
95 X 158A	13.38	0.056	50.1	0.049	...	0.0021	...	0.043	9.50	...	0.0058	26.9	70		40 x 15			
95 X 174A	16.70	0.086	57.1	0.0030	...	0.0075	...	0.037	0.0089	...	26.08	0.082	79		40 x 15			
95 X 255A	0.220	0.312	55.7	0.041	...	0.0020	...	0.035	0.0065	...	0.010	43.7	124		40 x 15			
95 X BIS40P1A	42.9	0.10	56.5	0.106	0.005	0.033	0.002	0.011	0.011	(0.0009)	0.051	0.085	138		40 x 15			
95 X CDS50P1A	50.1	0.113	0.13	0.26	0.027	0.030	(0.0022)	0.007	18.1	<0.002	0.092	31.0	145		40 x 15			

15. Binary Alloys

Blocks/Discs

15.1.1 Fe Binary											Size (mm)			
		C	Si	S	P	Mn	Ni	Cr	Mo	Al	Ø	H		
151 X FC1A	Cr	0.013	0.02	0.008	0.020	0.06	0.018	0.45	<0.005	0.067	40	x 15		
151 X FC2A		0.017	0.02	0.007	0.020	0.069	0.020	1.00	<0.005	0.045	40	x 15		
151 X FM1A	Mn	0.019	0.01	0.008	0.011	0.53	0.015	0.015	<0.005	<0.005	40	x 15		
151 X FM2A		0.019	0.02	0.008	0.012	1.11	0.015	0.015	<0.005	<0.005	40	x 15		
151 X FM3A		0.025	0.04	0.009	0.012	4.60	0.01	0.01	<0.005	<0.005	40	x 15		
151 X FN1A	Ni	0.018	0.01	0.009	0.003	0.06	0.515	0.015	<0.005	0.12	40	x 15		
151 X FS1B	S	0.07	0.10	0.058	0.013	0.26	0.015	0.03	0.01	0.02	40	x 15		
15.1.2 Fe Binary											Size (mm)			
		Element	%	Size (mm)		Fe Binary (continued)					Element	%	Size (mm)	
				Ø	H								Ø	H
151 X 14930D	Al	Aluminium	14.30	40	x 15	C	151 X 13672E	Ni	Nickel	5.00	40	x 15	c	
151 X 14931D	Al	Aluminium	19.7	40	x 15		151 X 13763F	Ni	Nickel	10.01	40	x 15		
							151 X 13673F	Ni	Nickel	19.72	40	x 15		
CRM 151 US 57	Ce	Cerium	0.011	40	x 27	C	151 X 13589J	Ni	Nickel	49.6	40	x 15		
CRM 151 US 58	Ce	Cerium	0.020	40	x 27									
CRM 151 US 59	Ce	Cerium	0.050	40	x 27		151 X 13767E	Nb	Niobium	0.65	40	x 15	c	
							151 X 13664E	Nb	Niobium	1.11	40	x 15		
151 US 601	Ce	Cerium	0.002	40	x 27	C								
151 US 602	Ce	Cerium	0.005	40	x 27		151 X 13604E	Si	Silicon	0.57	40	x 15	c	
151 US 603	Ce	Cerium	0.198	40	x 27		151 X 13607E	Si	Silicon	1.01	40	x 15		
151 US 604	Ce	Cerium	0.496	40	x 27		151 X 13605E	Si	Silicon	2.04	40	x 15		
							151 X 13606F	Si	Silicon	3.12	40	x 15		
151 X 13765G	Cr	Chromium	19.9	40	x 15									
151 X 13593G	Cr	Chromium	39.6	40	x 15		151 X 13759E	Ti	Titanium	0.23	40	x 15	c	
							151 X 13762E	Ti	Titanium	0.41	40	x 15		
151 X 13584D	Co	Cobalt	1.00	40	x 15	C								
151 X 13603E	Co	Cobalt	3.51	40	x 15		151 X 13674D	W	Tungsten	1.81	40	x 15	c	
151 X 13601D	Co	Cobalt	5.59	40	x 15		151 X 13669D	W	Tungsten	5.04	40	x 15		
151 X 13602D	Co	Cobalt	7.71	40	x 15		151 X 13670D	W	Tungsten	14.66	40	x 15		
151 X 13764C	Co	Cobalt	11.5	40	x 15		151 X 13699D	W	Tungsten	24.6	40	x 15		
151 X 13600D	Co	Cobalt	20.95	40	x 15									
							151 A 421	W	Tungsten	0.52	38	x 19	c	
151 X 13668E	Cu	Copper	1.08	40	x 15	C	151 A 422	W	Tungsten	1.28	each			
							151 A 423	W	Tungsten	2.06				
151 X 14045E	Mn	Manganese	0.49	40	x 15	C	151 A 424	W	Tungsten	3.02	Set Only			
151 X 14046D	Mn	Manganese	0.89	40	x 15									
151 X 13937G	Mn	Manganese	1.14	40	x 15		151 X 13700D	V	Vanadium	0.59	40	x 15	c	
151 X 13599G	Mn	Manganese	4.16	40	x 15		151 X 13703D	V	Vanadium	5.45	40	x 15		
151 X 13595E	Mn	Manganese	7.61	40	x 15									
151 X 13757G	Mo	Molybdenum	4.96	40	x 15	C								
151 X 13754G	Mo	Molybdenum	11.10	40	x 15									

These binary materials are available until stocks are exhausted.

These binary materials are certified only for the element detailed but will also include elements which have not been analysed

16. Setting Up Samples

Blocks/Discs

All of these samples have been prepared to meet the daily setting up requirements of laboratories using Direct Reading Spectrometers.
The Analytical Data are supplied with each sample but are not certified as accurate as these are not intended to be used as Primary Reference Materials.

16.1 Cast Iron															Size (mm)		
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Sn	Al	Ti	V		W	D	H
161 A 1/17	3.0	2.6	0.06	0.06	0.38	0.20	0.51	0.30	0.48	0.05	0.02	0.01	0.04		60 x 35 x 18	CC	
161 A 2/37	3.4	1.8	0.11	0.21	0.72	0.46	0.05	0.10	0.17	0.10	<0.005	0.04	0.57		60 x 35 x 18		
161 A 3/19	3.2	2.1	0.09	1.0	0.89	0.02	0.25	<0.005	0.01	<0.005	<0.005	0.07	0.31		60 x 35 x 18		
161 A 4/20	3.2	2.7	0.01	...	0.12	0.10	0.08	...	0.75	<0.005	0.01	0.05	0.49		60 x 35 x 18		
161 A 5/37	3.8	2.0	0.01	...	0.58	1.1	0.01	...	0.02	0.07	0.03	0.005	0.50		60 x 35 x 18		
161 A 6/6	2.5	1.8	0.12	0.05	0.65	...	0.10	...	0.02	0.05	<0.005	0.02	0.02		60 x 35 x 18		
161 A 7/8	2.8	0.94	0.18	0.09	0.29	...	0.07	...	0.21	<0.01	0.02	...	0.06		60 x 35 x 18		
															Ø	H	
161 U RG13	3	2	0.04	0.3	1.0	0.6	1.0	0.3	0.5	0.2	0.06	0.05	0.3		40 x 40	HIP	
161 U RG14	3	2	0.01	0.04	0.2	0.01	0.9	...	0.07	0.2	0.09	0.02	0.1		40 x 40		
161 U RG15	2	4	0.07	0.1	0.8	0.5	0.5	0.9	0.5	0.1	0.07	...	...		40 x 40		
161 U RN15	3.3	0.4	0.01	0.006	1.4	3	...	...	...	0.05	0.06	0.009	...		40 x 40		
161 MI 215A	3.6	2.0	0.13	0.3	1.0	0.8	0.5	0.5	0.5	0.2	0.02	0.04	0.5		36 x 38		
161 MI 216A	3.0	3.0	0.005	0.02	0.2	...	1.5	...	0.05	0.2	0.1	...	0.03		36 x 38		
161 M BS SU CCA	3.53	1.99	0.012	0.020	0.64	0.048	0.045	0.005	0.13	0.003	0.011	0.003	0.010		34 x 17		
161 M BS SU CCB	3.45	2.05	0.011	0.021	0.60	0.059	0.069	0.006	0.098	0.003	0.013	0.003	0.010		34 x 17		
16.2 Steels																	
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Sn	Al	Nb	W			
162 A A/10	0.03	0.01	<0.005	<0.005	0.17	0.04	0.03	<0.005	<0.005	0.01	<0.005	0.03	<0.005	<0.005			
162 A B/6	0.39	0.29	<0.005	0.005	0.44	1.5	1.2	0.20	0.15	0.02	0.01	0.01	0.005	0.005			
162 A C/17	0.15	0.17	0.06	0.07	1.2	3.4	0.19	0.11	0.47	0.06	0.05	0.05	0.02	0.25			
162 A D/11	0.80	0.80	0.03	0.01	0.40	0.10	3.0	1.3	0.11	0.29	0.01	0.19	0.05	0.16		continued	
162 A E/5	0.07	0.29	<0.001	0.005	0.53	31.0	19.7	0.005	0.005	0.04	...	0.55	<0.005	0.02			
162 A F/4	0.02	0.19	<0.005	0.02	0.46	7.4	25.5	3.5	0.58	...	0.01	<0.005	<0.005	0.63			
162 A F/5	0.02	0.26	<0.005	0.02	0.50	7.0	24.7	3.5	0.59	0.01	<0.001	<0.005	<0.005	0.62			
162 A G/5	0.03	0.33	0.03	0.03	1.6	11.4	16.5	2.2	0.43	0.12	<0.01	<0.005	<0.005	0.04			
162 A G/6	0.02	0.22	0.03	0.03	1.5	11.0	16.9	2.1	0.35	0.11	0.008	0.003	<0.001	0.06			
162 A H/6	0.52	1.0	0.03	0.04	1.6	1.1	1.3	0.42	0.39	...	0.03	0.20	0.11	...			
162 M BS SU CP1A	0.008	0.015	0.0036	0.005	0.060	0.020	0.020	0.0015	0.010	0.0030	0.0059	<0.002	<0.001	(0.001)		continued	
162 U RE12	30ppm	30ppm	<20ppm	<50ppm	<100ppm	<100ppm	<100ppm	<50ppm	<100ppm	20ppm	10ppm	<50ppm	20ppm	<100ppm			
162 U RE13	<0.005	<0.01	<0.005	<0.005	0.03	0.02	0.01	<0.01	0.01	<0.005	<0.001	<0.003	0.001	<0.001			
162 U RH12	0.5	0.4	<0.01	0.01	17	0.3	3.4	0.1	0.05	0.03	<0.01	0.02	<0.01	0.02		continued	
162 U RH13	1	0.3	<0.01	<0.01	0.4	0.3	3.5	4.5	0.14	4	0.01	0.01	0.03	7			
162 U RH18	1	0.3	<0.01	0.02	0.3	0.3	4	3	0.2	9.5	0.02	0.02	0.02	9			
162 U RH31	0.03	0.3	<0.01	0.02	1	20	17	2	1.8	0.1	<0.01	0.01	0.3	0.08			
162 U RH32	0.1	0.5	<0.002	<0.005	1	20	22	3	...	18	...	0.3	...	2.4			
162 U RN13	1	1	<0.01	<0.01	2	2.5	0.01	0.01	<0.01	0.01	0.05	0.2	0.005	<0.001		continued	
162 U RN14	0.05	1.3	0.07	0.08	0.07	0.02	3	0.5	0.4	0.4	0.002	0.01	0.4	0.4			
162 U RN16	0.9	0.01	<0.01	<0.01	1.8	2.9	0.005	<0.01	0.01	0.01	0.05	0.5	0.006	<0.01			
162 U RN17	0.05	1.5	0.08	0.08	0.1	0.07	3	0.5	0.4	0.4	0.002	<0.01	0.4	0.4		continued	
162 U RN18	1	...	0.3	...	1	9	...	...	8	...	0.6	0.05	...	...			
162 U RN19	0.9	1.3	0.08	0.1	1.6	3.1	2.7	0.9	0.5	0.8	0.1	0.3	0.5	0.7			
Continuation from above															Size (mm)		
	As	Ti	V	Zr	B	Ca	Pb	N	Ta	Bi	Sb	Te	Others		Ø	H	
162 A A/10	...	<0.001	<0.005	...	...	...	...	...	...	...	...	...	...		44 x 25/75/150	W	
162 A B/6	0.005	0.01	0.01	...	0.001	<0.001	<0.001	...	...	...	...	...	...		44 x 25/75/150		
162 A C/17	...	0.04	0.4	0.05	0.008	<0.001	...	0.004	...	...	...	...	...		44 x 25/75/150		
162 A D/11	...	0.1	0.12	...	<0.001	...	...	0.01	...	...	...	...	...		44 x 25/75/150		
162 A E/5	...	0.48	0.08	...	<0.001	...	...	0.01	...	...	...	...	Ce 0.02		44 x 25/75/150		
162 A F/4	...	0.01	0.05	...	<0.001	...	...	0.2	...	...	...	...	...		44 x 25/75/150		
162 A F/5	0.005	<0.005	0.03	...	0.002	...	...	0.23	...	...	...	...	...		44 x 25/75/150		
162 A G/5	...	<0.005	0.06	<0.005	...	<0.005	...	0.03	<0.005	...	...	...	...		44 x 25/75/150		
162 A G/6	...	0.003	0.05	<0.001	...	0.002	...	0.04	<0.002	...	...	...	...		44 x 25/75/150		
162 A H/6	0.01	0.34	0.33	0.03	0.01	<0.005	...	...	...	...	...	...	...		44 x 25/75/150		
															W	D	H
162 M BS SU CP1A	0.002	<0.0005	<0.0005	<0.002	<0.0002	(0.0002)	<0.001	...	(0.002)	...	<0.001	...	Fe 99.98		51 x 51 x 30		
															Ø	H	
162 U RE12	<10ppm	3ppm	<10ppm	<10ppm	<1ppm	<1ppm	<20ppm	...	...	...	...	...	...		40 x 40		
162 U RE13	<0.003	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.001	...	0.001	...	...	...	...		40 x 40		
162 U RH12	<0.01	0.1	<0.005	...	...	...	...	...	...	...	...	...	...		40 x 40		
162 U RH13	...	0.002	1.5	...	...	...	...	...	...	...	...	...	...		40 x 40		
162 U RH18	...	0.005	3	...	...	...	...	...	...	...	...	...	...		40 x 40		
162 U RH31	<0.01	0.01	0.05	<0.01	...	...	...	...	...	...	...	...	...		40 x 40		
162 U RH32	...	...	...	0.01	<0.002	...	...	0.15	...	...	...	...	La 0.01		40 x 40		
162 U RN13	0.002	0.05	0.07	0.03	0.001	<0.0005	0.001	0.01	...	...	0.08	0.004	...		40 x 40		
162 U RN14	0.05	0.09	0.5	0.006	0.004	0.003	0.05	0.04	0.2	...	<0.005	0.01	...		40 x 40		
162 U RN16	0.002	0.003	0.01	0.2	0.0005	<0.0005	<0.001	0.002	...	...	0.06	...	...		40 x 40		
162 U RN17	0.05	0.09	0.5	0.003	0.006	0.003	0.03	0.04	...	...	0.005	...	...		40 x 40		
162 U RN18	...	...	...	...	...	...	0.4	...	...	0.07	...	0.04	...		40 x 30		
162 U RN19	0.06	0.1	0.5	0.06	0.008	0.005	0.04	0.03	0.5	(0.03)	0.08	(0.03)	...		40 x 40		

16. Setting Up Samples

Blocks/Discs

All of these samples have been prepared to meet the daily setting up requirements of laboratories using Direct Reading Spectrometers.
The Analytical Data are supplied with each sample but are not certified as accurate as these are not intended to be used as Primary Reference Materials.

16.2 Steels (continued)																		
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Sn	Al	Nb	W				
162 MI 217A	0.01	0.01	0.001	0.002	0.003	0.01	0.01	0.01	0.001	0.004	0.0005	0.0002	0.001	0.005	continued			
162 MI 218A	0.05	0.1	0.07	0.1	2	5	0.1	0.1	0.6	0.01	0.1	0.003	<0.0001	0.7				
162 MI 219A	0.9	2	0.002	0.003	0.02	2.8	5	1.5	0.6	1	0.06	0.2	0.4	0.01				
162 MI 194A *	0.51	0.49	0.025	0.039	1.03	0.78	0.70	0.40	0.26	0.054	0.017	0.10	0.058	0.13	continued			
162 MI 195A *	0.25	1.16	0.008	0.018	1.85	1.01	0.21	0.052	0.52	0.10	0.085	0.014	0.008	0.38				
162 MI 196A *	1.08	0.35	0.015	0.040	2.42	0.61	2.35	0.13	0.25	0.014	0.034	0.016	0.088	0.19				
* most of these values are certified																		
Continuation from above	As	Ti	V	Zr	B	Ca	Pb	N	Ta	Sb								
162 MI 217A	0.003	0.0001	0.002	0.005	<0.0001	0.0001	0.004	0.0005	0.01	0.006								
162 MI 218A	0.1	0.01	1	<0.001	0.0004	<0.0001	<0.001	0.007	0.02	0.02								
162 MI 219A	0.01	1.7	0.3	0.002	0.01	<0.0001	0.003	0.002	0.01	0.1								
162 MI 194A	0.033	0.078	0.34	0.027	0.006	...	(0.003)	0.0053	...	0.016								
162 MI 195A	0.023	0.0023	0.085	0.003	0.004	...	(0.002)	0.0076	...	0.007								
162 MI 196A	0.030	0.013	0.16	0.006	0.002	...	(0.002)	0.0099	...	0.002								
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Al	Nb	As	Ti	Pb	Ta		
162 JH STD	0.13	0.19	0.028	0.009	0.48	4.17	26.05	0.049	0.012	0.012	0.079	0.10	0.10	0.070	0.023	0.010		
162 JH STE	0.44	1.42	0.009	0.008	1.60	14.53	15.21	2.47	0.054	0.20	0.040	0.46	0.049	0.19	0.017	0.37		
162 JH STF	0.024	0.58	0.003	0.032	0.21	29.21	1.0	0.94	0.017	0.053	0.007	1.56	0.005	0.50	0.046	0.13		
162 JH STG	0.034	1.25	0.006	0.025	1.41	3.96	11.29	1.21	0.20	0.20	0.085	1.03	0.088	0.32	...	...		
162 JH STH	0.086	0.50	0.001	0.007	0.51	0.47	17.90	0.53	0.052	0.054	0.045	0.10	0.010	0.11	...	...		
162 JH STI	0.26	0.19	0.028	0.004	0.20	0.019	27.06	0.056	0.012	0.003	0.013	0.016	0.001	0.015	...	...		
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Sn	Al	V	N	O	Others		
162M BS 01C	0.19	0.042	0.018	0.004	0.46	0.010	0.012	0.005	0.017	...	<0.002	0.006	...	0.003	0.014			
162 M BS 02E	0.454	0.278	0.019	0.008	0.73	0.076	0.090	0.022	0.17	0.006	0.007	0.004	<0.002	(0.007)	(0.004)			
162 M BS 03D	0.18	0.28	0.10	0.025	1.15	0.11	0.18	0.04	0.27	0.02	0.017	<0.001	...	0.011	0.005			
162 M BS 04D	0.39	0.17	0.072	0.016	1.02	0.12	0.20	0.09	0.09	...	0.006	0.028	...	0.003	0.002			
162 M BS 05E	1.06	0.23	0.025	0.010	0.33	0.11	1.55	0.024	0.18	0.01	0.010	0.009	0.008	0.006	0.003			
162 M BS 06J	0.192	0.22	0.030	0.009	0.801	0.42	0.502	0.157	0.14	0.010	0.008	0.029	0.005	(0.008)	(0.002)			
162 M BS 10B	0.02	0.43	0.026	0.024	1.75	8.3	18.5	0.4	0.27	0.090	0.009	0.003	0.06	0.07	...	W 0.04		
162M BSSULF-2	0.17	0.24	0.008	0.007	1.13	0.115	0.12	0.035	0.19	0.014	...	0.040	...	0.0074	0.002			
162M BSSULF-3	0.17	0.22	0.011	0.008	0.83	3.25	0.11	0.017	0.07	0.010	0.005	0.021	0.0024	0.0067	0.002			
162M BSSU4130	0.29	0.25	0.020	0.015	0.55	0.090	0.97	0.16	0.104	0.006	...	0.030	...	0.0057	0.002			
162M BSSU4620	0.21	0.23	0.023	0.010	0.58	1.69	0.15	0.26	0.14	0.009	0.008	0.022	0.002	0.0090	0.002			
162M BSSU8620	0.21	0.29	0.0216	0.011	0.836	0.485	0.547	0.185	0.084	0.005	0.006	0.033	...	0.0072	0.0017	Ca 0.0008		
162M BSSU9310	0.125	0.23	0.016	0.010	0.57	3.25	1.29	0.127	0.19	0.016	0.014	0.026	0.005	0.0102	0.002			
162M BSSUP-20	0.38	0.64	0.005	0.011	0.84	0.116	1.76	0.46	0.21	0.011	0.011	0.018	0.010	0.0093	0.002	Ca 0.0016		
162M BSSU8740	0.41	0.24	0.014	0.014	0.92	0.44	0.51	0.225	0.14	0.012	0.007	0.019	...	0.0085	0.0016			
162 U RFe C	0.1	0.2	0.07	0.09	1.4	3	0.8	0.1	0.6	0.07	0.05	0.003	0.6	0.01	...	continued		
162 U RFe D	0.8	1.2	0.02	0.01	0.2	0.1	3	1.3	0.05	0.3	0.009	0.1	0.1	0.03	...			
162 M BS SS-1	0.122	0.215	0.027	0.009	1.08	3.97	27.87	0.05	0.094	0.02	0.044	0.042	0.017	0.0046	...			
162 M BS SS-2	0.329	1.36	0.01	0.018	1.7	15.32	15.12	2.01	0.199	0.2	0.012	0.034	0.1	0.0027	...	continued		
162 M BS SS-3	0.073	0.64	0.002	0.031	0.21	31.45	4.37	0.8	0.026	0.1	0.0008	0.034	0.06	0.0017	...			
162 M BS SU 309	0.077	0.50	0.0009	0.027	1.68	13.68	22.50	0.30	0.26	0.13	0.007	0.006	0.065	0.095	0.005			
162 M BS SU 316L	0.021	0.39	0.025	0.035	1.70	12.27	17.58	2.09	0.405	0.21	...	0.005	0.044	0.091	0.005			
162 M BS SU 321	0.055	0.63	0.023	0.016	1.67	10.15	17.18	0.22	0.21	0.16	0.004	0.19	0.13	0.012	0.002	continued		
162 M BS SU 347	0.056	0.51	0.027	0.030	1.61	9.43	17.26	0.39	0.16	0.05	0.007	0.005	...	0.060	0.004			
162 X FESUS1	1.1	1.8	0.35	0.15	0.8	0.5	25.0	0.45	0.3	1.1	0.05	0.6	0.4	...	...	continued		
Continuation from above	As	B	Nb	Pb	Ti	W	Zr	Ca	Sb	Ta	Bi	Te	Zn					
162 U RFe C	0.06	0.0025	0.1	0.016	0.005	0.6	0.002	0.0001	0.015	0.1	0.01	0.02	...					
162 U RFe D	0.01	0.01	0.3	0.007	0.17	0.1	0.02	0.003	0.09	(0.01)	(0.02)	(0.005)	...					
														W	D	H		
162 M BS SS-1	0.024	0.0032	0.1	0.004	0.044	(0.014)	0.028	0.0016	0.02	(0.002)	...	...	...					
162 M BS SS-2	0.048	0.0022	0.52	0.011	0.15	0.1	0.012	0.0055	0.011	0.24	...	...	...					
162 M BS SS-3	0.0012	0.001	1.31*	0.003	0.5*	0.052	<0.002	(0.0004)	(0.0003)	0.12	...	...	...					
* Segregation of these elements is evident in this sample																		
162 M BS SU 309	...	0.0030	0.027	...	...	...	...	...	...	...	...	...	...					
162 M BS SU 316L	...	...	...	...	...	...	...	...	...	...	...	...	...					
162 M BS SU 321	...	...	...	...	0.45	...	...	...	...	...	...	...	...					
162 M BS SU 347	...	0.0040	0.79	...	...	...	...	...	...	...	...	...	...					
162 X FESUS1	0.005	...	0.05	0.005	0.4	0.2	0.04	...	0.015	...	0.005	...	0.002					

16. Setting Up Samples

Blocks/Discs

All of these samples have been prepared to meet the daily setting up requirements of laboratories using Direct Reading Spectrometers.
The Analytical Data are supplied with each sample but are not certified as accurate as these are not intended to be used as Primary Reference Materials.

16.4 Pure Aluminium																
All Elements ppm																
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	B	Be	Na	Li	Ca	Ni		
164 X ALSUS 1	<2	<2	<2	<0.3	<2	<0.4	<0.7	<0.5	<0.2	<0.1	<0.5	<0.1	<1	<0.5	continued	
164 U RA10	~30	~5	~2	<1	<1	<1	<3	<1	<2	<1	<0.01	<0.02	<0.1	<2	continued	
164 MI 220B	<1	0.6	0.4	0.3	1	<1	3	0.4	<1	<1	<1	<1	<1	<1	continued	
164 HY AL4N	13	18	25	2	15	0.6	3	0.6	0.6	0.1	1	0.2	0.2	0.4		
164 V E0	<0.8	<0.5	<0.4	<0.2	<0.6	<0.3	<0.5	<0.5	<0.4	<0.1	<0.2	<0.1	<0.4	<0.1		
164 V E1	5	<3	<4	<0.5	<3	<0.5	<2	<1	<2	<2	<1	<0.1	<1	<0.3	continued	
164 V E10	<10	<5	<4	<1	<3	<1	<3	<1	<2	<0.2	<1	<0.2	<1	<1		
Continuation from above	All Elements ppm															Size (mm)
	Pb	Sn	Zr	Bi	Ag	Ba	In	Co	V	Ga	Sb	Sr	Cd	Others	Ø	H
164 X ALSUS 1	<0.5	<0.5	<0.3	<1	<0.5	<0.2	<1	<0.1	<1	<0.2	<1	...	...	20 other each at <1 ppm	60 x 75	HIP
164 U RA10	<3	<3	<1	<3	<1	...	...	<1	<2	<1	<3	<0.3	<1		50 x 50	HIP
164 MI 220B	<1	<2	<1	<5	<1	<2	...	<2	<1	<1	<5	...	...	QA 10	57 x 40	CC
164 HY AL4N	1	0.5	0.5	0.1	...	...	...	...	1	0.5	2	1	...		50 x 35	
164V E0	<0.1	<0.2	<0.3	<0.2	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.2	<0.2		60 x 40	
164 V E1	<0.5	<0.2	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<1	...	<0.2		60 x 40/75	
164 V E10	<2	<3	<1	<3	<2	...	...	<1	<0.5	<1	...	...	<1		60 x 40/75	
16.4 Aluminium																
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	B	Be	Na	Li	Ca	Ni		
164 V E2	0.9	0.9	0.20	0.15	0.20	0.05	0.10	0.20	...	0.004	0.007	...	0.007	0.2		
164 V E3	10.0	0.35	4.0	...	...	...	...	...	...	...	...	...	0.01	1.0		
164 V E4	...	...	...	0.7	1.1	0.2	5.2	...	...	...	...	...	...	...	continued	
164 V E5	...	...	...	1.4	4.9	...	...	...	0.007	...	...	0.008	...	...		
164 V E8	0.01	0.012	0.02	0.005	0.005	0.005	0.005	0.003	...	0.001	...	...	0.005	0.003		
164 V E13	...	4.8	...	...	...	...	...	...	...	...	...	...	...	...	60 x 25/40/75	
164 V P2	2.2	1.8	0.5	1.5	2.8	0.34	0.54	0.24	0.002	0.002	0.002	0.007	0.018	0.03	continued	
164 V P3	0.07	5.8	0.02	0.04	0.003	0.001	0.008	0.004	0.0002	...	...	...	0.0002	0.003		
164 U RA13	14.5	0.3	4	0.02	0.2	0.006	0.4	0.001	0.007	<0.001	0.004	0.0001	0.01	2.8		
164 U RA14	1	1.2	0.5	0.6	5	0.5	4	0.2	0.001	0.002	0.0002	0.003	0.005	0.5		
164 U RA16	15	...	4	...	0.2	...	0.3	...	...	...	...	...	...	3	continued	
164 U RA17	1	1.2	0.5	0.6	5	0.2	4	0.2	0.001	0.002	0.0002	0.003	0.005	0.5		
164 U RA18	15	0.2	8.3	0.34	0.2	0.005	0.3	<0.001	0.0078	<0.0001	0.0045	<0.0001	0.012	3		
164 U RA19	1.4	1	0.58	1.4	8.2	0.23	6.9	0.22	0.002	0.006	0.0003	0.0045	0.003	0.6		
164 MI 221A	0.2	0.2	0.6	0.4	4.8	0.22	6.8	0.1	...	0.005	...	...	0.03	...	continued	
164 MI 222A	1.1	0.9	4.9	1.1	0.2	...	0.3	0.2	...	0.003	...	...	...	0.3		
164 MI 223A	12.0	0.5	1.0	0.2	1.5	0.1	0.013	0.1	...	...	...	...	0.001	2.4		
164 HY AMS-1	1.2	0.8	0.6	0.5	1.3	0.2	0.4	0.2	0.004	0.002	0.005	0.01	0.01	0.02	continued	
164 HY ASC-1	14.0	1.6	6.0	0.4	1.2	0.2	0.5	0.5	...	0.003	...	...	0.02	0.6		
164 X ALSUS 5	0.05	0.05	1.1	0.002	2.6	0.005	12.0	0.025	<0.005	<0.005	...	...	0.0005	0.005		
164 X ALSUS 6	0.5	0.2	12.0	0.1	0.03	0.02	0.05	0.05	...	0.005	...	...	...	0.1	continued	
164 X ALSUS 7A	0.9	0.55	4.0	0.06	0.15	0.01	0.12	0.3	...	0.1	<0.001	<0.001	<0.001	1.1		
164 X ALSUS 8A	9.5	0.25	0.75	0.45	0.9	0.06	0.25	0.02	...	0.015	<0.001	<0.001	<0.001	0.12		
164 X ALSUS 25	27.15 *	0.26	0.035	0.1	0.03	0.005	0.05	0.025	...	...	...	...	0.007	0.005		
* This value is certified																
Continuation from above	All Elements ppm															Size (mm)
	Pb	Sn	Zr	Bi	Sr	Cd	Sb	Co	Ga	V	Ag	Ba	In	P	Ø	H
164 V E2	0.1	0.18	...	...	0.12	...	...	0.04	0.06	0.1	0.22	...	...	...	60 x 25/40/75	C
164 V E3	0.4	...	...	...	...	...	0.3	...	...	...	...	...	...	...	60 x 25/40/75	
164 V E4	...	...	0.2	...	...	0.06	...	0.3	...	...	0.2	...	...	...	60 x 25/40/75	
164 V E5	...	...	...	0.1	...	...	...	...	...	...	...	...	...	...	60 x 25/40/75	
164 V E8	0.003	0.003	0.003	0.005	0.002	0.003	0.01	0.002	0.005	0.003	0.005	0.004	0.005	...	60 x 25/40/75	
164 V P2	0.06	0.03	0.09	0.022	<0.0002	0.004	...	0.007	0.037	0.017	0.0006	...	...	...	52 x 40	HIP
164 V P3	0.03	0.007	0.001	...	...	0.001	0.0002	0.0005	0.02	...	...	...	...	...	52 x 40	
164 U RA13	0.27	0.1	0.001	0.02	0.02	0.01	0.13	0.009	0.01	<0.0005	0.003	...	...	~0.01	50 x 50	
164 U RA14	0.002	0.004	0.09	0.2	<0.002	~0.012	0.001	0.1	0.01	0.1	0.05	...	(0.01)	0.001	50 x 50	
164 U RA16	0.3	0.1	...	...	0.03	...	...	...	...	...	(0.06)	...	(0.01)	...	50 x 40	
164 U RA17	0.002	0.004	0.09	0.2	<0.002	~0.012	0.001	0.1	0.01	0.1	0.05	...	(0.01)	0.001	50 x 40	
164 U RA18	0.26	0.32	<0.001	<0.0005	0.04	~0.012	0.36	0.002	0.01	0.0005	0.001	...	(0.01)	>0.012	50 x 40	
164 U RA19	0.008	0.005	0.16	0.24	<0.001	0.044	0.004	0.27	0.06	0.15	0.06	...	0.01	<0.001	50 x 40	
164 MI 221A	...	...	...	...	...	...	0.01	0.2	0.03	...	...	...	...	...	QA 11	62 x 40
164 MI 222A	0.1	0.1	0.2	...	...	0.2	...	0.02	0.06	0.1	0.2	...	...	0.0025	QA 12	62 x 40
164 MI 223A	...	...	...	...	0.035	...	...	...	...	...	...	...	...	...	QA 15	62 x 40
164 HY AMS-1	0.05	0.03	...	0.01	...	0.03	0.02	...	0.01	0.03	...	...	...	...	45 x 35	
164 HY ASC-1	0.1	0.1	0.01	0.1	0.03	0.05	0.02	...	0.04	0.02	...	...	...	...	45 x 35	
164 X ALSUS 5	0.005	0.005	0.3	<0.005	<0.005	...	<0.005	...	0.005	0.003	...	...	...	...	50 x 25	W
164 X ALSUS 6	0.05	0.1	0.05	...	...	0.03	0.05	0.05	0.02	0.03	...	...	...	...	50 x 20	C
164 X ALSUS 7A	0.11	0.01	0.18	...	0.003	...	0.12	0.2	...	...	0.09	...	...	<0.01	50 x 20	
164 X ALSUS 8A	0.001	0.13	0.025	...	0.07	...	0.03	0.025	...	...	1.0	...	...	<0.01	50 x 20	
164 X ALSUS 25	0.01	<0.001	...	...	0.04	...	...	...	...	...	...	...	...	...	65 x 30	SC

16. Setting Up Samples

Blocks/Discs

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16.5.1 Pure Copper																
All Elements ppm																
	Sn	Pb	Zn	Fe	Ni	Al	Si	As	Mn	Bi	Sb	Mg	P	S		
165 X CUSUS1	0.7	11	0.4	8	1	0.05	0.05	0.05	0.01	0.05	0.1	0.01	1	11	continued	
165 U RC11	1	2	2	2	1	1	1	1	2	1	1	1	2	8	continued	
165 U RC20	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Continuation from above																
All Elements ppm																
	Cr	Ag	Be	Cd	Co	Se	Te	Au	Zr	C	O	N	Cu		Size (mm) Ø H	
165 X CUSUS1	0.01	0.05	<0.01	<0.01	0.1	0.05	<0.05	<0.05	<0.01	(0.5)	(370)	(6)	99.96		50 x 45 w	
165 U RC11	1	10	...	1	1	1	1	...	...	...	~10	...	99.99		40 x 40	
165 U RC20	...	...	...	...	...	...	...	...	...	...	300	...	99.96		40 x 40	
16.5.2 Copper																
All Elements ppm																
	Sn	Pb	Zn	Fe	Ni	Al	Si	As	Mn	Bi	Sb	Mg	P	S	Cu Others	
165 U RC110	0.006	0.005	0.005	0.005	0.003	0.003	0.003	0.003	0.004	0.003	0.006	0.004	0.003	0.004	rem	
165 U RC12	0.2	0.09	0.2	0.1	0.06	0.1	0.06	0.09	0.04	0.009	0.05	0.003	0.1	0.1	rem	
165 U RC14	0.03	<0.01	0.03	0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.01	<0.01	...	...	<0.01	rem	
165 U RC32	0.2	0.7	37	0.5	0.1	1.1	0.6	0.005	1.7	0.001	...	...	0.004	0.002	57 continued	
165 U RC33	<0.01	0.01	<0.01	4	4.5	10	0.03	0.05	0.1	0.01	...	<0.001	<0.02	...	rem	
165 U RC36	8	12	0.8	0.03	1.5	<0.005	<0.005	0.02	<0.002	0.01	0.5	<0.001	0.02	0.03	rem	
165 U RC38	<0.01	0.02	0.01	0.5	30	...	0.01	...	0.9	...	...	<0.01	0.01	<0.001	rem	
165 U RC40	<0.01	<0.01	0.01	1.5	2	8	0.02	<0.01	4	...	...	<0.01	<0.01	...	rem	
165 X CC102	<0.005	<0.005	<0.01	0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	98 continued	
165 X CA104	0.01	0.01	...	4.3	4.7	9.5	0.05	<0.005	0.4	<0.005	0.01	<0.005	<0.005	...	80	
165 X MNB5SUS	1.8	0.2	37.0	0.6	1.3	3.1	0.5	<0.001	0.25	...	<0.001	<0.001	<0.001	...	55 45 x 20 cc	
165 X PB10SUS	12.7	0.015	0.015	0.001	0.01	<0.001	0.001	0.001	<0.001	...	0.005	<0.001	0.02	0.002	87 45 x 20 cc	
165 X ALB1SUS	0.02	0.20	0.005	3.0	5.8	9.3	0.10	0.002	0.08	...	...	<0.002	0.01	...	81.5 Cr 0.01 45 x 20 c	
165 X WSB4SUS	0.9	0.25	5.3	0.9	0.3	0.6	4.4	0.04	1.9	...	0.08	0.001	0.05	0.005	...	Cr 0.05 45 x 20 c
165 X GM4SUS	2.5	5.3	7.4	0.06	2.0	0.001	0.001	0.02	0.005	0.02	0.04	...	0.01	0.35	82.0 Ag 0.005 40 x 15 cc	
165 T EA1	0.20	2.95	38.5	0.14	0.065	...	<0.01	0.090	...	...	...	...	...	...	57.8 40 x 18 c	
Continuation from above																
All Elements ppm																
	Cr	Ag	Be	C	Cd	Co	Se	Te	Ti	Zr	O	Au			Size (mm) Ø H	
165 U RC12	0.05	0.05	0.001	...	0.04	0.04	0.01	0.05	0.001	0.002	...	...			40 x 40	
165 U RC14	0.9	...	...	...	...	...	...	...	...	0.06	...	...			40 x 40	
165 U RC32	<0.01	...	...	...	...	...	<0.001	<0.01	...	...	...	...			40 x 40	
165 U RC33	<0.005	...	<0.001	...	...	<0.005	...	...	<0.001	<0.001	...	...			40 x 40	
165 U RC36	<0.005	<0.01	<0.001	...	<0.001	<0.002	...	...	<0.001	<0.005	...	...			40 x 40	
165 U RC38	<0.01	...	...	0.05	...	...	...	...	...	0.01	...	...			40 x 40	
165 U RC40	<0.01	...	...	...	...	...	...	...	...	...	...	...			40 x 40	
165 U RC110	0.004	0.006	0.0003	...	0.004	0.003	0.004	0.007	0.001	<0.002	...	0.003			40 x 40	
165 X CC102	0.9	<0.01	...	...	<0.01	...	...	...	...	0.1	...	...			50 x 45 w	
165 X CA104	<0.005	...	...	...	...	...	...	...	...	...	...	...			45 x 45	
16.6 Magnesium																
All Elements ppm																
	Mn	Cu	Si	Fe	Ni	Al	Zn	Pb	Sn	Zr	Cd	Na	Be	Ag	Sr Ca	
166 X MGSUS1	0.17	0.002	0.06	0.005	0.001	0.04	6.8	0.003	0.02	<0.001	...	...	0.0001	0.007	0.0001 <0.001 45 x 50 c	
166 X MGSUS2	0.4	0.02	0.12	0.005	0.02	8.0	0.4	0.04	0.01	...	0.004	...	0.0015	0.005	0.0003 0.015 45 x 50	
166 U RMg11	<0.01	0.001	0.041	0.005	0.002	0.011	0.015	...	...	...	...	...	...	...	...	40 x 40
166 U RMg13	0.2	0.006	0.01	0.001	0.001	5.7	0.8	0.001	0.001	0.004	0.0001	0.001	...	...	...	40 x 40
166 U RMg14	0.4	0.3	0.08	0.003	0.04	7.9	1	0.08	0.08	<0.01	...	...	0.002	...	...	<0.01 40 x 40
16.7 Nickel																
All Elements ppm																
	C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	W			
167 U RNi10	<8ppm	<10ppm	<2ppm	...	...	<1ppm	<5ppm	...	...	3ppm	...	<4ppm	...			
167 U RNi11	0.02	0.05	<0.01	<0.01	0.1	<0.02	<0.06	<0.02	0.03	<0.01	0.001	<0.02	<0.03			
167 U RNi12	0.1	0.15	<0.01	<0.01	0.6	31	0.7	<0.01	0.08	0.01	0.6	2.8	0.02		continued	
167 U RNi13	<0.01	<0.02	<0.01	<0.01	1	0.6	6	14	16	0.2	<0.01	0.4	3			
167 U RNi14	0.05	0.1	<0.01	<0.01	0.1	<0.1	0.1	20	6	20	...	0.5	<0.1			
167 U RNi15	0.02	0.08	<0.01	<0.01	0.1	0.05	17.5	19.5	2.8	0.3	1	0.5	0.04			
Continuation from above																
All Elements ppm																
	Nb	V	B	Zn	Pb	Ag	As	Mg	Ta	Zr					Size (mm) Ø H	
167 U RNi10	...	...	...	2ppm	0.8ppm	0.3ppm	<0.5ppm	...	...	...					40 x 40	
167 U RNi11	<0.01	<0.03	<0.005	...	...	...	...	0.02	...	<0.003					40 x 40	
167 U RNi12	<0.01	<0.03	0.005	...	<0.01	...	...	...	0.04	0.01					40 x 40	
167 U RNi13	0.1	0.4	<0.005	...	<0.01	...	...	...	0.01	<0.01					40 x 40	
167 U RNi14	0.03	0.04	...	...	<0.01	...	...	...	0.3	...					40 x 40	
167 U RNi15	5	0.03	0.003	...	<0.01	...	...	...	0.03	0.02					40 x 40	

16. Setting Up Samples

Blocks/Discs

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16.8 Lead																				Size (mm)	
	Sn	Sb	Bi	Cu	As	Ag	Zn	Cd	Ni	Te	Fe	Ti	Se	S	In	Ca	Au			Ø H	
168 X PBSUS1	1.4	6.2	0.04	0.02	0.4	0.01	0.002	0.005	0.005	0.01	0.005	...	0.005	0.002	0.005	...	0.001			44 x 40	c
168 X PBSUS5	0.85	0.5	0.35	0.1	0.25	0.2	0.003	0.12	0.001	0.006	0.0001	0.005	0.0002	0.0005	0.3	0.001	0.002			40 x 40	
168 X PBSUS6	0.15	0.1	0.2	0.1	0.025	0.04	0.005	0.025	0.001	0.005	0.0005	0.03	0.003	0.001	0.015	0.01	0.001			43 x 45	
168 X PBSUS7	0.05	10	0.02	0.04	0.7	0.005	0.001	0.002	0.01	0.025	...	0.005	0.015	0.005	0.001	0.001	0.005			43 x 45	
168 U RPB11	<3ppm	<3ppm	53ppm	<1ppm	<2ppm	7ppm	<5ppm	<3ppm	<2ppm	...	<10ppm	<3ppm	...	...	...	...	...			40 x 40	
168 U RPB13	0.2	0.1	0.2	0.1	0.03	0.04	0.02	0.04	0.001	(0.01)	0.0002	0.03	(0.005)	...	<0.0001	...	...			40 x 40	
168 U RPB14	0.005	10	0.01	0.05	1	0.01	<0.01	0.01	<0.001	(0.01)	<0.001	0.01	(0.005)	0.01	<0.0001	...	...			40 x 40	
168 U RPB15	30.0	2.0	0.1	2.0	0.02	3.0	0.2	0.01	0.003	...	...	0.01	...	...	...	...	...			40 x 40	
168 U RPB16	0.18	0.001	0.006	0.0015	0.0001	0.0025	0.001	0.0001	0.00006	0.0001	0.00008	0.0008	0.0001	0.0001	0.0002	0.34	0.0001			continued	
168 U RPB17	3.6	9.9	0.1	1.5	0.3	0.3	0.001	...	0.001	0.003	0.007	0.002	...	...	...	0.01	0.0001			continued	
168 U RPB18	0.03	1.2	0.3	0.06	7.6	0.09	...	0.03	...	0.03	...	0.02	0.02	...	0.01	...	...			continued	
Continuation from above																				Size (mm)	
	Cr	Co	K	Ge	Ba	Rh	Mn	Al	Pt	Na	Mg	Pd	Ru							Ø H	
168 U RPB16	0.00005	0.00006	0.0002	0.01	0.018	0.0001	0.00001	0.017	0.0003	0.01	0.0015	0.0001	0.00006							40 x 40	
168 U RPB17	0.00009	0.001	0.0007	0.001	...	...	0.0002	...	0.001	...	...	0.0003	...							40 x 40	
168 U RPB18	...	...	...	...	...	...	...	...	...	...	...	...	...							40 x 40	
16.8.1 Lead with precious metals																				Size (mm)	
	Au	Pt	Pd	Rh	Ru	Ir	Ag	Fe	Bi	Te	As	Sb	Ti	S						Ø H	
168 X PBSUSPM1	25	30	10	6	1	3	25	5	120	3	2	2	7	<1						44 x 40	c
168 U RPBPM	100	50	...	50	5	...	...	...	...	...	...	...	...	...						40 x 40	
16.9 Zinc																				Size (mm)	
	Pb	Mg	Al	Cd	Fe	Sn	Cu	Ni	Mn	Ti	Cr	Ag	In	Tl	Sb	Si	Bi			Ø H	
169 X ZnSUS1	0.6	0.002	0.35	0.3	0.05	0.3	0.35	0.06	0.001	0.001	0.001	0.04	0.25	0.06	0.2	0.003	0.005			50 x 20	c
169 U RZn11	~8ppm	<1ppm	<1ppm	<1ppm	~5ppm	<1ppm	~3ppm	1ppm	<1ppm	<1ppm	...	...	...	...	...	...	...			40 x 40	
169 U RZn12	70ppm	40ppm	40ppm	80ppm	70ppm	70ppm	40ppm	10ppm	60ppm	...	...	70ppm	80ppm	80ppm	20ppm	...	...			40 x 40	
169 U RZn13	0.6	<0.001	0.4	0.3	0.005	0.3	0.2	0.04	<0.01	<0.001	...	0.04	0.3	0.02	0.1	...	...			40 x 40	
169 U RZn14	0.04	0.1	11	0.04	0.08	0.03	4	<0.01	0.01	0.06	...	<0.001	<0.01	<0.01	<0.01	...	...			40 x 40	
169 U RZn15	0.2	...	0.2	0.4	0.4	0.06	0.3	...	...	...	...	...	...	...	0.02	...	...			40 x 40	
169 U RZn16	0.1	...	0.2	0.01	0.09	0.004	0.005	...	...	...	...	...	...	...	...	...	...			40 x 40	
16.10 Titanium																				Size (mm)	
	Al	V	Fe	Pd	C	Mo	Zr	Sn	B	Co	Cr	Cu	Mg	Mn						Ø H	
1610 U RTi11	...	...	~0.05	...	~0.06	...	...	...	...	...	...	...	...	...						40 x 40	
1610 U RTi12	...	...	~0.02	0.2	~0.06	...	...	...	...	...	...	...	...	...						40 x 40	
1610 U RTi13	6	4	0.3	...	0.08	...	...	...	...	...	...	...	...	...						40 x 40	
1610 U RTi14	(6)	...	0.01	...	0.02	2	4	2	...	...	...	...	...	...						40 x 40	
1610 M BS TSU-1	6.11	4.12	0.22	0.15	0.062	0.067	0.068	0.076	0.01	0.061	0.07	0.073	<0.005	0.065							
1610 M BS TSU-2	5.15	0.08	0.18	...	0.095	3.93	1.94	2.05	0.013	...	4.03	0.16	...	0.089						continued	
1610 M BS TSU-3	0.13	0.069	0.1	0.14	0.066	0.28	0.065	0.069	0.012	0.065	0.063	0.077	<0.003	0.064							
Continuation from above																				Size (mm)	
	N	Nb	Ni	O	P	Ru	S	Si	Ta	W	Y									Ø H	
1610 M BS TSU-1	0.02	0.068	0.073	0.191	0.009	0.07	0.008	0.057	0.079	0.075	0.009									44 x 7	HIP
1610 M BS TSU-1	0.017	...	0.059	0.164	0.012	...	0.011	0.11	...	0.082	0.011									each	
1610 M BS TSU-1	0.018	0.066	0.77	0.25	0.01	0.066	0.005	0.067	0.083	0.065	0.008									set only	
16.11 Tin																				Size (mm)	
	Ag	Sb	As	Bi	Pb	Cu	Zn	Cd	Fe	In	Ti	Al	Ni	Co	Au	Pt	Pd			Ø H	
1611 X SnSUS6	0.1	0.14	0.45	0.08	0.9	0.45	0.001	0.01	0.01	0.005	0.005	0.002	0.1	0.015	0.003	0.003	0.003			40 x 40	c
1611 X SnSUS7	0.12	10.5	2.5	2.4	0.3	11.2	0.01	0.015	0.3	0.05	0.05	0.002	0.1	0.03	0.001	...	0.001			45 x 25	
1611 U RSn10	<1ppm	<10ppm	<10ppm	<5ppm	<10ppm	<5ppm	<1ppm	<1ppm	<5ppm	<5ppm	<5ppm	<5ppm	<5ppm	...	...	...	...			40 x 40	
1611 U RSn11	...	<0.003	<0.002	<0.001	<0.002	<0.003	<0.001	...	<0.001	...	...	...	...	...	...	...	...			40 x 40	
1611 U RSn12	0.2	2	0.5	0.08	35	1	0.01	0.1	<0.001	0.1	0.2	<0.001	<0.001	<0.001	...	...	...			40 x 40	
1611 U RSn13	<0.001	15	<0.01	0.06	1	0.4	0.01	0.02	0.2	<0.01	<0.001	0.2	0.1	0.1	...	...	...			40 x 40	
16.12 Cobalt																				Size (mm)	
	C	Si	Mn	Ni	Cr	W	Mo	Nb	Fe	Al	B	S	P							Ø H	
1612 X CoSUS1	0.9	1.3	0.9	12.0	27.0	5.0	5.0	1.1	4.0	2.0	0.01	0.1	0.05							continued	
1612 U RCo11	...	0.01	<0.005	0.003	<0.005	0.01	<0.005	<0.0005	<0.02	...	...	...	<0.003							continued	
1612 U RCo14	0.8	1	0.5	10	25	7.5	1	<0.03	1	0.2	0.007	<0.005	<0.005								
Continuation from above																				Size (mm)	
	Ti	Ta	Zr	Cu	V	Sn	Pb													Ø H	
1612 X CoSUS1	0.05	0.1	0.05	0.1	0.1	0.1	0.02													45 x 20	c
1612 U RCo11	<0.03	...	<0.003	<0.01	0.001	...	...													35 x 20	
1612 U RCo14	<0.03	...	...	...	...	...	...													35 x 40	

16. Check & Control Samples

Blocks/Discs

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16.20 Steel/Iron		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Sn	Al	Nb	W	As					
1620 U CFe1		0.004	0.0065	0.0025	0.003	0.0385	0.022	0.013	<0.001	0.01	0.003	5ppm	0.0025	0.001	<2ppm	0.0015	continued				
1620 U CFe2		0.26	0.25	0.022	0.035	0.9	0.25	0.25	0.09	0.12	0.025	0.015	0.065	0.045	0.01	0.05					
1620 U CFe3		0.04	0.36	0.002	0.026	1.7	11.03	16.7	2.01	0.09	0.21	...	0.007	0.77	0.03	...					
1620 U CFe4		1.7	0.4	0.010	0.010	0.40	0.30	11.0	0.80	0.06	0.03	0.005	0.008	0.04	0.03	0.008					
1620 U CFe5		3.7	0.8	0.03	0.10	0.80	0.10	0.10	0.10	0.10	...	0.04	...	...	...	...					
1620 U CFe6		3.3	2.9	0.075	0.07	0.56	0.08	0.12	0.03	0.52	...	0.014	<0.002	...	...	...					
1620 U CFe7		3.7	3.1	0.005	0.02	0.07	0.05	0.03	<0.01	0.14	...	0.003	0.015	...	...	...					
1620 U CFe8		3.3	2.4	0.1	0.15	0.50	0.10	0.12	0.04	0.18	...	0.02	0.05	...	...	...					
1620 U CFe9		0.09	0.001	0.3	0.06	1.2	0.01	0.01	0.005	0.006	0.003	...	0.0005	...	...	0.003					
Continuation from above		Ti	V	Zr	B	Ca	Pb	N	Te	Sb	Ta	Size (mm)									
													Ø	H							
1620 U CFe1		0.0005	0.0003	<2ppm	0.001	<0.0001	<0.001	...	<0.0002	...	...	40 x 30/50									
1620 U CFe2		0.042	0.07	0.008	0.0045	0.0028	...	0.0088	...	0.0036	...	40 x 30/50									
1620 U CFe3		0.005	0.07	...	0.0045	...	...	...	...	...	...	40 x 30/50									
1620 U CFe4		0.003	1.0	0.004	0.002	...	...	0.045	...	...	...	40 x 30/50									
1620 U CFe5		...	1.0	...	...	...	0.005	...	...	...	...	40 x 30/50									
1620 U CFe6		0.019	0.015	...	...	...	<0.002	...	...	...	...	40 x 30/50									
1620 U CFe7		0.01	0.018	...	...	...	<0.001	...	...	...	...	40 x 30/50									
1620 U CFe8		0.019	...	...	...	...	<0.002	0.007	...	...	...	40 x 30/50									
1620 U CFe9		...	...	...	0.0001	...	0.3	0.007	...	0.0005	...	40 x 30/50									
		FOR ARGON SYSTEM/ARGON PURITY CHECK IN O.E.S.											Size (mm)								
													Ø	H							
1620 U CFe0		The following minimum intensities should be achieved for control sample 1620 U CFe0 (FeSi) using HEPS/ spark like discharge (with or without hydrogen in argon) compared to the pure sample 162 U RE 12 or 162 U RE 13																			
		Fe 1877 > 60%, Fe 2730 > 70%, Fe 2813 or 3608 > 80%															40 x 30/50				
16.40 Aluminium		Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	B	Na	Ca	Ni								
1640 U CAI2		0.88	0.28	0.058	0.63	0.75	0.052	0.05	0.048	<0.001	...	...	0.005	continued							
1640 U CAI3		0.08	0.17	0.004	0.21	2.8	0.001	0.007	0.009	...	...	0.02	0.002								
1640 U CAI4		19.6	5.0	0.010	0.03	0.010	...	<0.01	...	0.0008	0.0008	...	1.82								
1640 U CAI5		8.8	0.7	1.4	0.08	1.9	0.08	0.24	0.09	0.0010	...	...	1.3								
Continuation from above		Pb	Sn	Sb	Ga	P								Size (mm)							
															Ø	H					
1640 U CAI2		<0.005	<0.003	<0.005	0.011	...								50 x 30/50							
1640 U CAI3		0.002	0.002	...	0.011	...								50 x 30/50							
1640 U CAI4		<0.01	...	...	...	...								50 x 30/50							
1640 U CAI5		0.07	0.07	...	...	0.0050								50 x 30/50							
		FOR ARGON SYSTEM/ARGON PURITY CHECK IN O.E.S.											Size (mm)								
													Ø	H							
1640 U CAI0		The following minimum intensities should be achieved for control sample 1640 U CAI0 (AlSi) using HEPS / spark like discharge (with or without hydrogen in argon) compared to the pure sample 164 U RA 10																			
		Al 3059 > 70%															50 x 30/50				
16.50 Copper		Ag	Au	As	Bi	Cd	Cr	Co	Fe	Mn	Ni	Pb	S	Sb	Se	Sn	Te	Zn	Size (mm)		
		All elements ppm																		Ø	H
1650 U CCu2		4930	47	...	90	...	110	...	227	113	4220	3710	...	2830	...	2180	...	1150	40 x 30/50		
1650 U CCu3		...	...	875	...	96	...	496	...	...	...	...	229	...	475	...	194	...	40 x 30/50		
16.60 Magnesium		Mg	Al	Si	Fe	Cu	Mn	Zn	Ni	Pb	Sn	Zr	Cd	Na							
															Ø	H					
1660 U CMg2		93	5.7	0.01	0.001	0.006	0.2	0.8	0.001	0.001	0.001	0.004	0.0001	0.001	50 x 30/50						
16.90 Zinc		Pb	Mg	Al	Cd	Fe	Sn	Cu											Size (mm)		
																				Ø	H
1690 X ZnChk1		0.005	0.02	4.0	0.005	0.025	0.003	1.2											50 x 20		
1690 X ZnChk2		2.0	<0.001	0.01	0.12	0.75	1.0	0.42											50 x 20		
1690 U CZn3		0.0046	0.046	4.06	0.0058	0.0106	0.0011	1.19											40 x 30/50		
1690 U CZn4		1.97	...	...	0.107	0.67	0.96	0.39											40 x 30/50		
																			40 x 30/50		

C1. Iron Base

Irons

Chippings

1.1	Cast Iron	Total C	Graphitic C	Si	S	P	Mn	Ni	Cr	Cu	Ti	Mg	Mo	V	Others	Typical Alloy Type	Size	
CRM	C11 E 37B	3.37	2.85	1.66	0.069	0.148	0.737	0.074	0.088	0.052	0.034	...	...	...	...		80g	
CRM	C11 E 66	3.56	2.23	1.49	0.027	0.048	0.635	0.163	0.621	0.154	...	...	0.022	...	...		80g	
CRM	C11 E 69	3.34	2.5	2.07	0.018	0.267	0.715	0.272	0.353	0.47	0.019	...	(0.004)	...	...		80g	
CRM	C11 E 75A	3.4	2.7	1.98	0.033	0.250	0.722	0.425	0.487	0.433	0.022	...	0.439	0.030	...	White	100g	
	C11 TFB11-2	3.148	...	(1.44)	0.084	(0.02)	(0.42)	...	...	...	...	...	...	...	...		100g	
	C11 TFB12-2	3.8	...	...	0.17	...	...	...	...	...	...	...	...	...	...	White	100g	
	C11 TFB13	2.9	...	...	0.10	...	...	...	...	...	...	...	...	...	...	White	100g	
	C11 TFB20	2.114	...	1.012	0.128	0.039	0.464	...	0.035	...	...	...	...	...	...	White	100g	
	C11 TFB20-1	3.552	...	(0.935)	0.059	(0.068)	(0.39)	...	(0.10)	...	...	...	...	...	...		100g	
	C11 TFG10	2.322	...	2.467	0.016	0.111	1.10	...	...	...	...	...	...	...	...	Grey	100g	
	C11 TFG20	2.487	...	1.726	0.109	1.440	0.571	...	...	...	...	...	...	...	...	Grey	100g	
	C11 TFA10	1.976	...	1.480	...	0.045	1.063	20.05	1.99	0.492	...	...	...	...	...		100g	
	C11 TFA20	0.643	...	1.519	...	0.045	0.368	...	28.30	...	...	...	...	...	...		100g	
CRM	C11 DB E428-2	2.747	...	1.752	0.1105	0.0691	0.750	0.0358	0.0366	0.0996	0.0311	...	(0.0014)	0.0120	As 0.0156		100g	
CRM	C11 DB E476-3	3.390	...	1.813	0.0493	0.0908	0.987	0.0549	0.0648	0.2445	0.0222	...	...	0.0115	As 0.0145, N 0.0038		100g	
CRM	C11 DB E478-2	4.003	...	2.411	0.0460	0.202	0.321	0.151	0.251	0.1276	0.0328	...	...	(0.0113)	...		100g	
CRM	C11 DB E479-1	2.86	...	2.02	0.089	0.076	0.136	1.012	1.00	...	...	...	0.196	...	Al 0.014		100g	
CRM	C11 DB E480-1	3.03	...	2.41	0.0086	0.0021	0.151	0.483	...	...	...	0.017	...	...	Al 0.016		100g	
CRM	C11 A 206/3	(2.44)	(2.37)	3.17	0.049	1.63	0.72	0.068	0.053	0.1	(0.04)	...	...	0.05	As	High Si & P	100g	
CRM	C11 A 236/3	(2.53)	(1.96)	2.0	0.068	0.046	1.16	(0.21)	...	(0.07)	0.052	...	...	...	As	Hamatite	100g	
CRM	C11 A E481-1	3.91	...	2.29	0.004	0.019	0.448	1.19	0.063	0.15	...	0.051	0.011	...	As,Al	Nodular	100g	
CRM	C11 A E482-2	2.599	...	1.815	0.728	0.0974	0.728	2.284	0.675	1.231	...	...	0.454	...	...		100g	
CRM	C11 A E483-1	2.46	1.65	1.75	0.103	0.615	0.596	...	0.039	...	...	...	...	...	Sn	High Duty	100g	
CRM	C11 A E484-1	3.2	...	0.717	0.23	0.121	0.395	...	0.155	...	...	...	...	...	...	Whiteheart	100g	
CRM	C11 A E486-1	2.21	...	2.43	0.023	1.0	0.841	0.057	0.104	0.548	...	...	...	0.02	Sn	Foundry	100g	
CRM	C11 A E489-1	2.86	...	1.524	0.155	0.815	(0.51)	...	...	0.274	...	...	...	...	N	White	100g	
CRM	C11 TI E485-2	3.308	...	0.508	0.165	0.61	0.19	0.0742	0.0845	0.0303	...	...	...	...	N	White	100g	
CRM	C11 TI E487-1	3.27	...	0.006	0.0007	0.002	0.094	0.04	0.063	...	...	...	...	...	Co,As		100g	
CRM	C11 TI E488-2	3.956	...	0.374	0.1173	0.0111	0.201	0.1247	0.303	0.0256	0.0636	...	...	0.0545	N,Sn	White	100g	
	C11 M BS CE209	2.46	...	2.13	0.027	0.167	0.39	0.045	0.01	0.211	0.062	0.0013	(0.001)	0.03	Ce,Al,As	Rare Earth	150g	
	C11 M BS CE208	2.41	...	1.63	0.041	0.118	0.35	0.047	0.007	0.212	0.048	0.0008	(0.001)	0.024	Ce,Al,As	Rare Earth	150g	
	C11 M BS CE207	3.05	...	2.07	0.017	0.089	1.2	0.048	0.039	0.222	0.079	0.0027	(0.0005)	0.034	Ce,Al,As	Rare Earth	150g	
CRM	C11 S 120-1	2.85	...	1.32	0.0095	0.053	0.70	0.12	0.28	0.29	0.006	...	...	0.007	N 0.0058		150g	
1.1.5	Pig Iron	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Ti	V	Sn	As	Pb	Sb	N	Size
	C11 CG 01123	2.00	1.54	0.022	0.096	1.13	0.0125	0.122	0.017	0.122	0.053	0.018	0.0043	0.0067	0.00019	0.0010	...	100g
	C11 CG 01124	2.68	0.627	0.067	0.174	0.783	0.095	0.110	0.021	0.063	0.015	0.019	0.0021	0.0048	0.00025	0.00084	...	100g
	C11 AU 41008	4.03	0.88	0.040	0.049	0.40	...	0.0068	0.00065	0.0032	0.027	0.0040	0.00015	0.0016	<0.0002	0.00014	...	150g
	C11 AU 41009	3.89	1.58	0.028	0.058	0.650	0.0058	0.0081	0.00066	0.0029	0.042	0.0049	0.00015	0.0010	<0.0002	0.00016	...	150g
CRM	C11 S 102-7	4.66	0.71	0.0181	0.103	0.375	...	...	...	...	0.0503	...	...	...	...	...	0.0051	150g
1.1.6	Pure Iron	All Elements ppm																
		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	N	V	Sn	As	B	Others	Size
CRM	C11 E 68	71	(20)	30	90	42	160	12	50	110	60	34	...	...	...	...		50g
CRM	C11 E 73	34	28	49	34	44	330	300	49	760	40	76	...	...	...	...		120g
CRM	C11 A E088-2(C)	6	52	70	48	809	275	244	(25)	163	61	(10)	2.9	...	...	...	Ca,	100g
CRM	C11 A E097-1(C)	<20	<100	22	16	64	25	16	<10	20	37	7	<10	<25	51	3	B, Zn	100g
		All Elements ppm																
		C	S	P	Mn	Cr	Ni	Cu	Al	Si	Mo	Ca	Mg	Ti	N		Size	
	C11 CG 01401a	15	15	14	170	56	120	30	100	490	28	...	...	25	25		15g	
	C11 CG 01402d	12	8	(1)	2.2	3.7	11	4	3.4	42	1.4	17	2.4	(1)	...		15g	
1.1.11	With Cr	C	Si	S	P	Mn	Ni	Cr	Cu	Mo	V	W	Co	Sn	Pb		Size	
CRM	C11 X 152940S	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	
1.1.14	Ductile Iron	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	Co	RE	Mg	V	Ti		Size	
	C11 CG 01119a	3.67	2.673	0.497	0.084	0.0053	0.033	0.0115	0.011	0.0013	0.0065	0.0187	0.023	0.0205	0.068		85g	
	C11 M BS CE206	2.64	2.76	0.99	0.15	0.018	0.45	0.068	0.048	0.007	0.029	0.021	0.0006	0.038	0.78	continued		
	Continuation from above		Ce	Al	As	La	Te										Size	
	C11 M BS CE206		0.011	0.004	0.004	0.004	<0.002										150g	

C1. Iron Base

Steels

Chippings

1.2.3 Low Alloy (continued)											Soluble	Total	Soluble	Total			
	C	Si	S	P	Mn	Ni	Cr	Cu	V	Ti	Al	Al	B	B	Size		
C12 CG 01322	0.0332	1.50	0.022	0.013	0.230	0.078	0.473	0.320	0.050	0.247	0.066	0.069	0.0061	0.0067	100g		
C12 CG 01323	0.188	0.305	0.046	0.013	1.44	0.166	0.389	0.277	0.158	0.285	0.106	0.112	0.0018	0.0023	100g		
C12 CG 01324	0.283	1.09	0.023	0.022	0.438	0.224	0.300	0.247	0.144	0.171	0.128	0.132	0.0041	0.0045	100g		
C12 CG 01325	0.392	0.626	0.019	0.028	1.08	0.241	0.174	0.030	0.023	0.116	0.082	0.086	0.0037	0.0042	100g		
C12 CG 01326	0.506	1.96	0.012	0.034	0.755	0.314	0.102	0.126	0.241	0.76	0.197	0.201	0.0016	0.0019	100g		
C12 CG 01327	0.569	0.204	0.0038	0.038	1.90	0.413	0.018	0.116	0.283	0.064	0.276	0.279	0.0007	0.0010	100g		
1.2.4 Calcium Treated Steel																	
	C	Si	S	P	Mn	Ni	Cr	Cu	Al	V	Ti	N	Mo	Co	Sn	Ca	Size
C12 M BSCSN-2C	0.469	0.17	0.0305	0.012	0.60	0.071	0.072	0.073	0.046	0.004	0.002	0.0173	(0.006)	(0.006)	(0.006)	0.0033	100g
CRM C12 A E096-2(C)	0.105	0.262	0.0016	0.0128	1.32	0.0253	0.0243	...	0.046	...	...	...	0.002	0.017	...	0.002	100g
1.2.5 Low-Alloy Structural Steels																	
	C	Si	S	P	Mn	Ni	Cr	Mo	V	Sn	As	Pb	Sb	Bi	Cu	N	Size
C12 CG 01359	0.285	0.236	0.012	0.030	0.315	0.102	2.37	1.27	0.351	0.0085	0.024	0.00029	0.0058	0.00005	...	...	100g
C12 CG 01360	0.282	0.265	0.016	0.024	0.466	0.248	1.62	1.09	0.252	0.030	0.019	0.0015	0.0058	0.0002	...	...	100g
C12 CG 01361	0.318	0.033	0.025	0.034	0.348	0.204	1.93	1.19	0.301	0.014	0.037	0.0037	0.0086	0.0022	...	...	100g
C12 CG 01362	0.244	0.400	0.050	0.017	0.505	0.292	1.50	0.987	0.193	0.033	0.042	0.036	0.0084	0.0027	...	...	100g
C12 CG 01363	0.325	0.179	0.0080	0.040	0.264	0.059	2.51	1.47	0.164	0.016	0.019	0.0056	0.0047	0.0052	...	...	100g
CRM C12 A E195-1(C)	0.756	0.466	0.0121	0.0160	0.571	0.327	1.566	0.768	0.312	(0.002)	...	...	...	...	0.0355	0.0100	100g
CRM C12 A E276-2(C)	0.399	1.034	0.0189	0.0093	0.365	0.203	4.975	1.134	0.296	0.0133	...	...	...	...	0.183	0.0116	100g

C1. Iron Base

Stainless Steels

Chippings

1.3.2 Austenitic Stainless Steels																	
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Al	Nb	Ti	B	N	Others	Size
C13 X 125340A	0.10	0.78	0.017	0.033	0.71	8.12	17.90	2.02	0.10	0.04	0.02	...	0.35	...	...	...	100g
C13 X 125370A	0.05	0.99	0.030	0.097	0.91	9.98	19.8	2.99	0.05	0.11	0.06	...	0.54	...	...	...	100g
C13 X 170020A	0.11	0.48	0.024	0.038	1.09	8.12	17.7	0.21	0.06	0.08	...	0.46	...	0.016	...	...	100g
C13 X 170050A	0.030	1.64	0.052	0.015	0.40	20.0	24.72	0.48	0.11	0.03	...	0.12	...	0.002	...	...	100g
CRM C13 A 332	0.063	0.44	0.02	0.015	0.8	12.45	12.8	...	(0.1)	(0.037)	...	...	...	...	...	...	100g
CRM C13 A 461/1	0.0103	0.37	0.0051	0.0053	0.686	6.124	14.727	0.01	0.0091	(0.004)	...	...	...	...	...	...	100g
CRM C13 A 462/1	0.0345	0.46	0.0041	0.0053	0.722	12.85	11.888	0.03	0.0112	...	...	...	...	...	...	...	100g
CRM C13 A 463/1	0.019	0.27	0.019	0.025	1.4	10.2	18.46	0.27	0.276	0.116	...	...	<0.005	0.0022	0.063	...	100g
CRM C13 A 464/1	0.086	0.57	0.028	0.02	0.791	20.05	25.39	...	...	0.054	...	...	...	...	...	Pb 0.0004	100g
CRM C13 A 465/1	0.066	0.41	0.012	0.021	1.38	9.24	17.31	0.09	0.098	0.053	0.026	...	0.4	0.0006	0.01	V 0.102	100g
CRM C13 A 467/1	0.082	0.52	0.019	0.018	0.788	9.21	18.09	...	...	...	...	0.99	...	...	...	...	100g
CRM C13 A 468/1	0.143	1.41	0.02	0.014	1.7	8.9	17.96	...	...	0.018	...	...	...	...	...	...	100g
CRM C13 A 474	0.022	0.17	0.02	0.008	1.7	14.74	19.06	3.550	0.35	(0.02)	...	...	...	...	...	V 0.30	100g
CRM C13 A 475	0.05	0.21	0.008	0.037	0.89	5.66	14.14	1.590	1.94	0.22	...	0.22	...	...	...	Sn 0.015	100g
CRM C13 E 24A	0.048	0.510	0.020	0.035	1.53	11.12	17.37	2.47	0.32	(0.16)	...	...	...	...	(0.036)	...	100g
CRM C13 E 98	0.050	0.26	0.016	0.042	1.88	11.01	16.75	1.92	0.292	0.125	0.070 (sol)	...	0.41	...	0.0112	Sn 0.019, V 0.053	100g
C13 X 180030A	0.12	0.79	0.030	0.050	1.10	10.0	19.8	0.40	0.07	0.11	...	1.00	...	...	...	...	100g
C13 X 180040A	0.09	1.30	0.017	0.077	1.53	11.98	21.84	0.60	0.02	0.16	...	0.78	...	...	...	...	100g
C13 X 190020A	0.07	0.76	0.053	0.031	1.05	9.18	17.1	1.99	0.105	...	...	0.07	...	...	...	...	100g
C13 X 190030A	0.09	0.59	0.029	0.063	1.60	13.1	18.9	2.50	0.08	...	...	0.11	...	...	...	...	100g
CRM C13 S 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
CRM C13 S 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
CRM C13 S 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
CRM C13 S 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
CRM C13 DB E237-1	0.068	0.482	0.012	0.032	1.443	10.32	17.24	0.306	0.123	0.221	...	0.660	...	...	0.035	V 0.057	100g
CRM C13 DB E284-2(C)	0.0201	0.537	0.0237	0.0258	1.745	10.72	16.811	2.111	0.1831	0.0525	0.0027	(0.0028)	0.191	0.0026	0.0151	V 0.0425	100g
1.3.3 Maraging Steels																	
	C	Si	S	P	Mn	Ni	Cr	Mo	Co	Al	Ti	Sn	Cu	Zr	B	N	Size
C13 X 149330A	0.017	0.05	0.016	0.02	0.15	16.9	0.04	3.97	10.9	0.002	0.04	...	...	...	...	...	50g
C13 X 149350A	0.02	0.31	0.049	0.036	0.42	18.9	0.01	5.55	7.07	0.22	0.89	...	...	...	...	...	50g
CRM C13 A E285-2(C)	0.002	0.012	0.0025	0.0053	0.017	18.7	0.024	4.987	7.76	0.1067	0.520	0.001	0.009	0.005	0.0008	0.0007	100g

1.3.4 Martensitic Stainless Steels

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Nb	Nb+Ta	Al	V	N	B	Size	
	C13 X 147750A	0.13	0.59	0.074	0.060	1.47	1.79	17.84	0.51	0.22	0.16	0.72	...	...	...	...	...	100g	
	C13 X 150230A	0.15	0.23	0.020	0.020	1.56	1.49	10.59	1.08	0.08	0.21	...	1.15	...	...	...	...	100g	
	C13 X 150240A	0.20	0.77	0.035	0.042	0.66	3.00	14.9	0.26	0.36	0.10	0.17	...	...	...	...	...	100g	
	C13 CG 01602	0.089	0.46	0.015	0.023	0.92	0.538	10.49	0.79	0.084	6.20	0.35	...	...	0.216	0.018	0.009	150g	
	C13 CG 01603	0.099	0.29	0.024	0.027	0.71	2.53	11.81	1.76	0.084	...	...	...	...	0.36	0.021	...	150g	
CRM	C13 E 22	0.628	0.449	0.009	0.029	0.804	0.143	16.21	...	0.050	...	...	...	...	...	0.008	...	100g	
CRM	C13 E 26	0.201	0.306	0.012	0.022	0.713	0.413	13.69	0.070	0.029	...	...	...	...	...	...	...	100g	
CRM	C13 HY CH26	0.061	1.38	0.017	0.026	1.10	...	23.5	...	(0.18)	...	(0.04)	...	1.53	...	...	...	100g	
CRM	C13 A E296-1C	0.1166	0.242	0.0026	0.0178	0.676	2.790	11.82	1.700	0.1498	0.0218	...	...	...	0.363	0.0214	(0.0003) As, Sn	100g	
CRM	C13 A 339	0.29	0.36	0.022	0.022	0.41	0.37	12.4	...	(0.08)	...	...	...	...	...	...	...	100g	
CRM	C13 A 340	0.18	0.35	0.02	0.024	0.38	0.4	16.35	...	(0.06)	...	...	...	...	...	...	...	100g	
CRM	C13 A 341	0.1	0.31	0.024	0.016	0.43	0.56	24.0	...	(0.1)	...	...	...	...	...	...	...	100g	
CRM	C13 A 342	0.18	0.92	0.026	0.03	0.91	2.16	16.15	0.690	(0.08)	...	...	...	...	...	...	...	100g	
CRM	C13 A 469	0.279	0.421	0.02	0.015	0.598	0.246	11.93	...	(0.02)	(0.01)	...	...	...	...	...	...	100g	
CRM	C13 A 470	0.153	0.335	0.035	0.024	0.235	0.369	17.68	...	(0.02)	(0.02)	...	...	...	...	...	...	100g	
CRM	C13 A 471	0.095	0.326	0.023	0.018	0.417	0.96	23.85	...	(0.02)	(0.02)	...	...	...	...	...	...	100g	
CRM	C13 A 472	0.227	1.05	0.029	0.032	1.02	1.95	15.82	0.661	(0.02)	(0.02)	...	...	...	...	...	...	100g	
CRM	C13 A 473	0.172	0.604	0.03	0.019	0.494	(0.06)	9.06	0.950	(0.03)	(0.01)	...	...	...	...	...	...	100g	
CRM	C13 S 670-3	0.008	0.55	(0.0005)	0.020	0.53	0.21	11.23	0.020	0.044	...	...	...	(0.055)	...	0.0064	...	Ti 0.26	150g
CRM	C13 DB E226-1	0.416	0.514	0.0094	0.0207	0.434	0.139	13.67	0.024	...	...	...	...	...	0.022	0.0362	...	100g	

1.3.5 Special Stainless

	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	Al	As	Sn	V	N	Others	Size
C13 X 125380A	0.05	0.52	0.039	0.042	0.61	6.03	25.6	2.02	2.97	...	...	...	...	...	...	...	50g
C13 X 142110A	0.08	1.72	0.016	0.006	0.70	12.4	26.05	0.30	0.31	0.08	...	...	...	...	...	Nb 0.18, W 3.29	50g
CRM C13 A E295-1C	0.0166	0.418	0.0003	0.0167	1.758	24.40	19.51	3.996	1.481	0.0450	0.0203	0.0041	0.0025	0.0456	0.0615	B 0.0018	100g
CRM C13 A E281-1	0.048	0.929	0.016	0.012	0.786	9.37	18.17	...	0.076	0.023	0.015	(0.015)	0.009	...	0.023	B, Pb, Ti	100g
CRM C13 A E287-1(C)	0.016	0.569	0.0014	0.027	1.48	10.35	18.61	0.247	0.203	0.148	...	...	...	...	0.019	B	100g
CRM C13 A E292-1(C)	0.0367	0.402	0.0055	0.0175	1.744	10.09	18.00	0.0464	0.0391	0.0255	(0.002)	(0.008)	...	...	0.0640	Nb 0.571	100g
CRM C13 Ti E276-1	0.364	0.985	0.011	0.012	0.368	0.178	5.29	1.47	0.083	...	...	...	...	0.541	0.0207	...	100g
CRM C13 Ti E279-2	0.088	0.516	...	...	0.258	1.603	15.64	...	0.107	...	...	...	...	...	(0.043)	...	100g
CRM C13 Ti E282-1	0.086	0.734	0.0042	0.019	1.64	10.86	16.72	2.19	0.109	...	...	...	...	(0.031)	...	Ti 0.488	100g
CRM C13 DB E278-1	0.903	0.336	0.0052	0.0154	0.405	0.236	18.11	1.040	0.077	...	...	...	...	0.077	...	...	100g
CRM C13 DB E283-1	1.219	0.345	0.029	0.022	0.217	...	4.15	3.41	...	10.27	0.010	...	...	3.28	0.033	B 0.003, W 9.66	100g
CRM C13 DB E286-1	0.100	...	0.280	0.026	1.92	8.54	18.13	0.329	...	0.150	(0.0023)	...	0.0084	...	0.043	Sb 0.0014	100g
CRM C13 DB E288-1	2.08	0.260	(0.0012)	0.024	0.292	0.298	12.00	0.103	0.060	0.018	0.012	(0.006)	(0.0043)	0.055	0.151	Ti 0.020	100g
CRM C13 DB E289-1	0.0489	0.531	0.0027	0.0114	1.016	24.68	14.63	1.102	...	0.065	0.199	(0.006)	0.111	0.260	...	B 0.0044, Ti 2.01	100g
CRM C13 DB E290-1	0.911	0.072	0.0160	0.0160	0.244	0.329	4.18	4.83	0.081	5.12	...	...	...	1.91	0.0325	W 6.27	100g
CRM C13 DB E291-1	0.903	0.907	0.0087	0.0168	0.808	0.563	17.10	2.10	0.0711	0.0233	0.0030	...	...	0.388	0.1142	...	100g
CRM C13 DB E327-2	0.152	2.052	0.0046	0.0228	1.289	19.72	24.35	0.174	0.060	0.159	0.070	...	...	0.044	0.059	...	100g

1.3.6 Precipitation Hardening

	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Nb	Nb+Ta	Co	As	N	Typical Alloy Type	Size
CRM C13 X PH 10M	0.107	0.236	0.031	0.053	1.49	5.21	16.17	0.172	3.11	0.071	...	0.004	0.003	0.238	...	100g
C13 X PH 20A	0.08	0.47	0.045	0.058	1.24	3.6	16.88	1.00	3.97	0.17	...	...	...	0.035	17/4 PH	100g
C13 X PH 40A	0.047	0.75	0.051	0.033	0.87	4.07	15.00	0.26	5.55	...	0.39	...	...	0.092	...	100g
C13 X PH 70A	0.16	1.28	0.029	0.017	1.44	5.65	14.1	2.56	0.82	...	0.28	...	...	0.094	FV520	100g

1.3.7 High Nitrogen

	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	V	W	Nb	Nb+Ta	Al	N	Size
CRM C13 X NSA 20B	0.094	0.506	0.010	...	0.51	9.97	16.89	1.74	...	...	...	...	...	...	...	0.126	40g
CRM C13 X NSB 30B	0.178	0.63	0.009	...	0.50	9.92	16.8	0.51	...	...	...	...	...	...	...	0.264	40g
C13 X NSC 30A	0.71	1.19	...	...	9.5	3.34	24.8	...	...	...	...	...	...	2.4	...	0.62	40g
CRM C13 X NSC 40B	0.565	1.95	0.0115	...	8.78	7.05	32.20	0.98	0.17	0.195	0.19	0.17	1.95	...	...	0.86	40g
CRM C13 X NSC 50A	0.493	1.153	0.0095	...	2.49	4.16	22.46	0.0018	0.745	...	0.026	...	2.31	...	0.315	0.257	40g
CRM C13 X NSD 10A	0.077	0.559	0.0067	...	22.59	0.100	24.97	1.10	0.023	...	...	...	...	...	...	1.09	40g
CRM C13 X NSD 20A	0.253	1.50	0.0027	...	17.01	0.104	23.94	1.06	0.054	...	...	...	...	...	...	0.801	40g
CRM C13 JN 500 HA	0.0413	0.720	0.012	0.0244	1.541	10.996	16.927	2.732	0.182	0.139	0.074	...	0.0227	...	...	0.1154	150g
CRM C13 JN 501 HA	0.0138	0.676	0.0028	0.0196	0.858	17.69	19.79	6.139	0.761	0.159	0.0437	...	0.0073	...	...	0.2243	150g

1.4.1 Tool Steel														Soluble		Typical		Size	
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	W	V		Al	N	Alloy Type			
CRM C14 E 67	1.27	0.26	0.007	0.036	0.256	0.32	4.33	4.39	0.092	9.79	8.03	2.58	...	...	...	Co/Mo/W	100g		
CRM C14 E 50	0.916	0.326	0.015	0.031	0.28	0.33	4.49	5.54	0.091	0.26	6.4	2.0	...	...	...	AlSi M2	120g		
CRM C14 E 114	0.388	1.02	0.0023	0.021	0.361	0.165	5.20	1.29	0.064	0.018	0.174	0.89	0.028	...	...	...	100g		
CRM C14 S 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		
1.4.2 High Speed Steel														Soluble		Typical		Size	
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Co	W	V	Sn	N	Others				
C14 X HS 10A	0.79	0.195	0.022	0.02	0.29	0.1	3.93	1.11	0.05	0.51	16.8	0.9	...	...	...	...	100g		
C14 X HS 20A	0.9	0.41	0.04	0.037	0.38	0.07	3.79	0.86	0.04	5.02	18.11	1.01	...	...	...	...	100g		
C14 X HS 30A	0.84	0.58	0.02	0.019	0.59	0.33	4.65	1.06	0.04	10.1	19.1	1.17	...	...	...	...	100g		
C14 X HS 40A	0.99	0.11	0.012	0.01	0.13	0.05	3.71	0.42	0.03	2.04	9.83	0.47	...	...	...	...	100g		
C14 X HS 50A	0.59	0.3	0.022	0.017	0.29	0.14	3.4	3.54	0.13	8.02	6.0	1.37	...	...	...	...	100g		
C14 X HS 60A	0.7	0.16	0.032	0.029	0.17	0.06	3.94	5.47	0.08	0.28	6.63	1.95	...	...	...	...	100g		
C14 X HS 80A	0.97	0.13	0.022	0.02	0.29	0.17	3.58	9.47	0.09	9.04	1.81	1.2	...	...	...	...	100g		
CRM C14 S 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		
CRM C14 S 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		
CRM C14 S 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		
CRM C14 S 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		
CRM C14 S 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		
CRM C14 DB E227-1	0.95	0.272	0.022	0.016	0.236	0.114	4.25	2.64	0.124	...	3.03	2.44	...	...	0.040	...	100g		
CRM C14 A 481/1	3.91	2.29	0.004	0.019	0.448	1.19	0.063	0.011	0.15	...	...	...	...	...	...	Al 0.023, As 0.010	100g		
CRM C14 A 482/1	2.599	1.815	0.0491	0.0974	0.728	2.284	0.675	0.454	1.231	...	...	...	...	...	...	...	100g		
CRM C14 A 483/1	2.46	1.75	0.103	0.615	0.596	...	0.039	...	...	...	...	...	0.130	...	...	...	100g		
CRM C14 A 484/1	3.2	0.717	0.23	0.121	0.395	...	0.155	...	...	...	...	...	...	...	...	...	100g		
CRM C14 A 220/2	0.88	0.19	0.029	0.023	0.3	0.12	5.12	4.92	0.09	0.32	6.97	1.94	0.019	...	...	...	100g		
CRM C14 A 241/2	0.84	0.21	0.025	0.024	0.27	0.15	5.35	0.53	0.08	5.7	19.9	1.59	0.025	...	...	...	100g		
1.4.3 High Manganese Steel														Soluble		Typical		Size	
	C	Si	S	P	Mn	Ni	Cr	Mo	Cu	Al	V	Sn	Co	N					
C14 X MN10A	0.53	0.65	0.004	0.022	18.4	0.04	1.31	0.45	0.03	0.004	0.03	0.03	...	...	...	...	50g		
C14 X MN30A	1.06	1.4	0.013	0.061	10.7	0.35	0.59	0.27	0.24	0.002	0.04	0.02	...	...	...	...	50g		
CRM C14 A 214/2	0.39	0.18	0.043	0.032	1.61	0.15	0.09	0.26	0.21	...	<0.01	...	...	...	...	...	100g		
CRM C14 A 290/2	1.15	0.34	0.019	0.042	12.5	0.29	0.16	(0.031)	(0.17)	...	(0.02)	...	(0.35)	(0.013)	...	...	100g		
CRM C14 A 491	0.92	0.9	0.012	0.026	16.1	0.05	1.45	0.6	(0.04)	0.042	(0.06)	...	...	...	...	...	100g		
CRM C14 A 494	1.24	0.26	0.005	0.04	13.55	0.69	0.56	0.078	(0.19)	0.004	(0.02)	...	(0.43)	...	...	...	100g		
CRM C14 A 495/1	0.81	0.58	0.026	0.054	13.1	1.13	1.93	0.11	...	0.17	(0.02)	...	...	...	...	...	100g		
CRM C14 DB 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		
1.4.4 Resulphurised and Lead Steels														Soluble		Typical		Size	
	C	Si	S	P	Mn	Mo	Ni	Cr	Cu	Pb	As	Sn	N						
C14 X FM10A	0.5	0.07	0.65	0.029	0.54	0.34	...	...	...	...	...	...	...	...	...	...	100g		
C14 X FM20A	0.1	0.14	0.134	0.053	1.37	0.06	...	...	...	...	...	...	...	...	...	...	100g		
CRM C14 S 519-1	0.39	0.25	0.022	0.012	0.7	...	0.056	0.12	0.105	0.097	...	...	...	...	...	...	150g		
CRM C14 DB E039-2	0.107	0.011	0.310	0.083	1.274	...	0.051	0.048	0.117	0.207	0.018	0.016	0.0113	...	...	...	100g		
1.4.9 Silicon Steels														Soluble	Insoluble	Total	Typical		Size
	C	S	P	Mn	Si	Ni	Cr	Cu	Mo	Al	Al	Al	Ca	As	Co	N			
C14 CG 01371	0.079	0.025	0.026	0.313	2.39	0.222	0.392	0.408	0.004	...	...	...	...	...	...	...	...	100g	
C14 CG 01372	0.057	0.02	0.012	0.225	3.36	0.316	0.259	0.314	0.0036	0.166	0.0019	...	...	...	...	...	100g		
C14 CG 01373	0.034	0.019	0.007	0.127	4.38	0.415	0.164	0.118	0.0037	0.073	0.0018	...	...	...	...	...	100g		
C14 CG 01374	0.162	0.03	0.036	0.346	0.998	0.103	0.471	0.213	0.0048	0.208	0.001	...	...	...	...	...	100g		
CRM C14 A 317	0.028	0.023	0.015	0.085	3.49	...	...	...	...	...	...	...	...	...	...	...	100g		
CRM C14 A E186-1(C)	0.61	0.035	0.022	0.87	1.72	0.19	0.218	0.281	0.048	0.014	...	...	...	...	...	...	100g		
C14 J E196-1(C)	0.0039	0.0005	0.0076	0.365	1.908	...	...	...	...	...	...	0.201	0.0005	...	...	0.0020	100g		
CRM C14 HY CH28	0.026	0.017	0.009	0.184	3.24	0.11	0.03	0.09	...	...	...	...	...	...	...	...	100g		
C14 MBS CE31	0.074	0.0088	0.0074	0.19	3.67	0.27	0.17	0.26	0.003	0.19	...	...	...	0.0052	0.005	...	100g		
1.4.10 Speciality Fe-base Alloys														Soluble	Insoluble	Total	Typical		Size
	C	S	P	Si	Mn	Cr	Ni	Cu	Nb	R.E.	Al	N	Co	Ti	Ta				
C14 CG 01651	0.073	0.0053	0.0253	0.438	0.675	0.09	0.096	0.089	0.044	0.048	0.093	0.013	...	...	...	Rare Earth Steel	150g		
C14 CG 01652	0.069	0.0076	0.0135	0.715	0.991	0.228	0.071	0.075	0.076	0.018	0.123	0.014	...	...	...	Rare Earth Steel	150g		
C14 CG 01653	0.124	0.0045	0.0125	0.674	0.821	0.127	0.055	0.094	0.122	0.098	0.177	...	...	...	...	Rare Earth Steel	150g		
CRM C14 A E376-1	0.0256	0.0040	...	0.313	0.046	...	13.37	2.94	0.305	...	8.12	...	23.70	0.158	(0.016)	Alnico	100g		
CRM C14 A 383	0.025	0.2	...	...	(0.07)	...	(13.2)	(2.63)	(0.51)	...	(7.7)	...	(24.4)	...	...	Alcomax III	100g		
CRM C14 A 398	0.025	0.19	...	0.11	0.065	...	16.59	6.09	0.13	...	9.98	...	14.92	0.765	...	Alnico HC	100g		

2.2	Ni/Cr	C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Mg	B	Ni	Typical Alloy Type	Size		
	C22 X 7530A	0.06	0.96	...	...	0.23	0.05	5.00	19.9	0.06	0.52	0.26	0.07	0.05	...	...	Nimonic 75'	50g		
	C22 X 7550A	0.12	0.22	...	...	0.99	0.23	1.11	18.09	0.52	0.10	0.84	0.58	<0.005	...	...		50g		
	C22 X 8010A	0.12	0.22	...	...	0.50	0.22	0.66	21.88	0.20	0.52	2.81	1.03	0.008	(0.0001)	...	Ag, Sn, Zr	50g		
	C22 X 8030A	0.03	1.09	...	...	0.21	0.08	1.88	17.7(2)	0.50	1.99	1.81	1.84	0.001	<0.001	...	Ag, Sn, Zr	50g		
	C22 X 9030A	0.05	1.00	...	...	0.20	0.01	0.33	20.96	0.06	18.04	1.85	1.66	<0.005	0.023	...	Nimonic 90'	50g		
	C22 X 9050A	0.20	0.21	...	...	0.97	0.22	1.09	18.10	0.51	20.99	2.75	1.01	<0.005	<0.001	...		50g		
	C22 X 10530A	0.12	0.98	...	...	0.51	0.21	0.40	13.91	6.05	17.74	1.37	5.24	0.0007	...	...	Nimonic 105'	50g		
	C22 X 10550A	0.30	0.26	...	...	<0.01	<0.01	1.22	15.52	3.96	21.7	0.44	4.74	0.014	...	...		50g		
	C22 X 90120A	0.10	0.25	0.022	0.015	0.52	0.14	...	13.76	4.49	0.38	2.01	0.13	...	0.008	41.1	Nimonic 901'	50g		
	C22 X 90130A	0.11	0.29	0.034	0.036	0.68	0.25	...	11.02	6.38	1.02	3.88	0.34	...	0.036	43.6		50g		
CRM	C22 A 310/1	0.068	0.46	...	...	0.35	...	...	19.45	...	17.0	2.43	1.06	...	...	58.6	Nimonic 90'	100g		
CRM	C22 A 387/1	0.033	0.06	0.0028	0.0033	0.025	0.0076	...	11.35	5.83	0.02	3.00	0.24	...	0.017	41.2	Nimonic 901'	100g		
2.3	Fe/Ni/Cr	C	Si	S	P	Mn	Cu	Cr	Mo	Co	Ti	Al	Ni	Fe	Typical Alloy Type	Size				
	C23 X 80010A	0.11	0.22	...	...	1.05	0.07	22.9	0.52	0.98	0.44	0.38	30.1	...	Incoloy 800'	50g				
	C23 X 80030A	0.05	0.87	...	...	0.42	0.53	18.92	0.14	0.11	0.10	0.06	34.7	...		50g				
	C23 X DS 10A	0.13	2.38	...	...	1.65	0.04	17.7	0.04	0.99	0.04	0.04	34.6	...	Incoloy 800DS'	50g				
	C23 X DS 30A	0.04	1.43	...	...	0.67	0.62	19.87	0.62	0.11	0.34	0.01	39.66	...		50g				
CRM	C23 S 680-3	0.051	0.44	0.0018	(0.0009)	0.95	0.20	20.96	...	0.40	0.42	0.51	32.80	(43.2)			150g			
2.4	Ni/Cr/Co/Mo	C	S	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Nb	B	V	W	Zr	P	Others	Size
	C24 X 26310A	0.06	0.002	0.12	0.71	0.07	0.74	18.96	5.66	20.9	2.56	0.30	...	0.006	...	...	...	...		50g
	C24 X 26350A	0.11	0.005	0.55	0.11	0.23	0.17	20.9	6.62	18.9	1.96	0.605	...	<0.001	...	...	...	...		50g
	C24 X WASP 10A	0.02	0.002	0.56	0.11	0.07	0.58	17.82	6.20	14.9	3.68	1.65	<0.01	<0.001	<0.01	0.02	0.03	0.009		50g
CRM	C24 X WASP 30D	0.118	0.026	0.208	0.542	0.735	0.96	20.84	1.96	13.77	5.52	2.99	0.163	0.0087	0.123	0.064	0.059	0.014	Ni, Ta	50g
	C24 X WASP 40A	0.14	0.008	0.02	0.42	0.23	2.33	20.7(3)	3.06	11.76	2.53	0.91	0.12	0.011	0.15	0.22	0.10	<0.001		50g
CRM	C24 X WASP 40C	0.052	(0.01)	0.21	0.53	(0.004)	1.48	19.7	7.51	11.01	2.25	2.16	0.25	0.014	0.145	0.25	0.08	<0.005	Pb, Ni	50g
2.7	Ni/Cr/Mo/Co	C	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Typical Alloy Type	Size							
	C27 X 141840A	0.29(5)	0.39	0.41	0.09	0.57	21.0	10.2	10.3	0.07	0.05	C242/ANC11	50g							
2.8	Ni/Cr/Fe	C	Si	S	P	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Nb	Ni	B	N	Others	Size	
	C28 X 60010A	0.06	0.85	...	...	0.14	1.08	5.98	16.75	...	0.98	0.60	0.02	...	...	...	...		50g	
	C28 X 60020A	0.16	0.20	...	...	0.64	0.03	10.07	13.95	...	0.21	0.12	0.26	...	...	...	...		50g	
	C28 X 62510A	0.02	0.27	0.004	0.003	0.08	0.03	2.19	19.9	10.36	0.02	0.01	0.003	2.93	...	...	...		50g	
CRM	C28 X 62510K	0.039	0.47	0.001	(0.0014)	0.17	0.051	3.12	20.5	9.88	0.022	(0.01)	0.16	2.70	(62.3)	0.0047	0.211		50g	
CRM	C28 X 62520L	0.077	0.61	0.0039	0.010	0.28	0.145	4.14	21.5	8.77	0.20	0.027	0.21	3.39	59.9	0.014	0.32	Sn, Bi, Ag	50g	
	C28 X 62530A	0.15	0.74	0.013	0.01	0.60	0.32	5.5	22.9	7.69	0.45	0.53	0.53	4.96	...	...	...		50g	
CRM	C28 X 62530M	0.124	1.26	0.013	0.02	0.54	0.30	5.41	21.90	7.86	0.39	0.044	0.32	4.25	56.67	0.023	0.35	Sn, Bi		
CRM	C28 X 62540K	0.037	0.53	0.0046	0.004	0.093	0.027	6.46	21.1	5.89	0.22	0.30	0.05	3.53	(61.3)	0.0014	0.065			
	C28 X 71810A	0.05	0.24	0.011	0.005	0.10	0.02	...	21.16	2.23	0.01	0.21	0.17	4.34	49.7	...	...		50g	
CRM	C28 X 71810H	0.008	0.71	0.005	(0.003)	0.108	0.013	(19.5)	18.71	2.94	0.01	0.025	(0.007)	4.97	52.6	0.0010	0.233	Sn, V	50g	
CRM	C28 X 71820L	0.035	0.47	0.0066	0.004	0.184	0.117	17.0	21.30	0.88	0.64	1.13	0.34	4.76	52.7	(0.0010)	0.033	Ta, V, W	50g	
	C28 X 71830A	0.19	0.38	0.05	0.026	0.47	0.35	...	17.78	3.31	1.00	1.40	1.77	5.44	54.8	...	...		50g	
CRM	C28 X 71830S	0.296	0.52	0.0023	0.003	0.36	0.26	(19.6)	18.85	1.31	0.94	1.21	1.21	6.25	49.0	0.0016	0.037	Ta, V, W	50g	
CRM	C28 X 71860H	0.007	0.65	0.014	0.016	0.253	0.091	(16.5)	17.85	2.88	0.404	0.20	0.32	5.15	54.84	0.0047	0.077	V	50g	
	C28 X 75010A	0.10	0.60	...	...	1.52	0.52	5.08	16.82	0.51	...	2.31	0.98	1.46	...	...	...		50g	
	C28 X 75030A	0.06	0.25	...	...	0.54	0.07	8.04	13.72	0.12	...	2.93	0.41	0.55	...	...	...		50g	
CRM	C28 A 351	0.025	0.14	0.0006	(0.006)	0.037	0.016	...	18.12	3.06	0.136	1.06	0.55	5.2	53.1	0.0051	...		100g	
CRM	C28 S 683-2	0.049	0.39	0.0013	(0.0008)	0.32	0.051	9.66	15.82	...	(0.011)	0.013	0.12	...	73.43	...	...		150g	

2.1	Ni/Co/Cr/Al/Ti	C	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	V	Ni	W	B	N	Typical Alloy Type	Size
CRM	C210 X 117750G	0.024	0.36	0.127	(0.008)	1.02	10.42	3.19	14.83	5.76	7.0	0.47	(56.6)	...	...	(0.003)	IN100	50g
CRM	C210 RU N15/3	0.052	0.219	0.047	0.017	0.51	10.02	5.55	15.06	2.55	4.02	0.319	...	5.50	0.022	...		250g
2.11	Ni/Cr/Al	C	Si	Mn	Cu	Fe	Cr	Mo	Co	Ti	Al	Nb	Zr	B	Ni	Typical Alloy Type	Size	
	C211 X 71310A	0.04	0.11	0.06	0.008	0.57	10.92	3.53	0.14	0.45	5.5	2.78	0.06	<0.001	...		50g	
	C211 X 71320A	0.16	0.51	0.27	0.13	0.39	12.9	5.50	1.04	1.13	6.59	1.64	0.18	0.016	...	N 713	50g	
CRM	C211 A 350	0.138	0.11	0.019	...	...	13.43	4.29	0.338	0.87	5.97	2.17	...	0.013	70.8	Inconel 713'	100g	
2.12	Ni/Cu	C	Si	S	Mn	Fe	Cr	Pb	Co	Ti	Al	Mg	Ni	Cu	Typical Alloy Type	Size		
	C212 X 40010A	0.10	1.48	0.022	3.04	0.57	0.05	0.08	0.12	0.11	0.09	0.13	67.6	rem	'Monel'	50g		
	C212 X 40020A	0.04	0.10	0.075	2.00	1.17	0.02	0.04	0.08	0.06	0.05	0.02	65.2	rem	400/500	50g		
	C212 X 40060A	0.03	3.94	0.035	0.83	1.95	0.12	0.02	0.05	1.34	3.85	0.016	63.3	rem	505/506	50g		
CRM	C212 A 363/1	0.14	0.028	(0.002)	1.26	...	(0.05)	...	0.032	0.03	0.027	...	64.7	31.9	Monel 400'	100g		
2.15	Ni/Co/Cr/Fe/Mo	C	Si	S	P	Mn	Fe	Cr	Mo	Co	V	W	Cu	Al	N	Typical Alloy Type	Size	
	C215 X HB10A	0.04	0.14	0.051	<0.006	1.15	6.95	1.15	35.8	0.05	0.57	...	...	...	...		50g	
CRM	C215 X HB10L	0.056	0.48	0.026	0.006	1.21	7.71	0.84	33.6	0.10	0.87	...	0.05	0.31	0.042	'Hastelloy 'B''	50g	
	C215 X HB50A	0.16	0.59	0.005	0.058	0.38	3.48	0.06	27.2	2.67	0.11	...	...	...	...		50g	
CRM	C215 X HB50J	0.147	1.30	0.002	0.053	0.44	3.05	0.03	26.0	2.47	0.14		0.05	0.20	0.008		50g	
	C215 X HC10A	0.04	0.38	0.007	0.006	1.28	4.50	16.0	19.6	2.28	0.13	3.58	...	...	...		50g	
CRM	C215 X HC20H	0.066	1.02	0.003	0.012	0.97	3.62	15.7	18.9	1.70	0.38	3.91	0.023	0.18	0.18		50g	
	C215 X HC50A	0.67	1.04	0.078	0.085	0.27	10.96	19.9	15.5	0.13	0.60	5.5	...	...	...	'Hastelloy 'C''	50g	
CRM	C215 X HC50Q	0.190	1.56	0.044	0.049	0.30	7.65	19.9	16.0	0.08	0.72	5.4	0.05	0.22	0.32		50g	
2.16	Pure Nickel	C	S	P	Si	Mn	Cr	Mo	Pb	Cu	Fe	Al	Size					
	C216 M BSHPN-1	268	4	5	6	2	22	3	0	2	202	70	100g					
2.19	Various Nickel Alloys	C	Si	S	P	Mn	Cr	Mo	Ni	Al	B	Co	Cu	W	Ti	V	Others	Size
CRM	C219 X 205000A	0.025	1.48	0.004	0.002	0.22	51.2	0.002	45.7	...	...	0.002	0.002	...	...	...	Fe 1.26	50g
CRM	C219 DB E326-1	0.092	1.46	0.0028	0.0093	0.406	16.37	(0.025)	61.16	(0.79)	...	0.223	(0.027)	...	...	(0.024)	Zr 0.129	100g
CRM	C219 RU N8/3	0.0103	0.421	0.0016	0.0023	0.010	14.06	4.30	...	...	0.020	...	0.011	6.05	2.18	0.58	Mg 0.0015	250g
CRM	C219 RU N13/4	0.0097	0.404	0.0019	0.0017	0.203	17.89	4.40	...	2.84	0.0097	5.52	...	6.53	1.11	...	Ce 0.0046	250g
CRM	C219 RU N14/3	0.0120	0.67	0.0029	0.0020	0.385	24.35	1.32	57.0	0.164	...	...	0.0082	13.47	0.40	...	Fe 2.16	250g
CRM	C219 A 345	0.153	...	...	...	...	9.95	3.01	rem	5.58	0.019	14.71	...	...	4.74	1.0		
CRM	C219 A 346	(0.15)	...	...	...	...	(10.0)	(3.0)	rem	(5.5)	...	(15.0)	...	...	(5.0)	(1.0)		continued
CRM	C219 A 371	0.3	0.34	0.013	...	...	...	...	...	...	...	0.39	...	...	...	...		
	Continuation from above		Pb	Bi	Ag	Se	Te	Sb	As	Cd	Ga	Sn	Zn	Mg	Tl	Ca	Typical Alloy Type	Size
	C219 A 345		0.2	<0.2	<0.2	<0.5	<0.2	<2	(2)	<0.1	8	6	<0.5	5	<0.2	<5		100g
	C219 A 346		21	10	35	9	12	47	50	0.4	(52)	91	29	147	(2)	(36)	Inconel' 100	100g
	C219 A 371		...	...	...	...	...	...	...	...	...	...	...	600	...	...	Comm Nickel	100g

C4. Zinc Base

Chippings

4.1 Zinc with Impurities		Pb	Mg	Al	Cd	Fe	Sn	Cu	Ni	Mn	Sb	As	Bi	In	Tl	Ti	Cr	Ag	Size
CRM	C41 X Z10M	0.0018	(0.0003)	(0.00015)	0.00005	0.0005	<0.0002	0.0005	0.00010	0.00018	(0.0004)	...	...	<0.00005	(0.0003)	...	...	...	50g
CRM	C41 X Z30K	0.0052	0.0009	0.0083	0.0044	0.002	0.0039	0.0019	0.0031	0.0007	0.0037	...	...	0.0007	0.002	0.0012	...	...	50g
CRM	C41 X Z40K	0.0092	0.0019	0.0096	0.0066	0.003	0.0070	0.0047	0.0069	0.0012	0.005	...	...	0.0015	0.003	<0.0005	...	...	50g
CRM	C41 X Z50L	0.0235	0.012	0.142	0.024	(0.015)	0.0213	0.0228	0.0116	0.0033	0.006	...	...	0.004	0.0032	...	...	...	50g
CRM	C41 X 0336 Z10K	0.95	0.0049	0.014	0.0056	0.0124	0.005	0.007	(0.0006)	0.0035	...	...	...	...	...	...	...	...	50g
CRM	C41 X 0336 Z30J	0.019	0.134	0.43	0.341	0.270	0.111	0.361	...	0.0058	...	...	...	...	...	...	...	...	50g
CRM	C41 X 0336 Z40B	2.87	0.179	1.39	0.638	(0.018)	2.38	0.874	0.0074	0.038	0.048	0.0005	0.027	0.0035	(0.004)	...	...	0.0023	50g
CRM	C41 X 0336 Z50A	0.91	<0.0005	0.035	0.056	0.016	0.21	0.023	(0.0005)	(0.0001)	0.008	...	(0.001)	...	...	...	...	...	50g
CRM	C41 X 0336 Z60A	1.82	0.0008	0.105	0.014	0.08	0.0023	0.0203	0.0018	0.0010	0.234	0.0020	0.123	0.0123	0.0132	...	...	0.0055	50g
CRM	C41 X 4380 Z10C	0.068	0.0012	0.055	0.376	0.01	0.049	0.175	0.0029	0.0015	0.002	...	0.0017	...	...	(0.001)	0.002	...	50g
CRM	C41 X 4380 Z40C	0.325	0.126	0.144	0.094	0.056	0.038	0.0022	0.0040	0.0007	0.017	...	0.011	...	...	0.005	(0.0003)	...	50g
CRM	C41 X 4380 Z70C	1.25	0.0028	0.137	0.015	(0.0044)	0.0047	0.012	0.012	...	0.090	...	...	...	...	0.009	0.0045	...	50g
CRM	C41 X 4380 Z80C	0.73	0.007	0.225	0.0079	0.003	0.011	0.020	0.024	0.0015	0.016	...	0.011	...	...	0.012	0.0019	...	50g
CRM	C41 X 2951 Z10	0.0042	0.0029	0.029	0.0005	0.011	(0.0007)	0.79	0.0038	0.0013	...	...	...	...	...	0.278	0.083	...	50g
CRM	C41 X 2951 Z30	0.0065	0.0164	0.078	0.0062	0.029	(0.006)	1.89	0.0010	0.0018	...	...	...	...	...	0.133	0.184	...	50g
Co																			
CRM	C41 X GLV10A	0.056	...	0.115	0.0093	0.059	0.010	0.0028	0.0141	...	<0.001	<0.001	0.0025	...	...	...	...	...	50g
CRM	C41 X GLV20A	0.214	...	0.068	0.0025	0.048	0.003	0.0052	0.0070	...	0.006	<0.001	0.017	...	...	...	...	...	50g
CRM	C41 X GLV30A	0.0080	...	0.31	0.021	0.012	0.006	0.0188	0.0301	...	0.048	(0.0008)	0.0011	...	...	...	...	...	50g
CRM	C41 X GLV40A	0.0038	...	0.201	(0.0001)	0.017	<0.005	0.0009	0.049	...	0.025	<0.002	0.0051	...	...	...	...	...	50g
CRM	C41 X GLV50A	0.0187	...	0.014	0.0138	0.076	0.020	0.0116	0.0030	...	0.162	0.0041	0.0109	...	...	...	...	...	50g
CRM	C41 X GLV60A	0.120	...	0.475	0.0055	0.0048	0.015	0.041	0.0008	0.0014	0.011	0.0015	0.024	...	...	...	0.0030	0.0050	50g
CRM	C41 X GLV70A	0.082	...	0.399	0.00056	0.0031	(0.0006)	0.023	0.0060	0.0025	0.0031	0.0016	0.0108	...	...	...	0.0010	(0.0001)	50g
	C41 CG 02701	0.0030	...	...	0.0010	0.0010	...	0.00010	...	...	...	...	...	...	...	...	...	...	50g
	C41 CG 02702	0.0142	...	...	0.0103	0.0097	...	0.00099	...	...	...	...	...	...	...	...	...	...	50g
	C41 CG 02703	0.309	...	...	0.0733	0.0301	0.0025	0.0021	...	...	0.0106	0.0052	...	...	...	...	...	...	50g
	C41 M BS SP-A	0.003	...	0.051	...	0.011	<0.001	<0.0005	...	...	0.099	...	...	...	...	...	...	...	50g
	C41 M BS SP-B	0.021	...	0.141	...	0.025	<0.001	<0.002	...	...	0.061	...	...	...	...	...	...	...	50g
	C41 M BS SP-C	0.005	...	0.185	...	0.041	<0.001	<0.0005	...	...	0.031	...	...	...	...	...	...	...	50g
	C41 M BS SP-D	0.038	...	0.25	...	0.060	<0.001	<0.0005	...	...	0.006	...	...	...	...	...	...	...	50g
4.2 Zn/Al		Pb	Mg	Al	Cd	Fe	Sn	Cu	Ni	Mn	Cr	In	Tl	Sb	Si	Ce	La	Size	
	C42 X Z10A	0.002	<0.001	4.3	<0.001	0.002	0.002	0.003	0.001	<0.001	...	...	...	...	...	...	...	...	50g
CRM	C42 X Z30H	0.006	0.0287	3.74	0.0048	(0.047)	0.0030	0.159	0.0102	0.0256	0.0020	...	...	0.003	0.015	(0.0003)	(0.0003)	...	50g
	C42 X Z40A	0.01	0.05	3.25	0.003	0.005	0.003	0.057	0.017	0.014	...	...	...	...	...	...	...	...	50g
CRM	C42 X Z40B	0.011	0.058	3.51	0.008	0.014	0.006	0.063	0.017	0.008	...	(0.0014)	(0.0026)	0.002	...	0.021	0.019	...	50g
CRM	C42 X Z50A	0.0047	0.073	4.22	0.0021	0.029	(0.0023)	0.100	0.019	0.0070	0.0018	0.0050	0.0056	0.005	...	0.011	0.009	...	50g
CRM	C42 X Z70A	0.0097	0.0095	4.39	0.030	0.027	0.012	0.0249	0.0067	0.0045	(0.0001)	...	...	...	0.006	0.053	0.047	...	50g
CRM	C42 X Z80A	0.0025	0.0033	7.03	0.0003	0.013	(0.0023)	0.0215	0.0019	0.0014	(0.0002)	...	...	...	0.013	0.0081	0.0079	...	50g
4.3 Zn/Al/Cu		Pb	Mg	Al	Cd	Fe	Sn	Cu	Ni	Mn	Cr	Ti	Bi	Sb	Si	In	Tl	Size	
	C43 X Z20A	0.008	0.042	3.2	0.01	0.02	0.01	0.89	0.003	0.008	...	...	...	...	...	...	...	...	50g
CRM	C43 X Z20K	0.0065	0.073	3.79	0.0068	0.021	0.003	1.04	0.012	0.0059	0.0021	...	(0.0022)	0.008	0.009	0.003	0.004	...	50g
CRM	C43 X Z30L	0.0132	0.0143	3.64	0.0132	0.061	0.0125	1.59	0.0061	0.0125	0.004	...	0.018	0.003	0.005	(0.0019)	(0.0035)	...	50g
CRM	C43 X Z40B	(0.0024)	0.043	4.76	0.0025	(0.064)	(0.0023)	3.21	0.0286	0.088	0.0063	0.0017	0.012	0.0043	(0.0065)	...	...	...	50g
CRM	C43 X Z50A	0.0045	0.041	3.05	0.0111	0.023	0.0032	6.05	0.0021	0.0030	0.0010	0.0009	...	...	0.003	...	...	...	50g
CRM	C43 X Z60A	0.0016	0.0256	4.02	0.0016	0.019	0.0053	2.72	0.029	0.0006	0.0006	0.0013	0.0049	0.0045	0.012	...	...	...	50g
	C43 X Z110A	0.015	0.05	11.2	0.014	0.008	0.02	0.47	0.006	0.01	...	...	...	...	...	...	...	...	50g
CRM	C43 X Z120D	0.0133	0.027	10.05	0.0114	0.047	0.0089	0.796	0.0035	0.0059	0.0023	0.0054	(0.002)	0.0039	(0.008)	...	...	...	50g
CRM	C43 X Z130D	0.0125	0.0204	9.55	0.0100	0.05	0.0111	0.981	0.0109	0.0070	...	...	...	0.009	(0.0048)	...	...	...	50g
CRM	C43 X Z140D	0.0082	0.0026	8.24	0.0067	0.015	0.0053	1.23	0.0052	0.0033	0.0046	0.0012	0.010	0.011	0.010	...	...	...	50g
	C43 X Z150 A	0.003	0.01	8.1	0.002	0.004	0.004	1.37	0.006	0.002	...	...	...	...	...	...	...	...	50g
CRM	C43 X Z150 C	0.0054	0.0024	7.36	0.0030	0.009	0.004	1.53	0.0019	0.0020	0.0025	0.0020	0.005	0.005	(0.011)	...	...	...	50g
	C43 X Z210A	0.007	0.06	24.9	0.01	0.05	0.01	2.05	0.002	0.009	...	...	...	...	...	...	...	...	50g
CRM	C43 X Z210C	0.012	0.047	23.5	0.027	0.12	0.0140	1.81	0.043	0.0104	0.0087	0.013	...	...	0.022	...	...	...	50g
	C43 X Z230A	0.002	0.01	29.8	0.002	0.008	0.003	2.73	0.003	0.002	...	...	...	...	...	...	...	...	50g
CRM	C43 X Z230C	0.0028	0.0133	31.4	0.0024	(0.24)	(0.002)	2.74	0.0115	0.0124	0.036	0.0026	...	...	0.061	...	...	...	50g

C5. Aluminium Base

Chippings

5.10	Al/Cu/Mg; 5.11	Al/Mg; 5.14	Al/Mn														Typical	
		Cu	Mg	Si	Fe	Mn	Ni	Zn	Pb	Sn	Ti	Cr	V	Be	Others		Alloy Type	Size
	C510 CG 02220	2.17	1.56	0.88	1.18	0.14	1.15	0.30	...	...	0.041	...	...	...				50g
	C510 CG 02221	4.46	1.51	0.34	0.38	0.36	0.045	0.28	...	...	0.055	...	...	...				50g
	C511 CG 02201	0.043	6.02	0.14	0.18	0.60	0.038	0.20	...	...	0.076	...	...	0.0022				50g
CRM	C511 X G05H10H	0.32	2.02	0.42	0.79	0.012	0.123	0.47	0.023	0.179	0.205	0.240	0.053	(0.0002)	Cd 0.013			25g
CRM	C511 X G05H20G	0.37	3.12	0.35	0.60	0.186	0.22	0.26	0.068	0.154	0.079	0.30	(0.001)	0.004	Cd 0.002, Ga 0.012			25g
	C511 X G05H30A	0.10	5.35	0.24	0.54	0.38	0.09	0.09	0.10	0.10	0.07	0.06	...	...			LM 5	25g
CRM	C511 X G05H30H	0.093	3.97	0.21	0.405	0.396	0.090	0.092	0.107	0.098	0.249	0.095	...	0.0074				25g
CRM	C511 X G05H40F	0.056	5.16	0.11	0.14	0.547	0.040	0.062	0.152	0.144	0.048	0.029	...	0.015				25g
CRM	C511 X G10H40B	0.052	10.4	0.33	0.19	0.12	0.085	0.21	0.10	0.051	0.097	0.15	...	0.023	B 0.004			40g
CRM	C511 X G3000B20B	0.20	0.68	0.23	0.335	0.81	0.063	0.098	0.137	0.105	0.111	0.200	<0.005	0.0017	Co 0.007			40g
CRM	C511 X G3000B30B	0.120	0.80	0.35	0.376	1.06	0.116	0.140	0.062	0.028	0.22	0.056	<0.005	0.005	Co 0.008			40g
CRM	C511 A 262/1	0.039	10.75	0.16	0.2	0.084	0.071	0.085	(0.05)	(0.04)	0.005	(0.002)	...	<0.01				100g
CRM	C511 A 263/2	0.019	4.67	0.14	0.26	0.36	...	0.056	...	...	0.022	0.074	...	<0.001				100g
CRM	C514 X 909110C	0.046	(0.001)	0.035	0.081	6.93	(0.0026)	0.029	0.016	0.013	0.0017	<0.005	...	...	Zr 0.184			40g
CRM	C514 X 909130D	0.623	0.149	0.74	0.94	11.3	0.143	0.225	0.114	0.019	0.425	0.106	...	...	Zr <0.005			40g

C6. Magnesium Base

Chippings

6.1		Magnesium with Impurities																
		Al	Zn	Mn	Cu	Si	Fe	Ni	Ca	Sn	Pb	Ag	Be	Cd	Ce	La		Size
CRM	C61 X MgP10A	0.0144	(0.0017)	0.0035	0.0008	0.005	0.027	...	<0.001	<0.002	<0.002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005		30g
CRM	C61 X MgP20A	0.065	0.0122	0.0118	0.0109	0.029	0.0061	0.0029	0.0139	0.0073	0.0061	0.003	<0.0001	0.0063	0.0019	0.0014		30g
CRM	C61 X MgP30A	0.096	0.0196	0.0135	0.0296	0.046	0.014	0.0049	0.053	0.0154	0.0148	0.0125	<0.0001	0.0154	0.0055	0.0038		30g
6.3		Mg/Mn																
		Al	Zn	Mn	Cu	Si	Fe	Ni	Ca	Sn	Pb	Zr	Ag	Cd	Ti			Size
	C63 X MgE20A	0.056	0.04	1.58	0.058	0.035	0.009	0.012	(0.003)	0.011	0.013	...	...	...	...			30g
CRM	C63 X MgE30B	0.015	0.022	2.36	0.012	0.01	0.004	0.0023	0.13	0.0057	0.005	<0.001	0.005	0.001	(0.0026)			30g
6.5		Mg/Al/Zn																
		Al	Zn	Mn	Cu	Si	Fe	Ni	Ca	Sn	Pb	Ag	Be	Cd	Ce	La	Sr	Size
CRM	C65 X MgA10H	3.83	1.40	0.20	0.148	0.17	(0.01)	0.008	0.008	0.090	0.016	...	0.00055	...	...	...	0.0007	30g
CRM	C65 X MgA10J	5.45	1.26	0.060	0.221	0.20	0.021	0.021	0.029	0.072	0.012	0.012	0.006	0.013	0.009	0.007	...	30g
CRM	C65 X MgA20G	7.19	0.95	0.14	0.112	0.13	0.011	0.003	(0.005)	0.050	0.006	...	0.0007	...	...	...	...	30g
	C65 X MgA30A	8.4	0.60	0.27	0.06	0.12	0.03	0.009	0.004	0.01	0.01	...	...	...	...	...	...	30g
CRM	C65 X MgA30H	8.97	0.70	0.152	0.006	0.044	0.004	(0.0015)	(0.0005)	0.003	(0.0036)	...	0.0007	...	...	...	<0.0001	30g
CRM	C65 X MgA40H	11.70	0.0047	0.0061	0.062	0.024	0.008	(0.0036)	0.033	0.0101	0.0040	0.0186	0.0011	...	...	...	...	30g
CRM	C65 X MgA50A	8.01	0.411	0.399	0.020	0.110	0.006	0.020	0.013	0.013	0.043	0.0050	0.0013	0.0035	...	...	0.00034	30g
CRM	C65 X MgB10D	2.39	1.711	0.68	0.20	0.17	0.016	0.013	0.41	0.011	0.017	0.029	0.0008	0.070	(0.014)	(0.013)	...	30g
	C65 X MgB20A	2.32	0.95	0.44	0.096	0.06	0.015	0.005	0.008	0.012	0.012	...	...	...	...	...	...	30g
CRM	C65 X MgB30B	3.12	0.60	0.012	0.021	0.013	0.008	0.0018	0.029	0.005	0.004	(0.0023)	0.0030	0.011	...	...	...	30g
6.6		Mg/Zn																
		Al	Zn	Mn	Zr	Cu	Si	Fe	Ni	Ca	Sn	Pb	Ag	Be	Total R.E.	Others		Size
CRM	C66 X MgD30B	0.039	1.97	0.282	(0.029)	0.058	0.017	0.023	(0.002)	(0.05)	0.008	0.006	(0.004)	(0.0003)	...			30g
	C66 X MgD40A	0.006	2.80	0.02	0.44	0.01	0.01	0.003	0.002	0.004	0.003	0.017	...	...	...			30g
	C66 X MgC20A	0.007	5.93	0.016	0.45	0.15	0.007	0.013	0.016	0.006	0.010	0.018	...	...	...			30g
CRM	C66 X MgC40C	0.039	6.80	0.167	<0.001	0.0023	0.06	0.006	0.001	<0.001	0.021	0.003	0.0074	0.0001	...	Sr 0.00014		30g
CRM	C66 A 307	(0.008)	2.08	0.006	0.56	0.005	<0.001	0.002	<0.001	...	<0.001	...	...	...	2.84			100g
CRM	C66 A 316	8.01	0.68	0.28	...	0.04	0.055	0.009	0.004	...	0.005	0.024	...	...	...			100g
6.7		Mg/Rare Earth																
		Al	Zn	Mn	Zr	Th	Cu	Si	Fe	Ni	Sn	Pb	Ca	Total R.E.				Size
	C67 X MgF30A	0.01	3.18	0.015	0.48	...	0.03	0.005	0.009	0.002	0.006	0.017	0.006	2.4				30g
	C67 X MgG40A	0.001	5.47	0.015	0.72	1.85	0.06	0.003	0.003	0.007	0.005	0.009	0.001	...				30g
6.8		Mg/Ag/Rare Earth																
		Al	Zn	Mn	Zr	R.E.	Th	Cu	Si	Fe	Ni	Ag						Size
	C68 X MgH40A	0.004	0.17	0.015	0.46	2.4	...	0.03	0.002	0.001	0.004	2.05						30g
	C68 X MgL10A	0.002	0.009	0.016	0.54	2.09	0.24	0.013	0.001	0.009	0.005	1.41						30g

C7. Tin Base

Chippings

7.1 Tin with Impurities																		
		Sb	As	Bi	Pb	Cu	Fe	Ni	Al	Cd	Zn	In	Te	Ag	Au	Sn	Size	
CRM	C71 X SR10D	0.013	0.004	0.010	0.030	0.0088	0.0017	0.001	0.0007	0.0070	0.0071	0.014	0.0032	0.009	0.003	...	50g	
CRM	C71 X SR20D	0.057	0.041	0.056	0.127	0.054	0.0027	0.0096	0.003	0.041	0.015	0.049	0.022	0.025	0.0083	...	50g	
CRM	C71 X SR30E	0.15	0.061	0.105	0.30	0.099	0.003	0.0009	(0.0009)	0.021	0.014	0.028	0.008	0.0069	0.003	...	50g	
	C71 A 192h	(0.0007)	...	...	(0.0007)	(0.00007)	(0.0002)	<0.00005	...	...	(0.00006)	...	...	...	...	(99.997)	100g	
7.2 Tin-Antimony																		
		Sb	As	Bi	Pb	Cu	Zn	Cd	Fe	Sn								Size
CRM	C72 X SA50R	4.93	0.015	0.006	0.08	0.018	0.035	0.05	(0.004)	...								50g
CRM	C72 CG 02301	7.87	0.018	0.014	1.32	4.06	...	...	...	86.61								100g
CRM	C72 CG 02302	11.81	0.020	0.012	1.2	6.72	...	...	...	80.27								100g
7.3 Tin White Metal																		
		Sb	As	Bi	Pb	Cu	Fe	Ni	Al	Cd	Zn	In	Ag	Co	S	Sn	Size	
CRM	C73 X SC40A	6.02	0.005	0.218	0.514	3.05	0.011	0.017	0.005	0.052	0.008	0.011	0.042	0.0035	(0.003)	...	50g	
CRM	C73 X SC70A	14.01	0.047	0.009	0.356	6.51	0.046	0.008	0.001	0.0018	(0.003)	0.014	0.006	0.0160	<0.001	...	50g	
CRM	C73 X SC90A	8.18	0.53	0.066	0.20	8.47	0.037	0.008	<0.001	0.078	(0.003)	0.010	0.004	0.0030	(0.008)	...	50g	
CRM	C73 X SC110A	11.63	0.31	0.537	0.040	10.54	0.072	0.49	<0.002	1.63	0.065	...	0.060	...	...	...	50g	
CRM	C73 A 178/2	9.45	0.15	0.11	3.18	4.58	0.024	0.17	0.005	0.14	0.040	...	(0.02)	...	...	82.2	100g	
7.4 Tin-base (Lead-Free) Solders																		
		Cu	Ag	Pb	Sb	Bi	Zn	Ni	Fe	As	Cd	Se	Sn					Size
CRM	C74 X E A	3.01	0.742	0.0262	0.027	0.0097	<0.001	0.011	0.052	0.088	0.0021	0.0025	rem					50g
CRM	C74 X HA A	0.604	2.69	0.025	1.98	0.057	2.59	0.016	0.052	0.0076	0.0027	...	rem					50g
CRM	C74 X HB A	4.75	0.070	0.058	5.00	0.008	0.018	1.12	0.12	0.026	0.011	...	rem					50g

C8. Lead Base

Chippings

8.2 Pb/Ag		Sn	Sb	Bi	Cu	As	Ag	Zn	Cd	Fe	Al	In					Size	
CRM	C82 X Ag 1.5E	0.04	0.39	0.06	0.27	0.006	1.55	0.004	...	...	...	...					100g	
CRM	C82 X Ag 3.5D	0.24	0.11	0.27	0.075	0.022	3.48	0.001	0.004	0.001	<0.001	0.045					100g	
CRM	C82 X Ag 6.0A	0.50	0.48	0.52	0.18	0.021	5.93	0.007	0.010	<0.001	<0.001	0.008					100g	
8.3 Pure Lead		ppm Sn	ppm Sb	ppm Bi	ppm Cu	ppm As	ppm Ag	ppm Zn	ppm Cd	ppm Ni	ppm Te	ppm Se	ppm TI	ppm Fe	ppm Al	% Pb	Size	
CRM	C83 F 286B	<0.05	0.10	21.5	1.49	<0.002	0.015	<0.1	0.125	0.041	<0.1	<0.05	2.5	...	...	...	160g	
CRM	C83 F 287B	<0.05	0.04	67.3	0.98	<0.003	15.2	<0.1	0.36	0.024	<0.2	<0.05	0.73	...	...	...	160g	
CRM	C83 F 288B	30.6	32.5	215.8	19.3	55.7	30.5	8.2	33.3	4.57	32.8	<0.2	2.3	...	...	...	160g	
CRM	C83 A 210e	<20	<20	...	(6)	...	...	<50	...	<10	...	...	...	<5	10	(99.996)	Bar 500g	
8.3.1 Lead with Impurities																		
		Sn	Sb	Bi	Cu	As	Ag	Zn	Cd	Ni	Te	In	Ca	Na	Se	Au	Size	
CRM	C83 X PR10G	0.004	0.005	0.080	0.006	0.050	0.088	0.002	0.075	0.001	0.003	0.045	0.004	0.01	<0.002	0.008	100g	
CRM	C83 X PR40F	0.009	0.012	0.014	0.015	(0.002)	0.014	0.005	0.010	0.013	0.025	0.005	0.0026	0.001	0.003	0.002	100g	
CRM	C83 X PR70A	0.21	0.84	0.50	0.22	0.049	0.30	0.002	0.49	0.005	0.002	0.077	(0.001)	0.004	(0.01)	(0.001)	100g	
CRM	C83 X PR80A	0.59	0.25	1.13	0.083	0.17	0.55	0.007	0.260	0.003	(0.002)	0.74	<0.002	0.019	(0.012)	(0.011)	100g	
8.4 Pb/Sn/Ca (Battery Alloys)		Sn	Sb	Bi	Cu	As	Ag	Zn	Cd	Ni	Te	Al	Ca					Size
CRM	C84 X BA10E	1.05	0.0018	0.0148	0.0019	(0.0004)	0.0099	0.0031	0.0026	0.0002	(0.0004)	0.0135	0.099					100g
CRM	C84 X BA20B	0.51	0.002	0.024	0.003	<0.0005	0.008	0.019	0.0052	(0.0002)	<0.002	...	0.062					100g
CRM	C84 X BA40B	0.108	0.061	0.074	0.031	(0.0008)	0.003	(0.0003)	0.010	0.0007	0.030	...	(0.0014)					100g
CRM	C84 X BA80A	0.293	0.0009	0.019	0.0007	(0.0004)	0.0043	0.0013	0.0010	...	<0.002	0.021	0.157					100g
8.5 Various Lead Alloys; 8.6 Lead Babbitt		Sn	Sb	Bi	Cu	As	Ag	Ni	Cd	Zn	In	Te	Se	Fe	S	Pb	Size	
CRM	C85 X ANTH D	1.32	6.32	0.059	0.0234	0.487	0.0058	0.0035	0.0052	0.0004	...	0.010	0.017	0.0041	(0.0030)	...	100g	
CRM	C85 X HRH A	0.87	1.14	0.090	0.080	0.73	0.247	0.0009	0.0002	...	...	0.002	0.035	...	(0.0008)	...	100g	
CRM	C85 X 0616Pb10A	0.070	1.76	0.026	0.047	0.068	0.0023	0.0010	0.0022	0.0009	...	(0.0016)	0.017	<0.001	...	...	100g	
	C86 CG 02401	15.97	16.09	0.024	1.96	0.014	...	...	...	...	...	...	...	...	...	65.72	100g	
	C86 CG 02402	5.69	15.02	0.0075	2.88	0.012	...	...	...	...	...	...	...	...	...	76.22	100g	
	C86 A 177/2	5.07	10.1	0.028	0.12	0.05	(0.008)	0.007	...	...	...	...	...	...	...	84.5	100g	
CRM	C86 X PSS20A	6.33	8.16	0.054	0.118	1.42	0.004	0.0080	0.069	<0.002	(0.002)	...	...	<0.001	...	...	100g	
CRM	C86 X PSS40A	10.69	16.97	0.120	0.328	0.278	(0.006)	0.0031	0.047	<0.002	0.013	...	...	(0.0013)	...	...	100g	

C9. Solders

Chippings

9.1 Sn/Pb Solders		Sn	Sb	Bi	Cu	As	Ag	Fe	Zn	Cd	Ni	Au	In	Te	Pb	Size
CRM	C91 X S30 PR30C	30.88	0.269	0.294	0.102	0.0126	0.024	0.0016	(0.003)	0.0115	0.0269	0.0063	0.0085	...	...	100g
CRM	C91 X S63 PR00A	59.8	0.013	0.007	0.023	0.008	0.010	(0.0026)	<0.001	0.012	<0.005	0.018	0.01	<0.001	rem	100g
	C91 X S63 PR10F	61.30	0.075	0.062	0.252	(0.001)	0.0065	0.012	0.0032	0.0057	0.0010	0.040	0.028	0.0008	rem	100g
CRM	C91 X S63 PR20G	62.6	0.614	0.162	0.052	0.080	0.057	0.030	0.007	0.0168	0.0073	0.090	0.019	0.009	rem	100g
CRM	C91 X S63 PR40A	66.8	0.093	0.030	0.021	<0.002	0.030	<0.005	<0.001	0.021	<0.005	0.05	0.014	0.006	rem	100g
9.3 Sn/Pb/Sb Solders		Sn	Sb	Bi	Cu	As	Ag	Fe	Zn	Cd	Ni	In	Te	Pb	Size	
CRM	C93 X S30 APR10C	28.58	2.54	0.059	0.192	0.010	0.0144	(0.012)	(0.0004)	0.0014	0.0010	0.0094	0.0024	...	...	100g
CRM	C93 X S30 APR20C	30.68	1.80	0.168	0.062	0.0178	0.049	0.0026	0.028	0.0061	0.042	0.0199	0.0102	...	...	100g
CRM	C93 X S30 APR30C	33.0	0.96	0.28	0.008	0.018	0.021	0.003	0.0053	0.009	0.010	...	...	rem	...	100g

C10. Titanium Base

Chippings

10.1 Various Titanium Alloys																	Typical	
		Al	Mo	Si	Sn	Zr	V	Fe	Nb	B	Cr	Cu	W	Ni	N	C	Alloy Type	Size
	C101 P 3180A	6.5	...	...	...	...	4.08	0.19	...	...	...	...	...	...	...	...	318	50g
	C101 P 5510A	4.04	3.8	0.48	3.89	...	...	0.05	...	...	...	...	...	...	...	...	551	50g
	C101 P 6790A	2.35	1.0	0.2	10.88	4.88	...	0.02	...	...	...	...	...	...	...	...	679	50g
	C101 P 6850A	6.11	0.48	0.21	...	5.05	...	0.02	...	...	...	...	...	...	...	...	685	50g
	C101 P 8290A	5.62	0.25	0.28	3.49	2.98	...	0.02	0.97	...	...	...	...	...	...	...	829	50g
	C101 P 8110A	7.97	0.97	...	...	...	1.02	0.08	...	...	...	...	...	...	...	...	811	50g
CRM	C101 A 356	6.25	0.0020	(0.0200)	(0.0155)	<0.0005	4.05	0.124	...	<0.0005	0.01123	0.0055	(0.0010)	0.0070	0.0103	...	50g	
CRM	C101 A 357	5.46	0.053	(0.0500)	(0.0620)	(0.0455)	3.53	0.202	...	(0.0013)	0.0521	0.0537	(<0.001)	0.0511	0.0148	...	50g	
CRM	C101 CG 02501	6.42	2.53	0.28	...	0.276	...	0.473	...	...	1.55	...	...	...	0.010	0.013	50g	
CRM	C101 CG 02502	6.33	3.40	0.275	...	1.71	...	0.057	...	...	...	...	...	...	0.021	0.0123	50g	

C11. Cobalt Base

Chippings

11.1 - Various Cobalt Alloys		C	Si	S	Mn	Ni	Cr	W	Nb	Fe	Cu	Pb	Sn	Mo	Al	B	Co	N	Size
	C111 X 126670A	0.38	0.064	...	0.97	1.12	19.7	10.2	1.53	2.20	0.11	0.03	0.10	...	...	...	...	...	30g
	C111 X 126690A	0.51	0.62	...	0.54	0.57	22.7	12.3	2.59	1.2	0.006	0.001	0.01	...	...	...	...	...	30g
	C112 X 149360A	0.50	0.12	...	0.74	1.57	23.0	0.95	...	0.44	...	...	...	4.97	0.50	...	...	...	30g
	C112 X 149430A	0.23	0.72	...	1.21	0.09	30.7(1)	0.07	...	0.18	...	...	...	8.0(3)	<0.01	...	...	...	30g
	C113 X X4010A	0.53	1.25	...	0.20	11.5(1)	26.9	7.14	...	0.65	...	...	...	...	...	...	...	...	30g
	C113 X X4020A	0.42	0.28	...	1.13	9.64	24.75	7.95	...	2.17	...	...	...	...	...	...	...	...	30g
	C119 X COB10E	0.009	0.41	0.0015	0.52	22.8	24.3	11.1	...	16.4	<0.005	...	...	...	0.39	...	...	0.188	50g
CRM	C119 X ST30G	2.04	0.95	0.020	0.62	2.44	30.4	10.1	<0.05	1.48	0.026	(0.002)	(0.03)	0.45	...	0.0022	...	0.104	50g
CRM	C119 TI E378-1(C)	1.181	1.172	0.0055	0.0579	0.617	28.22	4.43	...	0.606	...	...	...	...	...	...	63.52	...	100g
CRM	C119 DB E328-1	0.390	0.629	0.003	1.395	20.38	20.54	4.16	3.61	2.40	0.013	...	...	4.41	0.070	...	41.65	0.027	100g

C13. Carbides

Chippings

13.1 Various Carbides		Total C	Free C	Ni	Co	Fe	Nb	Al	Ca	Cr	V	Ta	Ti	Type	Size
	C131 M BS107	6.14	(0.04)	0.0008	0.0013	0.008	(0.014)	0.0004	0.001	0.0014	0.15	...	...	Tungsten Carbide	100g
CRM	C131 A 352/1	6.154	0.036	...	...	0.0029	...	...	...	...	...	...	...	Tungsten Carbide	100g
	C13 MA 307	6.16	...	...	...	...	...	...	...	...	...	...	...	Tungsten carbide	150g
CRM	C131 B 276b	6.10	(0.04)	...	...	...	...	...	...	...	...	...	...	Tungsten Carbide	75g
CRM	C131 B 887	(5.5)	...	<0.01	10.35	<0.05	<0.05	...	...	...	...	...	<0.05	Cemented Carbide W83-Co10	100g
CRM	C131 B 888	(4.6)	...	<0.05	24.7	<0.05	<0.05	...	...	...	...	4.77	(0.04)	Cemented Carbide W64-Co25-Ta5	100g
CRM	C131 B 889	(6.0)	...	<0.05	9.50	<0.05	<0.05	...	...	...	...	4.03	4.03	Cemented Carbide W/Co/Ta/Ti	100g

17. Gases In Metals

Balls/Pins/Discs

17.1.1 Steel		ppm O	ppm N		Sample Form	Typical Alloy Type	Quantity				
17 MA 644		3	171	These values may change as the batches are remade.	1g Pins	Steel	100 pins				
17 MA 645		60	58		1g Pins	Steel	100 pins				
17 MA 646		31	677		1g Pins	Steel	100 pins				
17 MA 1647		41	1797		1g Pins	Steel	100 pins				
17 MA 1648		180	73		1g Pins	Steel	100 pins				
17 MA 1649		n/a	23		1g Pins	Steel	101 pins				
17 MA 1650		76	97		1g Pins	Steel	100 pins				
17 MA 1651		64	213		1g Pins	Steel	100 pins				
17 MA 1652		54	532		1g Pins	Steel	100 pins				
17 MA 1653		14	34		1g Pins	Steel	100 pins				
These are nominal values. Exact chemistry is given with the product.				Each grade is also available as 0.5g pins.							
Each pin is plated to ensure stable and accurate oxygen values											
17 DB E099-1		8	78		1g Balls	Ball-Bearing Steel	100 balls				
17 DB E026-1		31	53		8mm Ø x 80mm Rod	Unalloyed	1 rod				
17 DB E026-2		25	42		8mm Ø x 80mm Rod	Unalloyed	1 rod				
17 DB E027-1		84	157		8mm Ø x 80mm Rod	Unalloyed	1 rod				
17 DB E028-1		113	29		8mm Ø x 80mm Rod	Unalloyed	1 rod				
17 DB E029-1		312	83		8mm Ø x 80mm Rod	Unalloyed	1 rod				
17 DB E284-2		99	151		Chippings	Stainless Steel	100g				
17.1.2 Steel		ppm H	ppm N	ppm O	Others	Sample Form	Typical Alloy Type	Quantity			
17 MA 546		0.61	...	...		1g Pins	Steel	100 pins			
17 MA 555		2.5	...	...		1g Pins	Steel	100 pins			
17 MA 556		5.75	...	...		1g Pins	Steel	100 pins			
17 MA 557		3.7	425	18		1.07g Pins	Steel	50 pins			
These pins are Ni plated. These are nominal values - exact chemistry is given with the product.											
17 M BSH0N		2.02	362.7	56.4	C 490ppm, S 25ppm	1g pins	AISI 302	250 pins			
17 JS GS1D	1.7 ± 0.2		254	46.0 ± 3.8		5mm Ø x 230mm Rods		8 rods			
17 JS GS2C	...		145	17.5		5mm Ø x 230mm Rods		8 rods			
17 JS GS5C	...		29	125		5mm Ø x 230mm Rods		8 rods			
17 JS GS6B	...		...	3.4		1.04g Pins		150 pins			
17 CG 02606	6.5		...	...		2g Balls		100 pcs			
17 CG 02607-2B	4.7		...	...		2g Balls		20 pcs			
17 CG 02608	2.4		...	...		2g Balls		100 pcs			
17 CG 02609			51	12		1g Balls		50 pcs			
17 CM 3001	5.9		184	68				20 pcs			
17 CM 3012-3	6.5		...	...		2g Balls		20 pcs			
17 CM 3012-4	6.5		...	...		1g Balls		20 pcs			
17 CM 3013	4.5		...	...		1g Balls		20 pcs			
17 CM 3014-1	4.4		...	...		2g Balls		20 pcs			
17 CM 3014-2	4.4		...	...		1g Balls		20 pcs			
17 CM 3015-1	2.4		...	...		1g Balls		20 pcs			
17 CM 3016-1	2.4		...	...		2g Balls		20 pcs			
17 CM 3031	...		...	214		0.64g		20 pcs			
17 CM 3032	...		360	187		1g Balls		20 pcs			
17 CM 3033	...		184	64		1g Balls		20 pcs			
17 CM 3034	...		231	39		1g Balls		20 pcs			
17 CM 3036	...		256	62.4		0.5g Balls		20 pcs			
17 CM 3037	...		100	137		0.45g Balls		20 pcs			
17 CM 3038	...		297	244		0.5g Balls		20 pcs			
17 CM 3039	...		204	353		0.5g Balls		20 pcs			
		ppm O	% N	% Sol Al	% C	% Mn	% Si	% Cr	% Ni	Sample Form	Quantity
CRM 17 J 31		15	...	0.020	1.03	0.36	0.32	...	...	10mm Ø x 500mm Rod	1 rod
CRM 17 J 32		28	...	0.008	1.02	0.30	0.32	1.38	...	10mm Ø x 500mm Rod	1 rod
CRM 17 J 34		68	...	0.047	0.13	1.40	0.31	...	...	10mm Ø x 500mm Rod	1 rod
CRM 17 J 35		198	...	0.001	0.04	1.51	0.31	17.3	9.9	10mm Ø x 500mm Rod	1 rod
		ppm N	ppm O	ppm H						Sample Form	Quantity
17 S SS-1		5-10	410-450	...	Nominal ranges. Exact values will be supplied with product					0.5g Pins	100
17 S SS-2		10-20	100-120	...						1.0g Pins	100
17 S SS-3		55-70	165-185	...						1.0g Pins	100
17 S SS-4		135-145	10-15	...						1.0g Pins	100
17 S SS-6		10-20	580-640	...						1.0g Pins	100
17 S SS-5		...	...	6.5-8	Nominal range.					10g Rods	10
17 S SMN-11		4-6	...	...	Nominal range.					Chippings	150g
17 S SMO-10		...	1691	...						0.5g pin	100
CRM 17 S GS-3C		32	34.6	...						5mm Ø x 230mm Rod	1
CRM 17 J 47		76	1.1%	...						Powder	35g

17. Gases In Metals

Balls/Pins/Discs

17.2 Nickel	ppm O	ppm S	ppm N	ppm C	Sample Form	Typical Alloy Type	Quantity
CRM 172 F 099	8.4	...	1.1	...	2g Cubes	Pure Nickel	25 cubes
CRM 172 PN Ni/1	...	31	...	1260	Chippings	Nickel Alloy	100g
CRM 172 PN Ni/2	...	149	...	128	Chippings	Nickel Alloy	100g
17.3 Copper	ppm O	ppm S			Sample Form	Typical Alloy Type	Quantity
CRM 173 F 022A	138	...			26mm Ø x 9mm Disc	Electrolytic tough pitch	1 disc
CRM 173 F 022B	138	...			26mm Ø x 9mm Disc	Electrolytic tough pitch	1 rod
CRM 173 F 054R	0.47	...			26mm Ø x 9mm Disc	Low Oxygen	1 rod
CRM 173 F 058	390	...			26mm Ø x 9mm Disc	Continuous cast	1 rod
173 MA 147	13	26	These values may change as the batches are remade.		1g Pins		100 pins
173 MA 148	498	12			1g Pins		100 pins
173 MA 149	305	6			1g Pins		100 pins
	ppm O	ppm S	ppm P		Sample Form		Quantity
173 DB 379/1	38	...	...		40mm Ø x 30mm Disc		1 disc
173 DB 379/2	212	...	...		40mm Ø x 30mm Disc		1 disc
173 DB 379/3	378	...	...		40mm Ø x 30mm Disc		1 disc
CRM 173 PN Cu10/I	3.8	...	...		6mm Ø Rod		1 rod
CRM 173 PN Cu600/I	581	...	...		6mm Ø Rod		1 rod
CRM 173 PN CuS-10	...	7.5	...		Chippings		150g
CRM 173 PN CuS-20	...	23.1	...		Chippings		150g
CRM 173 F 017A	...	...	6.9		42mm Ø x 30mm Disc		1 disc
CRM 173 F 017B	...	10.4	...		Chippings		50g
173 DB 373/1	...	...	33.8		50mm Ø x 30mm Disc		set only
173 DB 373/2	...	...	226.5		50mm Ø x 30mm Disc		
173 DB 373/3	...	...	455.7		50mm Ø x 30mm Disc		
17.5 Aluminium	ppm O	ppm C	ppm B	ppm H	Sample Form	Typical Alloy Type	Quantity
175 US US1001	...	...	...	0.18	12mm Ø x 250mm Rod	Al-6Cu	1 rod
175 US US1002	...	...	...	0.16	12mm Ø x 250mm Rod	Al-6Cu	1 rod
175 US US1003	...	...	...	0.23	12mm Ø x 250mm Rod	Al-1Mg	1 rod
175 US US1004	...	...	...	0.23	12mm Ø x 250mm Rod	Al-6Mg	1 rod
17.10 Titanium	ppm O	ppm N	ppm H		Sample Form	Typical Alloy Type	Quantity
CRM 1710 F 024B	608	117	...		0.4g cube	Pure Titanium	25 pcs
CRM 1710 F 024C	608	117	...		0.2g cube	Pure Titanium	25 pcs
CRM 1710 F 059A	1750	...	...		Ø 26mm x 9mm Disc	Ti 6Al 4V alloy	1 disc
CRM 1710 F 059B	1750	...	...		0.2g cube	Ti 6Al 4V alloy	25 pcs
CRM 1710 F 318	...	...	12.2		Ø 7mm x 1mm Disc	Pure Titanium	25 pcs
1710 MA 637	597	101	16	These values may change as the batches are remade.	0.1g Pins		100 pins
1710 MA 642	1500	120	49		0.25g Pins		100 pins
1710 MA 648	1238	49	142		0.1g Pins		100 pins
1710 MA 649	810	119	200		0.25g Pins		100 pins
1710 MA 650	1913	330	62		0.25g Pins		100 pins
1710 MA 651	1275	51	29		0.1g Pins		100 pins
1710 CG 02601	...	170	...		Chippings	Pure Titanium	35g
1710 CG 02602	...	200	...		Chippings	Ti 5Al 4V alloy	35g
1710 CG 02604	2730	230	...		2x3x100mm Strip	Pure Titanium	3 strips
1710 CG 02618	...	130	...		Chippings	Ti 15Al 3V alloy	20g
17.12 Zirconium	ppm O	ppm N	ppm C	ppm H	Sample Form	Typical Alloy Type	Quantity
CRM 1712 F 276	1541	41	107.6	...	4.5mm Ø x 2mm Pins	Zircaloy 4	100 pcs
1712 MA 640	1480	51	...	11	0.10g Pins		100 pcs

18. Carbon,Sulphur & Nitrogen in Steels Chippings/Pins

18.1	Cast Iron	% C	% S		Sample Form	Typical Alloy Type	Weight
	18 MA 301	2.12	0.01	These pins are Ni plated. These are nominal values. Exact chemistry is given with the product.	Chippings	Cast	150g
	18 MA 302	3.31	0.03		Chippings	Grey	150g
	18 MA 303	3.95	0.01		Chippings	Nodular	150g
	18 MA 304	4.20	0.02		Chippings	Ductile	150g
	18 MA 305	2.75	0.02		Chippings	Malleable	150g
	18 MA 306	3.50	0.01		Chippings	Nodular	150g
	18 MA 309	3.70	0.01		Chippings	Nodular	150g
	18 MA 310	3.38	0.10		Chippings	Cast	150g
	18 MA 673	0.0004	0.001		Chippings	Pure Iron	454g
18.3	Steel	% C	% S	% N	Sample Form	Typical Alloy Type	Quantity
	18 M BS CSN 2-1	0.476	0.034	0.064	1.00g Pins	AISI 440A	500 pins
	18 M BS CSN 2-2	0.548	0.028	0.076	1.00g Pins	AISI 440A	500 pins
	18 M BS CSN 3	0.892	0.0035	0.0047	1.00g Pins	Low Alloy	500 pins
	18 M BS CSN 4	0.011	0.0008	0.026	1.00g Pins	AISI 302 mod	500 pins
	18 M BS CS5	0.050	0.0040	...	1.00g Pins	AISI 304	500 pins
	18 M BS CSN A	0.068	0.305	0.0081	Chippings	AISI 1213 mod	100g
	18 M BS ST-626	0.068	0.020	0.0064	Pins	Carbon Steel	100pins
CRM	18 E 58	0.294	0.019	...	Chippings	Carbon Steel	120g
CRM	18 E 59A	0.497	0.027	...	Chippings	Carbon Steel	120g
CRM	18 E 60A	0.715	0.012	...	Chippings	Carbon Steel	100g
	18 J 36	0.0125	0.0126	0.0337	Chippings		150g
	18 J 40	0.793	0.200	0.0344	Chippings		100g
CRM	18 S 243-5	...	0.346	...	Chippings	Binary Alloy	150g
	18 S CS-01	0.93	0.006	...	8mm Ø x 0.5g Ring,		200 pcs
	18 S CS-11	0.93	0.006	...	8mm Ø Double Ring,		100 pcs
	18 MA 947	0.389	0.094	0.0121	Chippings		150g
	18 MA 948	0.534	0.089	0.0082	Chippings		150g
	18 MA 949	0.018	0.028	0.0628	Chippings		150g
	18 MA 950	0.071	0.013	0.0016	Chippings		150g
	18 MA 951	0.179	0.023	0.0090	Chippings		150g
	18 MA 952	0.449	0.024	0.0089	Chippings		150g
	18 MA 953	0.968	0.013	0.0078	Chippings		150g
	18 MA 954	0.405	0.022	0.0076	Chippings		150g
	18 MA 955	0.203	0.021	0.0085	Chippings		150g
	18 MA 956	0.450	0.297	0.0060	Chippings		150g
	18 MA 957	0.183	0.106	0.0083	Chippings		150g
	18 MA 958	0.057	0.027	0.0517	Chippings		150g
	18 MA 959	0.019	0.023	0.0742	Chippings		150g
	18 MA 960	0.105	0.0006	0.0403	Chippings		150g
	18 MA 961	0.0194	0.0161	0.0499	Chippings		150g
	18 MT 088A	0.0151	0.00045	...	2g Pins	T-302 HQ	200 pins

19.2 Rocks

		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	Fe	MgO	CaO	Na ₂ O	K ₂ O	CO ₂	TiO ₂	P ₂ O ₅	MnO	S	Pb	
CRM	192 BG COD 89	56.28	16.58	6.51	3.28	...	2.84	5.56	3.39	4.76	0.20	0.60	0.223	0.125	...	...	
	192 BG COD 36a	47.67	18.51	6.74	3.98	...	8.42	14.92	1.43	0.25	...	0.50	0.054	0.137	...	...	continued
	192 BG COD 161a	55.40	13.23	6.09	...	...	1.69	3.70	1.48	4.10	3.16	0.42	0.27	1.11	2.29	1.73	
	192 B 2780	...	16.75	...	...	2.784	0.888	0.273	0.298	4.07	...	(1.20)	(0.096)	(0.060)	1.263	0.577	continued
	Continuation from above																
	All Elements ppm																
		Ba	Ce	Cr	Co	Cu	Ga	La	Li	Ni	Rb	Sr	V				
	192 BG COD 89	443	...	27	14	97	...	...	20	...	167	461	130				
	192 BG COD 36a	...	...	101	30	97	...	...	...	63	...	...	190	continued			
	192 BG COD 161a	2180	75	610	14	1940	15	38	38	13	221	277	61				
192 B 2780	(993)	(64)	(44)	(2.2)	(215.5)	(26)	(38)	(18)	(12)	(175)	(217)	(268)	continued				
Continuation from above																	
All Elements ppm																	
	Zn	Zr	Mo	Ag	As	Cd	Sc	Yb	Cs	Cl	Hg	L.O.I.			Type	Size	
192 BG COD 89a	58	122	2.5	...	...	...	17	...	...	...	...	3.29			Monzonite	50g	
192 BG COD 36b	58	...	...	...	...	...	...	...	...	...	...	...			Gabbro	50g	
192 BG COD 161b	2.44%	181	20	12.8	61	190	...	2.1	12.1	...	...	...			Pb-Zn Sulphide Ore	50g	
192 B 2780	2570	(176)	(11)	(27)	48.8	12.10	(23)	...	(13)	...	0.710	...			Hard Rock Mine Waste	50g	
SiO ₂ Al ₂ O ₃ Fe ₂ O ₃ FeO MgO CaO TiO ₂ P ₂ O ₅ MnO Na ₂ O K ₂ O S H ₂ O CO ₂ Type Size																	
CRM	192 A FER-1	16.95	0.52	(49.88)	(23.34)	0.30	3.29	0.03	2.39	0.22	0.03	0.02	0.26	0.41	1.39	Iron Formation	100g
CRM	192 A FER-2	49.21	5.16	22.5	15.24	2.10	2.17	0.18	0.27	0.12	0.57	1.33	0.17	0.98	0.07	Iron Formation	100g
CRM	192 A FER-3	53.61	0.09	(29.4)	(13.63)	1.02	0.84	0.01	0.07	0.08	0.03	0.03	(0.03)	(0.20)	1.20	Iron Formation	100g
CRM	192 A FER-4	50.07	1.70	22.7	15.54	1.41	2.23	0.07	0.13	0.19	0.05	0.29	0.11	0.72	4.86	Iron Formation	100g
SiO ₂ Al ₂ O ₃ Fe ₂ O ₃ FeO MgO CaO TiO ₂ P ₂ O ₅ MnO Na ₂ O K ₂ O Cr ₂ O ₃ H ₂ O CO ₂																	
	192 CG 07101	34.34	0.67	(4.21)	(2.42)	41.03	0.10	0.008	0.004	0.068	0.008	0.010	1.57	14.17	0.58	continued	
	192 CG 07102	37.75	0.21	(4.85)	(1.97)	38.34	1.80	0.004	0.003	0.097	0.028	0.009	0.42	12.69	1.66		
CRM	192 A UM-2	(39.2)	(7.23)	...	...	(25.45)	(4.68)	(0.24)	(0.02)	(0.08)	(0.32)	(0.11)	(1.51)	(6.27)	(0.10)	continued	
CRM	192 A UM-4	39.35	8.89	...	...	22.5	6.79	0.35	0.02	0.15	0.45	0.18	2.59	(4.86)	0.26		
Continuation from above																	
	S	NiO	CoO	V ₂ O ₅	Cl	ZnO	CuO								Type	Size	
192 CG 07101	0.051	0.32	0.012	0.007	0.57	...	...								Ultrabasic	150g	
192 CG 07102	0.008	0.30	0.013	0.003	0.022	...	...	Plus another 39 elements							Ultrabasic	150g	
192 A UM-2	(0.94)	0.29	0.012	...	...	(0.004)	0.095								Sulfide-ultramafic	100g	
192 A UM-4	0.44	0.19	0.007	...	...	0.008	0.054								Sulfide-ultramafic	100g	
SiO ₂ Al ₂ O ₃ Fe ₂ O ₃ FeO MgO CaO TiO ₂ P ₂ O ₅ MnO Na ₂ O K ₂ O H ₂ O CO ₂ Total L.O.I. Type Size																	
192 CG 03104	69.63	14.82	5.67	(0.40)	0.67	0.22	0.68	0.043	0.024	0.20	3.76	(3.71)	0.13	4.17	Shale	50g	
192 CG 03116	66.26	18.63	0.19	...	0.054	0.76	0.048	...	...	3.69	9.6	...	...	...	Feldspar	50g	
192 CG 03124	60.64	20.05	1.37	0.28	0.13	0.52	0.12	0.020	0.050	8.97	5.06	...	...	2.37	Nepheline Syenite	50g	
192 CG 03125	39.42	29.67	0.33	1.24	0.92	5.98	0.14	0.072	0.031	12.59	4.72	...	2.97	...	Nepheline Syenite	50g	
192 CG 03126	66.84	23.58	1.94	...	0.087	0.17	0.70	0.20	0.004	0.34	0.38	4.15	...	5.48	Pyrophyllite	50g	
192 CG 03127	70.34	22.20	0.220	...	0.041	0.066	0.18	0.11	0.0040	0.043	0.028	5.57	...	6.34	Pyrophyllite	50g	
192 CG 07103	72.83	13.40	2.14	1.02	0.42	1.55	0.287	0.091	0.060	3.13	5.01	0.60	0.15	...	Granite	70g	
192 CG 07104	60.62	16.17	4.90	2.39	1.72	5.20	0.52	0.23	0.08	3.86	1.89	1.50	3.47	...	Each	Andesite	
192 CG 07105	44.64	13.83	13.4	7.60	7.77	8.81	2.37	0.93	0.17	3.38	2.32	2.86	...	...	with	Basalt	
192 CG 07106	90.36	3.52	3.22	0.61	0.082	0.30	0.263	0.218	0.020	0.061	0.65	1.01	0.19	...	50+	Sandstone	
192 CG 07107	59.23	18.82	7.60	1.39	2.01	0.60	...	0.155	0.022	0.35	4.16	5.60	0.077	...	other	Shale	
192 CG 07109	54.48	17.72	6.04	1.23	0.65	1.39	0.48	0.018	0.12	7.16	7.48	2.38	0.26	...	elements	Syenite	
192 CG 07110	63.06	16.1	4.51	0.19	0.84	2.47	0.80	0.36	0.089	3.06	5.17	1.79	1.03	...	certified	Andesite	
192 CG 07111	59.68	16.56	2.64	3.08	2.81	4.72	0.77	0.34	0.094	4.05	3.50	0.88	0.15	...	at the	Granodiorite	
192 CG 07112	35.69	14.14	9.90	13.36	5.25	9.86	7.69	0.028	0.193	2.11	0.15	1.09	0.12	...	ppm	Gabbro	
192 CG 07113	72.78	12.96	1.14	1.86	0.16	0.59	0.30	0.045	0.14	2.57	5.43	1.18	0.52	...	Level	Rhyolite	
CRM	192 A 375/1	69.24	17.88	0.291	...	0.180	0.78	0.312	0.226	...	8.89	1.47	...	...	0.72	Soda-Feldspar	100g
192 S JA-1b	63.97	15.22	2.59	3.98	1.57	5.70	0.85	0.165	0.157	3.84	0.77	0.72	...	...	Andesite	20g	
192 S JA-2	56.42	15.41	2.16	3.69	7.60	6.29	0.66	0.146	0.108	3.11	1.81	1.12	...	...	Andesite	20g	
192 S JA-3	62.27	15.56	1.15	4.83	3.72	6.24	0.70	0.116	0.104	3.19	1.41	0.20	...	...	Andesite	20g	
192 S JB-1b	51.11	14.38	3.29	5.16	8.14	9.6	1.26	0.256	0.147	2.63	1.32	1.53	...	...	with	Basalt	
192 S JB-2	53.25	14.64	3.33	9.98	4.62	9.82	1.19	0.101	0.218	2.04	0.42	0.25	...	...	50+	Basalt	
192 S JB-3	50.96	17.20	3.20	7.85	5.19	9.79	1.44	0.294	0.177	2.73	0.78	0.18	...	...	other	Basalt	
192 S JF-1	66.69	18.08	0.06	<0.04	0.006	0.93	0.005	0.01	0.001	3.37	9.99	0.23	...	...	elements	Feldspar	
192 S JF-2	65.30	18.52	0.06	<0.03	0.004	0.09	0.005	0.003	0.001	2.39	12.94	0.24	...	...	certified	Feldspar	
192 S JG-1	72.30	14.24	0.38	1.61	0.74	2.20	0.26	0.099	0.063	3.38	3.98	0.54	...	...	at the	Granodiorite	
192 S JG-1a	72.30	14.30	0.51	1.36	0.69	2.13	0.25	0.083	0.057	3.39	3.96	0.59	...	...	ppm	Granodiorite	
192 S JG-2	76.83	12.47	0.33	0.57	0.037	0.70	0.044	0.002	0.016	3.54	4.71	0.33	...	...	Level	Granite	
192 S JG-3	67.29	15.48	1.62	1.83	1.79	3.69	0.48	0.122	0.071	3.96	2.64	0.67	...	...	Granodiorite	100g	
192 S JGb-1	43.66	17.49	4.79	9.43	7.85	11.90	1.60	0.056	0.189	1.20	0.24	1.28	...	...	Gabbro	20g	
192 S JGb-2	46.47	23.48	0.62	5.41	6.18	14.10	0.56	0.017	0.13	0.92	0.059	1.46	...	...	Gabbro	100g	
192 S JP-1	42.38	0.66	1.98	5.99	44.60	0.55	0.006	0.002	0.121	0.021	0.003	2.39	...	...	Peridotite	20g	

19.2 Rocks (continued)		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	Na ₂ O	K ₂ O	H ₂ O	CO ₂	TiO ₂	P ₂ O ₅	MnO	F	Others	Type	Size	
	192 S JH-1	48.18	5.66	1.39	8.09	16.73	15.02	0.71	0.53	1.82	...	0.67	0.099	0.19	...	Each with ~50 other elements certified at the ppm or ppb level	Hornblendite	100g	
	192 S JSI-1	59.47	17.60	1.875	4.523	2.413	1.479	2.184	2.845	3.92	0.769	0.725	0.202	0.0599	0.0598		Slate	100g	
	192 S JSI-2	59.45	18.17	0.959	5.048	2.385	1.885	1.344	3.008	4.158	1.236	0.754	0.164	0.0818	0.0678		Slate	100g	
	192 S JCh-1	97.81	0.734	0.272	0.0867	0.0754	0.0449	0.0305	0.221	0.356	0.055	0.0316	0.0167	0.0173	0.0134		Chert	20g	
	192 S JR-1	75.45	12.83	0.35	0.49	0.12	0.67	4.02	4.41	1.16	...	0.11	0.021	0.099	0.0991		Rhyolite	20g	
	192 S JR-2	75.69	12.72	0.27	0.44	0.04	0.50	3.99	4.45	1.19	...	0.07	0.012	0.112	0.1109		Rhyolite	20g	
	192 S JR-3	72.76	11.90	2.61	1.86	0.050	0.093	4.69	4.29	0.72	...	0.21	0.017	0.083	...		Rhyolite	100g	
	192 S JSy-1	60.02	23.17	...	...	0.016	0.25	10.74	4.82	...	...	0.0015	0.014	0.0024	...		Syenite	100g	
	192 S JCRM R651	21.74	71.7	1.48	...	0.10	0.19	0.03	0.65	...	...	3.15	0.19	...	...		+ Zr, LOI	Aluminous Shale	100g
	192 S JCRM R802	60.7	32.3	0.23	...	<0.01	0.04	0.09	0.07	...	...	0.19	0.05	...	...	LOI 6.0	Pyrophyllite	50g	
	192 S JCRM R901	59.77	0.924	1.224	...	31.22	0.438	0.054	0.004	...	...	0.019	0.195	0.004	...	LOI 6.14	Talc	50g	
	192 S JCRM R902	60.77	0.115	0.091	...	31.97	0.342	0.006	0.003	...	...	0.004	0.046	(0.002)	...	LOI 6.64	set only	50g	
	192 S JCRM R903	55.76	2.447	0.564	...	31.84	0.998	0.029	0.007	...	...	0.075	0.051	(0.003)	...	LOI 8.23		50g	
CRM	192 A SY4	49.9	20.69	6.21	2.86	0.54	8.05	7.10	1.66	(1.0)	3.5	0.287	0.131	0.108	(0.06)	Many others	Diorite	100g	
CRM	192 LI Zeo 1	67.11	12.21	1.75	...	1.41	4.51	0.612	2.19	...	...	0.190	0.055	0.045	...		Natural Zeolite	50g	
CRM	192 E 18B	1.15	0.35	0.21	...	1.65	52.6	0.14	0.23	...	...	...	35.7	...	...		Phosphate	100g	
CRM	192 A SA 32	(0.4)	(0.05)	0.14	...	0.50	54.44	...	...	...	1.61	...	39.96	...	2.49		Phosphate	100g	
CRM	192 A SA 34	39.04	59.15	0.75	...	0.13	(0.13)	0.093	0.24	...	...	0.17	...	...	...		Andalusite	100g	
CRM	192 B 120c	5.5	1.30	1.08	...	0.32	48.02	0.52	0.147	...	3.27	0.103	33.34	0.027	3.82	+ U, V	Florida Phosphate	90g	
CRM	192 B 694	11.2	1.8	0.79	...	0.33	43.6	0.86	0.51	...	...	(0.11)	30.2	0.0116	3.2	+ U, V	Western Phosphate	90g	
CRM	192 A SA 1	75.70	12.08	(0.6)	1.30	(0.06)	0.78	3.36	4.99	0.49	(0.10)	...	...	0.02	0.42	continued			
CRM	192 A SA 2	63.63	17.34	1.11	0.30	0.46	0.68	0.43	15.35	0.22	0.09	...	0.12	0.01	...				
CRM	192 A SA 3	52.40	13.64	8.78	1.13	0.28	3.22	8.37	5.51	2.31	0.17	0.48	0.06	0.77	0.44				
CRM	192 A SA 4	52.64	16.50	(0.8)	7.47	7.50	11.50	2.46	0.25	0.33	(0.10)	0.20	(0.03)	0.18	...				
CRM	192 A SA 5	51.10	4.18	0.87	10.59	25.33	2.66	0.37	0.09	0.26	(0.08)	0.20	0.02	0.22	...				
CRM	192 A SA 6	38.96	(0.3)	0.71	14.63	43.51	0.28	(0.04)	(0.01)	0.30	0.40	...	...	0.22	...				
CRM	192 A SA 39	33.44	4.29	9.29	(4.0)	26.24	9.69	(0.5)	1.04	...	...	1.58	1.46	0.17	...	continued			
CRM	192 A SA 40	3.08	0.41	2.75	(0.4)	1.97	49.77	(0.05)	(0.03)	...	...	0.05	2.05	0.18	...				
CRM	192 A SA 41	56.67	13.50	4.23	(0.3)	8.10	1.50	0.93	1.39	...	...	0.55	0.05	0.06	...				
CRM	192 A SA 44	34.84	58.80	2.06	(1.0)	(0.1)	0.14	(0.05)	0.18	...	...	1.83	0.10	0.03	...				
CRM	192 A SA 45	49.62	26.22	12.6	(10.0)	3.39	0.78	0.84	3.18	...	...	1.82	0.08	0.10	...				
CRM	192 A SA 47	36.30	1.09	4.14	(0.4)	42.09	(0.1)	(0.05)	(0.02)	...	...	(0.01)	(0.02)	0.06	...				
CRM	192 A SA 48	67.11	11.24	0.58	(0.2)	0.18	8.90	3.22	4.26	...	...	0.10	(0.09)	0.02	...	continued			
CRM	192 A SA 50	51.56	15.28	11.0	8.49	7.57	10.80	2.30	0.61	...	...	0.86	0.15	0.17	...				
CRM	192 PI AC1	1.22	(0.77)	(0.71)	...	(0.072)	45.8	0.52	(0.25)	...	...	0.49	...	0.41	...				
Continuation from above																			
All Elements ppm																			
		Ba	Ce	Cr	Co	Cu	Ga	La	Li	Nb	Ni	P	Pb						
	192 A SA 1	(120)	195	12	...	12	27	109	(12)	53	(8)	...	40						
	192 A SA 2	2400	12	12	(3)	19	11	(5)	...	...	(7)	520	(5)						
	192 A SA 3	450	(240)	(10)	...	13	(54)	(250)	(48)	960	...	260	43	continued					
	192 A SA 4	102	(6)	(30)	58	14	16	(3)	...	...	120	(130)	...						
	192 A SA 5	46	...	24000	110	18	(8)	(2)	...	...	555	90	...						
	192 A SA 6	(10)	...	2900	208	10	...	(0.2)	...	...	2040	(40)	(40)						
	192 A SA 39	1700	(85)	...	77	58	(10)	...	...	110	994	...	(25)						
	192 A SA 40	(310)	(160)	(35)	(20)	(10)	(10)	...	...	(10)	(250)	...	(20)						
	192 A SA 41	820	(60)	123	(15)	53	(20)	...	...	8	122	...	(30)						
	192 A SA 44	(50)	(220)	384	(8)	(10)	(55)	...	...	96	(15)	...	(30)	continued					
	192 A SA 45	(900)	(100)	256	41	11	(35)	...	...	27	80	...	(20)						
	192 A SA 47	(75)	(20)	...	79	(5)	(5)	...	...	...	2221	...	(60)						
	192 A SA 48	(290)	(850)	23	...	(10)	...	...	...	202	...	...	135						
	192 A SA 50	220	(30)	357	40	84	...	...	...	(10)	(85)	...	(25)						
	192 PI AC1	767	3326	(13)	2.72	54.0	...	2176	...	...	(9)	...	...	continued					
Continuation from above																			
All Elements ppm																			
		Rb	S	Sr	Th	Ti	V	Zn	Zr	Cl	Y	Others		Type	Size				
	192 A SA 1	325	...	10	51	540	(2)	50	300	...	143	Eu, Nd, Yb		Granite	100g				
	192 A SA 2	530	...	62	1	265	10	(10)	(33)	...	...	Eu		Syenite	100g				
	192 A SA 3	190	(650)	4600	66	2900	81	395	11000	1200	22	Eu, Nd, U,		Lujavrite	100g				
	192 A SA 4	...	...	260	...	1200	220	68	(23)	(23)	(7)	Eu		Norite	100g				
	192 A SA 5	...	...	32	...	1200	230	100	...	...	(5)	Eu		Pyroxenite	100g				
	192 A SA 6	...	...	(3)	...	120	40	90	...	...	...			Dunite	100g				
	192 A SA 39	52	(1500)	1400	(10)	...	109	70	239	...	17			Kimberlite	100g				
	192 A SA 40	(10)	(500)	1600	(12)	...	27	25	87	...	33			Carbonatite	100g				
	192 A SA 41	59	(1500)	54	(12)	...	139	76	146	...	17			Carbonaceous Shale	100g				
	192 A SA 44	13	(300)	5	50	...	395	271	406	...	84			Sillimanite Schist	100g				
	192 A SA 45	142	(500)	92	(21)	...	266	74	322	...	63			Kinzingite	100g				
	192 A SA 47	...	(200)	(3)	...	...	(16)	45	...	...	(5)			Serpentinite	100g				
	192 A SA 48	291	...	29	113	...	(8)	53	300	...	436			Fluorspar Granite	100g				
	192 A SA 50	14	(300)	195	(6)	...	216	81	86	...	23			Dolerite	100g				
	192 PI AC1	...	...	(2.0)	21.8	...	104	38.0	(51)	...	272	Many		Apatite	50g				

19.3 Soils		Si	Al	Ca	Fe	K	Mg	Mn	Na	P	Ti	ppm As	ppm Ba	ppm Cd	ppm Ce	ppm Co	ppm Cr		
CRM	193 A SO-2	24.99	8.07	1.96	5.56	2.45	0.54	0.072	1.9	0.3	0.86	...	966	...	...	9	16		
CRM	193 A SO-3	15.86	3.05	14.63	1.51	1.61	4.98	0.052	0.74	0.048	0.2	...	296	...	...	8	26	continued	
	193 A TILL-1	28.4	7.3	1.94	4.77	1.84	1.29	0.14	2.01	0.10	0.59	18	702	...	71	18	65		
	193 A TILL-2	28.4	8.5	0.91	3.77	2.55	1.10	0.08	1.62	0.07	0.53	26	540	...	98	15	74	continued	
	193 A TILL-3	32.2	6.5	1.88	2.74	2.01	1.03	0.05	1.96	0.05	0.29	87	489	...	42	15	123		
	193 A TILL-4	30.3	7.6	0.89	3.94	2.70	0.76	0.05	1.83	0.09	0.49	111	395	...	78	8	53		
	193 S JSO-1	17.91	9.56	1.82	7.97	0.28	1.27	0.153	0.50	0.21	0.90	8.1	267	...	...	32	71	continued	
	193 S JSO-2	19.71	11.30	0.78	7.31	1.29	1.00	0.136	0.76	0.07	0.84	1076	352	...	...	1071	1118		
	193 S JSAC 0401	(35.0)	(6.5)	...	(3.0)	(1.7)	...	0.0266	...	...	(0.38)	10.62	(410)	4.25	(62)	(6.2)	50.4	continued	
	193 S JSAC 0411	...	(7.6)	...	(3.3)	(0.64)	...	0.0943	...	...	(0.32)	11.3	(250)	0.274	(43)	(6.5)	23.5		
	193 CG 08302	30.57	7.11	2.59	3.34	2.12	1.53	0.068	1.52	0.086	0.40	3.8	509	0.081	83.6	13.1	60.8	continued	
	193 CG 08303	25.9	6.86	4.79	2.79	1.57	1.30	0.0051	1.10	0.16	0.36	10.6	724	1.20	...	13.0	112		
CRM	193 B 2586	29.15	6.652	2.218	5.161	0.9760	1.707	0.1000	0.4680	0.1001	0.6050	8.7	413	2.71	58.0	...	301		
CRM	193 B 2587	33.13	5.860	0.927	2.813	1.583	0.669	0.0651	1.127	0.0970	0.3920	13.7	568	1.92	...	...	92		
CRM	193 B 2709	29.66	7.50	1.89	3.50	2.03	1.51	0.0538	1.16	0.062	0.342	17.7	968	0.38	(42.0)	13.4	130	continued	
CRM	193 B 2710	28.97	6.44	1.25	3.38	2.11	0.853	1.01	1.14	0.106	0.283	626	707	21.8	(57)	(10)	(39)		
CRM	193 B 2711	30.44	6.53	2.88	2.89	2.45	1.05	0.0638	1.14	0.086	0.306	105	726	41.70	(69)	(10)	(47)		
CRM	193 LI 12.1.07	(25.0)	(9.0)	(0.69)	3.73	3.08	(0.59)	0.09	(0.3)	(0.13)	(0.55)	...	582.0	0.214	...	15.4	79.8		
CRM	193 LI 12.1.08	(31.0)	(5.77)	(0.49)	2.7	1.85	(0.63)	0.091	(0.8)	(0.1)	(0.5)	...	365.0	0.198	...	11.9	87.4	continued	
CRM	193 LI 12.1.09	(20.0)	(7.48)	(6.34)	3.73	2.63	(1.19)	0.073	(0.45)	(0.14)	(0.38)	...	315.0	0.285	...	15.6	75.3		
CRM	193 SA 42	34.61	5.31	0.64	3.27	0.37	1.16	0.08	(0.11)	(0.02)	0.22	...	(250.0)	...	...	35.0	430.0	continued	
Continuation from above																			
		Cu	Hg	Ni	Pb	Rb	Sr	V	Zn	Zr	Y	Others			Type		Size		
193 A SO-2		7	0.082	8	21	78	340	64	124	...	...				Podzolic B Horizon		200g		
193 A SO-3		17	0.017	16	14	39	217	38	52	...	...				Calcereous C Horizon		200g		
193 A TILL-1		47	...	24	22	44	291	99	98	502	...				Soil		100g		
193 A TILL-2		150	...	32	31	143	144	77	130	390	...				Till		100g		
193 A TILL-3		22	...	39	26	55	300	62	56	230	...				Soil		100g		
193 A TILL-4		237	...	17	50	161	109	67	70	385	...				Till		100g		
193 S JSO-1		169	...	39	13	14.5	196	300	105	96	24.9						100g		
193 S JSO-2		1276	...	1070	1087	62.5	87	1345	1174	1161	1090						100g		
193 S JSAC 0401		15.3	...	18.9	26	(88)	...	65.0	66.8	...	...	Se, Be		Brown Soil		50g			
193 S JSAC 0411		26.7	...	11	18.9	(49)	(60)	68.6	64.6	...	...	Se, Be		Volcanic Ash Soil		50g			
193 CG 08302		24.6	0.018	31.1	14.2	135	163	77.5	58.0	...	...	many		Tibetan		15g			
193 CG 08303		120	2.15	40	73	60	405	...	260	...	...	La, Th, U		Polluted farmland		40g			
193 B 2586		...	0.367	...	432	...	84.1	...	352	...	...	Nd, Yb		Urban		55g			
193 B 2587		...	0.290	...	3242	...	126	...	335.8	...	...			Urban (contaminated)		55g			
193 B 2709		34.6	1.40	88	18.9	(96)	231	112	106	(160)	(18)	many		San Joaquin		50g			
193 B 2710		2950	32.6	14.3	5532	(120)	(330)	76.6	6952	...	(23)	many		Montana - elevated traces		50g			
193 B 2711		114	6.25	20.6	1162	(110)	245.3	81.6	350.4	(230)	(25)	many		Montana - elevated traces		50g			
193 LI 12.1.07		30.0	0.171	30.8	19.6	(200)	(82.0)	98.3	88.8	(350)	...	many		Eutric Cambisol		50g			
193 LI 12.1.08		21.2	0.078	40.0	18.9	(100)	107.0	(87.5)	63.7	(500)	...	many		Orthic Luvisol		50g			
193 LI 12.1.09		30.9	0.087	37.4	41.3	(100)	274.0	89.7	119.0	(200)	...	many		Rendzina		50g			
193 A SA 42		17.0	...	125.0	(10.0)	22.0	37.0	94.0	44.0	192.0	11.0	many				100g			
		SiO ₂	Al ₂ O ₃	CaO	Fe ₂ O ₃	K ₂ O	MgO	MnO	Na ₂ O	P ₂ O ₅	TiO ₂	L.O.I.							
193 BG COD 310		46.08	11.36	14.83	3.92	2.26	3.15	0.1	1.24	0.2	0.43	...							
193 BG COD 311		66.7	13.72	2.9	4.09	2.72	1.68	0.097	2.19	0.15	0.5	4.98	continued						
193 BG COD 312		56.52	13.78	7.39	4.56	2.34	2.3	0.099	1.92	0.2	0.52	9.64							
Continuation from above																			
		Be	Cu	Cr	Cd	As	Co	Li	Pb	Mo	Ni	V	Zn	Type		Size			
193 BG COD 310A		2.39	49.82	103.5	4.59	9.24	11.34	21.95	120.27	5.74	63.11	85.75	269.75	Meadow Soil		50g			
193 BG COD 311A		2.4	72.0	68.0	...	7.02	10.7	21.25	51.0	1.48	39.0	87.2	74.0	Meadow Soil		50g			
193 BG COD 312A		2.52	88.15	52.5	0.67	6.54	12.5	24.1	88.0	...	52.0	85.35	126.3	Meadow Soil		50g			

19.3 Soils (continued)		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	Na ₂ O	K ₂ O	H ₂ O	CO ₂	Organic C L.O.I.				Size
	193 CG 07401	62.6	14.18	5.19	(1.27)	1.81	1.72	1.66	2.59	(4.99)	(1.13)	(1.8)	(8.59)			70g
	193 CG 07402	73.35	10.31	3.52	(0.56)	1.04	2.36	1.62	2.54	(2.86)	(0.97)	(0.49)	(4.41)			70g
	193 CG 07403	74.72	12.24	2.0	(0.48)	0.58	1.27	2.71	3.04	(1.91)	(0.13)	0.5	(2.65)			70g
	193 CG 07404	50.95	23.45	10.3	(0.41)	0.49	0.26	0.11	1.03	(10.13)	(0.12)	(0.62)	(10.88)	Plus another 61 elements		70g
	193 CG 07405	52.57	21.58	12.62	(0.22)	0.61	(0.095)	0.122	1.5	(8.81)	(0.096)	(0.32)	(9.14)	all certified at ppm levels		70g
	193 CG 07406	56.93	21.23	8.09	(0.57)	0.34	0.22	0.19	1.7	(8.9)	(0.084)	(0.806)	(10.0)			70g
	193 CG 07407	32.69	29.26	18.76	(1.05)	0.26	0.16	0.074	0.2	(13.73)	(0.11)	(0.64)	(14.3)			70g
	193 CG 07408	58.61	11.92	4.48	(1.2)	2.38	8.27	1.72	2.42	(3.28)	(5.97)	0.31	(9.15)			70g
	193 CG 07409	73.28	12.91	2.08	...	0.49	1.35	3.31	3.37	...	...	...	...	Plus another ~50 elements		50g
	193 CG 07410	65.64	14.55	4.6	...	1.25	1.42	1.9	2.59	...	...	...	...	all certified at ppm levels		50g
	193 CG 07411	47.96	12.04	7.97	...	3.71	4.33	1.1	2.03	...	...	...	...			50g
All Elements ppm																
		Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn	
	193 GL 021	2725	4955	25	586	...	1	5426	11	...	4792	6481	...	...	174	continued
	193 GL 027	9149	...	12.4	166	2.73	12.0	5970	26.9	4.7	9.87	11173	51.9	2755	259	
	193 GL 6135	22700	...	70	305	1.4	...	23400	455	20	107	47500	411	9400	390	continued
Continuation from above																
		Hg	Mo	Ni	K	Se	Ag	Na	Sr	Tl	Sn	V	Zn			Type
	193 GL 021	4.7	...	12.8	1006	...	7	380	...	...	...	...	546			Metals in Natural Soil
	193 GL 027	3.80	(1.05)	10.5	2115	14.0	5.88	241	43.0	(4.81)	...	21.4	61.3			Metals in Natural Soil
	193 GL 6135	2.9	...	291	16300	0.9	...	1700	...	...	...	139	345			Brick Works Soil

19.4 Clays		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	TiO ₂	P ₂ O ₅	CaO	MgO	Na ₂ O	K ₂ O	S	CO ₂	L.O.I.	Others	Type	Size
CRM	194 E 28	45.4	37.6	0.84	...	2.01	0.15	0.1	0.04	0.01	0.02	...	...	13.7		Para	50g
CRM	194 E 32	51.8	28.5	3.46	...	1.49	0.13	0.7	0.39	0.16	0.8	...	...	12.6		Saracuruna	50g
CRM	194 E 42	51.9	32.2	1.09	...	0.96	0.07	0.05	0.19	0.02	0.47	...	...	12.9		Sao-Simao	50g
CRM	194 B 679	52.1	20.8	12.94	...	0.96	(0.17)	0.23	1.25	0.18	2.93	...	...	...	Trace Elements	Brick Clay	75g
	194 CG 03101a	49.98	26.27	10.55	(0.08)	0.70	0.14	0.13	0.46	0.06	0.79	0.049	(0.041)	10.62	Cl 0.0041		50g
	194 CG 03102a	53.67	31.32	0.33	(0.052)	0.03	0.053	1.80	0.083	2.55	1.15	0.023	(0.051)	8.81	Cl 0.0029		50g
	194 CG 03103	66.64	13.28	4.64	(0.8)	0.66	0.106	3.23	1.84	1.81	2.50	0.027	1.66	5.1	Cl 0.011		60g
	194 CG 03121	54.55	31.41	0.50	...	0.69	0.099	0.052	0.12	0.015	0.34	0.53	(0.026)	11.94		Kaolin	50g
	194 CG 03122	44.53	38.62	0.72	...	0.39	0.21	0.16	0.068	0.069	0.049	0.12	(0.06)	15.00		Kaolin	50g
	194 D KK	47.05	36.75	0.975	...	0.166	0.092	0.26	0.196	0.03	1.07	...	...	13.12	Trace Elements	Kaolin	100g
CRM	194 A 348	51.13	31.59	1.04	...	1.08	0.071	0.173	0.305	0.344	2.23	...	...	11.75	Cr ₂ O ₃ 0.016	Ball Clay	100g
	194 GC 2CAS1	52.5	32.0	1.03	...	1.16	...	0.2	0.28	0.34	2.25	...	...	9.8	Li ₂ O 0.03	Ball Clay	100g
	194 GC AN41	54.8	41.5	0.71	...	0.05	...	0.16	0.41	<0.05	1.81	...	...	...		China Clay	100g
	194 BG COD 12B	...	35.1	0.52	...	0.18	...	...	...	...	...	...	...	...		Kaolin C1	70g
	194 BG COD 13B	...	31.9	0.95	...	0.23	...	...	...	...	...	...	...	11.3		Kaolin B2	70g
	194 BG COD 14B	...	32.5	1.17	...	...	...	...	...	...	...	...	...	11.9		Kaolin K2	70g
	194 BG COD 52	51.28	29.69	2.45	0.89	1.16	0.044	0.71	0.63	0.19	1.83	0.19	0.27	11.66	Many at ppm levels	Fire Clay	50g

19.5.1 Sediments															L.O.I. 1000°C	
	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	Na ₂ O	K ₂ O	TiO ₂	P ₂ O ₅	MnO	S	C	H ₂ O		
195 CG 07302	69.91	15.72	1.90	0.56	0.21	0.25	3.03	5.20	0.23	0.045	0.031	0.0089	0.39	2.58	...	
195 CG 07303	71.29	12.04	6.54	0.72	0.68	0.22	0.32	2.46	1.06	0.142	0.052	0.0192	0.58	4.1	...	
195 CG 07304	52.59	15.69	5.91	0.91	1.02	7.54	0.30	2.23	0.89	0.106	0.107	0.0354	1.05	6.6	...	
195 CG 07305	56.44	15.37	5.84	0.94	0.98	5.34	0.39	2.11	0.90	0.142	0.150	0.0410	1.30	6.7	...	
195 CG 07306	61.24	14.16	5.88	1.58	3.00	3.90	2.30	2.43	0.77	0.230	0.125	0.0784	0.36	3.49	...	
195 CG 07307	64.70	13.41	6.51	1.50	3.08	1.67	1.21	3.54	0.75	0.185	0.089	0.019	0.63	3.6	...	
195 CG 07308	82.89	7.70	2.20	0.53	0.25	0.24	0.47	2.84	0.61	0.032	0.043	0.008	0.33	2.22	...	continued
195 CG 07309	64.89	10.58	4.86	1.53	2.39	5.35	1.44	1.99	0.92	0.151	0.080	0.015	0.46	2.93	7.21	
195 CG 07310	88.89	2.84	3.86	0.26	0.12	0.70	0.039	0.125	0.21	0.061	0.130	0.009	0.40	2.1	2.88	
195 CG 07311	76.25	10.37	4.39	0.35	0.62	0.47	0.46	3.28	0.35	0.057	0.321	0.017	0.24	2.67	3.02	
195 CG 07312	77.29	9.30	4.88	1.19	0.47	1.16	0.44	2.91	0.25	0.053	0.181	0.094	0.40	2.15	2.62	
195 CG 07313	53.88	13.75	6.58	0.29	3.38	1.71	4.81	2.95	0.67	0.45	0.43	...	0.25	5.39	9.93	
195 CG 07315	51.10	11.41	5.93	0.30	3.02	5.74	4.43	2.32	0.61	0.48	0.59	0.25	0.30	5.80	13.0	
195 CG 07316	31.60	7.70	3.81	0.23	2.04	22.6	3.76	1.61	0.39	0.33	0.40	0.20	0.26	4.00	25.8	
195 CG 08301	...	...	...	...	...	...	...	...	...	...	0.126	...	...	...	...	continued
195 S JLK-1	57.16	16.73	4.251	2.191	1.736	0.686	1.051	2.805	0.668	0.208	0.266	0.1052	1.503	6.372	...	
195 S JSD-1	66.55	14.65	3.526	1.363	1.813	3.034	2.727	2.183	0.643	0.122	0.0924	0.0068	0.111	2.301	...	
195 S JSD-2	60.78	12.31	4.552	5.955	2.731	3.658	2.438	1.145	0.614	0.105	0.120	1.310	0.316	2.554	...	continued
195 S JMS-1	53.74	15.82	4.54	2.12	2.87	2.13	4.07	2.24	0.70	0.18	0.102	1.32	1.69	6.79	...	
195 S JMS-2	41.78	14.18	10.96	<0.04	3.24	4.68	5.79	2.70	1.40	1.26	2.26	0.29	0.39	7.13	...	
CRM 195 B 1646a	85.71	4.339	2.870	...	0.647	0.727	0.999	1.041	0.773	0.063	0.030	0.3520	...	...	...	
CRM 195 B 1944	(66)	10.07	5.04	...	...	...	...	...	...	...	0.065	...	...	...	...	continued
CRM 195 B 8704	...	11.52	5.67	...	2.000	3.697	0.745	2.411	0.723	...	0.070	...	...	...	...	
Continuation																
from above	All Elements ppm															
	Ag	As	Ba	Cd	Ce	Co	Cr	Cs	Cu	Ga	Hg	Ni	Pb	Rb	Sb	
195 CG 07302	0.066	6.2	185	0.065	192	2.6	12	16.6	4.9	27.4	0.04	5.5	32	470	0.46	
195 CG 07303	0.59	18	615	0.10	64	11.7	87	7.8	177	15.9	0.05	26	40	79	5.4	
195 CG 07304	0.084	19.7	470	0.19	78	18	81	10	37	20.5	0.044	40	30	130	1.84	
195 CG 07305	0.36	75	440	0.82	89	18.9	70	9.4	137	20.3	0.100	34	112	118	3.9	
195 CG 07306	0.36	13.6	330	0.43	68	24.4	190	9.1	383	16.7	0.045	78	27	107	1.25	
195 CG 07307	1.05	84	720	1.05	78	21	122	5.9	38	17.7	0.053	53	350	147	2.6	
195 CG 07308	0.062	2.4	480	0.081	54	3.6	7.6	3.6	4.1	10.8	0.042	2.7	21	132	0.24	continued
195 CG 07309	0.089	8.4	430	0.26	78	14.4	85	5.1	32	14.0	0.083	32	23	80	0.81	
195 CG 07310	0.27	25	42	1.12	38	15.3	136	2.3	22.6	6.4	0.230	30	27	9.2	6.3	
195 CG 07311	3.2	188	260	2.3	58	8.5	40	17.4	79	18.5	0.072	14.3	636	408	14.9	
195 CG 07312	1.15	115	206	4.0	61	8.8	35	7.9	1230	14.1	0.056	12.8	285	270	24	
195 CG 07313	...	5.8	0.44	...	92	76.7	58.4	9.4	424	23.7	...	150	29.3	97.3	1.85	
195 CG 07315	...	7.1	0.31	0.25	82	81	59	6.8	357	18	0.95	167	37	73	2.0	
195 CG 07316	...	4.6	0.25	0.30	55	53	38	4.5	231	12	0.13	108	22	50	1.3	
195 CG 08301	...	56	375	2.45	...	16.5	90	...	53	...	0.22	32	79	...	...	continued
195 S JLK-1	0.198	26.8	574	0.572	87.9	18.0	69.0	10.9	62.9	21.4	0.142	35.0	43.7	147	1.68	
195 S JSD-1	0.036	2.42	520	0.146	34.4	11.2	21.5	1.89	22.0	17.2	0.0155	7.04	12.9	67.4	...	
195 S JSD-2	1.04	38.6	1199	3.06	23.4	48.4	108	1.07	1117	15.3	0.106	92.8	146	26.9	12.5	continued
195 S JMS-1	...	18	307	...	...	18.1	133	5.9	88	...	...	53	49	88	1.4	
195 S JMS-2	...	35	1856	...	...	226	78	3.0	447	...	...	311	88	65	4.5	
195 B 1646a	<0.3	6.23	(210)	0.148	(34)	(5)	40.9	...	10.01	(5)	(0.04)	(23)	11.7	(38)	(0.3)	
195 B 1944	(6.4)	18.9	...	8.8	...	...	266	...	(380)	...	...	76.1	330	...	...	continued
195 B 8704	...	(17)	413	2.94	66.5	13.57	121.9	5.83	...	...	...	42.9	150	...	3.07	
Continuation																
from above	All Elements ppm													Type	Size	
	Sc	Se	Sn	Sr	Th	Tl	U	V	Y	Zn	Zr	Others				
195 CG 07302	4.4	0.2	29	28	70	1.9	17	16.5	67	44	460	many		Stream	70g	
195 CG 07303	14.3	1.0	3.4	90	9.2	0.58	1.9	120	22	52	220	many		Stream	70g	
195 CG 07304	15.4	0.29	4.0	142	14.6	1.2	2.6	118	26	101	188	many		Stream	70g	
195 CG 07305	14.5	0.40	4.6	204	15.2	1.16	2.6	109	26	243	220	many		Stream	70g	
195 CG 07306	17	0.30	2.8	266	9.0	1.08	2.4	142	20	144	170	many		Stream	70g	
195 CG 07307	14.6	0.30	5.4	220	12.6	0.93	3.5	96	24	238	162	many		Stream	70g	
195 CG 07308	5.7	0.11	9.4	52	13.4	0.78	3.0	26	18	43	490	many		Stream	70g	
195 CG 07309	11.1	0.16	2.6	166	12.4	0.49	2.6	97	27	78	370	many		Stream	70g	
195 CG 07310	4.1	0.28	1.4	25	5.0	0.21	2.1	107	14	46	70	many		Stream	70g	
195 CG 07311	7.4	0.20	370	29	23.3	2.9	9.1	47	4.3	373	153	many		Stream	70g	
195 CG 07312	5.1	0.25	54	24	21.4	1.76	7.8	47	29	498	234	many		Stream	70g	
195 CG 07313	25.6	...	...	267	13.9	...	1.98	112	104	160	177	many		Marine	50g	
195 CG 07315	23	...	...	298	11	...	1.9	101	98	137	140	many		Marine	50g	
195 CG 07316	15	...	...	667	7.0	...	1.1	69	69	142	94	many		Marine	50g	
195 CG 08301	...	0.39	...	...	...	...	...	96	...	251	...			River	50g	
195 S JLK-1	15.9	0.641	5.7	67.5	1.23	1.17	3.83	117	40.0	152	137	many		Lake	100g	
195 S JSD-1	10.9	0.25	2.77	340	4.44	0.407	1.00	76.0	14.8	96.5	132	many		Stream	20g	
195 S JSD-2	17.5	18.8	32.5	202	2.33	...	1.10	125	17.4	2056	111	many		Stream	20g	
195 S JMS-1	...	...	...	154	...	...	...	127	24.3	264	132			Marine	100g	
195 S JMS-2	...	...	...	454	...	...	...	183	254	166	220			Marine	100g	
195 B 1646a	(5)	0.193	(1)	(68)	(5.8)	<0.5	(2.0)	44.84	...	48.9	...			Estuarine	70g	
195 B 1944	...	(1.4)	(42)	...	...	(0.59)	...	...	...	...	...	plus PAHs, PCBs		New York	50g	
195 B 8704	11.26	...	...	...	9.07	...	3.09	94.6	...	408	...			Buffalo River	50g	

19. Sediment / Sludge

Powders

19.5.1 Sediments (continued)																L.O.I.		
		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	FeO	MgO	CaO	Na ₂ O	K ₂ O	TiO ₂	P ₂ O ₅	MnO	S	C	H ₂ O	1000°C		
CRM	195 A SA 46	35.9	6.71	28.16	(18.0)	3.16	1.32	0.28	0.35	0.6	0.11	1.14	(0.17)	...	...	...	continued	
CRM	195 A SA 51	33.81	11.87	18.36	(3.0)	0.92	0.86	0.07	0.33	0.82	0.21	0.21	(0.24)	...	...	...		
CRM	195 A SA 52	57.81	9.38	19.71	(4.0)	0.6	0.37	(0.1)	0.25	1.3	0.09	0.27	(0.02)	...	...	...		
	195 A LKSD-1	40.1	7.8	4.1	...	1.7	10.8	2.0	1.1	0.5	0.2	0.1	1.57	12.3	2.92	29.9	continued	
	195 A LKSD-2	58.9	12.3	6.2	...	1.7	2.2	1.9	2.6	0.6	0.3	0.3	0.14	4.5	2.23	13.6		
	195 A LKSD-3	58.5	12.5	5.7	...	2.0	2.3	2.3	2.2	0.5	0.2	0.2	0.14	4.5	2.07	13.4		
	195 A LKSD-4	41.6	5.9	4.1	...	0.9	1.8	0.7	0.8	0.4	0.3	0.1	0.99	17.7	6.55	43.6		
	195 A STSD-1	42.5	9.0	6.5	...	2.2	3.6	1.8	1.2	0.8	0.4	0.5	0.18	12.3	4.46	31.6		
	195 A STSD-2	53.7	16.1	7.5	...	3.1	4.0	1.7	2.1	0.8	0.3	0.1	0.06	1.6	2.43	10.3		
	195 A STSD-3	48.6	10.9	6.2	...	2.2	3.3	1.5	1.8	0.7	0.4	0.3	0.14	8.4	3.47	23.6		
	195 A STSD-4	58.9	12.1	5.7	...	2.1	4.0	2.7	1.6	0.8	0.2	0.2	0.09	4.1	1.73	11.6		
Continuation from above		All Elements ppm																
		Ag	As	Ba	Ce	Co	Cr	Cs	Cu	Ga	Ni	Pb	Rb	Sb				
	195 SA 46	...	...	(180)	(110)	56	559	...	566	...	(125)	(1.3)	(20)	...	continued			
	195 SA 51	...	...	(335)	(120)	60	509	...	268	(20)	178	5200	37	...				
	195 SA 52	...	...	(410)	(210)	81	1300	...	219	(15)	182	1200	20	...				
	195 A LKSD-1	0.6	40	430	27	11	31	1.5	44	...	16	82	24	1.2	continued			
	195 A LKSD-2	0.8	11	780	108	17	57	3.0	37	...	26	44	85	1.1				
	195 A LKSD-3	2.7	27	680	90	30	87	2.3	35	...	47	29	78	1.3				
	195 A LKSD-4	<0.5	16	330	48	11	33	17	31	...	31	91	28	1.7				
	195 A STSD-1	<0.5	23	630	51	17	67	1.8	36	...	24	35	30	3.3				
	195 A STSD-2	0.5	42	540	93	19	116	12	47	...	53	66	104	4.8				
	195 A STSD-3	<0.5	28	1490	63	16	80	5.2	39	...	30	40	68	4.0				
	195 A STSD-4	<0.5	15	2000	44	13	93	1.9	65	...	30	16	39	7.3				
Continuation from above		All Elements ppm																
		Sc	Se	Sn	Sr	Th	U	V	Y	Zn	Zr	Others				Type	Size	
	195 SA 46	...	...	...	25	...	...	225	(20)	5900	101				Stream	100g		
	195 SA 51	...	...	...	44	(10)	...	1.81	21	2200	121				Stream	100g		
	195 SA 52	...	...	...	25	(11)	...	346	20	264	250				Stream	100g		
	195 A LKSD-1	9	...	16	250	2.2	9.7	50	19	331	134	many				Lake	100g	
	195 A LKSD-2	13	...	5	220	13.4	7.6	77	44	209	254	many				Lake	100g	
	195 A LKSD-3	13	...	3	240	11.4	4.6	82	30	152	178	many				Lake	100g	
	195 A LKSD-4	7	...	5	110	5.1	31.0	49	23	194	105	many				Lake	100g	
	195 A STSD-1	14	...	4	170	3.7	8.0	98	42	198	218	many				Stream	100g	
	195 A STSD-2	16	...	5	400	17.2	18.6	101	37	246	185	many				Stream	100g	
	195 A STSD-3	13	...	4	230	5.5	10.5	134	36	204	196	many				Stream	100g	
	195 A STSD-4	14	...	2	350	4.3	3.0	106	24	107	190	many				Stream	100g	
19.5.2 Sludges																		
		% Ca	% Fe	% P	% Si	ppm As	ppm Cd	ppm Cu	ppm Pb	ppm Hg	ppm Mo	ppm Ni	ppm Se	ppm Zn	ppm Cr	ppm Ag	Type	Size
CRM	195 B 2781	(3.9)	(2.8)	(2.42)	(5.1)	7.82	12.78	627.4	202.1	3.64	46.7	80.2	16.0	1273	(202)	(98)	Domestic	40g
CRM	195 B 2782	0.67	26.9	0.50	(20.3)	166	4.17	2594	574	1.10	10.07	154.1	0.44	1254	109	30.6	Industrial	70g

19. Gypsum/Limestone & Dolomite

Powders

19.6 Gypsum		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	K ₂ O	Na ₂ O	TiO ₂	SO ₃	CO ₂	Cl	H ₂ O+	SrO	L.O.I.	P ₂ O ₅	V ₂ O ₅	Size
	196 CG 03109a	1.68	0.34	0.16	39.24	1.74	0.094	0.065	0.016	51.91	(4.02)	0.033	0.39	(0.27)	4.55	...	...	50g
	196 CG 03110	7.21	1.92	0.63	28.5	4.92	0.38	0.021	...	32.55	(8.63)	0.019	14.27	(0.071)	(23.55)	...	...	50g
	196 CG 03111a	0.63	0.14	0.11	32.3	2.47	0.026	0.14	0.01	40.72	(5.44)	0.0032	17.45	(0.096)	23.6	...	...	50g
	196 CD FGD-1	0.13	0.023	0.014	32.7	0.007	0.007	0.005	...	46.4	0.02	...	20.70	0.012	21.04	0.03	0.0003	100g
	196 CD FGD-2	0.21	0.033	0.043	32.8	0.019	0.01	0.02	...	45.6	0.62	...	20.38	0.024	21.33	0.05	0.0009	100g
	196 CD GYP-A	0.45	0.10	0.05	32.9	0.18	0.021	0.009	...	46.2	0.47	...	19.4	0.11	20.06	0.011	...	100g
	196 CD GYP-B	1.05	0.17	0.07	32.8	1.80	0.05	0.021	...	41.0	5.0	...	17.80	0.14	22.85	0.010	...	100g
	196 CD GYP-C	3.5	0.79	0.40	30.4	5.35	0.36	0.022	...	33.0	11.2	...	14.37	0.35	25.93	0.018	...	100g
	196 CD GYP-D	8.7	2.03	1.08	28.2	1.73	0.54	0.07	...	36.7	3.6	...	16.39	0.18	20.82	0.025	...	100g
	196 CD TIG-1	0.11	0.57	0.26	32.3	0.12	0.008	0.036	0.82	43.4	1.41	...	20.3	0.42	22.03	0.04	0.10	100g
19.7 Limestone and Dolomite		CaO	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	MnO	P ₂ O ₅	SrO	MgO	Na ₂ O	K ₂ O	Cr ₂ O ₃	L.O.I.	Other	Type	Size	
CRM	197 E 35	53.8	1.98	0.24	0.14	0.013	0.012	0.008	0.04	0.7	0.004	0.1	...	43.0		Calcitic	80g	
CRM	197 E 44	50.5	2.69	0.33	0.3	0.019	0.015	0.013	0.04	2.93	0.002	0.12	...	42.9			80g	
CRM	197 E 122	32.0	4.3	1.24	0.65	0.06	0.042	0.048	0.018	17.5	0.019	0.43	...	43.3		Dolomitic	80g	
CRM	197 A E752-1	55.4	0.70	0.12	0.045	0.009	0.010	(<0.01)	0.019	0.15	(<0.03)	0.02	...	43.4	BaO 0.006	Limestone	100g	
CRM	197 A E782-1	30.34	0.266	0.104	0.450	0.0042	0.081	0.0128	...	21.29	...	0.0260	0.0009	47.25		Dolomite	100G	
CRM	197 TI E701-1	52.7	1.99	0.55	1.04	0.03	0.028	0.05	...	0.6	...	...	...	...	S 0.040	Calcitic	100g	
	197 GC AN34	57.2	1.02	0.38	1.05	0.02	...	...	...	40.0	0.11	0.08	0.01	...	Mn ₃ O ₄ 0.14	Dolomite	100g	
	197 GC 2CAS6	30.8	1.71	0.67	0.49	0.03	...	...	...	19.7	0.04	0.14	<0.01	45.9	Mn ₃ O ₄ 0.07	Dolomitic	100g	
Results calculated to the Ignited Basis																		
	197 DH X0907	28.67	3.91	0.846	0.84	0.065	0.046	0.067	...	20.06	0.045	0.349	...	44.68	SO ₃ 0.105	Dolomite	100g	
	197 DH X0908	26.57	8.55	1.93	1.19	0.140	0.045	0.086	...	18.59	0.056	0.734	...	41.39	SO ₃ 0.242	Dolomite	100g	
	197 DH X0909	34.94	6.71	1.55	0.92	0.110	0.037	0.065	...	12.99	0.043	0.589	...	41.59	SO ₃ 0.180	Dolomite	100g	
	197 DH X0912	32.78	7.14	5.59	11.36	0.292	1.34	0.495	...	27.99	0.051	0.076	...	12.43	SO ₃ 0.502	Recycled Dolomite	100g	
	197 DH X0913	25.23	5.23	3.44	18.76	0.164	0.78	0.226	...	30.31	0.041	0.058	...	14.89	SO ₃ 0.389	Recycled Dolomite	100g	
	197 S JLS-1	55.09	0.120	0.0207	0.0178	0.0020	0.00209	0.0295	0.035	0.606	0.00194	0.00297	0.0005	...	~50 elements at ppm levels		100g	
	197 S JDO-1	33.96	0.216	0.0174	0.0232	0.00133	0.00657	0.0343	0.014	18.47	0.0129	0.00232	0.0012	...	~50 elements at ppm levels		100g	
	197 CG 03105	53.27	1.98	0.29	0.14	0.016	0.0045	0.0088	...	1.40	0.026	0.059	...	42.82	SO ₃ , Cl		50g	
	197 CG 03105a	54.03	1.09	0.24	0.11	0.010	0.0067	0.0081	...	0.81	0.017	0.084	...	43.12	SO ₃ , Cl		50g	
	197 CG 03106	50.38	4.38	0.64	0.29	0.034	0.0071	0.013	...	2.28	0.07	0.14	...	41.58	SO ₃ , Cl		50g	
	197 CG 03106a	51.61	2.09	0.33	0.17	0.015	0.0089	0.0061	...	2.25	0.017	0.17	...	42.84	SO ₃ , Cl		50g	
	197 CG 03107	49.94	3.76	1.25	0.78	0.059	0.019	0.04	...	2.18	0.026	0.5	...	41.35	SO ₃ , Cl		50g	
	197 CG 03108	47.49	3.84	0.88	1.97	0.014	0.19	0.04	...	3.63	0.024	0.23	...	41.52	SO ₃ , Cl		50g	
	197 CG 07108	35.67	15.60	5.03	2.52	0.327	0.056	0.051	0.108	5.19	0.081	0.78	0.004	34.5	~50 elements at ppm levels		70g	
	197 CG 07114	30.02	0.62	0.1	0.04	0.015	0.01	0.006	0.006	21.8	0.03	0.038	0.0005	47.1	~50 elements at ppm levels		100g	
	197 CG 07214	54.95	0.38	0.017	0.071	...	0.009	...	...	0.67	...	...	...	43.57	P, S		50g	
	197 CG 07215	51.56	1.17	0.5	0.292	...	0.018	...	...	2.67	...	...	...	43.22	P, S		50g	
	197 CG 07216	36.55	0.092	0.027	0.226	...	0.029	...	...	16.59	...	...	...	46.23	P, S	Dolomite	50g	
	197 CG 07217	30.6	0.96	0.295	0.376	...	0.062	...	...	20.73	...	...	...	46.3	P, S	Dolomite	50g	
	197 CG 07210	51.32	3.26	0.58	1.04	0.037	0.024	36.89	0.077	0.43	0.33	0.17	...	...	F 3.54	Phosphate	100g	
	197 CG 07211	40.71	3.61	2.58	1.08	0.14	0.015	2.086	0.16	8.19	0.059	0.28	...	...	F 2.05	Phosphate	100g	
	197 CG 07212	19.42	38.8	4.06	3.08	0.48	0.026	6.06	0.055	7.12	0.14	2.63	...	...	F 0.51	Phosphate	100g	
	197 BG COD 35B	32.44	0.100	0.037	0.017	...	...	...	...	20.03	...	...	...	47.24	CO ₂ 47.29	Dolomite	50g	
	197 B 88b	29.95	1.13	0.336	0.277	...	0.0160	0.0044	0.0076	21.03	0.0290	0.1030	...	...	CO ₂ 46.37	Dolomitic limestone	75g	
19.7a Trace elements in Synthetic Limestone		All Elements ppm																
		Ag	As	B	Ba	Be	Bi	Cd	Ce	Co	Cr	Cu	Ga	La	Li	Mn		
	197 CG 07712	0.030	2.2	2.2	24	0.22	0.23	0.023	2.8	2.3	2.3	2.2	2.8	2.6	3.2	37		
	197 CG 07713	0.060	5.2	5	54	0.52	0.53	0.053	5.8	5.3	5.3	5.2	5.8	5.6	6.2	67		
	197 CG 07714	0.11	10.2	10	104	1.0	1.0	0.10	11	10.3	10.3	10.2	10.8	10.6	11.2	117		
	197 CG 07715	0.21	20	20	204	2.0	2.0	0.20	21	20.3	20.3	20	20.8	20.6	21	217		
	197 CG 07716	0.51	50	50	504	5.0	5.0	0.50	51	50	50	50	51	50.6	51	517	continued	
	197 CG 07717	1.0	100	100	1000	10	10	1.00	101	100	100	100	101	101	101	1020		
	197 CG 07718	2.0	200	200	2000	20	20	2.00	200	200	200	200	200	200	200	2020		
	197 CG 07719	5.0	500	500	5000	50	50	5.00	500	...	...	500	...	...	500	5000		
	197 CG 07720	10	...	...	...	100	100	10	...	...	...	1000	...	...	...	10000		
In each case, the matrix for this set is the same: 85% CaCO ₃ , 8% MgCO ₃ , 5.2% SiO ₂ , 1.1% Al ₂ O ₃ , trace Fe ₂ O ₃ , Na ₂ SO ₄ .																		
Continuation from above		All Elements ppm																
		Mo	Nb	Ni	Pb	Sb	Sn	Sr	Ti	V	W	Y	Yb	Zn	Zr		Size	
	197 CG 07712	0.21	2.5	2.1	2.4	0.21	0.28	110	31	3.2	0.22	2.1	0.22	3.0	4.0		70g	
	197 CG 07713	0.51	5.5	5.1	5.4	0.51	0.58	200	61	6.2	0.52	5.1	0.52	6.0	7.0		70g	
	197 CG 07714	1.0	10.5	10	10.4	1.0	1.1	250	111	11.2	1.0	10	1.0	11	12		70g	
	197 CG 07715	2.0	20.5	20	20.4	2.0	2.1	350	210	21	2.0	20	2.0	21	22		70g	
	197 CG 07716	5.0	50.5	50	50	5.0	5.1	650	510	51	5.0	50	5.0	51	52		70g	
	197 CG 07717	10	100	100	100	10	10	1150	1010	101	10	100	10	101	102		70g	
	197 CG 07718	20	200	200	200	20	20	2200	2000	200	20	200	20	200	202		70g	
	197 CG 07719	50	...	500	500	50	50	5200	5000	500	50	...	50	500	500		70g	
	197 CG 07720	100	...	...	1000	100	100	...	...	...	100	...	100	1000	...		70g	

20. Slag

Powder

20.1 Slags		SiO ₂	Al ₂ O ₃	Total Fe	TiO ₂	Cr ₂ O ₃	MnO	CaO	MgO	S	P ₂ O ₅	Na ₂ O	K ₂ O	C	Others	Type	Size
	201 DH X3220	36.31	9.21	0.333	0.494	...	0.614	42.78	6.10	1.00	0.004	0.322	0.607	0.413	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3203	36.95	9.46	0.422	0.489	...	0.936	41.41	6.56	0.814	0.017	0.481	0.672	0.226	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3204	36.14	11.51	1.54	0.871	...	0.772	39.95	4.47	1.01	0.033	0.414	0.744	0.156	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3205	29.00	15.39	0.458	0.575	...	1.72	43.81	4.04	0.801	0.297	0.184	0.353	0.163	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3208	40.72	9.07	0.212	0.482	...	0.550	38.59	8.18	0.942	0.003	0.234	0.779	0.091	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3209	39.03	9.23	0.512	0.489	...	0.636	40.62	8.08	1.09	...	0.135	0.34	0.048	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3210	38.44	9.99	0.414	0.547	...	0.975	37.87	8.13	1.22	...	0.566	2.05	0.036	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3215	36.98	11.03	0.186	1.92	...	0.325	39.93	7.99	1.25	<0.01	0.269	0.570	0.041	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3216	36.74	11.31	0.207	0.875	...	0.253	40.95	8.11	1.44	<0.01	0.207	0.448	0.046	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3217	46.68	10.74	0.796	0.558	...	1.78	35.44	2.72	0.600	...	0.233	0.258	...	ZrO ₂ , SrO, CO ₂	Blast furnace	100g
	201 DH X3911	8.58	0.93	18.51	0.35	0.225	5.71	50.50	1.54	0.160	2.65	...	0.013	...	V ₂ O ₅ 0.59	Converter	100g
	201 DH X3912	9.97	0.372	19.45	0.433	0.155	5.63	49.52	1.41	0.063	2.16	...	0.016	...	V ₂ O ₅ 0.527	Converter	100g
	201 DH X3913	9.87	0.76	14.61	0.42	0.246	5.68	56.31	1.07	0.152	2.29	...	...	...	V ₂ O ₅ 0.55	Converter	100g
	201 DH X3921	10.56	4.79	16.92	0.780	0.287	2.98	50.05	2.99	0.196	1.36	0.020	0.013	...	F 0.500	Converter	100g
	201 DH X3922	8.30	4.07	12.34	0.601	0.226	2.26	61.79	2.67	0.154	1.02	0.016	0.030	...	F 0.411	Converter	100g
	201 DH X3923	11.52	1.27	20.33	1.21	0.216	3.54	46.50	3.23	0.288	1.73	0.014	0.011	...	F 0.030	Converter	100g
	201 DH X3924	8.90	0.598	29.99	0.559	0.231	2.89	39.62	1.66	0.089	1.23	0.022	0.014	...	F 0.359	Converter	100g
	201 DH Q0198	5.39	34.68	8.50	1.99	0.17	4.80	30.35	9.86	<0.01	0.22	0.125	0.030	...	V ₂ O ₅ 0.61	Ladle	100g
	201 DH Q0298	4.29	21.03	13.16	0.27	0.36	5.02	42.97	5.59	<0.01	0.61	0.01	0.01	...	V ₂ O ₅ 0.18	Ladle	100g
	201 DH Q0398	16.20	1.25	16.40	0.96	0.22	3.75	48.06	1.50	0.04	1.80	0.07	0.02	...	V ₂ O ₅ 0.94	Ladle	100g
	201 DH X5101	0.234	39.64	0.536	3.79	0.012	0.114	49.92	4.48	1.54	(0.003)	0.006	0.002	...	...	Vacuum Ladle	100g
	201 DH X5201	1.95	36.11	0.323	0.137	0.004	0.190	50.55	5.45	1.38	0.002	...	...	0.006	F 2.62	Vacuum Ladle	100g
	201 M BS 101/1	23.7	0.61	6.25	0.8	...	3.45	52.4	9.15	0.18	0.78	0.009	0.003	...	...	Steel making	100g
	201 M BS 101/2	16.8	0.92	15.16	0.77	...	4.76	47.0	8.12	0.23	0.7	0.031	0.006	...	...	Steel making	100g
	201 M BS 101/3	18.8	1.47	10.96	0.92	...	5.2	53.7	3.1	0.19	0.77	0.028	0.006	...	...	Steel making	100g
	201 M BS 101/4	16.5	0.87	13.37	1.21	...	4.7	51.9	4.6	0.15	0.8	0.023	0.007	...	...	Steel making	100g
	201 M BS 101/5	14.9	0.57	19.2	1.1	...	5.7	46.0	5.5	0.12	0.71	0.043	0.005	...	...	Steel making	100g
	201 M BS 100A	35.2	10.13	0.3	0.5	...	0.35	37.6	12.9	1.82	...	0.18	0.49	0.07	...	Iron making	100g
	201 M BS Slag1	36.7	18.5	0.28	0.42	...	1.11	30.2	11.01	1.8	...	0.2	0.36	0.07	...	Iron Making	50g
	201 M BS Slag2	37.0	10.3	0.23	0.2	...	0.19	44.6	5.87	1.14	...	0.16	0.17	0.2	...	Iron Making	50g
	201 M BS Slag3	37.44	12.9	0.25	0.63	...	1.72	37.3	8.3	0.81	...	0.26	0.81	0.03	...	Iron Making	50g
CRM	201 A 381	8.78	0.67	13.3	0.35	0.33	3.16	49	1.03	0.19	15.7	...	...	...	V ₂ O ₅ 0.94	Basic	100g
CRM	201 A E879-1	8.82	0.803	18.97	0.535	0.477	4.45	43.7	2.19	0.102	8.46	...	...	...	F 0.368	Basic	100g
CRM	201 S 904-1	33.8	13.4	0.38	0.84	(0.016)	0.91	(41.0)	7.5	0.73	0.02	0.31	0.28	...	...	Blast Furnace	70g
CRM	201 J S9	1.4	31.5	0.03	0.05	...	0.04	29.1	2.2	...	...	...	...	0.042	CaF ₂ 35.5	ESR high-Al	100g
CRM	201 J S10	7.8	0.54	0.08	0.05	...	0.03	20.3	0.3	...	...	...	...	0.022	CaF ₂ 70.7	ESR low-Al	100g
CRM	201 J S11	26.8	2.85	...	0.95	0.17	0.12	60.0	4.7	0.30	(<0.005)	...	...	...	F (7.9)	AOD	100g
CRM	201 TI E802-1	32.45	16.12	0.576	0.61	0.008	0.59	42.84	4.76	0.714	0.25	0.32	0.59	...	...	Blast Furnace	100g
CRM	201 TI E803-1	32.13	13.19	0.613	0.5	...	0.71	43.28	4.05	0.767	0.27	...	...	...	...	Blast Furnace	100g
CRM	201 TI E804-1	5.54	(0.79)	11.92	0.25	...	1.91	51.6	1.46	0.127	17.56	...	...	...	...	Basic	100g
CRM	201 TI E805-1	6.63	0.62	14.87	0.34	...	2.05	48.92	1.86	0.092	16.19	...	...	...	...	Basic	100g
CRM	201 TI E806-1	11.73	0.9	17.89	0.5	...	5.94	46.13	3.02	0.11	2.25	...	...	...	...	Basic	100g
CRM	201 TI E878-1	33.75	15.97	0.6	0.62	0.248	1.28	35.62	9.62	0.83	0.03	0.47	1.29	...	F 0.15	Blast Furnace	100g
	201 CG 01701	28.24	14.63	0.44	0.34	...	0.085	49.44	4.15	1.01	...	0.057	0.058	...	...	Blast Furnace	50g
	201 CG 01702	38.67	9.03	0.21	0.28	...	0.272	44.57	4.07	1.19	...	0.18	0.61	...	...	Blast Furnace	50g
	201 CG 01703	36.09	12.28	0.30	0.44	...	0.142	40.98	7.17	0.92	...	0.38	0.91	...	...	Blast Furnace	50g
	201 CM 1734	36.27	11.35	0.33	0.45	...	1.73	44.87	2.59	0.55	...	...	...	...	...	Blast Furnace	100g
	201 CM 1735	36.61	7.46	...	0.66	...	0.425	46.61	5.95	1.559	2.04	...	...	...	...	Blast Furnace	100g
	201 CM 1738	36.62	7.84	0.33	0.39	...	0.22	42.45	8.18	0.53	0.074	...	...	...	...	Blast Furnace	100g
	201 CM 1739	39.95	7.64	0.62	0.41	...	0.31	41.55	8.07	0.43	0.018	...	...	...	...	Blast Furnace	100g
	201 CM 1740	40.66	8.28	0.42	0.45	...	0.23	40.46	7.61	0.58	0.010	...	...	...	...	Blast Furnace	100g
	201 CM 1741	13.72	7.60	12.13	0.47	...	1.24	35.68	24.36	0.070	0.67	...	...	...	...	Steel making	100g
	201 CM 1744	8.91	3.92	34.33	0.32	...	2.01	26.73	12.15	0.107	0.87	...	...	...	...	Steel making	100g
		SiO ₂	Al ₂ O ₃	Total Fe	TiO ₂	MnO	Total Ca	MgO	S	P ₂ O ₅	Na ₂ O	K ₂ O	F			Type	Size
	201 CG 01704	10.24	0.62	13.6	0.565	1.88	40.62	6.89	0.105	1.03	...	...	0.105	...	...	Converter	50g
	201 CG 01705	13.73	1.43	12.56	0.52	3.03	37.39	8.33	0.126	1.08	...	...	0.126	...	...	Converter	50g
	201 CG 01706	19.13	4.73	11.21	0.445	3.63	35.27	5.18	0.192	1.15	0.064	0.038	0.192	...	...	Converter	50g
	201 CG 01707	26.4	7.75	5.55	0.531	1.93	31.73	9.24	0.459	0.58	0.12	0.36	0.459	...	...	Converter	50g
	201 CG 01708	12.2	3.08	18.82	0.781	1.64	25.90	11.67	0.089	0.95	0.03	0.052	0.089	...	...	Converter	50g
	201 CM 1745	14.91	1.78	13.38	0.42	1.86	37.64	9.28	0.097	1.02	...	...	0.97	...	...	Steel making	100g
	201 CM 1756	21.35	4.00	13.12	0.18	13.16	16.19	21.18	0.036	...	...	...	0.17	...	...	Arc Furnace	100g
	201 CM 1757	24.77	8.73	2.25	0.25	2.39	28.87	15.67	0.25	...	...	...	0.82	...	...	Arc Furnace	100g

20.1 Slags (continued)		SiO ₂	Al ₂ O ₃	Total Fe	TiO ₂	Cr ₂ O ₃	MnO	CaO	MgO	S	P ₂ O ₅	V	B ₂ O ₃	Type	Size		
CRM	201 LI 7-1-005	35.3	10.0	0.21	0.32	...	0.47	38.8	12.0	...	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-006	38.5	7.05	0.59	0.34	...	1.24	...	16.8	...	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-007	39.0	6.2	0.55	0.39	...	0.78	31.2	18.9	...	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-008	39.1	8.4	0.30	0.30	...	0.73	42.1	6.1	...	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-009	32.8	9.2	...	0.38	...	0.60	49.6	1.1	1.17	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-010	44.0	7.94	5.5	0.91	...	3.40	31.2	0.73	0.14	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-011	21.9	24.0	...	...	...	...	29.4	17.5	...	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-012	51.4	45.2	...	...	...	0.06	0.57	...	...	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-013	20.3	38.6	1.12	0.78	...	0.26	28.7	8.0	...	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-014	33.57	24.0	...	...	...	...	30.1	9.3	...	...	...	...	Blast furnace	75g		
CRM	201 LI 7-1-015	...	14.5	1.68	...	...	0.58	28.0	9.2	...	...	...	...	Blast furnace	75g		
CRM	201 DB E826-1	8.96	1.31	...	...	0.26	...	46.48	...	...	14.65	0.503	...	phosphate	100g		
CRM	201 DB E827-1	6.21	...	...	...	...	...	47.38	...	...	20.70	...	...	phosphate	100g		
	201 SI XS-FCS	24.34	23.72	8.42	...	22.45	...	3.91	15.39	...	...	...	...	Ferro-Chrome	100g		
	201 SI SAM-FMS1	30.21	4.95	0.046	...	...	22.53	30.26	7.38	...	...	...	0.59	Ferro-Manganese	100g		
	201 SI SAM-SMS1	43.28	8.96	0.125	...	...	16.81	19.47	5.16	...	...	...	0.26	Silico-Manganese	100g		
20.1.1 Titanium Slag		TiO ₂	Fe ₂ O ₃	SiO ₂	Al ₂ O ₃	MgO	CaO	MnO	Cr ₂ O ₃	V ₂ O ₅				Size			
	201A SA 57	85.4	11.8	1.72	1.23	0.98	0.16	1.76	0.16	0.39				100g			
	201 A SA 58	84.1	9.6	2.95	2.17	0.69	0.22	1.44	...	0.4				100g			
20.3 Sinters		Si	Al	Total Fe	FeO	Ti	Mn	Ca	Mg	S	P	Na	K	F	V	Size	
	203 M BS 104	3.72	0.55	54.6	...	0.06	0.81	7.4	0.78	0.014	0.044	0.02	0.12	...	...	100g	
CRM	203 TI E611-1	2.07	0.69	62.22	(13.8)	0.033	1.97	2.85	0.32	(0.008)	0.03	...	...	...	...	100g	
CRM	203 TI E612-1	5.94	3.0	42.4	(9.2)	0.151	0.363	12.06	1.2	0.053	0.885	...	...	...	...	100g	
CRM	203 A E676-1	6.40	3.4	39.76	...	0.19	0.83	12.78	1.16	0.12	0.59	0.095	0.43	0.1	0.07	100g	
		SiO ₂	Al ₂ O ₃	Total Fe	Ti	Mn	CaO	MgO	S	P	Cu	K ₂ O	Na ₂ O	Fe		Size	
	203 CG 07219	6.38	2.45	54.24	0.087	0.066	11.03	3.21	0.014	0.06	0.005	0.084	0.054	(9.06)		100g	
20.4.1 Fluorspar		CaF ₂	CaCO ₃	MgCO ₃	SiO ₂	Fe ₂ O ₃	K ₂ O	P	S	Al ₂ O ₃	Ba	Pb	Na ₂ O	F	Others	Type	Size
	204 DH X2703	85.94	0.587	0.052	12.35	0.151	0.133	...	...	0.392	0.046	0.003	0.009	41.83	CO ₂ , H ₂ O		100g
	204 DH X2704	74.31	0.591	0.052	24.33	0.103	0.067	...	...	0.332	0.005	...	0.007	36.17	CO ₂ , H ₂ O		100g
	204 DH X2707	86.03	6.44	0.146	6.16	0.257	0.042	...	...	0.371	0.005	0.003	0.061	41.87	CO ₂ , H ₂ O		100g
	204 DH X2709	77.84	0.019	0.033	0.77	15.77	0.028	...	...	0.310	0.007	0.005	0.030	37.91	CO ₂ , H ₂ O		100g
	204 DH X2712	82.85	2.96	1.55	0.373	0.373	0.125	...	...	1.01	0.009	0.095	...	40.32	CO ₂ , H ₂ O		100g
CRM	204 A SA 14	97.32	(0.3)	(0.03)	(0.57)	0.06	...	(0.079)	...	...	...	...	...	...		Buffalo	100g
CRM	204 A SA 15	97.84	0.95	0.55	(0.26)	(0.23)	...	0.007	...	...	...	...	...	...	Mn 0.0213	Marico	100g
CRM	204 J C	76.91	...	...	8.2	0.7	...	0.026	1.75	0.66	8.2	0.07	...	37.43			100g
CRM	204 J D	97.07	...	...	(1.5)	0.2	...	0.035	0.004	0.04	...	<0.001	...	47.24			100g
	204 GB 39	...	...	...	...	...	...	...	...	...	(0.44)	...	...	46.85	Sr (0.014)		50g
CRM	204 S 883-1	75.24	0.29	...	20.16	...	...	0.008	0.39	...	...	...	...	...	As 0.0012	China	70g
CRM	204 A 392	97.2	1.0	...	0.67	...	...	...	0.12	...	0.33	0.18	...	...			100g
CRM	204 E 95	85.4	...	...	8.3	0.36	...	...	...	...	...	...	...	...			100g
CRM	204 CG 07250	94.91	(0.02)	...	4.72	0.096	0.019	0.0025	0.029	...	...	...	0.005	...			65g
CRM	204 CG 07251	90.87	(0.02)	...	8.35	0.124	0.026	0.0031	0.090	...	...	...	0.005	...			65g
CRM	204 CG 07252	92.57	(0.02)	...	6.84	0.124	0.029	0.0024	0.043	...	...	...	0.006	...			65g
CRM	204 CG 07253	85.21	(0.02)	...	14.15	0.209	0.044	0.0013	0.045	...	...	...	0.005	...			65g
CRM	204 CG 07254	98.59	0.27	...	0.87	0.087	...	0.007	0.011	...	...	...	...	...			65g
20.4.2 Aluminium Fluoride		F	Na	Si	Fe	Ca	P	S	L.O.I.							Size	
	204 CA ALF-01	62.0	0.32	0.070	0.009	0.017	0.0100	0.28	...							100g	
	204 CA ALF-02	63.0	0.26	0.130	0.010	0.014	0.0100	0.26	...							100g	
	204 CA ALF-03	64.3	0.27	0.120	0.009	0.014	0.0090	0.25	...							100g	
	204 CA ALF-04	63.0	0.29	0.100	0.007	0.016	0.0090	0.31	...							100g	
	204 CA ALF-05	63.3	0.29	0.090	0.006	0.015	0.0060	0.10	...							100g	
	204 ML SRP-8	62.4	0.21	0.16	0.010	...	0.030	0.14	0.69							50g	
20.4.3 Cryolite		F	Na	Al	Si	Fe	S	Ca	Cl	P	CO ₂	L.O.I.				Type	Size
	204 CA CAA	40.5	30.6	13.5	0.26	0.053	1.71	...	...	...	...	...					100g
	204 CA CAB	44.3	30.1	11.9	0.16	0.067	2.59	...	...	...	...	...					100g
	204 CA CAC	44.7	32.9	11.9	0.24	0.039	2.16	...	...	...	...	...					100g
	204 CA CAG	47.7	31.9	12.2	0.035	0.013	1.28	...	...	...	...	...					100g
	204 ML SRP-2	50.8	31.2	14.0	0.61	0.035	0.36	0.05	0.02	...	...	0.40				Synthetic	50g
	204 ML SRP-9	49.0	31.7	12.4	0.12	0.014	0.67	0.02	...	0.002	1.52	2.84				Synthetic	50g
	204 ML SRM-3	54.3	32.8	12.9	0.07	0.008	...	0.018	...	...	...	0.08				Natural (greenland)	200g

20. Iron Ore

Powders

20.2 Iron Ore		Total														Type	Size
		Fe	SiO ₂	TiO ₂	CaO	MgO	Al ₂ O ₃	Na ₂ O	K ₂ O	Mn	P	S	Pb	Cu	Zn		
CRM	202 E 27	61.89	7.94	0.1	0.018	0.042	1.74	...	...	0.24	0.054	0.004	...	...	...	Mt Wright, Quebec Schefferville, Quebec	100g
CRM	202 E 30	65.01	2.7	0.047	2.59	0.29	0.82	...	...	0.03	0.026	0.012	...	...	...		100g
	202 AU 3001	53.95	8.56	...	0.46	0.17	4.06	0.010	0.055	0.045	0.322	0.229	0.014	0.169	0.018		100g
	202 AU 3002	62.78	5.35	...	1.11	0.34	1.01	0.024	0.017	0.053	0.052	0.035	0.0009	0.008	0.0033		100g
	202 AU 3003	54.05	8.42	...	0.54	0.18	4.07	0.011	0.051	0.047	0.336	0.192	0.012	0.144	0.017		100g
	202 AU 3004	52.02	11.28	...	1.68	0.71	4.11	0.040	0.141	0.31	0.278	0.103	0.0051	0.074	0.016		100g
	202 AU 3005	56.09	10.24	...	3.60	1.12	1.06	0.058	0.031	0.091	0.04	0.095	0.0019	0.018	0.0074		100g
	202 AU 3006	61.63	6.32	...	1.68	1.47	0.78	0.051	0.04	0.129	0.015	0.296	0.0015	0.014	0.0093		100g
CRM	202 A MW1	66.08	4.6	(0.13)	0.054	0.032	0.3	(0.015)	0.013	(0.016)	0.011	(0.011)	...	...	...	Lincolnshire	200g
CRM	202 A SCH1	60.73	8.09	0.05	0.041	0.03	0.96	0.025	0.031	0.777	0.054	0.007	...	...	...		100g
CRM	202 A E651-1	23.85	7.40	0.16	22.6	1.73	4.26	0.07	0.32	...	0.35	0.40	...	...	...	Total	100g
	202 M BS 103	59.41	8.12	0.04	1.27	0.34	0.96	(0.05)	(0.07)	0.47	0.058	0.065	...	...	...		
		Fe	FeO	SiO ₂	TiO ₂	CaO	MgO	Al ₂ O ₃	Na ₂ O	K ₂ O	Mn	P	S				
CRM	202 A SA 11	66.16	...	3.1	0.064	0.045	0.021	1.38	0.015	0.14	0.0113	0.042	0.012	continued			
CRM	202 A SA 12	66.63	...	0.34	0.72	1.09	2.8	0.77	0.012	0.13	0.17	0.048	0.069				
CRM	202 S 803-6	65.50	(0.27)	2.88	0.059	(0.018)	0.020	1.22	(0.006)	(0.005)	0.020	0.048	(0.011)				
CRM	202 S 805-1	68.04	...	0.49	0.029	0.028	0.033	1.02	(0.004)	(0.006)	0.25	0.044	(0.003)				
CRM	202 S 812-3	59.95	24.23	14.47	0.061	0.64	0.46	0.42	...	...	0.032	0.043	0.021				
CRM	202 S 814-1	65.7	...	3.88	0.06	0.78	1.43	0.47	0.117	0.103	0.025	0.036	0.845	continued			
CRM	202 S 820-2	57.0	...	5.75	0.25	0.12	0.084	2.78	0.019	(0.009)	0.077	0.036	0.033				
CRM	202 S 831-1	57.03	28.35	3.73	7.77	1.33	3.28	3.69	0.114	0.078	0.5	0.168	0.006				
CRM	202 S 850-4	65.67	(0.3)	4.12	0.056	0.41	0.79	0.4	0.129	0.075	0.019	0.013	0.006				
CRM	202 S 851-4	56.16	5.95	5.41	0.31	9.91	1.62	2.01	...	...	0.26	0.060	0.012				
CRM	202 S 852-2	66.83	...	1.7	0.48	0.13	1.15	0.38	0.03	0.007	0.077	0.014	(0.002)				
CRM	202 S 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)				
CRM	202 J 28	65.86	2.4	4.2	0.2	0.3	0.3	0.6	0.106	0.12	...	0.045	0.004				
CRM	202 J 29	71.09	28.35	0.47	0.25	0.09	0.25	0.27	0.034	0.012	...	0.008	0.016	continued			
CRM	202 J 30	34.67	11.9	38.6	0.11	3.39	3.72	...	0.24	0.78	...	0.019	0.028				
CRM	202 J 42	70.83	...	0.60	0.207	0.177	0.46	0.214	0.029	0.016	0.062	0.025	0.007				
Continuation from above		Cu	Ni	Cr	V	Zn	Fe ₂ O ₃	MnO	P ₂ O ₅	V ₂ O ₅	ppm As	ppm Pb	ppm Co	ppm Cd	Type	Size	
	202 SA 11	0.0011	0.003	0.0041	0.004	0.0023	...	...	...	...	19.0	18.0	...	3.0	Sishen Hematite	100g	
	202 SA 12	0.0502	0.0281	0.0021	0.052	0.0142	...	...	...	...	(2.0)	25.0	223.0	(5.0)	Phalaborwa Magnetite	100g	
	202 S 803-6	(0.001)	(0.001)	0.010	(0.002)	(0.002)	...	...	...	...	...	...	...	...	Iscor Hematite	100g	
	202 S 805-1	(0.001)	...	...	(0.005)	(0.002)	...	...	...	...	...	...	...	...	MBR Hematite	100g	
	202 S 812-3	0.001	(0.002)	(0.004)	0.003	...	...	...	...	...	...	...	...	...	Musan Ore	100g	
	202 S 814-1	0.036	0.007	...	0.045	0.032	...	...	...	...	...	...	...	...	Peru Magnetite	100g	
	202 S 820-2	(0.001)	(0.003)	(0.002)	(0.005)	0.009	...	...	...	...	...	(10.0)	...	...	Robe River Limonite	70g	
	202 S 831-1	0.007	0.007	0.024	0.3	0.076	...	...	...	...	...	...	...	...	Taharoa Iron Sand	100g	
	202 S 850-4	0.008	(0.006)	(0.003)	0.025	(0.007)	...	...	...	...	...	...	...	...	Marcona Pellet	100g	
	202 S 851-4	...	0.008	0.028	0.031	0.013	...	...	...	...	...	...	...	...	...	100g	
	202 S 852-2	0.006	0.045	(0.004)	0.46	(0.005)	...	...	...	...	...	...	...	...	Savage River Pellet	100g	
	202 S 853-1	...	0.009	0.018	0.19	(0.002)	...	...	...	...	...	...	...	...	...	100g	
	202 J 28	0.002	...	...	...	...	91.5	0.059	0.102	0.21	...	...	...	...	...	150g	
	202 J 29	0.002	...	...	...	...	70.1	0.05	0.018	0.2	...	...	...	...	...	150g	
	202 J 30	0.014	...	...	...	...	36.3	0.15	0.042	<0.005	...	...	...	...	...	150g	
	202 J 42	0.0008	0.0144	0.0044	...	0.0019	...	0.062	...	0.190	(2.0)	(1.0)	102	<0.5	...	150g	
		Total Fe	FeO	SiO ₂	TiO ₂	CaO	MgO	Al ₂ O ₃	Na ₂ O	K ₂ O	Mn	S	NiO	Cr ₂ O ₃			
	202 DH X1101	63.6	0.348	2.05	0.144	0.018	0.018	1.51	0.002	0.009	0.02	0.023	...	0.006			
	202 DH X1102	63.96	8.75	7.82	...	0.195	0.283	0.376	0.034	0.06	0.028	0.061	0.001	...			
	202 DH X1104	63.61	0.168	5.46	0.095	0.028	0.03	1.49	0.01	0.022	0.101	0.004	...	0.007			
	202 DH X1106	58.41	0.576	6.22	0.167	0.964	0.142	3.31	0.024	0.063	0.216	0.029	...	0.02			
	202 DH X1107	62.22	0.144	6.4	0.099	0.056	0.074	2.36	0.006	0.019	0.07	0.009	...	0.003	continued		
	202 DH X1108	64.05	2.73	4.6	0.043	0.007	0.017	1.21	0.003	0.005	0.077	0.008	...	...			
	202 DH X1109	70.47	38.65	0.735	0.313	0.188	0.454	0.297	0.037	0.016	0.046	...	0.019	0.002			
	202 DH X1111	65.44	19.87	7.17	0.039	0.209	0.309	0.155	0.057	0.037	0.023	0.003	...	...			
	202 DH X1112	67.83	0.408	0.597	0.046	0.007	0.018	0.704	0.002	...	0.101	...	...	...			
	202 DH X1122	69.61	29.28	1.23	0.485	0.585	0.448	0.196	0.026	0.066	0.066	0.015	...	...			
Continuation from above		V ₂ O ₅	PbO	ZnO	Co ₃ O ₄	CO ₂	P ₂ O ₅	C	L.O.I 900°C					Type	Size		
	202 DH X1101	0.005	0.005	0.002	...	0.006	0.218	0.181	4.54					Cerro Boliv	100g		
	202 DH X1102	...	...	0.001	...	0.024	0.054	0.053	0.505					Bong-Range	100g		
	202 DH X1104	...	...	0.002	...	0.029	0.144	0.066	1.44					Morro Agudo fines	100g		
	202 DH X1106	...	0.003	0.005	...	0.537	0.129	1.96	...					Bellary	100g		
	202 DH X1107	0.01	0.004	0.004	...	0.016	0.161	0.033	1.61					Mount Newman	100g		
	202 DH X1108	...	...	...	...	0.003	0.138	0.046	2.43					Nimba Washed	100g		
	202 DH X1109	0.224	...	0.003	0.015	0.013	0.062	0.018	0.081					Malmberget	100g		
	202 DH X1111	...	...	...	...	0.073	0.024	0.029	0.366					Guelbs	100g		
	202 DH X1112	...	...	...	...	0.022	0.106	0.038	1.27					Carajas Sinter	100g		
	202 DH X1122	0.226	...	...	...	0.213	0.11	0.066	0.137					Kiruna B	100g		

20.2	Iron Ore	Total															L.O.I. 900°C	Type	Size
		Fe	FeO	SiO ₂	TiO ₂	CaO	MgO	Al ₂ O ₃	Mn	S	Cr ₂ O ₃	P ₂ O ₅	V ₂ O ₅	C	CO ₂				
	202 DH X1123	64.99	0.133	2.65	0.045	0.031	0.034	1.62	0.047	0.011	...	0.122	0.005	0.058	0.007	2.35	Hamerslay	100g	
	202 DH X1124	65.47	0.109	2.54	0.045	2.05	0.135	1.26	0.034	0.004	0.003	0.081	...	0.068	0.098	0.079	Samarco pellets	100g	
	202 DH X1125	64.05	0.193	2.52	0.045	2.53	0.421	1.20	0.068	0.010	0.002	0.087	0.008	0.671	0.929	...	Samarco pellets	100g	
	202 DH X1126	65.88	8.07	4.64	0.046	0.424	0.306	0.151	0.095	0.004	0.002	0.011	0.009	0.28	0.97	0.097	Carol conc.	100g	
	202 DH X1127	62.86	0.611	4.11	0.097	0.139	0.086	2.38	0.050	0.018	...	0.163	0.007	0.14	0.051	2.86	Hamerslay	100g	
	202 DH X1128	65.52	0.144	2.55	0.043	2.08	0.110	1.23	0.044	0.004	...	0.094	0.005	0.030	0.075	0.059	Samarco pellets	100g	
	202 DH X1129	66.185	0.306	0.858	0.083	0.006	0.016	0.645	0.028	0.016	...	0.159	...	0.123	0.003	3.29	San Isidro	100g	
	202 DH X1131	67.22	0.084	0.426	0.044	0.008	0.028	1.26	0.380	0.005	0.006	0.129	0.011	0.059	0.007	1.31	Carajas NPO	100g	
	202 DH X1132	65.21	0.588	5.00	0.053	0.023	0.025	0.811	0.072	0.003	0.017	0.052	0.008	0.033	0.005	0.628	M-Agudo Sinter	100g	
	202 DH X1133	61.04	5.86	9.51	0.032	1.02	0.551	0.185	0.153	...	0.015	0.017	0.007	0.485	1.741	0.101	Carol-Lake	100g	
	202 DH X1134	57.77	0.57	12.79	0.066	0.073	0.095	1.61	0.209	0.011	...	0.131	0.006	0.080	0.036	2.09	Morro Agudo	100g	
	202 DH X5602	58.03	4.64	5.28	0.103	8.54	1.30	1.25	0.362	0.004	0.008	0.093	0.029	0.097	0.196	0.128	Sinter	100g	
	202 DH X5605	58.10	7.97	5.82	0.131	8.04	0.76	1.88	0.421	0.004	0.025	0.110	0.029	0.115	0.198	0.122	Sinter	100g	
	202 DH X5611	51.78	7.33	6.90	0.156	14.07	1.78	1.30	0.878	0.034	0.030	0.285	0.055	0.152	0.513	0.295	Sinter	100g	
	202 DH X5612	53.21	7.48	6.78	0.141	12.74	1.60	1.22	0.759	0.028	0.025	0.255	0.046	0.166	0.464	0.267	Sinter	100g	
	202 DH X5614	57.82	5.21	5.56	0.113	8.80	1.08	1.31	0.308	0.012	0.010	0.096	0.032	0.064	0.173	0.122	Sinter	100g	
	202 DH X5619	57.33	7.04	6.05	0.102	8.78	1.72	1.38	0.287	0.009	0.031	0.129	0.019	0.037	0.043	0.090	Sinter	100g	
	202 DH X5620	58.04	7.64	5.84	0.093	8.19	1.54	1.41	0.241	...	0.026	0.126	0.016	0.033	0.041	0.098	Sinter	100g	
	202 DH X5621	55.97	5.98	7.90	0.087	8.32	2.04	1.28	0.331	0.006	0.034	0.128	0.110	0.051	0.062	0.129	Sinter	100g	
		Total	Fe	SiO ₂	TiO ₂	CaO	MgO	Al ₂ O ₃	Na ₂ O	K ₂ O	Mn	P	S	Cu	Ni	Co	V ₂ O ₅	Type	Size
	202 CG 07213	67.01	3.16	0.032	0.22	0.71	1.23	...	...	0.147	(0.0037)	0.118	...	...	...	...	...	100g	
	202 CG 07218a	64.90	3.48	...	0.081	0.045	1.58	0.012	0.084	0.056	0.055	0.015	...	...	...	...	...	100g	
	202 CG 07219a	54.24	6.38	0.146	11.03	3.21	2.45	0.054	...	0.066	0.060	0.014	0.005	...	...	...	...	Sinter	100g
	202 CG 07219b	52.20	7.46	0.210	11.87	2.94	2.24	0.083	0.26	0.133	0.052	0.045	0.038	0.0042	...	...	...	Sinter	100g
	202 CG 07220	61.97	4.92	0.07	3.54	1.64	0.74	0.031	0.053	0.113	0.014	0.039	0.011	0.015	0.008	...	...	Pellets	100g
	202 CG 07220a	65.54	3.06	...	0.80	0.039	0.71	...	...	0.102	0.038	0.0044	0.005	0.0024	...	...	...	Pellets	100g
	202 CG 07221a	64.27	3.48	0.108	0.80	1.41	0.91	0.061	0.18	0.117	0.012	0.398	0.056	0.0082	0.0068	...	...	100g	
	202 CG 07222	39.47	8.80	0.073	5.20	4.20	1.00	0.032	0.22	0.193	0.045	1.18	0.086	0.024	0.013	...	...	Siderite	100g
	202 CG 07222a	43.66	3.99	0.021	3.37	3.85	0.60	0.024	0.2	0.235	0.034	1.46	0.087	0.0058	0.016	...	...	Siderite	100g
	202 CG 07223	62.76	5.51	0.08	0.10	0.30	0.99	0.014	0.062	0.096	0.043	0.126	0.289	0.0083	0.012	...	...	Hematite	100g
	202 CG 07223a	61.68	9.82	0.067	0.11	0.054	0.48	0.006	0.055	0.026	0.024	0.036	0.061	0.0023	0.0048	...	...	Hematite	100g
	202 CG 07224	32.97	20.33	10.63	6.38	6.16	8.26	...	...	0.223	0.01	0.687	0.02	0.0094	0.018	0.313	...	Crude Ore	100g
	202 CG 07225	27.55	25.47	9.72	7.5	6.17	10.29	...	...	0.205	0.0119	0.566	0.015	0.0083	0.016	0.258	...	Crude Ore	100g
	202 CG 07226	50.81	5.55	12.34	1.48	3.49	5.11	...	...	0.26	0.0026	0.570	0.021	0.014	0.020	0.558	...	Concentrate	100g
	202 CG 07226a	52.66	4.11	12.66	1.04	3.21	4.46	...	...	0.27	0.0022	0.556	0.019	0.012	0.02	0.572	...	Concentrate	100g
	202 CG 07227	13.23	36.33	10.74	11.62	8.32	11.47	...	...	0.187	0.0115	0.446	0.0065	0.0048	0.0098	0.059	...	Tailings	100g
		Fe	Si	Al	Ca	Mg	Mn	Ti	P	S	Na	K	V	As	Cr	L.O.I	Type	Size	
CRM	202 A AS 004	62.5	2.34	1.38	0.272	0.069	0.401	0.081	0.042	0.01	0.038	9.021	0.011	0.0012	...	1.51	Whyalla Pellets	100g	
CRM	202 A AS 006	58.42	3.49	2.33	0.025	0.024	0.032	0.113	0.054	0.024	0.015	0.016	0.0034	0.0009	...	4.03	Hamersley Low Grade	100g	
CRM	202 A AS 007	66.19	2.25	0.173	0.014	0.015	0.005	0.031	0.0045	0.0054	0.0085	0.065	0.0013	0.0005	...	0.165	Dampier Lump	100g	
CRM	202 TI E677-1	51.54	11.78	0.32	0.038	0.012	0.16	0.013	0.017	(0.005)	0.007	0.008	...	...	...	...	...	100g	
CRM	202 TI E679-1	24.2	3.43	1.99	18.07	0.7	0.295	0.106	0.557	0.099	0.054	0.157	0.035	...	...	...	...	100g	
CRM	202 TI E685-1	91.1	0.795	0.32	0.14	0.239	0.042	0.22	0.017	0.0031	0.077	0.042	0.144	...	...	...	...	100g	
	202 M BS105	65.95	2.14	0.1	0.5	0.19	0.09	0.008	0.008	(0.001)	0.017	0.014	0.003	0.0013	0.013	...	Iron Ore Pellets	100g	
CRM	202 A E681-1	33.21	8.32	5.62	2.80	0.89	0.22	0.29	0.88	0.103	0.068	0.49	0.077	(0.01)	0.041	C 1.80, F 0.19	Iron Ore	100g	
CRM	202 A E682-1	68.74	0.226	0.203	0.014	0.018	0.212	0.032	0.036	0.004	(0.0035)	(0.0054)	...	...	...	...	Iron Ore	100g	
CRM	202 A E683-1	56.06	3.38	1.30	5.70	1.04	0.462	0.097	0.148	(0.013)	0.045	0.148	0.026	...	0.018	Zn 0.010	Iron Ore Sinter	100g	
CRM	202 A E877-1	62.07	1.08	0.044	3.23	0.28	1.37	0.032	0.18	0.18	0.23	0.058	0.029	0.014	0.017	Zn 1.16, Pb 1.00	Furnace Dust	100g	
		Total	Fe	SiO ₂	TiO ₂	CaO	MgO	Al ₂ O ₃	Na ₂ O	K ₂ O	Mn	P	S	Cr	As	Others	Type	Size	
CRM	202 DB E627-2	31.77	9.24	0.225	15.67	1.57	4.49	...	...	0.250	0.661	0.114	0.018	0.020	...	...	Minette	100g	
CRM	202 DB E629-1	36.21	19.25	0.216	5.63	1.64	4.07	...	...	0.390	0.096	0.063	0.016	0.023	...	...	Minette	100g	
CRM	202 DB E630-1	65.63	5.88	0.066	0.10	0.47	0.88	...	...	0.060	0.043	0.032	...	...	...	...	Bomi-Hill	100g	
CRM	202 DB E631-1	61.09	3.20	0.109	0.75	0.													

20. Various Ores

Powders

20.6 Ores		Al ₂ O ₃	Fe ₂ O ₃	SiO ₂	TiO ₂	ZrO ₂	P ₂ O ₅	V ₂ O ₅	Cr ₂ O ₃	CaO	MgO	MnO	ZnO	K ₂ O	Na ₂ O	SO ₃	L.O.I.	Size			
(Al) Aluminium																					
CRM	206 B 600	40.0	17.0	20.3	1.31	0.06	0.039	0.06	0.024	0.22	0.05	0.013	0.0030	0.23	0.022	0.16	20.5	90g			
CRM	206 B 69B	48.8	7.14	13.43	1.9	0.29	0.118	0.028	0.011	0.13	0.085	0.11	0.0035	0.068	(0.025)	0.55	27.2	60g			
CRM	206 B 696	54.5	8.7	3.79	2.64	0.14	0.05	0.072	0.047	0.018	0.012	0.004	0.0014	0.009	(0.007)	0.15	29.9	60g			
CRM	206 B 697	45.8	20.0	6.81	2.52	0.065	0.97	0.063	0.1	0.71	0.18	0.41	0.0037	0.062	(0.036)	0.077	22.1	60g			
CRM	206 B 698	48.2	19.6	0.69	2.38	0.061	0.37	0.064	0.08	0.62	0.058	0.38	0.0029	0.01	(0.015)	0.143	27.3	60g			
CRM	206 A 394	88.8	1.9	4.98	3.11	(0.15)	0.22	...	(0.08)	0.08	0.12	...	...	0.02	0.02	...	(0.4)	100g			
CRM	206 A 395	52.4	16.3	1.24	1.93	...	...	...	(0.066)	0.05	0.02	0.0054	(0.0035)	(0.02)	(0.02)	...	27.8	100g			
	206 CA BXT-01	58.3	5.1	0.95	3.46	0.09	0.13	0.07	0.065	0.57	0.02	0.02	0.002	0.01	0.04	0.05	31.08	100g			
	206 CA BXT-02	50.9	17.8	1.56	1.87	0.05	0.15	0.06	0.068	0.04	0.09	0.01	0.009	0.01	0.04	0.08	27.0	100g			
	206 CA BXT-03	54.1	11.7	3.79	1.05	0.06	0.02	0.04	0.016	<0.01	0.01	0.01	0.002	<0.01	0.02	0.09	28.9	100g			
	206 CA BXT-04	48.5	17.0	2.68	5.32	0.06	0.13	0.19	0.090	0.02	0.05	0.04	0.003	0.03	0.02	0.13	25.7	100g			
	206 CA BXT-05	46.8	19.2	1.98	2.25	0.06	0.38	0.11	0.108	1.13	0.08	0.32	0.026	0.01	0.03	0.21	27.2	100g			
	206 CA BXT-06	48.7	18.9	0.80	2.67	0.07	0.61	0.13	0.134	0.13	0.06	0.27	0.023	0.01	0.03	0.15	27.2	100g			
	206 CA BXT-07	44.6	25.2	2.41	2.41	0.07	0.14	0.07	0.047	0.01	0.04	0.08	0.006	0.01	0.02	0.16	24.7	100g			
	206 CA BXT-08	51.5	9.6	3.17	9.41	0.10	0.26	0.19	0.048	0.02	0.04	0.02	0.006	0.02	0.02	...	25.6	100g			
	206 CA BXT-09	53.4	14.5	7.57	2.98	0.12	0.07	0.06	0.037	0.01	0.002	0.03	0.040	0.01	0.01	0.06	20.8	100g			
	206 CM 1778	90.58	1.82	4.20	2.13	...	...	...	...	0.16	0.038	...	...	0.12	0.19	...	...	90g			
	206 CM 1770	79.26	1.12	1.49	3.05	...	0.148	...	...	0.060	0.077	...	...	...	...	...	14.38	50g			
	206 CM 1769	57.16	1.45	6.19	4.00	...	0.17	...	...	0.089	0.28	...	...	0.15	0.042	...	0.21	100g			
	206 ML SRC-28	55.1	9.46	2.64	2.58	0.13	0.07	...	...	...	...	...	...	...	...	...	29.7	75g			
	206 ML SRC-38	60.5	1.44	2.54	3.16	...	...	...	...	...	...	...	...	...	...	...	31.5	75g			
	206 ML SRC-39	58.4	0.98	6.46	2.78	...	...	...	...	...	...	...	...	...	...	...	30.3	75g			
	206 ML SRC-40	52.8	1.30	15.6	3.01	...	...	...	...	...	...	...	...	...	...	...	26.1	75g			
	206 ML SRC-41	52.6	14.1	2.02	2.04	...	...	...	...	...	...	...	...	...	...	...	28.5	75g			
	206 ML SRC-45	48.6	20.3	2.82	2.52	...	...	...	...	...	...	...	...	...	...	...	24.6	50g			
	206 ML SRC-78	58.4	5.60	0.88	3.59	0.07	0.12	...	0.10	0.02	...	0.02	...	...	...	0.05	30.7	50g			
		Sb	Al	Si	Ca	Mg	Na	K	Fe	As	C	Cu	Pb	S					Size		
(Sb) Antimony																					
CRM	206 A CD 1	3.57	(5.5)	(32.9)	(1.4)	(0.6)	(0.1)	(1.8)	(2.8)	0.66	(0.2)	<0.01	(0.02)	(3.1)					200g		
		Ba	SO ₃	F	Sr														Type	Size	
(Ba) Barium																					
	206 GB 38	51.52	30.77	2.89	(0.85)														Barytes UK	80g	
		SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	Fe ₂ O ₃	P ₂ O ₅	Be	F	MnO	TiO ₂	L.O.I.	Others				Size		
(Be) Beryllium																					
	206 CG 07150	73.97	14.86	0.582	0.071	4.79	0.82	0.513	0.012	0.060	0.019	0.030	0.015	0.68	Plus a further 17 elements, mostly rare-earths				100g		
	206 CG 07151	73.99	14.86	0.584	0.069	4.67	0.87	0.593	0.013	0.365	0.041	0.036	0.016	0.73					100g		
		Al ₂ O ₃	Fe ₂ O ₃	SiO ₂	TiO ₂	B ₂ O ₃	F	BaO	SrO	CaO	MgO	K ₂ O	Na ₂ O	SO ₃	L.O.I.					Type	Size
(B) Boron																					
	206 B 1835	3.474	1.141	18.408	0.1332	18.739	0.348	0.0497	0.9418	21.622	3.411	1.261	3.484	1.477	25.724					Borate	60g
		Cr ₂ O ₃	Al ₂ O ₃	SiO ₂	CaO	MgO	Total Fe	FeO	MnO	P	S	TiO ₂	V ₂ O ₅	L.O.I.					Type	Size	
(Cr) Chromium																					
CRM	206 S 870-2	48.14	11.62	3.96	...	15.54	14.04	...	...	(0.002)	0.018	...	...	...					100g		
	206 GB 30	35.0	(29.12)	(2.76)	...	(16.63)	11.2	...	...	...	...	0.23	...	...					Philippines	50g	
CRM	206 A 308	41.5	19.4	4.25	0.34	16.4	...	15.3	(0.14)	...	...	(0.16)	...	...					Greece	100g	
	206 GC 2CAS5	35.8	23.2	5.55	0.57	16.8	11.5	...	0.13	...	...	0.29	...	0.76					Chrome Ore	100g	
	206 GC AN22	34.0	29.3	3.45	0.39	16.5	...	...	0.14	...	...	0.26	...	...					100g		
CRM	206 A SA 8	48.97	10.57	4.3	0.26	14.69	14.13	(13.9)	0.25	0.0039	0.0341	0.24	0.14	...					Chromite	100g	
CRM	206 A SA 9	46.45	15.17	0.61	(0.16)	10.85	19.41	(17.5)	0.21	0.0024	0.0028	0.56	0.32	...					Chromite	100g	
	206 CG 07201	49.44	12.1	4.08	0.36	15.66	(13.06)	0.28	0.001	...	...	0.12	...	1.55	Plus further 14 elements				200g		
	206 CG 07202	48.97	13.37	4.2	0.66	16.95	(9.13)	0.12	0.001	...	...	0.077	...	1.63					200g		
		% Cu	% Fe	% Mn	% Pb	% S	% Zn	% SiO ₂	% Sb	% Se	ppm Au	ppm Ag	% Cd	% As	ppm Co	ppm Ni			Type	Size	
(Cu) Copper																					
	206 GB 44	40.33	1.01	0.122	34.86	14.34	1.51	...	0.346	...	...	691	0.103	1.14	198	615			Matte - Australia	80g	
CRM	206 PN MR1	1.23	1.41	...	0.15	...	0.040	(60)	...	...	...	58	...	0.0280	...	...			200g		
CRM	206 PN MR2	1.61	0.88	...	0.085	...	0.025	(22)	...	...	...	29	...	0.0130	...	...			200g		
CRM	206 PN MR3	1.87	1.10	...	0.16	...	0.047	(49)	...	...	...	44	...	0.0057	...	...			200g		
CRM	206 PN RM2	2.28	1.34	...	...	1.10	...	...	...	...	...	260	...	...	170	120			150g		
CRM	206 PN ZM6	2.12	46.72	...	...	1.04	...	...	...	...	...	31	...	...	3900	800			Converter slag	250g	
	206 A CCU-1C	25.62	29.34	0.012	(0.34)	33.3	3.99	2.52	(0.004)	0.0107	4.94	129	0.0136	0.0034	...	...			Flotation concentrate	200g	
	206 CG 07268	33.30	30.30	0.0048	0.0128	34.69	0.30	...	0.0003	0.0048	...	846	0.00202	0.00031	75.1	41.3			sulphide	10g	

20.6 Ores (continued)		Cu	S	Zn	Al ₂ O ₃	SiO ₂	CaO	TiO ₂	Fe ₂ O ₃	MnO	MgO	Na ₂ O	K ₂ O	F	Size			
(Cu) Copper (continued)																		
206 CG 07233		1.15	0.72	0.059	1.73	9.27	9.61	0.079	55.58	0.60	3.91	0.044	0.071	0.079	Plus a further 37 elements analysed all at ppm	100g		
206 CG 07234		0.19	0.14	0.013	15.18	53.26	4.95	0.50	12.25	0.12	1.30	0.321	2.71	0.080		100g		
		SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MnO	MgO	CaO	Na ₂ O	K ₂ O	P ₂ O ₅	S	Cu	Zn	Pb	Ba	FeO	
206 BG COD 260A		48.46	0.49	10.84	15.79	0.022	0.19	0.38	0.08	0.62	0.19	13.96	2.75	0.2	0.16	2.19	...	
206 BG COD 53B		67.21	0.48	14.85	4.34	0.044	2.33	1.1	3.76	1.88	0.144	0.85	0.361	0.415	0.0288	0.0247	1.89 continued	
Continuation from above		All Elements ppm																
		As	Au	Ag	Co	Cd	Cr	La	Li	Ni	Rb	Sc	F	V	Zr	L.O.I.		
206 BG COD 260		7000	3.3	33.7	20	14	...	...	130	...	...	...	...	...	...	...	50g	
206 BG COD 53A		...	0.27	...	7	...	21	17	16	12	59	9	...	123	120	3.29	50g	
		ppm Au	ppm Ag	% S												Type	Size	
(Au) Gold																		
CRM 206 A SA 54		0.215	...	...													500g	
CRM 206 A SA 56		2.69	(1.7)	...												Tails	500g	
CRM 206 A GTS-2		0.346	...	(1.1)												Tails	400g	
CRM 206 A MA1B		17.0	(4.0)	(1.17)												Au Ore	200g	
CRM 206 A MA2C		3.02	(0.051)	(0.23)												Au Ore	400g	
CRM 206 A MA3A		7.49	(1.5)	(0.56)												Au Ore	200g	
CRM 206 B 886		8.25	...	1.466												Calcined	200g	
206 CG 07203		3.59	5.41	...													1kg	
206 CG 07204		7.16	3.34	...													1kg	
206 CG 07205		14.0	19.4	...													1kg	
206 CG 07206		19.4	24.6	...													1kg	
206 CG 07207		0.008	0.33	...													1kg	
206 CG 07208		0.051	2.06	...													1kg	
206 CG 07209		0.421	9.08	...													1kg	
		ppm Au	ppm Ag	Al ₂ O ₃	SiO ₂	Fe ₂ O ₃	MnO	CaO	K ₂ O	MgO	TiO ₂	Cu	Pb	Zn	S			
206 BG 325		11.2	6	12.03	52.76	10.42	0.26	3.31	5.17	3.56	0.51	0.204	2.03	0.50	4.7			
206 BG 326		4.3	17.2	7.09	42.32	8.36	0.50	10.27	...	2.54	0.23	0.510	5.47	4.06	6.06	continued		
206 BG 327		0.46	20.0	6.53	28.81	34.43	0.14	0.63	0.94	3.09	0.30	6.65	0.053	0.028	21.14			
206 BG 328		93	1700	3.64	40.52	17.96	0.128	2.81	...	0.79	0.16	2.11	13.62	0.18	12.52			
Continuation from above		All Elements ppm																
		Cd	Co	Ni	Bi	As	Pd	Pt								Type	Size	
206 BG 325		32.6	21.5	17.0	...	...	...	...								gold-pyrite Zidarovo	50g	
206 BG 326		212	13.5	12	90	...	...	...								polymetallic gold ore Zidarovo	50g	
206 BG 327		2	229	38	879	100	...	...								copper-pyrite Zidarovo	50g	
206 BG 328		38.8	71	174	...	578	0.028	0.048								polymetallic gravity concentrate	50g	
		Pb	Cu	Zn	S	F	SiO ₂	Al ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	Fe ₂ O ₃	MnO		Size	
(Pb) Lead																		
206 CG 07235		4.17	0.2	0.062	0.86	0.27	43.63	12.88	0.53	19.51	1.62	1.61	1.42	4.37	1.40	Plus a further ~40 elements	100g	
206 CG 07236		0.61	0.035	0.092	0.38	0.23	30.51	8.95	0.44	34.56	2.06	0.066	0.82	3.79	1.53	analysed all at ppm levels	100g	
206 CG 07269		84.26	0.0127	0.0533	13.30	...	...	...	...	...	...	...	...	...	...	Plus 12 other associated elements	10g	
CRM 206 PN KO12		61.43	...	2.48	17.95	...	0.58	0.12	...	1.91	0.89	...	...	12.04	...	Plus 6 other associated elements	400g	
		Pb	Cu	Zn	S	Fe	SiO ₂	Al ₂ O ₃	CaO	MgO	C	Mn	As	Cd	ppm Ni	ppm Ag	Type	Size
206 SI RPZ-PF		3.85	0.29	12.85	12.57	5.16	14.32	1.66	14.12	8.48	5.77	1.35	0.023	0.026	7.1	70	Feed stock	120g
206 SI RPZ-PC		52.13	0.66	7.05	16.76	5.03	1.26	0.22	4.06	2.30	3.45	0.39	0.059	0.015	5.2	660	Concentrate	120g
		SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	Fe ₂ O ₃	P ₂ O ₅	Be	F	Li ₂ O	Cs ₂ O	Rb ₂ O	L.O.I.	Others	Size	
(Li) Lithium																		
206 CG 07152		74.37	14.76	0.335	0.054	4.19	3.17	0.394	0.173	0.018	0.667	0.460	0.037	0.145	1.48	Plus a further ~20 elements,	100g	
206 CG 07153		64.64	19.12	0.076	0.036	2.33	4.80	0.301	0.237	0.026	3.12	2.29	0.177	0.735	4.06	mostly rare-earths at ppm levels	100g	
		Mn	Al	SiO ₂	CaO	MgO	Na ₂ O	K ₂ O	Fe	As ₂ O ₃	BaO	P	S	TiO ₂	Others	Type	Size	
(Mn) Manganese																		
206 GB 29		58.96	...	(2.21)	...	...	...	...	...	...	0.66	...	...	...	Cu (0.185)	Pyrolusite (Morocco)	40g	
CRM 206 E 52		46.1	5.62	3.06	0.15	0.25	0.1	1.6	2.4	0.0026	0.32	0.035	0.018	0.28	Ni, Co, Cu, Pb		120g	
CRM 206 S 861-1		49.22	2.04	5.46	(0.1)	...	...	...	3.15	...	1.44	0.087	(0.006)	...	O 13.45		100g	
CRM 206 A SA 16		49.17	(0.16)	5.04	4.7	0.76	(0.03)	0.02	11.48	...	0.6	0.033	0.17	...	Zn 0.0364	Wessels	100g	
CRM 206 A SA 17		38.81	0.13	4.69	(14.4)	3.03	0.09	0.09	4.27	...	(0.08)	0.018	(0.01)	...	CO ₂ 15.4	Mamatatan	100g	
CRM 206 A 176/2		47.5	2.75	2.53	0.09	0.04	0.11	1.30	6.86	0.22	0.19	0.087	0.018	0.30			100g	
CRM 206 DB E633-1		47.85	0.92	10.39	2.02	0.58	...	...	1.64	...	1.13	0.170	0.227	0.079			100g	
CRM 206 B 25d		51.78	2.82	2.52	...	...	...	0.93	2.74	...	...	0.06	...	0.13	O 14.28		60g	

20. Various Ores

Powders

20.6 Ores (continued)																	
	Mn	Fe	SiO ₂	Al ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	S	P	Cu	Zn	Ni	BaO	Type	Size
(Mn) Manganese (continued)																	
206 DH X4301	36.01	21.48	7.49	0.69	0.039	2.13	0.402	0.353	0.70	...	0.035	...	0.014	...	0.447		100g
206 DH X4302	36.80	20.26	9.57	0.538	0.035	3.93	0.619	0.083	0.107	...	0.019	...	0.035	...	0.823		100g
206 DH X4303	29.05	30.01	3.63	2.17	0.070	0.060	0.032	0.017	0.244	...	0.052	...	0.002	...	0.133		100g
206 DH X4304	30.65	28.25	2.41	2.96	0.104	0.078	0.064	0.012	0.261	...	0.066	...	0.002	...	0.228		100g
206 DH X4305	36.37	9.32	11.72	1.28	0.070	8.57	1.81	0.109	0.198	...	0.025	...	0.022	0.017	0.428		100g
206 CG 07261	45.39	1.22	16.16	2.20	0.063	1.06	0.64	0.044	1.00	0.007	0.054	0.013	0.027	0.019	0.68		100g
206 CG 07262	36.99	2.24	22.24	3.00	0.10	3.60	1.44	0.048	0.46	0.013	0.081	0.014	0.029	0.019	0.47		100g
206 CG 07263	32.54	11.24	14.50	8.55	0.43	0.083	0.11	0.039	0.93	0.019	0.207	0.036	0.064	0.099	0.18		100g
206 CG 07264	25.00	20.99	10.46	8.97	0.54	0.051	0.10	0.030	0.72	0.032	0.275	0.028	0.048	0.073	0.23		100g
206 CG 07265	22.54	1.40	14.07	1.68	0.10	14.73	3.50	0.024	0.46	0.21	0.043	0.009	0.009	0.041	0.13		100g
206 CG 07266	15.74	2.07	15.82	2.49	0.15	19.78	3.82	0.04	0.70	0.27	0.061	0.014	0.020	0.050	0.15		100g
206 CG 07265 and 66 are certified for Mn(CO) at 22.46% and 15.69% respectively.																	
206 CG 07295	24.7	5.2	15.45	5.2	1.37	2.67	3.03	2.56	1.08	0.14	0.26	0.69	0.092	1.02	many	polymetallic nodule	70g
206 CG 07296	32.2	4.7	12.30	4.7	0.54	2.25	3.56	3.03	1.14	0.11	0.16	1.36	0.160	1.55	others	polymetallic nodule	70g
206 S JMn-1	25.63	10.08	14.11	4.30	1.06	2.91	3.12	2.80	0.94	0.094	0.24	1.1132	0.1068	1.2632	many others	nodule	100g
	Mo	Al	Si	Ca	S	Na	K	Fe	Bi	O	C	F	Mn	H ₂ O	W	Type	Size
(Mo) Molybdenum																	
206 GB 27	0.276	...	...	...	...	...	...	1.76	...	...	...	...	...	...	0.036	Mo-W ore	60g
	Mo	W	SiO ₂	Al ₂ O ₃	CaO	Fe ₂ O ₃	MgO	Na ₂ O	K ₂ O	MnO	F	S				Type	Size
206 CG 07238	1.51	0.36	34.10	3.46	31.44	21.34	0.86	0.075	0.046	1.40	4.08	1.64	Plus a further ~40 elements			Tailings	100g
206 CG 07239	0.11	0.10	46.67	7.27	23.03	14.66	1.83	0.77	0.82	1.49	1.33	0.48	analysed all at ppm levels			Tailings	100g
	Mo	Fe	SiO ₂	Al ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	S	P ₂ O ₅	CuO	ZnO	PbO	C	Type	Size
206 DH X4701	58.02	1.60	7.05	0.902	0.078	1.11	0.984	0.103	0.242	0.111	0.032	0.38	0.046	0.053	0.322	concentrate	100g
206 DH X4702	63.29	1.21	2.88	0.495	0.034	0.143	0.129	0.110	0.106	0.033	0.067	0.582	0.011	0.004	0.008	concentrate	100g
206 DH X4703	60.12	1.76	6.01	0.925	0.106	0.355	0.14	0.015	0.26	0.092	0.076	0.070	0.138	0.399	0.004	concentrate	100g
206 DH X4704	57.46	2.62	6.89	0.995	0.041	0.415	0.577	0.316	0.178	0.132	0.020	1.27	0.022	0.021	0.013	concentrate	100g
206 DH X4705	55.50	3.61	9.71	1.08	0.048	0.423	0.182	0.415	0.357	0.063	0.022	0.539	0.118	...	0.008	concentrate	100g
	%	%	%	%	%	%	%	ppm	ppm	%	%	%	ppm	ppm	ppm	Type	Size
	Ni	Al	Si	Ca	Mg	Fe	Au	Ag	Co	Cu	Pb	Pd	Pt	S			
(Ni) Nickel																	
CRM 206 A SU1A	1.233	(5.0)	(17.8)	(3.5)	(3.0)	(20.0)	(0.2)	4.3	0.041	0.967	(0.01)	0.37	0.41	(10.0)		Ni-Cu-Co Ore	200g
206 SI BCL-NCT1	0.13	...	21.57	...	...	13.06	...	...	61	0.041	...	...	...	3.36		Ni-Cu-Co Tailings	100g
206 GB 21	1.97	...	...	...	...	23.59	...	...	0.069	0.798	...	...	...	...		Norite (Canada)	50g
206 GB 22	1.255	...	...	...	...	22.88	...	...	0.051	0.106	...	...	...	...		Serpentinite (Canada)	40g
	Nb ₂ O ₅	Fe	SiO ₂	Al ₂ O ₃	TiO ₂	CaO	MgO	K ₂ O	ZrO ₂	CeO ₂	La ₂ O ₃	Nd ₂ O ₄	Ta ₂ O ₅	U ₃ O ₈	BaO	SrO	Size
(Nb) Niobium																	
206 DH X1801	0.696	5.68	8.75	2.61	0.266	26.86	13.53	1.38	0.094	0.096	0.042	0.051	0.005	0.002	0.154	0.123	100g
206 DH X1802	0.200	5.72	8.91	2.67	0.237	26.96	13.51	1.41	0.074	0.098	0.041	0.049	0.002	0.002	0.162	0.116	100g
206 DH X1803	60.62	3.50	1.91	0.291	4.26	13.02	0.136	0.233	0.847	0.556	0.153	0.207	0.273	0.202	0.201	1.20	100g
206 DH X1807Q	61.95	2.29	2.28	0.382	3.86	13.18	0.150	0.320	0.868	0.567	0.150	0.209	0.276	0.190	0.192	1.18	100g
206 DH X1808Q	56.71	5.41	3.52	0.614	3.92	11.67	0.177	0.463	0.837	0.588	0.185	0.214	0.265	0.153	0.277	1.31	100g
	Nb	Al	Si	Ca	Mg	Na	K	Fe	Mn	P	S	Ta	Ti	L.O.I			Size
CRM 206 A OKA-1	0.37	(0.9)	(2.4)	(31.3)	(1.3)	(0.2)	(0.3)	(2.8)	(1.1)	(1.1)	(0.6)	...	...	31.9			200g
	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm			Size
	Ca	Fe	S	Cu	Ni	Co	Pt	Pd	Au	Ag	Rh	Ru	Os	Ir			Type
Noble Metals																	
CRM 206 A SA 7	...	...	...	...	...	...	3.74	1.53	0.31	0.42	0.24	0.43	0.063	0.074			Pt Ore 500g
206 SI MIM-C1	...	...	...	3.57	4.37	0.12	51.9	35.3	6.83	...	3.55	3.40	...	1.75			Pyroxenite concentrate 120g
206 SI MIM-C2	...	...	...	3.31	4.28	0.123	44.5	33.4	4.90	(5.5)	4.01	3.76	...	2.18			Pyroxenite concentrate 120g
206 SI MIM-O1	...	...	...	0.1134	0.2104	0.0117	1.97	1.55	0.31	...	0.16	0.18	...	0.11			Pyroxenite ore 120g
206 SI MIM-T1	...	...	...	0.0176	0.0743	0.0083	0.51	0.43	0.14	...	0.054	0.065	...	0.08			Pyroxenite tailings 120g
206 SI MIM-T2	...	...	...	0.018	0.084	0.007	0.358	0.384	0.13	...	0.048	0.055	...	<0.5			Pyroxenite tailings 120g
206 SI TATNC-T1	2.45	33.21	25.46	3.96	6.41	0.18	1.61	10.3	0.49	10.5	0.21	0.05	...	...			Ni-Cu Concentrate 100g
CRM 206 A TDB-1	(6.9)	10.4	(0.03)	0.0323	0.0092	...	0.0058	0.0224	0.0063	...	(0.0007)	(0.0003)	...	(0.00015)			diabase rock 400g
206 A WGB-1	(11.27)	4.7	(0.02)	...	...	...	0.0061	0.0139	0.0029	...	(0.00032)	(0.0003)	...	(0.00033)			gabbro rock 400g
206 A VMG-1	(10.7)	(11.9)	(3.5)	...	...	...	0.731	0.382	0.110	...	0.026	0.035	(0.024)	0.046			mineralised gabbro 400g
206 A WMS-1	(1.1)	...	(32)	...	...	...	1.741	1.185	0.279	...	0.225	0.099	(0.119)	0.235			massiue sulfide 200g
206 A WPR-1	(1.4)	(9.9)	0.9	...	...	...	0.285	0.235	0.042	...	0.0134	0.022	(0.013)	0.0135			altered peridotite 400g
CRM 206 A PTC1A-1A	...	(34.6)	(31.8)	13.51	10.03	(0.30)	2.72	4.48	1.31	56.0	0.33	(0.21)	...	(0.11)			Concentrate 200g
CRM 206 A PTM1A-1A	...	(1.48)	(22.4)	24.96	47.44	(1.97)	7.31	10.01	3.3	(135)	(0.92)	(0.7)	...	(0.35)			Ni-Cu Matte 400g
CRM 206 A PTA1-1	(1.2)	(63.0)	...	...	...	...	3.05	...	...	...	...	...	...	...			Pt Blacksand 400g
CRM 206 A UMT-1	...	...	...	(0.0743)	(0.1396)	(0.0077)	0.0129	0.0106	0.0048	...	0.001	...	...	...			Ultramafic Tailings 400g

20. Various Ores

Powders

20.6 Ores (continued)																
	REO	ThO ₂	La ₂ O ₃	CeO ₂	Pr ₆ O ₁₁	Nd ₂ O ₃	Sm ₂ O ₃	Eu ₂ O ₃	Gd ₂ O ₃	Tb ₄ O ₇	Dy ₂ O ₃	Ho ₂ O ₃	Er ₂ O ₃	Tm ₂ O ₃	Lu ₂ O ₃	
(R.E.) Rare Earths																
206 GB 40	7.78	(0.023)	2.43	(3.96)	0.33	0.97	(0.06)	(0.010)	(0.019)	(0.0067)	(0.0028)	(0.0050)	(0.00097)	(0.0003)	(0.0129)	continued
206 GB 41	64.21	(0.121)	20.9	(32.24)	2.74	(7.61)	(0.52)	(0.075)	(0.151)	(0.068)	(0.0157)	(0.0034)	(0.0049)	(0.00105)	(0.050)	
206 CG 07158	0.092	0.0028	0.000003	0.0092	0.0049	0.02	0.0034	0.0008	0.0032	0.0005	0.0027	...	0.0016	0.0002	0.0002	
206 CG 07159	0.085	0.0047	0.0020	0.0022	0.0006	0.0028	0.0016	0.00004	0.0032	0.0008	0.0056	...	0.0036	0.0006	0.0006	
206 CG 07160	0.486	0.0045	0.00001	0.0035	0.0045	0.02	0.02	0.0002	0.03	0.0058	0.04	...	0.02	0.0032	0.0030	
206 CG 07161	0.784	0.0027	0.00003	0.02	0.05	0.19	0.03	0.0075	0.03	0.0041	0.02	...	0.01	0.0015	0.0014	
Continuation from above																
		Y ₂ O ₃	Yb ₂ O ₄	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	CaO	Na ₂ O	K ₂ O	Rb ₂ O	Sc ₂ O ₃	Others	Type	Size	
206 GB 40		(0.00047)	(0.014)	(16.59)	2.1	3.28	(4.02)	(16.99)	(0.12)	(1.28)	...	...	several	Bastnazite	90g	
206 GB 41		(0.080)	(0.066)	(0.82)	(0.073)	(0.42)	(0.26)	(4.52)	(0.13)	(0.01)	...	...	several	Bastnazite conc.	90g	
206 CG 07158		0.0014	0.02	67.28	19.04	3.49	0.229	0.033	0.062	2.13	0.012	0.0011				100g
206 CG 07159		0.0037	0.057	74.55	14.70	1.15	0.077	90.026	0.158	4.98	0.069	0.0010				100g
206 CG 07160		0.02	0.30	74.34	14.65	1.13	0.08	0.031	0.155	4.92	0.067	0.0009				100g
206 CG 07161		0.0100	0.12	66.72	19.00	3.46	0.231	0.029	0.064	2.11	0.011	0.0012				100g
ppm Ag																
(Ag) Silver																
206 CG 07255	46.9															500g
206 CG 07256	112															500g
206 CG 07257	298															500g
206 CG 07258	446															500g
206 CG 07259	559															500g
206 CG 07260	732															500g
Ta																
		Al	SiO ₂	Ca	Mg	Na	K	Fe	Mn	Nb	Sn	Ti		Type	Size	
(Ta) Tantalum																
206 A TAN1-1	0.236	(8.2)	(71.5)	(0.5)	(0.02)	(4.6)	(1.5)	(0.2)	(0.02)	(0.02)	(0.01)	...		Ta ore	200g	
Sn																
		Al	Si	Ca	Mg	Fe	As	Bi	Cu	F	S	Ti	W	Zn	Type	Size
(Sn) Tin																
CRM 206 F 010	76.59	...	...	...	...	...	...	...	...	...	...	...	...	...		225g
206 GB 26	33.36	...	...	...	...	12.03	...	...	2.11	...	...	...	13.52	...	Sn-W ore	40g
CRM 206 A 355	31.42	4.12	7.14	2.63	0.35	17.08	0.14	0.015	0.085	2.07	0.5	0.37	0.35	0.059		100g
206 CG 07231	45.8	...	...	...	...	21.33	0.574	0.034	...	...	0.183	...	...	...	continued	
206 CG 07232	62.49	...	...	...	...	9.53	0.306	0.016	0.043	...	0.09	...	...	...		
Continuation from above																
		Pb	Sb	Zn	Ag	SiO ₂	WO ₂							Type	Size	
206 CG 07231	2.89	0.024	0.264	0.00255	...	...								Concentrate	100g	
206 CG 07232	1.62	0.016	0.12	...	0.93	0.182								Concentrate	100g	
TiO ₂																
		Fe ₂ O ₃	SiO ₂	Al ₂ O ₃	MgO	CaO	MnO	Cr ₂ O ₃	V ₂ O ₅	Ti	Total Fe		Others	Type	Size	
(Ti) Titanium																
CRM 206 A SA 59	48.8	50.3	0.75	0.61	0.56	0.05	1.05	0.1	0.25	...	...		...	Ilmenite	100g	
CRM 206 A SA 61	93.3	0.68	2.03	0.93	...	...	...	0.11	0.42	...	...		...	Rutile	100g	
206 GB 32	...	...	...	...	...	...	...	...	...	57.19	...		Nb (0.26)	Rutile	40g	
CRM 206 B 670	96.16	0.86	0.51	...	...	...	...	0.23	0.66	...	...		ZrO ₂ 0.84	Rutile	90g	
206 DH X6703	28.74	...	5.67	3.40	2.47	0.99	...	0.108	0.25	...	40.92		many	Ilmenite	100g	
206 DH X6704	31.92	...	7.93	4.64	2.81	1.30	...	0.109	0.286	...	36.23		many	Ilmenite	100g	
206 DH X5802	93.76	0.629	2.04	0.449	...	0.048	0.007	0.113	0.454	...	...		many	Rutile	100g	
206 DH X5803	91.47	1.22	3.07	0.668	...	0.131	0.056	0.213	0.455	...	...		many	Rutile	100g	
W																
		Mo	Bi	Ag	Sn	Al	SiO ₂	Ca	Mg	Fe	S	Cu	Zn	As	Type	Size
(W) Tungsten																
CRM 206 A CT-1	1.04	(0.03)	...	...	...	(2.9)	(36.82)	(12.2)	(2.0)	(17.5)	...	...	...	...	Scheelite Ore	200g
CRM 206 A BH-1	0.422	(0.02)	...	...	...	(3.5)	(81.34)	(0.5)	(0.4)	(3.2)	...	...	...	...	Wolframite Ore	200g
CRM 206 A TLG-1	0.083	(<0.01)	...	...	...	(3.0)	(46.02)	(166.0)	(2.7)	(8.6)	...	...	...	...	Scheelite Ore	200g
CRM 206 A MP=2	0.65	0.281	0.245	0.00049	0.043	(5.4)	(76.1)	(2.7)	(0.04)	(3.7)	(0.7)	(0.9)	(0.4)	(0.2)	W-Mo-Bi Ore	200g
W																
		Cu	Pb	Zn	Bi	Sn	S	F	Al ₂ O ₃	SiO ₂	Fe ₂ O ₃	CaO	MgO	K ₂ O	Type	Size
206 CG 07240	0.015	0.079	0.26	0.29	0.011	0.14	3.12	9.91	8.24	32.27	7.79	37.73	1.45	1.94	Tailings	100g
206 CG 07241	0.22	0.096	0.00812	0.010	0.068	0.17	1.90	4.48	11.15	71.27	5.60	4.17	0.14	1.58	Tailings	100g
Each sample is also certified for ~30 other elements, all at ppm levels																
	% WO ₂	ppm As	ppm Bi	ppm Mo	ppm P	ppm S	ppm Ca	ppm Fe	ppm Pb	ppm Mn	ppm Nb	ppm Si	ppm Sn	ppm Ti	Ore Type	Size
CRM 206 B 277	67.4	(0.015)	(0.07)	(0.06)	(0.03)	(0.25)	(0.37)	(7.4)	(0.07)	(10.0)	(1.00)	(0.85)	(0.54)	(2.2)	Concentrate	100g
CRM 206 B 2430	70.26	0.002	0.078	0.22	0.017	0.26	...	...	...	...	...	...	...	...	Scheelite Ore	100g

20. Various Ores

Powders

20.6 Ores (continued)		U	Th	Al	Si	Ca	Mg	Na	K	Fe	S	Ti	Pb	L.O.I	H ₂ O	Others	Type	Size
(U) Uranium																		
CRM	206 A DL-1A	0.0116	0.0076	(5.3)	(39.95)	(0.3)	(0.2)	(0.09)	(0.2)	(0.93)	(0.41)	(0.09)	...	(1.4)	(0.2)		U-Th Ore	200g
CRM	206 A DH-1A	0.2629	0.091	(3.44)	(37.3)	(0.04)	(0.07)	(0.04)	(1.43)	(5.17)	(4.82)	...	...	...	(0.07)		U-Th Ore	200g
CRM	206 A BL-1	0.022	0.0015	...	...	...	...	...	...	...	...	...	...	...	...		U-Th-Ore	100g
CRM	206 A BL-2A	0.426	...	(6.62)	(27.6)	(4.06)	(1.5)	(3.42)	(0.33)	(4.75)	(0.36)	...	(0.09)	(5.16)	(0.19)		U. Ore	200g
CRM	206 A BL-3	1.02	...	...	...	...	...	...	...	...	...	...	...	...	...		U. Ore	100g
CRM	206 A BL-4A	0.125	...	(6.75)	(28.6)	(3.27)	(1.38)	(3.24)	(0.36)	(5.26)	(0.28)	...	(0.031)	(4.44)	(0.16)		U. Ore	200g
CRM	206 A BL-5	7.09	(0.004)	(6.0)	(22.0)	(4.0)	(1.5)	(3.6)	(0.4)	(5.9)	(0.3)	(0.4)	(1.5)	...	...		Concentrate	100g
CRM	206 A OKA-2	0.02186	2.893	...	...	...	...	...	(0.34)	...	...	...	...	...	...		R.E.-Th Ore	100g
CRM	206 A RL-1	0.201	...	(6.5)	(25.3)	(1.8)	(9.2)	(0.06)	(0.22)	(2.3)	(0.13)	(0.25)	...	(10.2)	(0.9)	As, Ni	U Ore	100g
CRM	206 A UTS-1	0.0049	0.0138	6.24	...	5.24	...	...	...	4.87	1.00	0.54	...	...	...	Ba, SO ₃	U Ore Tailings	200g
CRM	206 A UTS-2	0.0056	0.0174	2.71	...	0.42	...	...	...	3.20	3.23	0.18	...	...	...	Ba, SO ₃	U Ore Tailings	200g
CRM	206 A UTS-3	0.0513	0.0010	5.80	...	4.03	...	...	...	3.25	0.23	0.23	...	...	...	Ba, SO ₃	U Ore Tailings	200g
CRM	206 A UTS-4	0.1010	0.0015	6.29	...	1.75	...	...	...	2.61	1.00	0.24	...	...	...	Ba, SO ₃	U Ore Tailings	100g
CRM	206 GB 37	0.148	0.0345	...	...	...	...	...	...	...	...	...	...	...	...		Canada	40g
		Zn	Cu	Pb	S	Cd	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	MgO	CaO	Na ₂ O	K ₂ O	F	Others	Type	Size	
(Zn) Zinc																		
	206 CG 07237	2.75	0.71	0.25	2.87	...	82.95	3.50	2.80	0.082	1.91	0.56	0.99	1.20	~30 at ppm levels		Tailings	100g
CRM	206 A 362	2.08	(0.004)	2.44	1.48	0.020	9.03	0.483	0.667	0.068	44.21	0.084	0.14	...	Mn ₂ O ₄ 0.829		Tailings	100g
		Zn	Al	Si	Ca	Mg	Fe	Ag	Pb	Cd	Cu	S	ppm Hg	As	Sn	H ₂ O	Type	Size
CRM	206 B 113b	56.49	...	...	0.8196	0.4460	2.077	0.04607	2.731	0.7804	0.2953	30.032	(0.55)	...	...	...	Concentrate	100g
	206 SI RPZ-ZC	55.26	0.074	0.25	1.29	0.53	4.02	0.031	3.53	0.11	0.65	31.75	...	0.023	0.012	...	Concentrate	120g
CRM	206 A CZN-3	50.92	...	(0.44)	...	...	9.97	0.0045	0.113	0.248	0.685	31.6	(0.0005)	0.039	...	...	Concentrate	200g
CRM	206 A KC-1A	34.65	(0.1)	(10.4)	0.3	0.05	(10.9)	0.167	2.24	...	0.629	(27.5)	...	...	0.61	(0.09)	Zn-Pb-Sn-Ag	200g
CRM	206 A PD-1	(35.9)	...	(3.05)	...	...	(12.2)	...	2.75	(0.28)	(7.03)	(8.23)	389	0.77	...	(0.4)	Non-ferrous Dust	200g
		Zn	S	Cd	Cu	Fe	Pb	ppm Ag	ppm As	ppm Bi	ppm Co	ppm Ga	ppm Ge	ppm In	ppm Mn	ppm Ni	ppm Sb	Size
	206 CG 07270	62.51	32.33	0.15	2.14	2.14	0.10	5.0	3.3	6.1	491	251	6.0	21.0	169	43.2	249	10g
		Zn	Cu	Pb	Fe	Cd	Mg	Al ₂ O ₃	SiO ₂	CaO	MgO	S	F	Cl	ppm Hg	Type	Size	
CRM	206 PN RB7	3.07	...	(0.26)	8.28	0.033	...	...	(0.8)	24.35	15.26	(10.3)	...	...	...		Blende	170g
CRM	206 PN RG8	5.40	...	0.84	6.34	0.047	...	0.90	2.64	26.45	12.16	0.57	...	...	...		Galmei Ore	130g
CRM	206 PN TC9	53.4	...	3.77	5.64	0.0049	...	...	5.47	6.96	3.50	0.52	0.055	0.033	...		Roasted oxide	220g
CRM	206 PN TC/P10	60.6	...	2.31	6.7	...	...	0.14	0.56	2.54	1.38	3.07	...	...	...		Roasted oxide	240g
CRM	206 PN Kc11	54.51	...	1.21	6.53	...	...	0.069	0.26	0.72	0.30	32.36	...	...	...		Concentrate	280g
CRM	206 F 109	...	0.946	0.738	14.51	0.46	0.020	...	...	...	...	...	0.0081	...	0.96		Blende	200g
CRM	206 F 110	...	1.628	9.78	0.55	1.051	0.136	...	...	...	...	...	0.0055	...	148.4		Blende	200g
		ZrO ₂	Al ₂ O ₃	SiO ₂	CaO	MgO	Fe ₂ O ₃	Na ₂ O	K ₂ O	P ₂ O ₅	TiO ₂	HfO ₂	MnO	F	L.O.I.		Size	
	206 CG 07156	0.187	14.74	66.02	2.70	2.10	4.80	3.83	3.37	0.163	0.420	0.0042	0.085	0.080	1.55	Plus a further 16 elements,	100g	
	206 CG 07157	1.25	14.70	65.66	2.64	2.01	4.69	3.74	3.31	0.167	0.410	0.03	0.083	0.082	1.51	mostly rare-earths		

21.1 Ferro Alloys		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	Ti	Fe	Al	Others	Type	Size
(B) Ferro Boron																	
CRM	211 A E587-1	0.738	(0.129)	(0.001)	(0.020)	0.272	...	(0.10)	(0.005)	...	0.004	(0.04)	...	0.047	B 18.7		100g
	211 DH L1701	0.009	0.66	...	0.014	0.275	0.039	0.092	...	...	0.177	0.05	75.48	1.54	B 21.22		50g
	211 DH L1702	0.56	0.535	...	0.036	0.762	0.082	0.154	...	0.088	0.013	0.047	77.41	0.211	B 19.12		50g
	211 DH L1703	0.318	0.326	...	0.018	0.246	0.359	0.08	...	0.064	0.004	0.017	79.36	0.141	B 81.78		50g
	211 AU 42025	0.031	1.09	...	0.018	...	...	...	...	...	...	1.72	...	...	B 22.51		80g
	211 AU 42026	0.078	0.57	...	0.013	...	...	...	...	...	...	0.66	...	...	B 15.28		80g
CRM	211 RU F22/2	0.145	8.71	0.015	0.023	...	...	...	...	3.76	...	...	...	8.63	B 8.40		200g
(Cr) Ferro Chromium																	
	211 M BS 130/1	7.06	4.46	0.034	0.016	1.2	...	51.6	...	(0.011)	(0.39)	(0.16)	...	...			100g
	211 M BS 130/2	7.76	2.12	0.045	0.013	0.45	...	52.6	...	(0.007)	(0.38)	(0.1)	...	...			100g
	211 M BS 130/3	6.54	6.25	0.029	0.014	0.77	...	49.0	...	(0.011)	(0.36)	(0.18)	...	...			100g
CRM	211 S 732	7.76	3.86	0.013	0.021	...	...	56.15	...	...	...	...	...	...			150g
CRM	211 J 14B	0.023	0.65	0.002	0.015	0.29	0.32	72.87	...	0.009	0.095	...	...	...	Co 0.45, N 0.043		100g
CRM	211 J 15A	7.54	3.03	0.022	0.02	0.275	0.33	55.08	...	(0.008)	0.19	0.3	...	...	Co 0.049, Mg 0.017		100g
CRM	211 A SA 10	6.99	1.95	0.0611	0.0173	0.16	0.19	53.7	...	...	0.32	0.2	36.04	...	Co 0.0512		100g
CRM	211 A E580-1	0.019	0.306	...	0.011	...	...	72.18	...	...	0.083	...	...	...	Co 0.047, N 0.035		100g
CRM	211 A E585-1	6.87	2.76	0.039	0.018	0.86	0.197	57.6	...	...	0.33	0.36	(31.1)	...	Co 0.044, N 0.023		100g
CRM	211 E 65	0.051	0.71	0.016	0.006	0.128	0.077	71.2	...	...	...	...	17.9	9.2	Co 0.016		100g
CRM	211 TI E507-1	5.4	1.2	...	0.017	0.27	...	70.3	...	...	...	...	...	...	N 0.049		100g
CRM	211 TI E509-1	0.012	0.23	...	(0.019)	...	...	72.85	...	...	...	...	...	...	N 0.032		100g
	211 CG 01424	6.55	1.29	0.043	0.025	0.14	...	68.75	...	...	...	...	...	...		Hi Carbon	50g
	211 CG 01425	0.201	0.90	0.0066	0.047	0.24	...	66.74	...	...	...	...	...	...		Lo Carbon	70g
	211 CG 01425a	0.178	1.02	0.0044	0.026	0.356	...	66.96	...	...	...	...	...	...			50g
	211 DH L1801	0.142	0.859	...	0.03	0.216	0.314	72.48	...	...	...	...	25.38	...	O 0.1336		50g
	211 DH L1805	0.722	0.806	...	0.024	0.215	0.444	62.58	...	...	...	...	33.91	...	O 0.525		50g
	211 DH L1806	0.388	0.645	...	0.015	0.084	0.369	60.53	...	...	...	...	37.03	...	O 0.375		50g
	211 DH L1808	0.031	0.605	...	0.015	0.861	0.302	67.13	...	...	...	...	30.53	...	O 0.165		50g
	211 DH L1811	1.48	0.545	...	0.025	0.134	0.45	61.78	...	...	...	...	34.96	...	O 0.244		50g
	211 DH L1812	1.32	0.566	...	0.025	0.13	0.453	61.42	...	...	...	...	35.6	...	O 0.220		50g
	211 DH L1813	1.74	0.815	...	0.044	0.369	0.284	68.79	...	...	...	...	26.01	...	O 0.521		50g
	211 DH L1814	0.46	0.941	...	0.046	0.30	0.293	67.52	...	...	...	...	29.94	...	O 0.151		50g
CRM	211 RU F8/2	0.029	0.25	0.013	0.0035	...	...	99.2	...	0.0014	...	...	0.26	0.17	N 0.025		250g
CRM	211 RU F15/1	0.078	2.10	0.0023	0.036	...	...	68.1	...	...	...	...	...	0.30	N 1.78		250g
	211 SI XS-FCMA	6.26	4.64	0.036	0.010	0.19	0.17	50.65	...	...	0.36	0.38	36.59	0.037	Co 0.054		100g
	211 SI XS-FCME	6.05	4.06	0.054	0.011	0.16	0.16	49.30	...	...	0.34	0.31	37.11	0.36	Co 0.048		100g
(Mn) Ferro Manganese																	
	211 M BS 121	1.62	0.62	0.004	0.38	81.4	...	(0.08)	(0.017)	(0.15)	...	(<0.001)	14.9	...	Zr (0.0002)		100g
CRM	211 S 701-5	6.81	0.04	0.002	0.144	74.14	...	...	...	...	...	...	...	...			150g
CRM	211 E 54	1.2	1.74	0.003	0.22	80.4	0.14	0.043	...	0.059	...	...	15.9	...			120g
CRM	211 A E583-1	0.333	0.396	0.007	0.146	86.42	...	...	...	...	...	...	(12.3)	...	N (0.041)		100g
CRM	211 TI E503	0.7	0.865	(0.009)	0.069	80.8	...	...	...	...	...	...	...	...			100g
	211 DH L1901	6.81	0.713	...	0.181	76.83	0.066	0.009	...	0.056	0.024	0.081	14.63	0.022	Co 0.128		50g
	211 DH L1202	1.353	0.791	...	0.261	81.59	0.053	0.371	...	0.007	0.011	0.001	15.34	...	Co 0.014		50g
	211 DH L1203	1.293	0.863	...	0.114	88.15	0.067	0.076	...	0.051	0.015	0.001	8.87	...	Co 0.141		50g
	211 DH L1204	0.057	0.738	...	0.075	87.19	0.02	0.029	...	0.023	0.016	...	11.5	...	Co 0.041		50g
	211 DH L1205	1.38	1.04	...	0.248	80.48	0.039	0.114	...	0.008	0.01	0.001	16.51	...	Co 0.015		50g
	211 DH L1906	6.895	0.04	...	0.167	77.09	0.057	0.01	...	0.04	0.035	0.003	15.4	...	Co 0.069		50g
	211 DH L1206	1.482	0.35	...	0.229	80.24	0.14	0.105	0.028	0.088	0.071	0.004	15.91	...	Co 0.166		50g
	211 DH L1207	1.63	1.11	...	0.081	88.0	0.022	0.06	...	0.016	0.026	...	8.78	...	Co 0.039		50g
	211 CG 01421	1.34	0.92	0.0024	0.277	79.95	...	...	...	...	...	...	...	...			150g
	211 CG 01426	6.27	1.43	0.0116	0.162	72.98	...	...	...	...	...	...	...	...			150g
CRM	211 RU F5/2	0.081	1.26	0.0096	0.065	95.9	...	...	...	0.0054	...	...	2.71	...			250g
CRM	211 RU F6/2	1.90	2.00	0.0031	0.330	90.3	...	...	...	0.050	...	...	5.40	...			300g
(Mo) Ferro Molybdenum																	
CRM	211 S 745-3	0.03	0.55	0.025	0.05	...	...	...	62.06	0.45	...	...	...	(0.037)			150g
CRM	211 A E578-1	0.016	0.208	0.065	0.024	...	...	...	72.23	0.136	...	...	...	...			100g
CRM	211 T E508-1	0.052	0.56	0.085	0.035	...	...	...	59.65	...	...	...	...	...			100g
	211 DH L2003	0.027	0.239	...	0.038	0.08	0.032	0.039	72.84	0.467	...	...	25.65	...	W 0.030		50g
	211 DH L2006	0.031	0.252	...	0.086	0.07	0.905	0.018	73.83	0.134	0.007	...	24.03	...	W 0.050		50g
	211 DH L2007	0.047	1.05	...	0.098	0.07	0.611	0.027	64.07	0.356	0.004	...	31.92	0.048	W 0.046		50g
	211 DH L2008	0.018	0.71	0.059	0.017	0.088	0.02	0.039	72.82	0.378	0.022	...	25.51	...	W 0.022		50g
	211 DH L2009	0.021	0.93	0.074	0.019	0.057	...	0.034	68.687	0.452	0.015	...	29.0	...	W 0.029		50g
	211 DH L2011	0.042	1.36	0.107	0.03	0.071	0.026	0.044	65.33	0.525	0.014	...	31.19	...	W 0.095		50g
	211 DH L2012	0.011	0.79	0.084	0.028	0.042	...	...	69.99	0.39	...	...	27.82	...			50g
	211 DH L2013	0.029	0.28	0.081	0.039	0.012	0.017	0.05	60.03	0.4	...	...	38.42	...	W 0.188		50g
	211 DH L2020	0.028	0.21	0.079	0.034	0.013	0.019	0.057	62.2	0.376	...	...	36.71	...	W 0.155		50g
	211 CM 1631	0.097	0.67	0.072	0.024	...	...	...	59.16	0.178	...	...	...	...			150g
	211 CM 1632	0.066	0.23	0.080	0.025	...	...	...	62.76	0.177	...	...	...	...			50g
	211 CM 1633	0.049	0.45	0.065	0.023	...	...	...	60.08	0.191	...	...	...	...			150g

21.1 Ferro Alloys

		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	Ti	Fe	Al	Nb	Ta	Sn	Size
(Nb) Ferro Niobium																		
CRM	211 S 755-2	0.19	2.12	0.15	0.049	...	...	...	...	...	...	...	...	3.23	68.49	(0.18)	(0.05)	150g
CRM	211 A E576-1	0.201	1.79	...	...	...	...	...	...	...	...	1.32	...	2.53	43.90	0.306	0.195	100g
CRM	211 A E579-1	0.037	1.03	0.021	0.064	...	...	...	...	...	...	0.567	...	1.86	62.87	3.85	0.344	100g
	211 DH L2801	0.432	1.9	...	0.105	0.102	0.003	0.007	...	0.011	0.028	0.439	29.77	0.8	64.69	0.099	...	50g
	211 DH L2802	0.379	4.14	...	0.246	1.09	0.021	0.14	...	0.065	0.289	1.34	32.51	2.37	52.57	0.564	...	50g
	211 DH L2803	0.076	1.88	...	0.101	0.276	...	...	...	0.062	0.084	0.141	28.38	1.25	66.99	0.059	...	50g
	211 DH L2804	0.06	2.28	...	0.125	0.077	...	...	...	0.111	0.01	0.077	28.44	0.078	67.61	0.097	...	50g
	211 DH L2805	0.047	1.53	...	0.149	2.52	...	0.023	...	0.033	0.025	0.919	26.5	1.53	65.4	0.35	...	50g
	211 DH L2806	0.081	2.11	...	0.109	0.129	0.017	0.028	...	0.341	0.015	0.044	30.69	0.061	65.05	0.071	...	50g
	211 DH L2807	0.099	1.94	...	0.114	0.136	0.015	0.028	...	0.279	0.014	0.045	31.93	0.064	64.09	0.066	...	50g
	211 DH L2808	0.181	3.17	...	0.071	0.415	0.012	0.038	...	0.048	1.16	1.82	24.02	3.2	64.49	0.171	...	50g
	211 DH L2809	0.495	3.47	...	0.097	0.53	0.017	0.035	...	0.037	0.878	1.35	27.46	2.22	60.12	0.217	...	50g
	211 DH L2812	0.135	2.09	...	0.089	0.441	0.006	0.012	...	0.095	0.052	0.683	29.84	1.132	64.37	0.317	...	50g
		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	Ti	Fe	Al	Others		Size	
(P) Ferro Phosphorus																		
CRM	211 CG 01429	0.224	1.87	0.0681	17.9	0.47	...	...	...	...	...	...	...	...			50g	
(Si) Ferro Silicon																		
CRM	211 E 56	0.032	75.0	0.001	0.022	0.029	0.003	0.011	...	0.001	...	0.02	24.1	0.31	Ca 0.34, Mg 0.023		60g	
CRM	211 E 70	0.087	44.7	(0.006)	0.018	0.283	0.022	0.046	...	0.066	...	0.018	54.1	0.21	Ca 0.16, Mg 0.016		60g	
	211 M BS140/1	(0.03)	45.2	(0.004)	(0.02)	0.46	0.15	(0.25)	...	0.13	...	0.09	52.8	0.68	Ca 0.04		100g	
	211 M BS140/2	(0.03)	51.85	(0.004)	(0.02)	0.53	0.15	(0.25)	...	0.14	...	0.1	46.12	0.62	Ca 0.03		100g	
	211 M BS140/3	(0.05)	47.2	(0.004)	(0.02)	0.6	0.09	(0.18)	...	0.09	...	0.07	50.85	0.59	Ca 0.09		100g	
	211 M BS140/4	(0.05)	49.8	(0.004)	(0.02)	1.0	0.11	(0.19)	...	0.09	...	0.09	47.5	0.9	Ca 0.09		100g	
CRM	211 S 720	(0.045)	76.35	(0.003)	0.032	0.21	...	...	...	...	...	...	...	1.52			100g	
CRM	211 A SA 33	1.01	15.6	(0.008)	0.043	0.75	0.28	0.43	...	0.29	...	...	80.2	0.62			100g	
CRM	211 J 39	0.105	75.9	...	0.018	0.165	(0.008)	(0.013)	...	0.013	(0.007)	0.116	21.6	1.45	Ca 0.24		50g	
CRM	211 TI E582-1	0.15	75.2	...	0.0184	0.23	...	0.074	...	...	...	0.225	21.42	1.154	Ca 0.405		100g	
CRM	211 DB E529-1	0.10	91.11	...	0.013	0.04	...	...	...	...	...	0.09	6.15	0.86	Ca 0.46, Mg 0.04		100g	
	211 DH L2302	0.064	76.83	0.001	0.014	0.267	0.015	0.05	...	0.036	0.006	0.086	20.55	1.21	Mg 0.013		50g	
	211 DH L2303	0.179	80.54	0.002	0.016	0.132	0.025	0.054	...	0.034	0.006	0.08	16.1	1.392	Mg 0.031		50g	
	211 DH L2304	0.165	83.65	0.003	0.009	0.141	0.029	0.038	...	0.032	0.017	0.102	13.31	0.827	Mg 0.010		50g	
	211 DH L2311	8.31	50.0	0.048	0.011	0.08	0.007	0.027	...	0.016	...	0.07	9.06	4.36	Mg 1.15		50g	
	211 DH L2312	4.96	48.3	0.056	0.011	0.114	0.013	0.083	...	0.02	...	0.062	12.38	3.4	Mg 0.193		50g	
	211 CG 01422a	0.081	76.74	0.004	0.023	0.172	...	0.14	...	...	...	...	...	1.8	Ca 0.30		50g	
	211 CG 01432	0.024	78.96	0.0037	0.0093	0.058	0.035	0.0053	0.0013	0.049	0.0024	0.032	20.24	0.24	Ca 0.064, Mg 0.0051		70g	
	211 CG 01433	0.190	55.73	0.048	0.038	0.220	0.0063	0.014	0.011	0.060	0.011	0.119	41.89	0.78	Ca 0.14, Mg 0.0068		70g	
CRM	211 RU F1/3	0.499	24.5	0.0027	0.042	0.510	...	0.361	...	...	...	0.072	...	0.74	Ca (0.01)		250g	
CRM	211 RU F2/2	0.027	44.6	0.0024	0.036	0.305	...	0.320	...	...	...	...	(52)	1.09	Ca 0.06		200g	
CRM	211 RU F3/3	0.049	77.6	0.0025	0.026	0.128	...	0.096	...	...	...	0.127	...	1.97	Ca 0.40		100g	
(Si/Ca) Silicon-Calcium																		
	211 M BS 119	0.3	62.3	0.01	0.033	...	...	...	...	...	...	...	3.0	0.46	Ca 32.3		100g	
	211 DH L0401	0.53	60.75	...	0.018	0.086	0.006	0.016	0.008	0.013	...	0.077	4.26	2.163	Ca 29.53		50g	
	211 DH L0402	0.194	58.68	...	0.013	0.051	0.006	0.009	<0.015	0.014	...	0.055	6.74	1.13	Ca 28.48		50g	
	211 DH L0403	0.4	60.12	...	0.014	0.611	0.008	0.018	0.003	0.016	...	0.169	5.56	1.59	Ca 28.60		50g	
	211 DH L0404	0.533	62.53	...	0.011	0.094	0.007	0.016	0.026	0.02	...	0.238	5.03	1.74	Ca 26.79		50g	
	211 DH L0405	0.755	57.48	...	0.014	0.039	0.012	0.006	0.0	0.005	...	0.055	3.47	1.19	Ca 32.84		50g	
	211 CG 01431	0.61	57.02	0.048	0.025	0.426	...	...	...	...	...	...	8.49	1.95	Ca 30.03		100g	
	211 CG 01434	0.21	59.24	0.051	0.024	0.067	0.012	0.035	...	...	...	...	9.71	1.55	Ca 9.89, Ba 16.54		70g	
	211 CM 1657	0.30	59.02	0.028	0.026	...	...	...	...	...	...	...	10.17	1.30	Ca 27.12		100g	
CRM	211 RU F25/2	...	51.5	0.0055	0.011	...	...	...	...	...	...	...	...	0.66	Ca 20.5		125g	
(Si/Cr) Silico-Chromium																		
	211 DH L5403	0.034	40.46	...	0.022	0.41	0.19	36.93	...	0.02	0.074	0.124	20.93	0.579			50g	
CRM	211 RU F24/2	0.02	49.9	0.0015	0.027	...	...	29.2	...	...	...	...	...	0.86			250g	

21.1 Ferro Alloys		C	Si	S	P	Mn	Ni	Cr	Mo	Cu	V	Ti	Fe	Al	Others	Size
(Si/Mn) Silico-Manganese																
CRM	211 S 705-4	2.11	14.76	0.014	0.081	61.56	0.014	0.016	...	0.02	0.015	0.236	...	0.05	Ca 0.028, Mg 0.015	100g
	211 TI E586-1	0.025	34.0	...	0.041	62.5	...	0.044	...	...	0.041	...	2.89	0.022	Ca 0.039, Co 0.007	100g
	211 DH L0101	1.764	17.42	...	0.11	69.46	0.053	0.032	...	0.034	...	0.183	10.06	...	Co 0.065	50g
	211 DH L0102	1.407	18.19	...	0.166	73.02	0.102	0.046	...	0.042	...	0.184	6.11	...	Co 0.108	50g
	211 DH L0103	1.716	17.79	...	0.1	68.25	0.032	0.009	...	0.032	...	0.191	11.11	...	Co 0.066	50g
	211 DH L0104	1.165	19.47	...	0.148	68.2	0.093	0.045	...	0.042	...	0.208	9.88	...	Co 0.109	50g
	211 DH L0105	1.693	17.22	...	0.147	67.02	0.068	0.032	...	0.069	...	0.201	12.64	...	Co 0.143	50g
	211 DH L0106	0.015	30.16	...	0.05	59.06	0.033	0.035	...	0.019	...	0.471	9.91	0.016	Co 0.028	50g
	211 CG 01427	0.922	19.34	0.0125	0.217	66.66	...	...	...	...	...	...	...	...	...	50g
	211 CM 1642	1.08	18.56	0.013	0.178	64.95	...	...	...	...	...	...	...	...	...	50g
	211 CM 1643	2.19	14.42	0.012	0.305	64.29	...	...	...	...	...	...	...	...	...	50g
	211 RU F23/2	1.43	18.08	0.022	0.488	73.0	...	...	...	...	...	...	...	...	...	250g
(Si/Zr) Silico-Zirconium																
CRM	211 RU F27/2	0.111	26.1	(0.001)	0.044	...	...	...	...	1.47	...	0.215	(12)	7.48	Zr 51.5	200g
(Ti) Ferro Titanium																
CRM	211 A E584-1	0.044	1.80	0.030	0.032	1.13	...	...	...	...	...	37.17	...	7.19	Soluble Al (6.0)	100g
CRM	211 TI E510-1	0.058	4.65	...	(0.035)	...	...	...	...	...	...	26.95	...	(4.9)	N (0.014)	100g
CRM	211 DB E589-1	0.132	(0.412)	0.0152	(0.011)	0.151	0.663	0.506	0.934	0.146	2.32	68.4	16.93	5.34	Co 0.115, Sn 0.55, Zr 0.866, N 0.64	100g
	211M BS FeTi-1	0.57	2.9	0.009	0.05	7.7	0.17	0.33	0.06	0.6	0.69	19.9	...	12.5	Zr 3.6	100g
	211M BS FeTi-2	0.46	3.2	...	0.053	7.91	0.16	0.3	0.15	0.43	0.81	19.4	...	12.7	N 0.16, Sn 0.16	100g
	211 DH L2403	...	0.325	...	0.01	0.102	0.412	0.439	0.238	0.185	3.167	69.39	17.12	5.47	Sn 0.418	50g
	211 DH L2404	...	0.265	...	0.007	0.116	1.82	1.007	0.4	0.115	2.24	66.74	19.19	4.92	Sn 0.530	50g
	211 DH L2405	...	0.087	...	0.011	0.049	0.13	0.087	0.086	0.047	0.838	66.8	27.87	1.497	Sn 0.016	50g
	211 DH L2407	...	0.359	...	0.0	0.075	0.645	0.397	0.295	0.682	3.158	70.61	13.26	6.51	Sn 0.434	50g
	211 CG 01430	0.023	4.68	0.012	0.040	2.54	...	...	...	0.012	...	28.76	...	5.08	...	50g
CRM	211 RU F16/3	0.051	6.44	0.024	0.053	0.68	...	0.127	0.112	1.46	0.208	33.11	...	8.45	Zr 0.022, Zn 0.122, Sn 0.023	250g
CRM	211 RU F30/2	0.132	0.191	0.0061	0.0036	0.156	0.046	0.107	0.96	0.040	0.86	71.2	21.28	3.76	Sn 0.023, N 0.48,	250g
(W) Ferro Tungsten																
CRM	211 A E555-1	0.025	1.75	(0.018)	(0.02)	...	...	...	...	...	...	...	...	0.14	W 79.9, Sn 0.034	100g
CRM	211 A E590-1	0.0250	1.05	(0.07)	...	0.136	...	...	0.101	0.0484	...	...	(17.9)	(0.37)	W 79.55, Sn 0.045	100g
	211 J 17	0.74	0.2	...	...	...	...	...	...	...	...	...	...	...	W 80.8, Sn 0.045	100g
	211 CG 01428	0.055	0.34	0.048	0.028	0.12	...	...	...	0.043	...	...	...	...	W 76.66	150g
CRM	211 RU F18/2	0.075	0.35	0.071	0.042	0.095	...	...	0.56	0.105	...	...	...	...	W 74.7, Sn 0.038, As 0.028	300g
(V) Ferro Vanadium																
CRM	211 J 18A	0.080	0.48	0.008	0.025	0.32	(0.008)	0.58	(0.1)	(0.005)	80.8	...	15.3	1.58	N 0.149	100g
CRM	211 S 750-2	0.14	0.52	0.1	0.018	...	...	...	...	...	53.4	...	...	3.2	...	150g
CRM	211 A E577-1	0.089	1.79	0.034	0.035	0.158	0.053	...	...	0.054	50.16	...	...	0.414	Soluble Al (0.21)	100g
CRM	211 TI E511-1	0.049	0.341	0.018	(0.016)	...	...	...	...	...	80.7	...	...	...	...	100g
CRM	211 DB E591-1	0.141	0.847	0.0153	0.0299	0.307	0.0141	...	...	0.0596	79.72	...	14.59	3.19	...	100g
	211 DH L2501	502.0	0.53	0.011	0.033	0.165	0.011	0.141	0.014	0.007	79.56	0.034	17.12	1.318	...	50g
	211 DH L2502	0.062	1.38	0.041	0.037	0.247	0.021	0.313	0.022	0.034	81.59	0.032	14.0	1.15	...	50g
	211 DH L2503	0.092	1.418	0.0-19	0.011	0.08	0.018	0.099	0.051	0.018	83.73	0.024	12.0	0.794	...	50g
	211 DH L2504	0.093	0.797	0.019	0.034	0.422	0.076	0.753	0.004	0.07	79.96	0.017	15.25	1.87	...	50g
	211 DH L2505	0.216	0.805	0.021	0.036	0.326	0.022	0.119	0.201	0.219	76.12	0.034	19.99	0.845	...	50g
	211 DH L2506	0.118	1.42	0.019	0.041	0.172	0.03	0.191	0.171	0.084	82.13	0.121	10.89	3.72	...	50g
	211 DH L2507	0.289	0.959	0.108	0.03	0.106	0.033	0.986	0.017	0.055	76.65	0.045	15.97	4.06	...	50g
	211 DH L2508	0.294	1.34	...	0.072	3.16	0.049	0.596	0.004	0.189	51.54	0.011	41.26	0.026	...	50g
	211 DH L2509	0.216	3.73	...	0.034	2.41	0.327	2.16	0.136	0.315	37.63	0.345	52.05	0.48	...	50g
	211 M BS FeV42	0.30	3.81	0.31	0.12	3.37	3.85	5.21	0.024	0.31	42.35	0.033	39.45	(0.06)	N 0.20	100g
	211 M BS FeV45	0.24	4.86	0.33	0.12	4.14	4.28	5.82	0.01	0.41	45.27	0.022	33.8	(0.013)	N 0.26	100g

22. Ceramics/Refractories

Powders

22.4 Ceramics		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	ZrO ₂ +		L.O.I.		Others	Type	Size	
											HfO ₂							
	224 GC AN28	32.8	2.4	0.03	<0.01	0.04	<0.01	0.04	0.04	...	...	0.13			PbO 64.5	Pb bisilicate	100g	
	224 GC AN30	51.8	7.41	0.18	0.03	13.0	0.22	8.67	1.13	...	...	...			B ₂ O ₃ 17.4	Borax frit	100g	
	224 A 201a	57.3	23.54	0.12	0.05	1.07	0.025	7.53	8.9	0.025	...	0.76				Nepheline	100g	
	224 A 202a	1.38	0.33	0.1	0.03	37.4	0.39	<0.03	0.1	<0.01	...	6.78				Plaster	100g	
	224 A 203a	59.7	0.3	0.22	<0.01	0.25	32.08	0.02	0.005	0.13	...	6.78				Talc	100g	
	224 A 204a	37.6	0.74	0.18	2.22	0.15	0.012	0.014	0.017	0.77	53.8	0.5				Zircon	100g	
		Si	Ca	Mg	Al	Ti	Mn	P	Fe	Na	K	B	Cr			Type	Size	
CRM	224 DB E777-1	44.44	2.02	0.043	0.42	0.27	...	...	0.23	(0.02)	0.13	...	...			Silica Brick	100g	
CRM	224 DB E779-1	0.182	1.691	(54.6)	0.105	0.0081	0.503	0.0267	3.73	(0.006)	(0.002)	0.0116	0.003			Magnesite	100g	
22.5.1 Refractories - Aluminosilicate																		
		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	ZrO ₂	Li ₂ O	SrO	MnO	L.O.I.	Type	Size	
CRM	225 E 51	55.0	40.3	1.19	2.19	0.06	0.2	0.09	0.69	0.09	0.07	0.018	...	...	0.16	Burnt Refractory	80g	
CRM	225 E 53	65.8	18.3	0.13	0.013	0.27	0.05	2.5	12.1	0.072	...	...	...	...	0.51	Feldspar (K)	80g	
CRM	225 E 57	24.3	71.5	1.25	1.19	0.05	0.13	0.35	0.83	0.054	0.2	0.008	0.009	...	0.2	Burnt Refractory	80g	
CRM	225 E 63	96.28	0.48	0.52	0.03	2.21	0.18	0.013	0.043	0.013	(0.002)	(0.0005)	...	0.008	0.17	Silica Refractory	80g	
CRM	225 E 72	66.2	20.26	0.09	0.005	0.18	(0.022)	10.0	1.47	1.03	...	...	...	...	0.66	Feldspar (Na)	80g	
	225 S JCRM R303	89.49	5.55	1.51	2.93	0.012	0.006	...	...	0.064	0.110	...	...	...	...		100g	
	225 S JCRM R304	35.90	55.94	0.585	1.33	0.427	0.451	0.273	0.329	...	0.105	...	...	...	4.26	Set only	100g	
	225 S JCRM R401	28.11	70.18	0.598	0.185	0.059	0.190	0.197	0.174	0.136	0.058	...	...	...	...		100g	
	225 S JCRM R404	>99.99	0.0011	0.00006	0.0006	0.00002	<0.00001	0.0001	0.00004	...	...	...	...	...	0.00		100g	
	225 S JCRM R405	97.78	1.07	0.053	0.022	0.029	0.023	0.060	0.71	...	...	...	...	...	0.13	Set only	100g	
	225 S JCRM R406	96.71	1.31	0.102	0.564	0.016	0.005	0.030	0.13	...	...	...	...	...	0.97		100g	
	225 DH X2607	10.57	79.12	0.305	0.077	0.093	0.073	0.271	0.121	0.015	6.88	...	...	0.081	0.431	79 Alumina	100g	
	225 DH X2608	45.33	41.87	2.33	1.57	1.18	4.82	0.173	1.14	0.129	0.081	...	...	0.061	0.447	42 Alumina	100g	
	225 GC 2CAS12	34.0	63.6	0.3	1.34	0.31	0.06	0.13	0.12	...	...	<0.01	...	...	0.12	Sillimanite	100g	
	225 GC AN40	58.9	38.2	0.9	0.02	0.15	0.27	0.1	1.48	...	...	...	...	...	...	Molochite	100g	
	225 GC 2CAS14	62.5	0.15	0.35	0.01	0.28	31.7	0.02	<0.01	...	...	<0.01	...	...	5.15	Steatite (talc)	100g	
	225 GC CAS8	67.15	18.63	0.11	0.03	0.22	0.02	3.53	10.6	...	...	...	...	...	(0.3)	Feldspar (K)	100g	
CRM	225 A 309	34.1	61.1	1.51	1.92	0.22	0.17	0.34	0.46	...	...	(0.01)	(0.003)	(0.03)	(0.1)	Sillimanite	100g	
CRM	225 A E776-1	62.76	29.28	1.43	1.62	0.310	0.476	0.488	2.92	0.062	(0.04)	0.019	...	...	(0.3)	Firebrick	100g	
CRM	225 A 313/1	99.78	0.036	0.012	0.017	0.006	0.0013	0.003	0.005	...	...	(0.0005)	...	0.00013	(0.1)	Hi-purity Silica	100g	
CRM	225 B 76a	54.9	38.7	1.60	2.03	0.22	0.52	0.07	1.33	0.120	...	0.042	0.037	...	(0.34)	Burnt Refractory	75g	
CRM	225 B 77a	35.0	60.2	1.00	2.66	0.05	0.38	0.037	0.090	0.092	...	0.025	0.009	...	(0.22)	Burnt Refractory	75g	
CRM	225 B 78a	19.4	71.7	1.2	3.22	0.11	0.70	0.078	1.22	1.3	...	0.12	0.25	...	(0.42)	Burnt Refractory	75g	
CRM	225 B 198	...	0.16	0.66	0.02	2.71	0.07	0.012	0.017	0.022	...	0.001	...	0.008	0.21	Silica Brick	45g	
CRM	225 B 199	...	0.48	0.74	0.06	2.41	0.13	0.015	0.094	0.015	...	0.002	...	0.007	0.17	Silica Brick	45g	
CRM	225 RU K1/1	96.1	0.57	1.23	(0.5)	1.37	0.046	...	...	0.030	...	...	...	0.030	...	Silica Refractory	75g	
CRM	225 RU K2/3	58.9	34.8	2.57	1.88	0.39	0.47	0.19	0.68	...	...	...	...	0.083	...	Fire Clay	75g	
CRM	225 RU K3/2	32.3	63.6	1.15	1.34	0.44	0.27	0.17	0.15	...	...	...	...	...	...	Mullite	100g	
		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	ZrO ₂	Cr ₂ O ₃	MnO	L.O.I.			Type	Size
	225 S JRRM 121	86.3	6.07	0.40	0.05	1.96	0.12	3.20	0.23	0.32	1.11	0.018	0.023	0.057			Fireclay	20g
	225 S JRRM 122	78.2	10.2	0.24	1.03	0.43	0.65	1.04	2.05	4.89	0.20	0.81	0.20	0.12				20g
	225 S JRRM 123	79.1	13.3	4.13	0.45	0.13	1.32	0.29	0.10	0.80	0.008	0.014	0.012	0.037				20g
	225 S JRRM 124	73.9	16.5	2.60	2.74	1.09	0.10	0.31	1.79	0.19	0.11	0.11	0.24	0.10				20g
	225 S JRRM 125	79.2	18.7	0.50	0.30	0.13	0.08	0.07	0.69	0.04	0.023	0.010	0.008	0.077				20g
	225 S JRRM 126	66.9	21.3	3.34	2.84	0.45	0.12	0.28	3.13	0.49	0.049	0.65	0.038	0.17				20g
	225 S JRRM 127	68.5	23.0	0.92	2.19	0.18	0.15	1.75	0.54	1.78	0.046	0.27	0.17	0.072				20g
	225 S JRRM 128	54.3	26.0	4.45	1.37	2.80	3.10	0.37	1.84	3.36	1.01	0.85	0.24	0.023			Set only	20g
	225 S JRRM 129	62.2	30.1	1.46	0.96	0.15	2.23	0.23	1.92	0.20	0.11	0.10	0.018	0.11				20g
	225 S JRRM 130	53.4	32.7	0.53	3.35	1.95	0.61	2.32	1.42	0.91	0.83	1.05	0.37	0.11				20g
	225 S JRRM 131	52.7	36.6	2.20	1.16	0.78	1.02	0.76	2.61	1.61	0.26	0.076	0.032	0.17				20g
	225 S JRRM 132	50.6	39.1	1.64	0.29	1.29	0.34	2.16	0.79	2.38	0.75	0.11	0.11	0.15				20g
	225 S JRRM 133	50.1	39.0	3.69	1.93	0.10	2.03	0.33	0.91	0.34	0.57	1.27	0.017	0.089				20g
	225 S JRRM 134	47.2	44.3	1.07	1.74	0.20	0.20	0.13	0.37	3.83	0.35	0.24	0.24	0.14				20g
	225 S JRRM 135	37.2	48.9	3.05	0.07	2.36	1.24	2.87	2.77	0.48	0.20	0.42	0.049	0.18				20g
	225 S JRRM 201	84.36	9.71	1.46	0.038	2.77	0.73	0.31	0.14	...	...	...	0.14	...			Silica	20g
	225 S JRRM 202	85.72	7.59	3.97	0.56	0.81	0.020	1.01	0.025	...	...	...	0.004	...				20g
	225 S JRRM 203	87.33	5.09	1.78	0.18	3.97	0.47	0.61	0.24	...	...	...	0.11	...				20g
	225 S JRRM 204	89.64	4.49	2.08	0.15	1.79	0.31	0.31	0.90	...	...	...	0.10	...				20g
	225 S JRRM 205	90.40	3.08	1.24	0.32	3.11	0.092	0.93	0.50	...	...	...	0.064	...			Set only	20g
	225 S JRRM 206	92.88	1.77	3.20	0.018	1.20	0.072	0.18	0.50	...	...	...	0.018	...				20g
	225 S JRRM 207	94.05	1.70	0.96	0.078	2.51	0.16	0.047	0.21	...	...	...	0.042	...				20g
	225 S JRRM 208	94.43	0.46	0.064	0.005	4.19	0.056	0.63	0.022	...	...	...	0.001	...				20g
	225 S JRRM 209	96.22	0.87	0.37	0.050	1.89	0.10	0.033	0.17	...	...	...	0.068	...				20g
	225 S JRRM 210	97.69	0.16	0.83	0.005	0.30	0.78	0.021	0.007	...	...	...	0.002	...				20g

22.5.1 Refractories - Aluminosilicate (continued)

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	B ₂ O ₃	Type	Size
225 S JRRM 301	43.91	46.80	3.52	1.03	0.79	0.69	0.17	2.00	0.87	Medium-high Alumina	20g
225 S JRRM 302	37.70	53.93	4.49	0.59	0.87	0.69	0.56	0.66	...		20g
225 S JRRM 303	36.16	59.25	1.47	0.16	1.03	0.85	0.69	0.20	...	Set only	20g
225 S JRRM 304	27.55	63.06	3.46	4.34	0.18	0.37	0.27	0.38	...		20g
225 S JRRM 305	20.03	68.69	2.81	3.30	0.65	0.30	0.80	3.11	...		20g
225 S JRRM 306	17.35	74.19	1.95	2.68	0.62	0.100	0.99	1.75	...		20g
225 S JRRM 307	10.87	80.14	2.97	1.22	0.15	0.61	1.08	2.36	...		20g
225 S JRRM 308	10.25	86.59	0.41	1.79	0.090	0.053	0.26	0.10	...		20g
225 S JRRM 309	2.12	89.83	1.27	3.85	1.02	0.28	0.42	0.92	...		20g
225 S JRRM 310	0.41	94.71	0.024	2.06	0.038	0.97	0.081	1.32	...		20g

22.5.2 Refractories -

Zircon, Zirconia	ZrO ₂	HfO ₂ + ZrO ₂	Al ₂ O ₃	SiO ₂	CaO	MgO	Fe ₂ O ₃	Cr	HfO ₂	P ₂ O ₅	Ti	ThO ₂	U ₃ O ₈	Y ₂ O ₃	Type	Size
CRM 225 A SA 13	64.01	...	0.61	32.45	(0.14)	(0.044)	0.187	(0.0023)	1.29	0.23	0.177	...	...	...	Zircon Conc	100g
CRM 225 A SA 62	64.2	...	0.88	32.8	...	...	0.07	...	1.31	0.12	...	0.0158	0.0354	...	Zircon Conc	100g
225 GB 35	66.14	...	...	...	...	...	...	...	1.42	...	0.16	...	...	...	Zircon	50g
CRM 225 A 358	92.70	...	0.08	0.20	1.50	3.42	0.064	...	1.63	...	0.12	...	...	...	Zirconia	100g
CRM 225 A 388	64.9	...	0.291	32.7	(0.04)	(<0.05)	0.049	...	1.3	0.12	0.14	0.018	0.034	0.136	Zircon	100g
225 GC 2CAS15	...	64.6	0.36	34.1	0.52	0.11	0.08	...	...	...	0.108	...	...	...		100g
225 S JCRM R501	...	66.5	0.39	32.6	...	...	0.06	...	...	...	0.096	...	...	...	Zircon sand	100g
225 S JCRM R502	...	60.3	5.87	32.8	...	...	0.10	...	...	...	0.14	...	...	...	Zircon sand	100g

	ZrO ₂	HfO ₂	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	Cr ₂ O ₃	MnO	L.O.I.	Type	Size
225 S JRRM 601	92.01	1.59	0.26	0.11	0.10	0.16	5.58	0.061	0.001	0.002	0.007	0.003		0.070	Zircon and Zirconia	20g
225 S JRRM 602	88.25	1.52	0.33	0.078	1.61	0.16	0.22	5.29	0.76	0.001	1.33	0.015		0.25		20g
225 S JRRM 603	84.7	1.45	0.96	5.29	2.85	0.93	0.95	0.956	0.18	0.65	0.83	0.029		0.11		20g
225 S JRRM 604	79.18	1.35	3.04	6.91	0.42	0.13	0.091	0.017	1.08	1.93	1.99	3.06		0.23		20g
225 S JRRM 605	75.27	1.31	10.78	4.83	0.17	0.12	1.93	1.99	0.45	0.54	0.35	1.54		0.31	Set only	20g
225 S JRRM 606	72.35	1.26	22.03	0.53	0.93	0.11	0.021	0.32	2.02	0.011	0.019	0.008		0.32		20g
225 S JRRM 607	61.31	1.21	32.75	3.51	0.12	0.13	0.043	0.031	0.026	0.043	0.085	0.002		0.56		20g
225 S JRRM 608	58.84	1.21	34.62	0.70	0.092	0.10	0.52	3.12	0.031	0.019	0.11	0.49		0.069		20g
225 S JRRM 609	55.56	1.12	40.50	0.88	0.15	0.15	0.30	0.15	0.94	0.020	0.081	0.012		0.12		20g
225 S JRRM 610	48.70	0.98	45.66	0.45	0.30	0.093	3.07	0.54	0.043	0.010	0.11	0.009		0.073		20g
225 S JRRM 701	48.0	0.85	28.4	10.0	2.00	4.96	2.07	0.47	1.84	0.024	(0.027)	1.01	(0.007)	(0.098)	Zircon aluminosilicates	20g
225 S JRRM 702	42.5	2.08	9.99	38.1	0.37	0.21	1.55	1.97	2.02	0.57	(0.028)	0.11	(0.004)	(0.18)		20g
225 S JRRM 703	37.3	0.72	14.6	46.3	0.059	0.072	0.037	0.011	0.53	0.002	(0.035)	0.006	(0.000)	(0.096)		20g
225 S JRRM 704	33.4	0.68	42.6	19.5	0.55	1.02	0.15	0.51	0.22	0.40	(0.13)	0.51	(0.89)	(0.079)		20g
225 S JRRM 705	27.9	0.48	1.99	64.1	0.14	2.02	0.19	0.46	0.30	0.018	(0.017)	2.01	(0.004)	(0.16)		20g
225 S JRRM 706	22.7	1.19	39.3	25.9	0.13	3.77	1.58	0.15	3.49	0.95	(0.016)	0.010	(0.004)	(0.72)	Set only	20g
225 S JRRM 707	18.1	0.36	21.1	55.7	1.81	0.28	1.08	0.84	0.19	0.15	(0.055)	0.18	(0.003)	(0.012)		20g
225 S JRRM 708	12.8	1.03	0.54	79.5	0.80	1.02	1.17	1.64	0.089	0.74	(0.002)	0.29	(0.001)	(0.13)		20g
225 S JRRM 709	8.32	0.18	34.3	50.3	0.47	0.091	0.52	1.20	1.03	0.21	(0.009)	2.91	(0.002)	(0.20)		20g
225 S JRRM 710	2.96	1.51	5.62	82.2	1.15	3.00	0.22	0.040	1.41	0.63	(0.042)	1.02	(0.002)	(0.094)		20g
225 GC AN46	15.7	...	45.5	30.5	0.85	0.50	0.21	5.36	0.15	1.01				0.08	Zircon Batt	100g

22.5.3 Refractories -

Silicon Carbide	Total C	Total Si	Total Al	Free C	Free Si	Total Fe	Mn	P	Cr	Mo	O	N	Ti	Ca	Others	Type	Size
CRM 225 A E781-1	48.25	35.56	4.39	(37.22)	(4.646)	(8.061)	(0.0274)	(0.011)	(0.024)	(0.0264)	...	(0.0282)	(0.032)	(0.0433)		Nitrogen-bearing	100g
CRM 225 A 359	23.46	67.6	0.118	(0.061)	(0.325)	0.175	...	...	...	...	(0.532)	(7.84)	0.022	0.108			100g
CRM 225 A 360	23.53	60.8	6.52	(0.085)	(0.538)	(0.19)	...	...	...	...	(4.03)	(4.77)	0.025	0.115		Sialon bonded	100g
CRM 225 TI E780-1	26.38	63.5	...	...	...	1.30	0.029	...	...	...	...	0.32	...	0.84			100g
225 S JRRM 1001	29.81	...	(0.008)	0.04	(0.06)	(0.044)	...	...	...	...	(0.048)	(0.03)	(0.0035)	(<0.001)	SiC 99.58		50g

22.5.4 Refractories - Alumina

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	Mn ₂ O ₄	ZrO ₂	L.O.I.	Note	Size
225 GC AN 25	99.4	<0.01	0.03	<0.01	0.05	0.01	0.53	<0.01	0.05	...	...	...	Calcined data	100g
225 GC AN 26	99.8	0.09	0.04	<0.01	0.06	<0.01	0.03	<0.01	...	...	...	...	Calcined data	100g
225 GC AN 27	99.84	0.05	0.03	<0.01	0.06	<0.01	0.02	<0.01	...	...	...	...	Calcined data	100g
225 GC CAS10	97.7	1.26	0.06	<0.01	0.1	0.04	0.6	0.08	...	0.19	...	(0.52)	Calcined data	100g
225 S JCRM R301	87.5	7.24	1.40	2.90	0.03	0.02	0.03	0.04	0.07		0.13	0.35	Burned Bauxite	100g
225 S JCRM R302	90.6	3.45	1.76	3.17	0.02	0.03	0.02	0.02	0.05		0.30	0.22	Burned Bauxite	100g

22.5.5 Slide Gate Sands

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Cr ₂ O ₃	Na ₂ O	K ₂ O	P ₂ O ₅	V ₂ O ₅	C	Mn ₂ O ₄	L.O.I.	Size
225 DH X4501	72.21	4.92	...	0.195	0.025	2.40	11.53	0.059	0.633	0.008	0.102	0.607	0.065	0.204	100g
225 DH X4502	65.97	5.69	...	0.203	0.038	3.24	14.75	0.062	0.693	0.007	0.110	0.471	0.074	0.177	100g
225 DH X4503	58.28	6.61	11.29	0.242	0.031	3.98	18.41	0.059	0.502	0.008	0.138	0.659	0.096	0.172	100g
225 DH X4504	82.53	3.08	4.23	0.124	1.18	1.40	6.52	0.056	0.449	0.010	0.058	0.287	0.042	0.167	100g

22.5.6 Continuous Casting Powder

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	Ca	MgO	P ₂ O ₅	Na ₂ O	K ₂ O	MnO	F	S	C	CO ₂	H ₂ O	Size
225 DH X3006	34.48	18.99	5.75	0.725	2.32	1.51	0.403	6.17	2.55	0.073	0.153	0.392	18.90	4.82	1.47	100g
225 DH X3007	16.55	16.83	1.13	0.399	28.74	14.14	0.340	0.349	0.428	0.019	0.040	0.109	6.53	1.10	2.15	100g
225 DH X3008	31.95	4.98	0.361	0.055	25.64	1.63	0.039	5.20	0.239	0.036	4.99	0.064	7.75	10.60	0.99	100g
225 DH X3009	34.49	19.34	5.07	0.707	3.85	1.44	0.531	6.33	2.51	0.072	0.268	0.508	19.89	4.41	0.754	100g

22. Refractories

Powders

22.6.1 Refractories - Magnesite, Graphitised Magnesite

		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	Cr ₂ O ₃	B ₂ O ₃	L.O.I.	MnO	Mn ₃ O ₄	C	Type	Size
CRM	226 A 319/1	1.093	0.109	0.291	0.0070	3.00	95.38	...	...	(0.007)	0.0035	(0.002)	...	0.108	...	...	Magnesia	100g
CRM	226 A 389/1	0.274	0.104	0.607	0.0051	0.880	97.89	...	...	0.0295	(0.004)	(0.015)	...	0.100	...	...	Hi-purity Magnesite	100g
CRM	226 TI E778-1	1.05	0.63	0.96	(0.015)	1.24	81.45	...	...	(0.01)	0.15	...	15.38	0.016	...	14.00	Graphitised Mag	100g
CRM	226 DB E779-1	0.390	0.198	5.33	0.013	2.367	91.0	(0.008)	(0.002)	0.060	(0.004)	0.034	...	...	0.692	...	Magnesite	100g
	226 GC AN 31	2.49	0.85	1.77	0.04	2.32	92.2	0.03	0.02	...	0.07	...	...	...	0.10	...	Magnesite	100g
	226 GC AN 36	0.49	0.49	4.71	0.01	0.97	93.2	...	...	...	0.06	...	...	...	0.11	...	Magnesite	100g
	226 GC AN 37	1.41	1.08	1.87	0.04	1.54	93.9	...	...	...	0.005	...	...	...	0.11	...	Magnesite	100g
	226 GC AN 43	...	...	...	...	...	...	...	...	...	...	0.005	...	...	...	...	Magnesite	100g
CRM	226 RU K6/2	2.03	0.54	2.23	...	2.93	92.4	...	...	...	...	...	...	...	...	...	Magnesite	125g
	226 DH X4203	15.94	1.27	2.75	0.054	1.29	76.81	0.375	0.019	0.059	0.119	...	1.01	...	0.090	0.396	Magnesite	100g
	226 DH X4204	4.05	1.40	1.20	0.056	1.92	90.66	0.055	0.008	0.115	0.135	...	0.158	...	0.100	0.030	Magnesite	100g
	226 DH X4205	11.39	1.52	2.38	0.092	2.18	79.79	0.269	0.040	0.132	0.222	...	0.63	...	0.077	0.373	Magnesite	100g
	226 DH X4206	17.03	2.37	3.59	0.197	2.37	71.27	0.319	0.048	0.132	0.209	...	0.84	...	0.065	0.458	Magnesite	100g
CRM	226 A SA 43	5.99	(0.06)	0.26	(0.01)	0.75	44.11	(0.05)	(0.04)	(0.02)	...	...	...	(0.01)	...	...	continued	

Continuation
from above

All Elements ppm

	Ba	Ce	Cr	Cu	Co	Ni	S	Sr	Zn	Size
226 A SA 43	(25.0)	(20.0)	(195.0)	(15.0)	4.0	252.0	(400.0)	8.0	(10.0)	100g

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	P ₂ O ₅	Cr ₂ O ₃	B ₂ O ₃	MnO	ZrO ₂	L.O.I.	Type	Size
226 S JRRM 401	6.42	8.10	3.89	(0.017)	0.20	81.24	(0.008)	(0.003)	(0.035)	(0.004)	(0.016)	(0.011)	...	...	Magnesite	20g
226 S JRRM 402	5.46	1.99	5.05	(0.026)	3.57	83.77	(0.010)	(0.001)	(0.077)	(0.006)	(0.12)	(0.011)	...	...		20g
226 S JRRM 403	8.14	4.06	1.55	(0.003)	0.61	85.48	(0.008)	(0.001)	(0.044)	(0.010)	(0.031)	(0.013)	...	...		20g
226 S JRRM 404	1.22	6.01	2.00	(0.007)	1.78	88.02	(0.008)	(0.001)	(0.053)	(0.006)	(0.011)	(0.030)	...	...		20g
226 S JRRM 405	3.47	1.37	1.34	(0.056)	1.60	91.95	(0.009)	(0.015)	(0.12)	(0.014)	(0.011)	(0.074)	...	...	Set only	20g
226 S JRRM 406	1.19	1.13	0.87	(0.008)	4.80	91.85	(0.002)	(0.006)	(0.041)	(0.006)	(0.013)	(0.011)	...	...		20g
226 S JRRM 407	2.43	0.100	2.14	(0.003)	0.67	94.55	(0.004)	(0.001)	(0.044)	(0.080)	(0.023)	(0.014)	...	...		20g
226 S JRRM 408	0.46	2.55	0.13	(0.006)	0.67	96.19	(0.001)	(0.000)	(0.015)	(0.009)	(0.090)	(0.010)	...	...		20g
226 S JRRM 409	0.53	0.20	0.49	(0.003)	0.74	98.03	(0.002)	(0.001)	(0.023)	(0.019)	(0.036)	(0.015)	...	...		20g
226 S JRRM 410	0.18	0.058	0.050	(0.003)	0.59	99.08	(0.001)	(0.000)	(0.045)	(0.003)	(0.020)	(0.010)	...	...		20g
226 S JRRM 801	0.35	93.4	2.00	0.21	0.14	3.26	0.19	0.014	0.003	(0.003)	...	(0.002)	(0.008)	(0.14)	Magnesite-alumina	20g
226 S JRRM 802	3.32	84.2	1.03	1.48	2.00	6.13	0.15	0.46	0.95	(0.002)	...	(0.003)	(0.002)	(0.063)		20g
226 S JRRM 803	0.58	74.2	4.90	2.51	0.57	16.2	0.86	0.007	0.017	(0.002)	...	(0.005)	(0.004)	(0.36)		20g
226 S JRRM 804	5.17	64.6	4.02	0.13	4.76	20.8	0.088	0.044	0.11	(0.010)	...	(0.020)	(0.002)	(0.012)		20g
226 S JRRM 805	2.49	58.0	0.73	1.05	0.28	36.0	0.54	0.015	0.68	(0.001)	...	(0.006)	(0.006)	(0.17)		20g
226 S JRRM 806	0.51	48.8	0.16	0.004	0.97	49.4	0.049	0.001	0.048	(0.006)	...	(0.028)	(0.001)	(0.21)	Set only	20g
226 S JRRM 807	0.58	39.9	0.32	0.19	2.75	55.0	0.32	0.15	0.53	(0.002)	...	(0.005)	(0.001)	(0.57)		20g
226 S JRRM 808	0.79	28.6	0.56	0.71	0.99	67.0	0.40	0.69	0.22	(0.001)	...	(0.017)	(0.001)	(0.84)		20g
226 S JRRM 809	0.36	19.8	0.11	2.88	4.47	70.1	0.049	0.98	1.06	(0.001)	...	(0.008)	(0.001)	(0.48)		20g
226 S JRRM 810	4.21	10.0	3.11	1.91	0.18	78.9	0.75	0.16	0.51	(0.004)	...	(0.016)	(0.004)	(0.22)		20g

22.6.2 Refractories - Chrome Magnesite

		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	Cr ₂ O ₃	B ₂ O ₃	MnO	Mn ₃ O ₄	NiO	V ₂ O ₅	Type	Size
CRM	226 A 369	2.59	14.7	10.3	0.14	1.17	53.5	...	...	17.2	...	0.11	...	...	...	Magnesite(Cr)	100g
CRM	226 A 370	3.01	12.3	7.23	0.13	1.54	61.8	...	...	13.4	...	0.11	...	...	...	Magnesite(Cr)	100g
CRM	226 A 396	1.37	5.73	10.9	0.26	1.12	64.6	(0.06)	(0.03)	15.6	0.09	0.17	...	...	...	Magnesite(Cr)	100g
	226 DH X0501	3.88	11.59	11.02	0.070	1.30	50.74	0.011	0.06	20.73	...	...	0.27	0.119	0.1	Cr Magnesite	100g
CRM	226 RU K5/2	8.64	4.28	8.47	...	1.15	54.8	...	...	22.6	...	...	...	...	...	Cr Magnesite	125g

	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Cr ₂ O ₃	MnO	P ₂ O ₅	NiO	V ₂ O ₅	ZnO	L.O.I.	Type	Size
226 S JRRM 501	0.026	2.92	4.80	0.006	0.023	87.60	2.82	0.020	(0.036)	(0.016)	(0.010)	(0.006)	(0.13)	Cr Magnesite	20g
226 S JRRM 502	3.11	11.98	1.02	0.013	0.20	76.28	7.49	0.018	(0.026)	(0.026)	(0.024)	(0.004)	(0.064)		20g
226 S JRRM 503	9.09	7.14	3.00	0.047	3.81	63.11	13.60	0.038	(0.032)	(0.036)	(0.037)	(0.013)	(0.11)		20g
226 S JRRM 504	2.18	17.56	4.11	0.013	2.60	54.85	18.35	0.011	(0.034)	(0.019)	(0.016)	(0.011)	(0.12)		20g
226 S JRRM 505	1.82	7.76	17.76	0.11	0.49	50.14	21.74	0.100	(0.023)	(0.078)	(0.075)	(0.021)	(0.085)		20g
226 S JRRM 506	2.16	14.69	7.49	0.13	0.46	46.65	28.19	0.072	(0.018)	(0.098)	(0.086)	(0.010)	(0.070)	Set only	20g
226 S JRRM 507	5.69	25.02	12.98	0.16	1.61	22.36	32.03	0.11	(0.010)	(0.20)	(0.13)	(0.037)	(0.11)		20g
226 S JRRM 508	3.08	3.98	22.70	0.014	1.03	30.86	38.18	0.006	(0.016)	(0.010)	(0.008)	(0.005)	(0.053)		20g
226 S JRRM 509	1.96	20.28	10.15	1.20	2.86	20.45	42.57	0.082	(0.013)	(0.048)	(0.11)	(0.037)	(0.13)		20g
226 S JRRM 510	4.91	12.21	14.99	0.13	0.29	16.86	50.38	0.17	(0.016)	(0.19)	(0.11)	(0.041)	(0.25)		20g
226 S JRRM 511	2.90	6.68	27.22	0.10	0.071	10.62	52.51	0.12	(0.004)	(0.10)	(0.054)	(0.052)	(0.48)		20g
226 S JRRM 512	10.57	29.25	26.01	0.047	4.06	24.81	4.98	0.025	(0.019)	(0.018)	(0.012)	(0.013)	(0.028)		20g

22. Cement/Red Mud/Alumina

Powders

22.7.1 Cements

		CaO	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	SO ₃	Na ₂ O	K ₂ O	TiO ₂	SrO	Mn ₂ O ₃	P ₂ O ₅	F	ZnO	Cr ₂ O ₃	L.O.I.	Size
CRM	227 B 1880a	63.83	20.31	5.18	2.81	1.72	3.25	0.19	0.92	0.25	0.083	0.127	0.22	...	(0.005)	0.007	(1.32)	4 x 5g
CRM	227 B 1881a	57.58	22.26	7.060	3.09	2.981	3.366	0.199	1.228	0.3663	0.036	0.1042	0.1459	(0.09)	0.0489	0.0588	1.59	4 x 5g
CRM	227 B 1882a	39.29	4.01	39.14	14.67	0.51	...	0.021	0.051	1.786	0.024	0.06	0.07	...	0.004	0.113	(0.20)	4 x 5g
CRM	227 B 1883a	29.52	0.24	70.04	0.078	0.19	...	0.30	0.014	0.02	0.019	(0.003)	(0.003)	...	...	0.006	(0.35)	4 x 5g
CRM	227 B 1884a	62.26	20.57	4.264	2.695	4.475	2.921	0.2161	0.997	0.186	0.2984	0.0853	0.1278	(0.11)	0.0101	0.0166	(1.06)	4 x 5g
CRM	227 B 1885a	62.39	20.909	4.026	1.929	4.033	2.83	1.068	0.206	0.195	0.638	0.0478	0.122	(0.13)	0.0029	0.0195	(1.68)	4 x 5g
CRM	227 B 1886a	67.87	22.38	3.875	0.152	1.932	2.086	0.021	0.093	0.084	0.018	0.0073	0.022	(0.02)	(0.001)	0.0024	(1.56)	4 x 5g
CRM	227 B 1887a	60.90	18.637	6.202	2.861	2.835	4.622	0.4778	1.100	0.2658	0.322	0.1186	0.306	(0.09)	0.0667	0.009	(1.43)	4 x 5g
CRM	227 B 1888a	63.23	21.22	4.265	3.076	2.982	2.131	0.1066	0.526	0.263	0.082	0.1256	0.080	(0.11)	0.107	0.0186	(1.75)	4 x 5g
CRM	227 B 1889a	65.34	20.66	3.89	1.937	0.814	2.69	0.195	0.605	0.227	0.042	0.2588	0.110	(0.05)	0.0048	0.0072	(3.28)	4 x 5g
	227 CG 03201a	62.34	20.56	5.02	3.16	1.40	2.29	0.18	1.15	0.21	...	...	...	...	...	...	3.39	25g
CRM	227 A 353	64.8	20.5	3.77	4.82	2.42	2.25	0.10	0.49	0.16	0.23	0.23	0.077	...	...	(0.02)	...	100g
CRM	227 A 354	70.0	21.8	4.85	0.30	0.42	2.25	0.10	0.11	(0.04)	0.11	0.058	0.12	...	...	(0.003)	...	100g
CRM	227 A 372/1	65.3	20.3	5.37	3.42	1.31	2.95	0.10	0.75	0.27	(0.05)	0.074	(0.07)	...	...	(0.01)	...	100g

The Na₂O and K₂O values for 227A 372 are acid soluble concentrations.

											Mn ₂ O ₄		ZrO ₂						
227 DH X0201	60.56	22.56	6.55	2.09	2.19	4.28	0.145	0.907	0.314	0.118	0.125	0.118	0.059	0.032	0.008	...	100g		
227 DH X0202	38.1	4.08	39.31	15.83	0.487	0.105	0.033	0.111	1.81	...	0.039	0.043	0.009	0.056	...	...	100g		
227 DH X0203	64.97	20.59	5.21	3.5	1.37	2.68	0.28	0.577	0.369	0.124	0.053	0.226	0.035	0.046	0.014	...	100g		
227 DH X0204	51.58	28.3	9.79	4.01	1.01	2.94	0.29	0.698	0.575	0.132	0.055	0.315	0.035	(0.03)	0.017	...	100g		
227 DH X0205	69.25	22.28	3.94	0.387	0.377	2.82	0.076	0.158	0.338	0.122	0.025	0.139	0.054	0.019	0.007	...	100g		
227 DH X0206	55.67	24.28	6.52	3.21	2.88	4.6	0.258	1.54	0.383	0.112	0.064	0.159	0.185	0.011	0.028	...	100g		
227 DH X0207	61.38	19.34	4.97	3.8	5.83	2.71	0.138	0.331	0.721	0.088	0.138	0.108	0.364	0.016	0.046	...	100g		
227 DH X0208	56.04	20.13	5.38	3.16	10.95	2.56	0.226	0.547	0.358	0.105	0.059	0.164	0.1	0.019	0.023	...	100g		

22.7.2 Cement Clinkers (XRD)

		Alite	Belite	Ferrite	Aluminate	Periclase	Arcanite	CaO	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	MgO	SO ₃	K ₂ O	TiO ₂	P ₂ O ₅	L.O.I.	Size
CRM	227 B 2686	58.6	23.3	14.1	2.3	3.3	...	(63.36)	(22.48)	(4.70)	(3.60)	(4.73)	(0.27)	(0.42)	(0.25)	(0.06)	(0.16)	3 x 10g
CRM	227 B 2687	73.6	9.1	2.2	12.1	...	1.0	(67.20)	(21.43)	(5.53)	(1.98)	(1.48)	(0.83)	(0.72)	(0.27)	(0.29)	(0.17)	3 x 10g
CRM	227 B 2688	66.1	17.9	11.1	5.0	...	1.0	(66.50)	(22.68)	(4.90)	(4.07)	(0.98)	(0.31)	(0.35)	(0.24)	(0.08)	(0.21)	3 x 10g

22.8 Red Mud

		Al ₂ O ₃	CaO	Fe ₂ O ₃	Na ₂ O	SiO ₂	TiO ₂	Organic C	L.O.I.	T.E.A.	MgO	MnO	Cr ₂ O ₃	P ₂ O ₅	ZrO ₂	ZnO	SO ₃	Size
	228 CA RM-01	16.8	3.5	53.8	1.4	5.4	5.9	0.36	12.0	4.6	...	...	...	...	...	...	...	100g
	228 CA RM-02	13.9	11.2	30.7	3.0	6.2	22.6	0.16	8.4	5.7	...	...	...	...	...	...	...	100g
	228 CA RM-03	13.3	8.3	49.2	1.4	4.6	6.5	0.28	12.1	6.4	...	...	...	...	...	...	...	100g
	228 CA RM-04	20.6	7.7	29.0	6.8	13.9	6.0	0.43	12.7	6.6	...	...	...	...	...	...	...	100g
	228 CA RM-05	21.9	0.9	35.6	8.3	15.7	7.1	0.22	8.9	6.9	...	...	...	...	...	...	...	100g
	228 CA CAN	27.9	13.5	4.7	8.5	16.5	8.5	0.23	17.3	13.8	...	...	...	...	...	...	...	100g
	228 ML SRC-16	14.5	18.2	30.0	3.99	8.02	3.66	...	16.4	...	...	...	...	...	...	...	...	175g
	228 ML SRC-27	17.5	5.63	46.9	4.42	6.89	5.99	...	8.98	...	...	0.78	0.26	1.14	0.15	0.037	0.38	100g
	228 ML SRC-79	27.3	11.4	4.86	11.4	23.2	3.07	...	14.1	...	0.12	0.11	0.01	0.28	0.40	0.01	2.79	50g

22.9 Alumina

		CaO	Fe ₂ O ₃	Ga ₂ O ₃	Na ₂ O	SiO ₂	TiO ₂	V ₂ O ₅	ZnO	P ₂ O ₅	SO ₃	Li ₂ O	MnO	Cr ₂ O ₃	B ₂ O ₃	L.O.I. 1000°C	L.O.I. 1200°C	Size
	229 B 699	0.036	0.013	0.010	0.59	0.014	...	0.0005	0.013	0.0002	...	0.002	0.0005	0.0002	...	0.69	0.89	60g
	229 CA ALU-01	0.017	0.016	0.011	0.27	0.013	0.004	0.002	0.001	0.0005	0.12	...	...	...	...	1.2	...	100g
	229 CA ALU-02	0.009	0.017	0.011	0.25	0.007	0.002	0.002	0.002	0.0005	0.12	...	...	...	...	0.78	...	100g
	229 CA ALU-03	0.010	0.011	0.009	0.44	0.010	0.006	0.001	0.001	...	0.05	...	...	...	...	0.77	...	100g
	229 CA ALU-04	0.020	0.017	0.009	0.46	0.021	0.009	0.003	0.001	...	0.07	...	...	...	...	0.49	...	100g
	229 CA ALU-05	0.033	0.008	0.007	0.37	0.014	0.002	0.001	0.010	...	0.13	...	...	...	...	0.83	...	100g
	229 CA ALU-06	0.043	0.008	0.005	0.36	0.017	0.001	0.001	0.009	...	0.11	...	...	...	...	1.31	...	100g
	229 CA ALU-07	0.049	0.023	0.006	0.46	0.025	0.004	0.004	0.001	...	0.17	...	...	...	...	0.89	...	100g
	229 CA ALU-08	0.008	0.022	0.014	0.42	0.007	0.002	0.003	0.001	...	0.09	...	...	...	...	0.57	...	100g
	229 CA ALU-09	0.026	0.008	0.009	0.42	0.018	0.001	0.001	0.001	0.0002	0.08	...	...	...	...	0.60	...	100g
	229 CA ALU-10	0.004	0.015	0.013	0.37	0.005	0.002	0.002	...	0.002	0.08	...	...	...	...	0.60	...	100g
	229 ML SRP-A-16	0.084	(0.026)	(0.016)	(0.54)	(0.076)	(0.005)	...	(0.002)	...	...	...	...	(0.0003)	0.22	1.36	...	100g
	229 ML SRP-A-29	(0.003)	0.0012	0.005	0.19	(0.007)	(0.001)	...	(0.001)	...	...	...	...	(0.0001)	...	34.7	...	250g
	229 ML SRP-A-61	0.036	0.009	(0.008)	2.38	0.028	(0.0005)	0.0040	(0.011)	...	...	...	0.0044	...	...	0.70	...	75g
	229 ML SRP-A-62	(0.028)	0.009	(0.008)	1.21	0.019	(0.0005)	0.0017	(0.011)	...	...	...	(0.004)	...	...	1.30	...	75g

23. Glass

Discs

23.1 Glass for XRF Monitoring																				Size (mm)			
	SiO ₂	Al ₂ O ₃	B ₂ O ₃	Na ₂ O	K ₂ O	MgO	CaO	TiO ₂	Fe ₂ O ₃	MnO	ZnO	Cr ₂ O ₃	CoO	F	SO ₃	P ₂ O ₅			Ø	H			
231 AC 111	53*	30*	...	10*	11*	44*	15.2*	2.7*	15.9*	1.6*	...	...	...	...	3.9*	3.1*			40	x 5			
* These are apparent concentrations, by comparison with discs prepared using 10:1 lithium borate																							
This monitor also contains 38 other elements, at apparent concentrations of ~ 2000 ppm each																							
	SiO ₂	Na ₂ O	K ₂ O	Al ₂ O ₃	CaO	MgO	FeO	SnO	P ₂ O ₅	SrO	ZnO	SO ₃	B ₂ O ₃	TiO ₂	MnO	CoO	CdO	F	Type	Size (mm)			
	Ø	H																					
231 X FESN 01	65	15	...	...	20	...	0.007	0.006	...	...	...	...	...	...	...	...	...	...	...	40	x 6		
231 X FESN 02	65	15	...	...	20	...	0.021	0.019	...	...	...	...	...	...	...	...	...	...	...	40	x 6		
231 X FESN 03	65	15	...	...	20	...	0.036	0.032	...	...	...	...	...	...	...	...	...	...	...	40	x 6		
231 X WM0	64	20	...	1	...	...	...	...	...	15	...	...	...	...	...	...	...	...	...	40	x 6		
231 X WM1	64	19.7	...	1	0.042	0.050	...	...	0.069	15	0.037	0.075	...	...	...	...	...	...	"wear metals"	40	x 6		
231 X WM2	64	19.1	...	1	0.14	0.17	...	...	0.23	15	0.12	0.25	...	...	...	...	...	...	...	40	x 6		
231 X WM3	62.5	18	...	1	0.70	0.83	...	...	1.15	14	0.62	1.25	...	...	...	...	...	...	...	40	x 6		
231 X WM4	57.50	0.90	...	13.48	1.12	1.26	...	...	1.80	19.93	1.49	...	...	...	...	...	...	...	...	40	x 6		
231 X EAF-1	18	...	...	1	40	1	1	...	0.2	...	...	4	20.8	4.5	9	...	...	0.5	EAF	40	x 6		
231 X EAF-2B	10	...	...	5	2	18	30	...	1	...	...	1.5	26	2	0.5	...	...	4	Slags	40	x 6		
231 X EAF-3	1	...	...	9	18.5	9	20	...	1.8	...	...	0.2	27	0.5	4	...	...	9	...	40	x 6		
231 X M01	61.27	19.15	0.41	0.96	...	...	...	...	1.31	14.36	...	0.003	...	...	...	2.54	...	...	...	40	x 6		
231 X M02	59.96	18.74	0.74	0.94	...	...	...	...	1.75	14.05	...	0.005	...	...	...	3.81	...	...	...	40	x 6		
231 X M03	58.71	18.35	0.99	0.92	...	...	...	...	2.18	13.76	...	0.009	...	...	...	5.09	...	...	...	40	x 6		
231 X M04	57.45	17.95	1.24	0.90	...	...	...	...	2.62	13.47	...	0.015	...	...	...	6.36	...	...	...	40	x 6		
231 X FLX-1	65	13	1	2	1.6	...	0.1	...	...	...	13	2	...	...	...	...	0.3	2	...	40	x 6		
231 X FLX -D1	10	13	0.5	0.5	31	22	...	...	0.5	...	...	...	34.5	...	0.5	...	...	...	Dolomite	40	x 6		
	SiO ₂	K ₂ O	Al ₂ O ₃	CaO	MgO	SnO	PbO	P ₂ O ₅	B ₂ O ₃	TiO ₂	Cr ₂ O ₃	NiO	WO ₃							Size (mm)			
	Ø	H																					
231 X PR2	20	9	...	...	20	1	3	...	43	...	...	...	4							40	x 6		
231 X PR3	38	...	20	4	10	...	...	10	13.5	3	1	0.5	...							40	x 6		
	SiO ₂	Na ₂ O	K ₂ O	Al ₂ O ₃	CaO	MgO	FeO	P ₂ O ₅	SrO	ZnO	B ₂ O ₃	TiO ₂	MnO	BaO	Cr ₂ O ₃	CuO	CoO			Size (mm)			
	Ø	H																					
231 X S1	50	20	5.0	8.0	5.0	8.0	2.0	...	...	...	...	2.0	...	...	...	...	...	...	...	40	x 6		
231 X S2	50	18	5.0	8.0	5.0	8.0	...	...	2.0	2.0	...	...	...	2.0	...	...	...	...	...	40	x 6		
231 X S3	50	16	5.0	4.0	5.0	7.0	1.5	0.5	1.0	1.0	5.0	2.0	0.5	1.0	0.5	...	...	...	...	40	x 6		
231 X S4	50	18	5.0	5.0	5.0	10.0	1.0	...	1.0	...	...	1.0	...	1.0	0.5	0.5	0.5	...	continued				
231 X S5	50	10	5.0	4.0	5.0	2.0	0.5	0.5	1.0	1.0	5.0	0.5	0.5	1.0	0.5	0.5	0.5	...	continued				
231 X S7	50	2.75	2.75	15	10.0	5.0	12	0.25	...	...	...	2.0	0.25	...	...	...	...	...	...	40	x 6		
231 X S9	71.6	12.5	1.5	2.5	9.0	1.0	0.5	0.2	...	...	1.0	0.2	...	...	...	...	...	...	...	40	x 6		
231 X S10	64.8	8.5	0.2	4.0	14.0	3.0	0.3	0.1	...	...	5.0	0.1	...	...	...	...	...	...	...	40	x 6		
Continuation from above																				Size (mm)			
	V ₂ O ₅	NiO	ZrO ₂	Nb ₂ O ₅	Mo ₂ O ₃	CdO	SnO	Ta ₂ O ₃	WO ₃	F	PbO	Bi ₂ O ₃	La ₂ O ₃	CeO ₂									
231 X S4	1.0	0.5	...	...	...	...	...	...	...	...	...	...	...	...									
231 X S5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	3.0	3.0	0.5	0.5									
	Ag ₂ O	Al ₂ O ₃	As ₂ O ₃	B ₂ O ₃	BaO	Bi ₂ O ₃	Br	CaO	CdO	CeO ₂	Cl	CoO	Cr ₂ O ₃	CuO	Dy ₂ O ₃	Er ₂ O ₃	F	FeO					
	Ø	H																					
231 X S6M	...	5.9	...	5.0	1.3	...	...	4.7	0.3	0.5	0.2	0.6	0.4	0.5	0.3	0.3	...	0.5	...				
231 X FLX -O1	...	3	...	5	4	...	...	5	...	...	0.5	...	1	1	...	...	...	1	continued				
231 X FLX-S13	0.3	4	0.2	5	1.3	2	0.5	5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	1	0.5	...				
Continuation from above																				Size (mm)			
	Gd ₂ O ₃	GeO ₂	HfO ₂	In ₂ O ₃	K ₂ O	La ₂ O ₃	MgO	MnO	Mo ₂ O ₃	Na ₂ O	Nb ₂ O ₅	Nd ₂ O ₃	NiO	P ₂ O ₅	PbO	Pr ₆ O ₁₁	Rb ₂ O						
231 X S6M	0.3	...	0.4	...	4.4	0.4	1.7	0.3	0.5	8.8	0.6	0.3	0.5	0.6	2.1	0.3	...	...	...				
231 X FLX -O1	...	...	...	...	...	...	5	...	2	10	...	...	1	1	3	...	...	...	continued				
231 X FLX-S13	0.3	0.1	0.3	0.3	5	0.5	2	0.5	0.3	8	0.3	0.3	0.5	0.5	2	0.3	0.1	...	...				
Continuation from above																				Size (mm)			
	Sb ₂ O ₃	Sc ₂ O ₃	SeO ₂	SiO ₂	Sm ₂ O ₃	SnO	SO ₃	SrO	Ta ₂ O ₅	TeO ₂	TiO ₂	V ₂ O ₅	WO ₃	Y ₂ O ₃	Yb ₂ O ₃	ZnO	ZrO ₂						
	Ø	H																					
231 X S6M	0.2	...	0.02	47.55	0.2	0.5	0.13	1.0	0.6	...	4.8	0.5	...	0.3	0.3	1.4	0.6	...	40	x 6			
231 X FLX -O1	...	...	...	50	...	1	0.5	...	...	...	1	1	...	...	...	4	...	...	40	x 6			
231 X FLX-S13	0.2	0.1	0.3	48	0.3	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.2	0.2	1	0.5	...	40	x 6			

23. Glass/Glass Sand

Powders/Pieces/Discs

23.1 Glass		SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	B ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	Li ₂ O	SO ₃	ZnO	ZrO ₂	P ₂ O ₅	MnO	
CRM	231 B 89	65.35	0.01	0.18	0.049	...	0.21	0.03	5.70	8.40	...	0.03	...	0.005	0.23	0.088	
CRM	231 B 92	(75.0)	...	...	...	0.70	(8.3)	(0.1)	(13.1)	(0.6)	...	...	(0.2)	...	...	...	
CRM	231 B 93a	80.8	0.014	2.28	0.028	12.56	0.01	0.005	3.98	0.014	...	...	...	0.042	...	...	
CRM	231 B 620	72.08	0.018	1.80	0.043	...	7.11	3.69	14.39	0.41	...	0.28	...	...	...	...	
CRM	231 B 621	71.13	0.014	2.76	0.040	...	10.71	0.27	12.74	2.01	...	0.13	...	0.007	...	...	continued
CRM	231 B 1411	58.04	0.02	5.68	0.050	10.94	2.18	0.33	10.14	2.97	...	...	3.85	...	...	...	
CRM	231 B 1412	42.38	...	7.52	(0.031)	4.53	4.53	(4.69)	4.69	4.14	(4.50)	...	4.48	...	...	...	
CRM	231 B 1830	73.07	0.011	0.12	0.121	...	8.56	3.90	13.75	0.04	...	0.26	...	...	...	...	
CRM	231 B 1831	73.08	0.019	1.21	0.087	...	8.20	3.51	13.32	0.33	...	0.25	...	...	...	...	
	231 GR EC1.1	71.97	0.04	1.08	0.103	...	8.63	3.78	13.41	0.59	...	0.23	...	...	...	...	continued
	231 GS 4	69.49	0.041	3.02	0.099	0.19	4.24	<0.05	15.45	0.57	...	<0.05	3.28	...	...	...	
	231 GS 5	72.74	0.034	1.12	0.043	...	6.55	2.75	15.65	0.42	...	0.21	...	...	...	...	
	231 GS 6	73.06	0.02	1.7	0.034	...	9.97	<0.1	14.65	<0.1	...	0.2	...	...	...	...	
	231 GS 7	72.64	0.042	1.5	0.044	...	11.03	0.14	13.9	0.43	...	0.19	...	...	...	...	continued
	231 GS 8	56.34	0.02	0.05	0.01	0.36	<0.02	<0.02	0.23	11.85	...	...	...	...	...	...	
	231 GS 9	56.7	0.03	1.4	0.045	...	0.1	...	4.0	8.4	...	...	...	...	...	...	
	231 GS 10	72.7	0.097	1.62	0.325	...	10.7	1.81	12.2	0.35	...	0.05	...	...	...	...	
	231 GS 11	70.7	0.068	1.83	0.342	...	10.3	2.14	13.6	0.69	...	0.06	...	...	...	...	
CRM	231 F 126A	57.80	...	0.128	0.0055	...	1.033	0.512	3.58	10	0.495	...	1.02	...	...	...	continued
Continuation from above		Sb ₂ O ₃	F	Cl	PbO	BaO	As ₂ O ₃	CdO	SrO	L.O.I. 550°C	R.I.	Density	Form	Type	Size		
	231 B 89	...	...	0.05	17.50	1.40	0.03	...	...	0.32	...	...	powder	lead-barium	45g		
	231 B 92	...	...	...	...	...	...	...	...	...	...	...	powder	low boron	45 g		
	231 B 93a	...	...	0.060	...	...	...	...	...	...	...	...	3 x disc	borosilicate	32 x 6		
	231 B 620	...	...	...	...	...	0.056	...	...	...	...	...	3 x disc	soda-lime	32 x 6		
	231 B 621	...	...	...	...	0.12	0.030	...	...	...	...	...	3 x disc	soda-lime	32 x 6		
	231 B 1411	...	...	...	...	5.00	...	...	...	...	...	...	10 x platelet	soft borosilicate	32x32x3		
	231 B 1412	...	...	...	4.40	4.67	...	4.38	4.55	...	...	...	8 x platelet	multicomponent	32x32x3		
	231 B 1830	...	...	...	...	...	...	...	...	...	...	...	3 x square plate	soda lime	38 x 38		
	231 B 1831	...	...	...	...	...	...	...	...	...	...	...	3 x square plate	soda lime	38 x 38		
	231 GR EC1.1	...	...	...	...	...	...	...	...	...	...	...		Float	25g		
	231 GS 4	...	4.96	...	...	...	...	...	...	0.22	...	...	Powder	Fluoride opal	25g		
	231 GS 5	...	...	...	...	...	...	...	...	...	...	...		Na-Ca-Mg-Si	25g		
	231 GS 6	...	...	...	...	...	...	...	...	...	...	...		Na-Ca-Si	25g		
	231 GS 7	...	...	...	...	...	...	...	...	0.07	...	...		Na-Ca-Si	25g		
	231 GS 8	...	...	...	30.59	...	0.32	...	...	0.21	...	...		Pb-K-Si	25g		
	231 GS 9	...	...	...	28.4	...	0.4	...	...	0.4	...	...			25g		
	231 GS 10	...	...	...	...	0.02	...	...	...	...	...	...	Powder		25g		
	231 GS 11	...	...	...	...	0.03	...	...	...	...	...	...			25g		
	231 F 126A	0.29	...	...	23.98	1.036	...	...	...	...	1.5597	2.99		Lead Crystal	300g		
Note: 231 GS4 231, GS10 and 231 GS11 are also available in disc form, 40mmØ x 6mm																	
23.2 Glass Sand		SiO ₂	TiO ₂	Al ₂ O ₃	Fe ₂ O ₃	ppm Cr ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	ZrO ₂	L.O.I.	MnO	Others	Type	Size	
CRM	232 B 81a		0.12	0.66	0.082	46	...	...	...	...	0.034	...	...			75g	
CRM	232 B 165a	...	0.011	0.059	0.012	(1.0)	...	...	...	...	0.006	...	...		Low Iron	75g	
CRM	232 B 1413	82.77	0.11	9.90	0.24	...	0.74	0.06	1.75	3.94	...	...	...	BaO 0.12	High-Alumina	75g	
CRM	232 E 61	99.79	0.026	0.054	0.014	...	(0.004)	(0.003)	(0.002)	(0.007)	0.01	0.06	...			100g	
CRM	232 E 62	99.62	0.036	0.11	0.072	...	(0.004)	(0.004)	(0.002)	(0.007)	0.01	0.1	...			100g	
CRM	232 D SPS	99.32	0.035	0.248	0.037	...	0.029	0.0071	0.045	0.058	...	0.167	...	Trace elements		100g	
CRM	232 A SA 49	99.6	(0.01)	(0.05)	(0.05)	...	(0.01)	(0.05)	(0.05)	(0.01)	...	...	(0.01)	Sr (5ppm)	Quartz	100g	
	232 GS SS1	99.74	0.026	0.061	0.014	3.0	<0.02	<0.02	<0.02	<0.02	...	0.12	...			200g	
	232 GS SS6	98.66	0.024	0.6	0.032	(2.5)	<0.02	<0.02	<0.02	0.4	...	0.14	...			200g	
	232 GS SS8	95.63	0.073	2.07	0.26	(11.0)	0.06	0.12	0.2	1.06	...	0.48	...			200g	
	232 GS SS9	97.24	0.044	1.35	0.103	(3.0)	0.02	0.06	0.1	0.82	...	0.24	...			200g	

24. Coal & Coke/Pitch

Powders

24.1	Trace Metals in Coal and Coke	C	H	N	Ash	Volatiles %	GCV MJ/kg	% S	ppm Al	ppm Ca	ppm Fe	ppm Ni	ppm V	ppm Co	ppm Na	Type	Size	
CRM	24 B 2718	(89.0)	(3.47)	(1.23)	(0.18)	(10.6)	(35.76)	4.7032	16.5	174	290	139.1	302	(5.79)	(88.6)	Green Pet Coke	50g	
CRM	24 B 2719	(97.1)	(0.17)	(1.17)	(0.12)	(0.54)	(32.90)	0.8877	58.9	57.7	201.6	204	58.6	(18.6)	(15.1)	Calcined Pet Coke	50g	
		Fe	Mn	Ni	Si	Zn	Ca	V	S	Ash	Density g/cc						Size	
	24 CA DF	0.028	0.0003	0.050	0.022	0.006	0.028	0.040	1.58	...	...					Green Pet Coke	100g	
	24 CA DG	0.023	0.0002	0.038	0.014	0.0011	0.0130	0.035	1.59	...	...					Green Pet Coke	100g	
	24 CA DH	0.019	0.0001	0.021	0.006	0.0008	0.004	0.034	2.40	...	...					Green Pet Coke	100g	
	24 CA DI	0.017	0.0001	0.004	0.013	0.0008	0.007	0.004	1.02	...	...					Green Pet Coke	100g	
	24 CA DJ	0.027	0.0005	0.003	0.12	0.0004	0.015	0.0030	0.64	...	...					Green Pet Coke	100g	
	24 CA CAB	0.025	...	0.011	0.019	...	0.11	0.021	2.49	...	...					Calcined Pet Coke	100g	
	24 CA BS	0.038	...	0.018	0.033	...	0.014	0.024	2.10	...	...					Calcined Pet Coke	100g	
	24 CA AU	0.32	...	(0.004)	1.8	...	0.083	(0.004)	0.57	7.8	1.76					Anthracite	100g	
	24 CA DM	0.32	...	(0.003)	1.9	...	0.17	(0.004)	0.40	8.6	1.85					Anthracite	100g	
		C	H	N	Cl	Ash	GCV MJ/kg	% Al	ppm As	ppm B	ppm Ba	ppm Br	ppm Cd	ppm Ce	ppm Co	ppm Cr	ppm Cu	ppm F
CRM	24 F 180	76.01	5.04	1.44	0.059	9.9	31.89	(1.24)	4.23	(55.0)	(157.0)	(7.3)	0.212	(14.1)	(3.3)	(13.5)	(9.1)	...
CRM	24 F 181	84.89	5.4	1.78	0.138	1.85	35.43	(0.28)	27.7	(8.3)	...	(34.9)	0.051	(4.8)	(1.6)	(5.0)	(12.3)	...
CRM	24 F 182	73.29	(4.22)	1.63	0.37	12.27	29.68	(1.56)	(1.47)	(31.2)	...	(36.5)	0.057	(17.0)	(8.7)	(20.0)	(12.3)	...
CRM	24 B 1632c	77.45	5.11	1.54	0.1139	7.16	(32.10)	0.915	6.18	62	41.1	18.7	0.072	11.9	3.48	13.73	6.01	(70)
CRM	24 B 1635	...	...	...	...	...	...	(0.32)	0.42	...	...	...	0.03	(3.6)	(0.65)	2.5	3.6	25.9
Continuation from above		Fe	ppm Hg	% K	ppm La	ppm Mn	ppm Na	ppm Ni	ppm Pb	ppm Sc	ppm Se	ppm Th	ppm Ti	ppm V	ppm Zn	Type	Size	
	24 F 180	1.17	0.123	(0.12)	(6.5)	34.3	(448.0)	(16.0)	17.5	(2.7)	1.32	(2.2)	(0.7)	19.3	27.4	Gas Coal	20g	
	24 F 181	0.36	0.138	(0.015)	(2.0)	(2.8)	(87.6)	(8.6)	2.59	(0.9)	1.15	(0.5)	...	12.0	8.4	Coking Coal	20g	
	24 F 182	0.73	0.04	(0.43)	(8.0)	195.0	...	(39.0)	(15.3)	(3.8)	0.68	(2.3)	(0.6)	24.3	33.3	Steam Coal	20g	
	24 B 1632c	0.735	0.0938	0.1100	...	13.04	298.8	9.32	3.79	2.905	1.326	1.40	517	23.72	12.1	Bituminous	50g	
	24 B 1635	0.239	0.0109	...	...	21.4	(0.24)	1.74	1.9	(0.63)	0.9	0.62	(200)	5.2	4.7	Sub-bituminous	75g	
		SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	K ₂ O	S	P ₂ O ₅	L.O.I.	ppm As	ppm Ba	ppm Be			
CRM	24 A SA 18	6.2	2.57	0.29	0.114	0.18	0.11	...	0.145	0.56	...	90.11	...	78	4.1			
CRM	24 A SA 19	15.0	8.01	1.75	0.341	1.39	0.2	0.29	0.24	1.49	...	71.28	7	304	2.8		continued	
CRM	24 A SA 20	17.66	11.27	1.17	0.63	1.87	0.43	0.27	0.14	0.51	0.14	64.66	5	372	2.5			
Continuation from above		Ce	Co	Cr	Cs	Cu	Ga	Ge	Hf	Hg	La	Mn	Ni	P				
	24 A SA 18	22	6.7	16	(1)	5.9	(8)	(8)	1.7	(0.04)	10	22	11	30				
	24 A SA 19	56	5.6	50	1.4	13	14	13	5.4	(0.2)	27	157	16	130		continued		
	24 A SA 20	87	8.3	(67)	(2)	18	16	...	4.8	0.25	43	80	25	...				
Continuation from above		Pb	Rb	Sc	Se	Sm	Sr	Th	U	V	Y	Zn	Zr		Type	Size		
	24 A SA 18	(5)	8.1	4.3	(1.0)	2	44	3.4	1.5	23	10	5.5	67		Witbank	120g		
	24 A SA 19	20	9	7.6	1.4	4.9	126	12	5	35	27	12	351		OFS	120g		
	24 A SA 20	26	10	10	0.8	6.3	330	18	4	47	29	17	(180)		Sasolberg	120g		
24.3	Sulfur and Mercury	ppm Hg	ppm Cl	% S	% C	% Ash	GCV MJ/kg									Type	Size	
CRM	24 B 2682b	0.1088	(76)	0.4917	(66.6)	(6.32)	(25.66)									Coal	50g	
CRM	24 B 2683b	0.0900	(1125)	1.955	(73.92)	(9.93)	(30.62)									Coal	50g	
CRM	24 B 2684b	0.0974	(1037)	3.076	(69.3)	(10.85)	(28.56)									Coal	50g	
CRM	24 B 2685b	0.1462	(530)	4.730	(64.6)	(15.94)	(26.94)									Coal	50g	
CRM	24 B 2692b	0.1333	(1593)	1.170	(79.34)	(7.90)	32.81									Coal	50g	
24.5	Pitch	% S	% C	ppm Al	ppm As	ppm Br	ppm Ca	ppm Cd	ppm Cr	ppm Fe	ppm I	ppm K	ppm Mg	ppm Mn	ppm Na			
	245 CD Pitch A	0.49	94.0	245	...	1.7	91	...	0.87	200	0.33	43	17	2.7	257			
	245 CD Pitch B	0.52	93.4	228	9	4.8	41	2.5	1.1	280	0.6	34	<30	3.3	150			
	245 CD Pitch C	4.46	83.4	9	0.18	0.25	3	<0.05	0.4	14	1.4	2.2	<16	0.21	10		continued	
	245 CD Pitch D	0.58	92.7	1.2	2.2	0.08	1.4	<0.05	2.2	4	0.84	0.6	<2	0.03	9			
Continuation from above		Ni	P	Pb	Sb	Si	Sn	Ti	V	Zn	Soft Point °C	Ash % (950°C)	Type	Size				
	245 CD Pitch A	2.5	10	91	...	358	...	18	1.2	88	115	0.27	Coal Tar	60g				
	245 CD Pitch B	...	3	80	57	408	3.7	16	0.89	90	118	0.22	Coal Tar	60g				
	245 CD Pitch C	76	236	1	0.03	20	<0.7	19	170	1	129	0.19	Coal Tar	60g				
	245 CD Pitch D	...	1	0.6	0.014	10	<0.2	0.32	0.06	1	86.5	0.04	Coal Tar	60g				
		Fe	Mn	Ni	Si	Zn	Ca	V	Na	Pb	Ti	S	P		Size			
	245 CA Pitch-02	0.032	0.0004	0.0004	0.041	0.0085	0.0150	0.0002	0.042	0.0097	0.0018	0.53	...		100g			
	245 CA Pitch-03	0.042	0.0005	0.0004	0.066	0.010	0.017	0.00010	0.021	0.012	0.0015	0.76	0.0027		100g			
	245 CA Pitch-04	0.015	0.0009	0.0003	0.075	0.047	0.0076	0.0001	0.011	0.036	0.0003	1.05	0.0066		100g			
	245 CA Pitch-05	0.059	0.0004	0.0004	0.154	0.016	0.0066	0.00020	0.0020	0.027	0.0025	0.54	0.0030		100g			
	245 CA Pitch-06	0.027	0.0003	0.0003	0.082	0.0074	0.0042	0.00010	0.013	0.0081	0.0015	0.50	0.0003		100g			
	245 CA Pitch-07	0.032	0.0010	0.0004	0.0080	0.074	0.0082	0.00003	0.011	0.051	0.00030	0.57	0.0018		100g			

24. Coal & Coke

Powders

24.2	C,H,S,N						GCV	GCV	% Volatile			
	Coal & Coke	C	H	S	N	Ash	MJ/Kg	BTU/lb	Matter	Moisture	Type	Size
CRM	24 F 331	...	...	0.499	...	...	...	...	...	...	Steam	20g
CRM	24 F 332	...	...	0.961	...	...	...	...	...	...	High vol. Ind.	20g
CRM	24 F 333	...	...	1.344	...	...	...	...	...	...	Coking Steam	20g
CRM	24 F 334	...	...	1.609	...	...	...	...	...	...	Anthracite	20g
CRM	24 F 335	...	...	5.08	...	...	...	...	...	...	Flame	20g
CRM	24 F 336	...	...	3.29	...	...	...	...	...	...	High Vol. Steam	20g
CRM	24 B 2775	...	...	0.5816	...	(5.77)	...	...	(1.31)	...	Foundry Coke	50g
CRM	24 B 2776	...	...	0.825	...	(8.06)	...	...	(0.98)	...	Furnace Coke	50g
CRM	24 MI 20025A	51.35	...	0.249	...	5.57	...	12,224	43.45	22.06	Coal	50g
CRM	24 MI 20075A	59.41	...	0.760	...	6.28	...	14,004	34.27	2.62	Coal	50g
CRM	24 MI 20100A	57.79	...	1.03	...	6.88	...	13,882	35.46	1.78	Coal	50g
CRM	24 MI 20150A	58.38	...	1.56	...	4.44	...	14,314	37.08	1.62	Coal	50g
CRM	24 MI 20300A	54.66	...	2.92	...	7.70	...	12,488	37.62	8.35	Coal	50g
CRM	24 MI 20500A	50.78	...	4.811	...	12.38	...	11,482	37.09	7.81	Coal	50g
	24 MA 1905	71.24	5.1	...	1.56	...	...	...	...	...	Coal	25g
	24 MA 1906	72.6	4.83	...	1.49	...	...	...	...	...	Coal	25g
	24 MA 1907	67.95	5.06	...	1.49	...	...	...	...	...	Coal	25g
	24 MA 1908	70.8	5.16	...	1.06	...	...	...	...	...	Coal	25g
	24 MA 2713	...	...	0.4	...	...	...	...	...	...	Green Petroleum Coke	50g
	24 MA 2714	...	...	0.9	...	...	...	...	...	...	Green Petroleum Coke	50g
	24 MA 2715	...	...	1.63	...	...	...	...	...	...	Green Petroleum Coke	50g
	24 MA 2716	...	...	2.01	...	...	...	...	...	...	Green Petroleum Coke	50g
	24 MA 2717	...	...	2.35	...	...	...	...	...	...	Green Petroleum Coke	50g
	24 MA 2719	...	...	1.85	...	...	...	...	...	...	Calcined Petroleum Coke	50g
	24 MA 2720	...	...	5.25	...	...	...	...	...	...	Green Petroleum Coke	50g
	24 MA 2721	...	...	6.25	...	...	...	...	...	...	Green Petroleum Coke	50g
	24 MA 2722	...	...	2.85	...	...	...	...	...	...	Calcined Petroleum Coke	50g
	24 MA 719	...	...	0.70 Range	...	...	...	...	...	...	Coke	50g
	24 MA 720	...	...	0.90 Range	...	...	...	...	...	...	Coke	50g
	24 MA 723	...	...	0.50 Range	...	...	...	...	...	...	Coke	50g
	24 MA 1700	...	...	0.25 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1701	...	...	0.48 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1702	...	...	0.71 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1703	...	...	0.80 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1704	...	...	0.97 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1705	...	...	1.51 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1706	...	...	2.06 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1707	...	...	2.47 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1708	...	...	3.10 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1709	...	...	3.30 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1710	...	...	4.75 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1711	...	...	5.53 Range	...	...	...	...	...	...	Coal	50g
	24 MA 1712	...	...	6.50 Range	...	...	...	...	...	...	Coal	50g
Values for "MA" coded products listed above are nominal. Exact chemistry is given on each bottle												
		C	H	S	N	P	Ash	GCV		% Volatile	Specific	
								MJ/Kg		Matter	Gravity	Size
	24 CG 11101d	75.42	4.72	0.50	1.38	...	9.75	30.65		32.98	1.39	Coal 50g
	24 CG 11102d	52.73	3.35	1.45	0.92	...	34.76	21.22		23.67	1.67	Coal 50g
	24 CG 11103c	77.34	0.99	0.31	0.22	...	16.91	26.24		6.56	1.94	Coal 50g
	24 CG 11104b	68.61	0.67	1.00	0.21	...	26.33	23.06		5.99	2.10	Coal 50g
	24 CG 11105a	76.48	3.30	1.73	1.18	...	13.89	29.94		11.76	1.49	Coal 50g
	24 CG 11107c	76.83	4.63	0.92	1.40	...	8.49	31.23		34.05	1.39	Coal 50g
	24 CG 11108b	72.27	4.59	1.91	1.33	...	11.07	29.66		33.53	1.42	Coal 50g
	24 CG 11109b	68.59	4.48	3.03	1.17	...	13.88	28.33		34.17	1.45	Coal 50g
	24 CG 11110c	55.73	2.44	4.70	0.72	...	32.8	21.55		12.79	1.80	Coal 50g
	24 CG 11111a	78.69	4.54	1.38	1.38	...	10.02	32.18		25.26	1.38	Coal 50g
	24 CG 11112a	69.03	3.01	2.20	1.03	...	21.23	26.95		11.82	1.58	Coal 50g
	24 CG 11113a	50.03	2.18	3.40	0.65	...	40.62	19.25		10.55	1.85	Coal 50g
	24 CG 11106a	...	...	0.580	...	0.034	13.05	28.47		1.00	...	Coke 90g
		Ash	% Volatile	Total	Total				C as		Hardgrove	Gross
			Matter	C	S	H	N	P	CO ₃	Cl	Grindability	Calorific
											Index	Value
	24 A AS 011-7	...	...	...	...	...	...	...	...	...	31 to 91	...
	24 A AS 012D-2	...	...	...	5.21	...	...	...	...	...	...	...
	24 A AS 013-9	9.97	20.29	80.01	0.578	4.41	1.73	0.03	0.039	0.038	...	32.524/MJ/kg

24. Coal & Coke

Powder

24.2	C,H,S,N							% Volatile												Size
	Coal & Coke	C	H	S	N	P	Ash	Matter												
CRM	24 SI CMT-001	...	...	0.50	...	...	14.50	24.50											150g	
CRM	24 SI CMT-002	...	...	0.64	...	...	7.05	32.26											150g	
CRM	24 SI CMT-003	67.35	3.83	0.93	1.64	0.120	17.51	28.02											150g	
CRM	24 SI CMT-004	68.59	2.48	1.32	1.71	0.080	23.98	8.13											150g	
CRM	24 SI CMT-005	72.72	4.46	0.81	1.87	0.070	10.94	32.02											150g	
CRM	24 SI CMT-006	71.63	3.82	0.89	1.90	0.031	13.50	26.67											150g	
CRM	24 SI CMT-007	73.13	4.04	0.54	1.77	0.100	13.24	26.75											150g	
CRM	24 SI CMT-008	84.46	2.62	0.85	1.75	0.025	8.90	5.11											150g	
CRM	24 SI CMT-009	73.60	3.91	0.70	1.76	0.114	13.48	25.21											150g	
CRM	24 SI CMT-010	72.74	4.32	0.84	1.91	0.070	11.50	32.41											150g	
CRM	24 SI CMT-011	77.20	3.45	1.60	2.17	0.029	13.72	11.73											150g	
CRM	24 SI CMT-012	64.75	3.30	0.80	1.49	0.051	20.05	24.04											150g	
CRM	24 SI CMT-013	73.83	4.64	0.70	1.93	0.005	10.90	32.48											150g	
CRM	24 SI CMT-014	74.11	3.83	0.93	1.68	0.017	12.35	22.00											150g	
CRM	24 SI CMT-015	72.02	3.56	0.33	1.62	0.051	14.41	23.34											150g	
24.9	Ultimate Series for Coal & Coke	Proximate Analysis					Ultimate Analysis					Sulphur Forms					Size			
		% Volatile % Fixed			%	%	%	%	%	%	%	%	%	%						
		% Ash	Matter	Carbon	BTU	S	C	H	N	Cl	Ash	Pyritic	Sulphate	Organic	Total					
	24 MA 2771	11.36	2.02	86.62	12236	0.71	88.16	0.06	1.17	0.03	11.36	0.1	0.01	0.6	0.71	continued				
	24 MA 2772	9.33	1.76	88.91	12211	0.85	88.1	0.25	1.38	0.0	9.33	0.01	0.0	0.84	0.85					
	24 MA 2773	7.14	45.15	47.71	11738	0.5	68.71	4.75	0.92	0.03	7.14	0.08	0.0	0.42	0.51					
	24 MA 2775	6.47	37.14	56.39	13513	0.66	77.16	4.87	1.45	0.03	6.47	0.05	0.0	0.61	0.66					
	24 MA 2776	7.57	35.62	56.81	13413	0.94	76.17	4.83	1.46	0.34	7.57	0.37	0.0	0.57	0.94					
	24 MA 2778	10.76	6.31	82.93	13191	0.63	83.44	2.11	0.92	0.03	10.76	0.06	0.0	0.57	0.63					
	24 MA 2780	8.23	39.05	52.72	12748	3.58	70.87	5.05	1.58	0.0	8.23	0.83	0.04	2.71	3.58					
	24 MA 2782	13.06	39.06	47.44	12226	5.82	67.61	4.82	1.39	0.0	13.12	3.42	0.91	1.49	5.82					
Continuation from above		All values %														Size				
		P ₂ O ₅	SiO ₂	Fe ₂ O ₃	Al ₂ O ₃	TiO ₂	CaO	MgO	SO ₃	K ₂ O	Na ₂ O	SrO	BaO	MnO	Undetirmined		Type			
	24 MA 2771	0.38	45.94	21.98	21.98	1.1	2.59	1.0	1.61	2.12	0.95	0.75	0.92	0.0	...	Coke	50g			
	24 MA 2772	0.36	46.12	18.98	25.8	1.22	2.74	0.8	1.49	1.49	0.52	0.12	0.92	0.0	...	Coke	50g			
	24 MA 2773	0.98	32.51	4.9	16.93	1.32	21.92	4.53	13.99	0.33	1.02	0.3	0.53	0.06	0.68	Coal	50g			
	24 MA 2775	0.9	62.7	2.27	28.21	1.48	0.96	0.38	0.46	1.41	0.28	0.3	0.06	0.0	0.59	Coal	50g			
	24 MA 2776	0.16	50.35	9.85	29.73	1.71	2.13	0.73	2.52	1.88	0.67	0.16	0.11	0.0	...	Coal	50g			
	24 MA 2778	0.68	51.24	4.78	32.06	2.09	2.17	1.04	1.77	2.0	0.84	0.19	0.25	0.0	0.94	Coal	50g			
	24 MA 2780	0.11	33.71	46.35	14.4	0.73	0.54	0.53	0.53	1.43	0.17	0.01	0.0	0.29	1.2	Coal	50g			
	24 MA 2782	0.26	29.12	45.87	14.67	0.51	4.5	0.54	2.82	1.05	0.54	0.01	0.09	0.02	...	Coal	50g			
Ash Fusion Temperature, Softeneing Temperature & Fluid Temeperature values are also certified																				
The following ASTM procedures were employed in the analysis of these samples: All analysis reported on a dried basis.																				
Preparation ASTM D2013						Ash ASTM D3174			Volatile Matter ASTM D3175			Carbon, Hydrogen ASTM D3178			Sulphur ASTM D3177					
Chlorine ASTM D2361						BTU ASTM D2015			Ash Analysis ASTM D 3682			Sulphur Forms ASTM D2492			Nitrogen ASTM D3179					
Petroleum Coke	% Moisture	% Ash Dry		Total % S Dry		Calorific Value											Size			
						BTU/lb	MJ/kg													
	24 A PC-1	<2	6.63	6.96	12940	30.08											75g			
	24 A PC-2	<2	2.57	6.04	14737	34.23											75g			
Coal Ash																				
	Al ₂ O ₃	BaO	CaO	Fe ₂ O ₃	K ₂ O	MgO	Mn ₃ O ₄	P ₂ O ₅	SiO ₂	Na ₂ O	SrO	SO ₃	TiO ₂				Size			
	24 A AS 010	29.8	0.19	3.27	12.8	0.9	2.11	0.22	0.91	47.3	0.36	0.1	0.62	1.69			100g			
	24 SI SIBS101	22.80	...	9.31	12.11	1.03	2.52	0.06	0.90	41.00	1.18	...	5.80	1.32			30g			
	24 SI SIBS102	17.41	...	1.28	5.11	1.10	0.60	0.06	0.12	69.92	0.16	...	0.89	1.60			30g			
	24 SI SIBS103	34.35	...	9.30	2.34	0.82	2.05	0.06	2.69	39.88	0.22	...	4.32	1.94			30g			
	24 SI SIBS104	28.34	...	10.80	2.77	0.55	2.93	0.07	1.91	44.80	0.14	...	4.67	1.60			30g			
	24 SI SIBS105	25.48	...	1.05	1.60	1.38	0.77	0.01	0.11	66.85	0.13	...	0.32	1.25			30g			
Electrode Carbon	Moisture	Ash		% Volatie Matter		Density		Relative Size Fraction								Type	Size			
	24 A AS 003	<1.0	<5.0	<1.5	2.2-2.3	<5.0											Electrode Carbon	1.5kg		

Information

Definitions

	The Reference Materials in this Catalogue have been categorised as Certified Reference Materials, Reference Materials or Setting-Up Samples. For these first two categories the definitions used in the ISO Guide 30 : 1992 issued by the International Standards Organisation have been used.
Certified Reference Material (CRM)	A Reference Material, accompanied by a certificate, one or more of whose property values are certified by a procedure which establishes its traceability to an accurate realization of the unit in which the property values are expressed and for which each certified value is accompanied by an uncertainty at a stated level of confidence
Reference Material	A material or substance one or more of whose property values are sufficiently homogeneous and well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials.
Setting up Samples	Samples which have been prepared to meet the daily setting up requirements of laboratories using direct reading spectrometers. Whilst analytical data are supplied with each sample they are not certified as accurate and are not intended to be used as Reference Materials
	Materials identified as Certified Reference Materials are designated with CRM in the left hand margin against the catalogue number.
	MBH manufactured products, identified by an X in the catalogue number e.g., 12 X 15254W, and which are marked as CRMs are certified in accordance with the above-mentioned definition.
	Where other manufacturers have designated their products as CRMs, MBH has reported that designation. MBH cannot verify that other manufacturers' products are certified in accordance with the definitions above. Users wishing to confirm the accuracy of a designation should request a copy of the relevant certificate before ordering the material.

Use of Reference Materials

Whilst modern instrumental methods of analysis are capable of high accuracy and precision, they are mostly comparative techniques. Reference materials must be selected and used correctly for optimum instrumental performance to be achieved, and the following points should be considered.

The instrument manufacturer's recommendations and advice should be followed

Users should be aware of the possible effects of structure, sample preparation and physico-chemical interferences when using reference materials.

Validity of Information

IMPORTANT - Please Note	The majority of the analytical data in the following pages indicates actual values for the batch currently available. However some materials may be remade during the lifetime of this catalogue and the values achieved for the replacements may differ from those stated.
	We recommend that customers verify the availability of any material where it is imperative that the material to be supplied has the elemental concentration values listed.
	All concentrations in this catalogue are given in % by weight, unless stated otherwise.

Abbreviations

CRM	This material is classified as a CRM.
()	Concentration values stated within brackets are not certified and are listed for information only.
R.E. / R.E.O.	Rare Earth / Rare Earth Oxide
L.O.I.	Loss on Ignition
rem	Remainder
ppm	Parts per Million
MJ/kg	Mega Joules per Kilogram
BTU/lb	British Thermal Units per pound
C	Cast
CC	Chill Cast
HIP	Hot Isostatic Pressed
Sc	Spun cast
W	Wrought

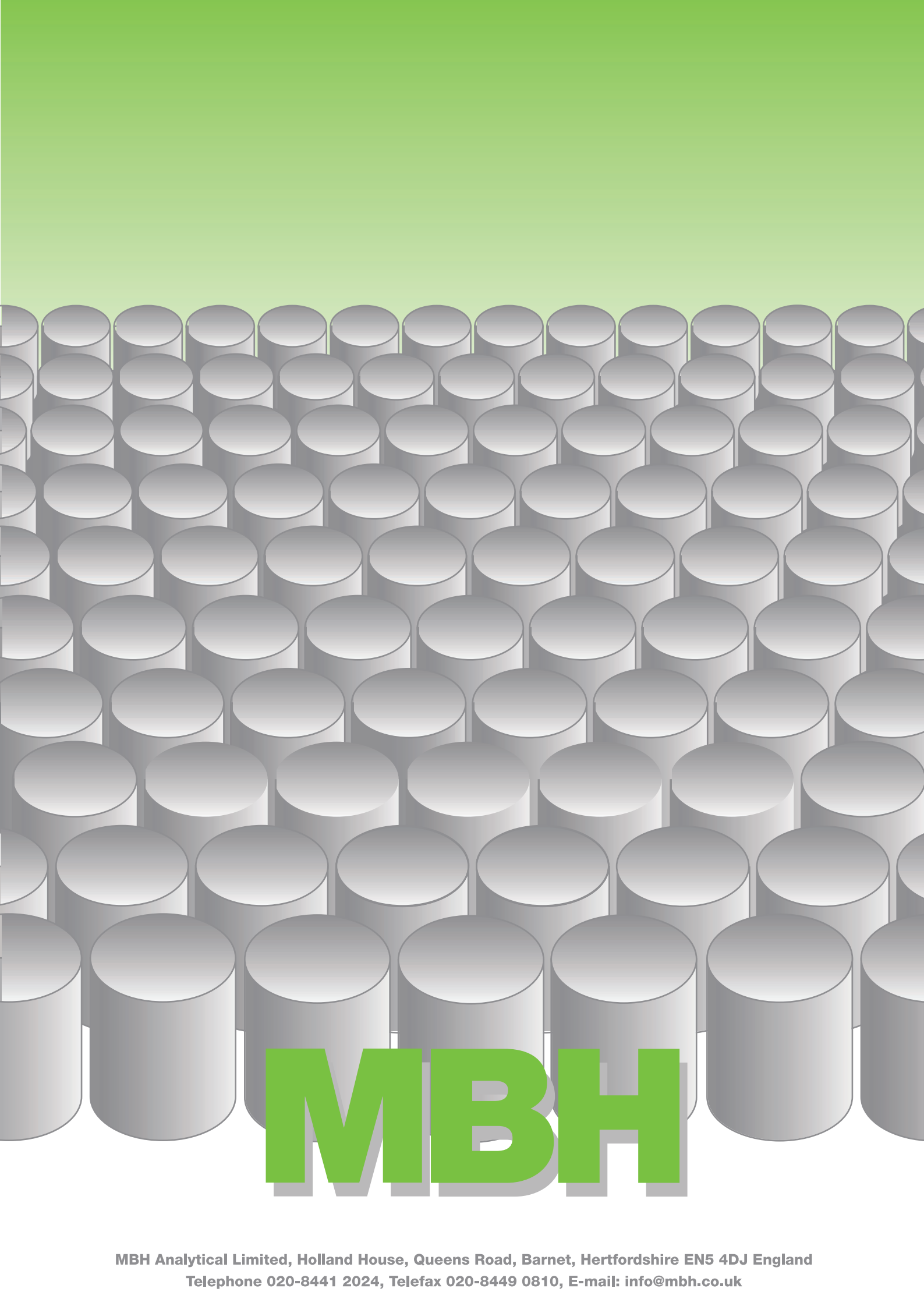
Notes

Conditions of Sale

Conditions of Sale

All materials are sold subject to our conditions of sale printed on the reverse of each quotation and order acknowledgement. The text is repeated here for your convenience.

- 1 All items are listed in our catalogue or otherwise offered for sale are subject to availability and any delivery dates that may be quoted are conditional on supplies from manufacturers. We are unable to accept any liability for delay and if any item becomes unavailable during the life of a catalogue we will advise you on suitable alternatives where appropriate.
- 2 Unless credit facilities have been agreed with us (in which case payment is due on a net monthly account basis), payment for items supplied is due either against a Pro Forma invoice or by Confirmed Irrevocable Letter of Credit through a British Clearing Bank payable on presentation of invoice and dispatch documents.
- 3 We draw the attention of all customers to the notes in our catalogue relating to Definitions, Analyses and Calibration procedures.
- 4 To the extent that the law may permit, the following condition stands in substitution for all conditions and warranties as to merchantability and fitness for purpose implied by statute, common law or otherwise
 - a. it is the responsibility of the customer to decide on the suitability and fitness for purpose of all items purchased.
 - b. Any items claimed to be defective must be returned to us (within 3 months of delivery) for examination and analysis and no claims can be entertained if this is not done.
 - c. We may at our option replace any item shown to be defective or refund the price paid. Our liability in respect of any such item will not in any circumstances exceed the amount paid for the item in question and no liability is accepted for consequential loss however arising.
- 5 These conditions shall apply to all contracts entered into by us to the exclusion of all other conditions and notwithstanding any terms that may appear on any printed stationery of any customer. No variation of these conditions shall be effective unless confirmed by us in writing on or prior to formal acceptance by us of any order.
- 6 Until such time as we have received full payment, items supplied to customers shall remain our property notwithstanding delivery to the customer and we shall be entitled to enter upon customer's premises to recover property if the customer shall go into liquidation, or if a receiver is appointed of the undertaking of the customer or any of his or its property.
- 7 This contract shall be governed by English law and any dispute shall be referred to the exclusive jurisdiction of the English Courts.

The background of the entire page is a light green gradient. The lower half of the page is filled with a dense, repeating pattern of grey cylinders, creating a 3D effect. The cylinders are arranged in a grid-like fashion, with some appearing slightly more prominent than others due to perspective.

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