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CRM COPPER RODS

Number	analysis listed in mg/kg													Zn
	Ag	As	Bi	Cd	Fe	Ni	O	Pb	S	Sb	Se	Sn	Te	
CAN SSC-1	18.8	1.16	1.15	N.F.	39.2	17.6	216.0	65.3	19.6	2.64	7.28	54.9	4.57	33.3

RM OXYGEN IN COPPER

Part Number	analysis listed in mg/kg		
	BAM 379/1	BAM 379/2	BAM 379/3
Oxygen	38	212	378

COPPER WIRE FOR GLOBULE ARC WORK

Number	analysis listed in mg/kg															These Reference Materials are in wire form, intended for globule arc work.			5 rods 3 mm Ø x 80 mm		
	Ag	As	Bi	Cd	Co	Cr	Fe	Mn	Ni	Pb	Sb	Se	Sn	Te	Zn	O	P	S	Si		
CRM																					
38X C1C	11	0.19	0.10	<0.01	.	<0.005	1.7	(0.005)	0.27	(0.05)	0.10	(0.25)	(0.01)	(0.21)	<0.1	266	<0.05	2.0	<0.1		
RM	typical analysis																				
38X C6	104.0	98.0	22.0	32.0	33.0	1.0	107.0	0.3	166.0	111.0	45.0	.	120.0	30.0	40.0	.	.	.	.
38X C4	21.0	19.0	5.0	8.0	3.0	3.0	19.0	2.7	29.0	23.0	9.0	.	21.0	8.0	22.0	.	.	.	.
38X C1B	13	0.8	0.1	<0.01	0.03	0.06	1.2	1.2	1.0	0.8	0.6	.	<0.3	0.3	0.45	.	.	.	.
38X C2A	12	3.8	1.5	2.5	2.6	1.0	9.1	3.1	1.4	2.7	2.6	.	1.1	1.6	3.6	.	.	.	.
38X C1A	7.8	<1.0	0.2	<0.1	<1.0	<1.0	2	<1.0	0.8	0.4	<1.0	0.7	0.7	0.4	1.5	.	.	.	.

COPPER

= class, where 1 = CRM and 2 = RM

39X: 40-42 mm D x 17 mm
CTIF: 40 mm D x 18 mmBAM, BCR, ERM: 40 mm D x 30 mm
FO CU: 40 mm D x 25 mmBS: 38 mm D x 12 mm
IARM: 31 mm D x 2 or 18 mm

#	Number	Al	As	Bi	Cd	Co	Cr	Fe	Mg	Mn	Ni	P	Pb	S
1	BAM 376	(0.01815)	0.01999	0.0200	0.01861	0.02079	(0.0400)	0.02346	0.0124	0.02059	0.0209	0.0203	0.0236	0.0133
2	FO CU 173	0.0091	0.00035	0.0028	<0.000005	0.0030	0.0029	0.00037	0.0100	0.00003	0.00030	0.0089	0.00016	0.00038
1	ERM-EB386	0.00365	0.00242	0.00096	0.00078	0.000520	0.00124	0.00647	0.00361	0.00133	0.00250	0.00072	0.00234	0.00219
1	ERM-EB385	0.00286	0.00114	0.000581	0.00058	0.000693	0.000981	0.00454	0.00291	0.00101	0.00119	0.00129	0.00113	0.00313
2	FO CU 171	0.0025	0.0100	0.000011	<0.000005	<0.000002	0.0100	0.0099	0.00004	0.00002	0.00024	<0.00005	0.0093	0.0006
2	BS 110A	0.002	(0.001)	.	.	.	.	0.003	.	<0.0003	0.002	0.001	0.003	0.0008
1	BAM 384	0.00130	0.00050	0.000334	0.000395	0.000388	0.000653	0.00328	0.00146	0.000688	0.00057	.	0.00057	(0.00041)
1	BAM 370	0.00126	.	.	.	.	.	.	.	.	.	0.00117	0.0016	.
1	39X 17866	0.0011	0.0541	0.0056	0.0252	0.0395	0.0284	0.0102	0.0011	0.0047	0.0503	0.0102	0.0052	0.051
2	FO CU 170	0.00084	0.00111	0.0011	0.00058	0.00095	0.00096	0.0012	0.00079	0.0010	0.00135	0.0011	0.0011	0.0012
1	39X 17869	0.0006	0.0137	0.044	0.0085	0.0133	0.00023	0.023	0.0004	0.0013	0.0144	0.013	0.0478	0.016
1	39X 17868	(0.0005)	0.0239	0.028	0.0049	0.0006	(0.0005)	(0.001)	(0.0002)	(0.0001)	0.126	(0.0001)	0.025	0.0041
2	FO CU 169	0.00037	0.00035	0.00036	0.00023	0.00029	0.00045	0.00051	0.00031	0.00030	0.00049	0.00031	0.00040	0.00035
2	FO CU 175	0.00031	0.00024	0.00001	0.0015	0.0099	0.000025	0.00008	0.0026	0.00013	0.00025	0.00315	0.000091	0.0089
2	FO CU 168	0.00031	0.00048	0.00035	0.00038	0.0004	0.00034	0.00053	0.00037	0.00030	0.00062	0.00034	0.00042	0.00035
1	39X 17867	(0.0003)	0.0417	0.0122	0.0173	0.0003	(0.0002)	0.0009	(0.0002)	0.0003	0.0339	(0.0012)	0.0058	0.0041
1	BAM 383	(0.00023)	0.000193	0.000102	0.000148	0.000137	0.000103	0.00109	0.000237	0.000124	0.000359	.	0.000131	(0.00028)
2	FO CU 167	0.00015	0.00016	0.00016	0.00004	0.00008	0.00015	0.0002	0.00019	0.00015	0.00015	0.00015	0.00016	0.0012
2	FO CU 166	0.00015	0.00018	0.00011	0.000093	0.00010	0.00013	(0.00095)	0.0001	0.00013	0.00023	0.00011	0.00013	0.0002
1	BAM 382	(0.00015)	(0.0053)	0.000055	0.000088	0.000075	0.000054	0.00060	0.000140	0.000076	0.000170	.	0.000103	(0.00028)
2	FO CU 174	0.00012	0.0029	0.00001	0.0077	0.000005	0.000048	0.0001	0.00008	0.0100	0.0099	0.000035	0.00011	0.0035
2	FO CU 182	0.00005	0.000028	<0.000002	<0.000001	0.000002	0.000019	0.00027	0.00002	0.000011	0.000035	<0.00001	0.000005	0.0002
1	39X 17870	<0.001	0.0043	0.075	0.0097	0.012	(0.002)	0.044	0.0004	0.020	0.0070	0.049	0.059	0.0194
1	39X 17871	<0.0005	0.029	0.069	0.0031	0.0008	(0.0003)	(0.0020)	(0.0002)	0.0010	0.027	<0.0005	0.0092	0.0080
2	FO CU 176	<0.00003	0.00010	0.00002	0.000001	<0.000002	0.000008	0.00013	0.00010	<0.00002	0.00005	<0.00005	0.000032	0.00105
2	FO CU 172	<0.00002	0.00047	0.0097	<0.000005	<0.000002	0.00007	0.0033	0.00002	<0.00002	0.0032	<0.00005	0.0032	0.0007
1	BAM 372	.	0.00103	.	0.00163	.	.	.	.	0.00114	0.0012	.	.	.
1	BAM 366	.	0.000111	(<0.00003)	0.000027	.	.	0.00234	.	.	0.00032	0.0263	0.00108	0.00087
1	BCR 074A	.	0.000078	(0.000010)	<0.00002	<0.000005	<0.00001	0.000114	.	0.000127	0.000104	.	0.000097	.
1	BAM 381	.	<0.0001	<0.0001	<0.00004	<0.00004	0.000013	0.00028	(0.000034)	0.000027	0.000073	.	0.00005	(0.00029)
1	IARM 70B	.	(0.0001)	<0.0002	.	<0.003	.	<0.001	.	<0.0003	<0.0002	0.002	(0.003)	(0.0005)
1	BCR 017A	.	.	.	.	.	.	.	.	.	.	0.00069	.	0.00104
1	BAM 369	.	.	0.00097	.	0.00104	0.00092	.	0.00036	.	.	.	.	.
1	BAM 371	0.0018	0.0013
2	CTIF CuCrZr 1*	0.75	0.06	.	0.005	0.02	0.02	.	.

#	Number	Al	As	Bi	Cd	Co	Cr	Fe	Mg	Mn	Ni	P	Pb	S
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continued analysis listed in mass % except * which is mg/kg

Number	Sb	Se	Si	Sn	Te	Ti	Zn	Zr	Ag*	Au%	B*	Be*	In*	Li*	Other
BAM 376	0.0202	0.0210	.	0.02473	0.0215	(0.00045)	0.02173	0.00422	.	.	40.6	.	.	.	.
FO CU 173	0.000085	<0.00005	0.0004	0.0030	0.00001	.	0.00004	0.000010	.	.	.	.	.	69	.
ERM-EB386	0.00312	0.00116	.	0.00283	0.00383	0.00331	0.00495	.	.	.	.	.	.	.	.
ERM-EB385	0.00191	0.00072	.	0.00180	0.00100	0.000383	0.0058	.	.	.	.	.	.	.	.
FO CU 171	0.0035	<0.00005	<0.0001	0.0100	0.0033	.	<0.00001	0.0023	.	.	.	.	.	.	.
BS 110A	0.0004	.	0.001	0.002	.	.	(0.001)	.	.	.	.	.	.	.	C: 0.0018
BAM 384	0.00120	0.000424	(0.00050)	(0.00102)	0.00070	(0.000210)	(0.00127)	<0.0009	.	.	.	.	.	.	.
BAM 370	0.0015	.	(0.0019)	0.00165	.	.	.	.	.	.	.	.	.	.	.
39X 17866	0.0113	0.0030	0.0156	0.070	0.027	.	0.268	.	55	0.0051	(1)	51.8	.	.	
FO CU 170	0.00093	0.00079	0.00124	0.0010	(0.0010)	<0.00005	0.00084	0.0008	.	.	5.2	.	.	8	.
39X 17869	0.0389	0.0063	(0.0007)	0.0150	0.0323	(0.0004)	0.011	.	.	0.0090	.	.	.	.	.
39X 17868	0.0198	0.0195	0.0012	0.006	0.0106	.	(0.003)	.	198	0.0190	.	.	.	.	.
FO CU 169	0.00038	0.00029	0.00041	0.0004	0.00036	0.0001	0.00029	0.00021	.	.	3.1	.	.	(9)	.
FO CU 175	0.000070	0.0090	0.0001	0.000030	0.0085	0.00025	0.00013	0.000012	.	.	30	.	.	125	.
FO CU 168	0.00046	0.0004	0.00058	0.0004	0.00032	0.0004	0.00032	0.00023	.	.	3.7	.	.	7.8	.
39X 17867	0.0145	0.0087	0.0010	0.0053	0.0104	.	(0.0010)	.	117	0.0120	.	.	29	.	.
BAM 383	0.000144	(0.00016)	<0.0010	0.00047	0.000140	0.000156	(0.00078)	<0.0009	.	.	.	.	.	.	.
FO CU 167	0.00019	0.00097	0.00014	0.00013	0.00072	<0.00005	0.00010	0.00007	.	.	2.6	.	.	(6.4)	.
FO CU 166	0.00013	0.00012	0.00032	0.00012	0.00013	0.00011	0.00012	0.00008	.	.	1.2	.	.	2.4	.
BAM 382	0.000072	0.000057	<0.0005	0.00045	0.000062	0.000066	0.00063	<0.0008	.	.	.	.	.	.	.
FO CU 174	0.000054	0.0038	0.00314	0.000008	0.00002	0.0020	0.0060	(0.0080)	.	.	.	.	.	.	.
FO CU 182	0.000025	0.000016	<0.0001	<0.000005	0.000005	.	0.000114	(0.000003)	.	.	.	.	.	<0.1	.
39X 17870	0.047	0.0076	(0.002)	0.0170	0.016	.	0.013	.	.	0.073 (3)	<1	23	.	.	
39X 17871	0.017	0.028	<0.0005	.	0.011	.	(0.0008)	<0.0005	.	0.0048	(4)	.	.	.	.
FO CU 176	0.000139	<0.00005	<0.0001	0.000022	0.000012	.	0.000017	0.00043	.	.	.	.	.	.	.
FO CU 172	0.0094	<0.00005	0.0096	<0.00001	<0.00001	0.0078	0.0032	<0.000005	.	.	.	.	.	.	.
BAM 372	.	0.00076	.	.	.	.	.	.	.	.	.	.	.	.	.
BAM 366	0.000099	(<0.00011)	.	0.0111	(<0.00003)	.	0.00156	.	.	.	.	.	.	.	.
BCR 074A	0.000058	0.000037	.	<0.000007	(0.000021)	.	0.000046	.	.	.	.	.	.	.	.
BAM 381	<0.00015	<0.0001	<0.0005	0.00040	.	<0.00005	0.000522	<0.0009	.	.	.	.	.	.	.
IARM 70B	(0.0002)	<0.0002	<0.0005	(0.0002)	.	.	<0.001	.	.	.	.	.	.	.	Cu: 99.9+
BCR 017A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
BAM 369	.	.	.	.	.	.	0.0022	.	.	.	.	.	.	.	.
BAM 371	.	.	.	.	0.0014	0.00132	.	.	.	.	11.5	.	.	.	.
CTIF CuCrZr 1*	0.01	0.06	Cu: 99.2

Number	Sb	Se	Si	Sn	Te	Ti	Zn	Zr	Ag*	Au%	B*	Be*	In*	Li*	Other
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* CTIF CuCrZr 1 is temporarily unavailable.

CRM COPPER

SOLD AS SET/10 ONLY, analysis listed in mass % except * which is mg/kg													40 mm Ø x 30 mm				informational values			
Number	Ag	As	Bi	Cu	Fe	Ni	P	Pb	S	Sb	Sn	Zn	Cd*	Mn*	Se*	Te*				
CMSI 4123-1	0.0020	0.0011	0.00052	99.94	(0.0015)	0.0011	0.00022	0.0012	0.0022	0.0011	0.0011	0.018	5.4	1.7	5.2	5.3				
CMSI 4123-2	0.0024	0.0020	0.00080	99.96	0.0022	0.0021	0.00075	0.0018	(0.0026)	(0.0020)	0.0020	0.0092	9.4	5.4	8.9	9.3				
CMSI 4123-3	0.0035	0.0042	0.0020	99.92	0.0051	0.0042	0.0015	0.0043	0.0063	0.0044	0.0042	0.0037	20	2.0	21	21				
CMSI 4123-4	0.0066	0.0082	(0.004)	99.92	0.0062	0.0078	0.0031	0.0069	(0.0007)	0.0075	(0.0077)	0.0023	28	12	40	41				
CMSI 4123-5	0.011	0.016	0.0069	99.82	0.011	0.0158	0.0014	0.014	0.0151	0.016	0.015	0.0020	75	7.0	74	79				
CMSI 4123-6	0.022	0.0019	0.0049	99.77	0.081	0.0069	0.0123	0.0017	0.0127	0.016	0.063	0.0095				
CMSI 4123-7	0.042	0.0032	0.0031	99.64	0.046	0.194	0.027	0.0022	0.0013	0.0086	0.318	0.0065				
CMSI 4123-8	0.080	0.0064	0.0016	99.82	0.019	0.0600	(0.063)	0.0038	0.0013	0.0044	0.0084	0.0012				
CMSI 4123-9	0.16	0.0123	.	99.88	(0.010)	0.0298	0.0033	0.0078	0.0053	(0.0022)	(0.00383)	0.0109				
CMSI 4123-10	0.061	0.0024	0.0019	99.91	0.0072	0.0057	0.0097	0.0043	0.0061	0.0023	0.0024	0.0059				

CRM CONVERTER COPPER

analysis listed in mass %													AVAILABLE IN SET/5 ONLY AS SHOWN			45 mm Ø x 12 or 30 mm		
Number	Ag	As	B	Bi	Co	Fe	Ni	P	Pb	S	Sb	Se	Sn	Te	Zn			
IMN CT1	0.057	0.32	0.024	0.018	0.051	0.17	0.48	0.082	0.013	0.054	0.33	0.062	0.24	0.053	0.28			
IMN CT2	0.042	0.22	0.033	0.013	0.033	0.10	0.29	0.059	0.086	0.036	0.24	0.041	0.14	0.036	0.19			
IMN CT3	0.026	0.11	0.00093	0.0067	0.013	0.083	0.12	0.038	0.31	0.012	0.11	0.018	0.070	0.022	0.11			
IMN CT4	0.016	0.050	0.0042	0.0043	0.011	0.045	0.049	0.020	0.88	0.0060	0.049	0.011	0.025	0.011	0.045			
IMN CT5	0.0062	0.0056	(0.011)	0.0011	0.0061	0.016	0.0095	0.0059	(1.48)	0.0024	0.010	0.0069	0.0070	0.0064	0.0098			

LOW ALLOY

Number	Ag	Al	As	Bi	C	Cd	Co	Cr	Cu	Fe	Mg	Mn	Ni
CRM	wrought												
36X CCZ	0.0019	0.0003	.	.	(0.002)	0.0027	0.0012	0.667	99.22	0.033	.	0.0008	0.0084
37X 218	.	0.0022	.	.	0.0022	.	0.0013	0.032	96.57	0.074	.	0.0883	2.52
36X 274	.	0.0013	0.0011	.	(0.0033)	.	0.0028	0.531	96.23	0.0779	.	0.0148	2.54
37X 226	.	0.0020	.	.	0.006	.	.	0.0023	91.58	1.51	.	0.577	0.0024
RM	wrought typical analysis												
36X CCR1	.	0.014	<0.002	<0.001	.	.	.	0.855	.	0.015	0.001	<0.001	<0.005

Number	P	Pb	S	Si	Sn	Zn	Zr	Units
36X CCZ	0.0016	0.0023	0.0010	0.0031	0.0045	0.0076	0.049	50 mm Ø x 17 mm
37X 218	0.0014	0.0025	0.007	0.58	0.015	0.027	.	38 mm Ø x 17 mm
36X 274	0.0011	0.0021	0.0035	0.594	0.0140	0.0395	<0.005	46 mm Ø x 17 mm
37X 226	0.0022	(0.001)	0.0005	3.55	0.0030	2.82	(0.0002)	57 mm Ø x 17 mm
36X CCR1	.	0.002	0.002	0.01	<0.005	0.003	0.11	45 mm Ø x 20 mm

CRM LOW ALLOY

SOLD IN SET/5 ONLY

38 mm Ø x 35 mm

Number	Bi	Cu	Fe	Ni	P	Pb	Sb	Sn	Zn
NCS HS45709-1	0.00098	93.7	0.26	1.97	0.0063	0.067	0.0023	0.104	3.9
NCS HS45709-2	0.0018	94.6	0.196	1.59	0.0085	0.053	0.0043	0.334	3.25
NCS HS45709-3	0.037	95.3	0.15	1.19	0.0148	0.038	0.0064	0.579	2.68
NCS HS45709-4	0.0058	96	0.083	0.8	0.0192	0.025	0.0087	0.841	2.24
NCS HS45709-5	0.0078	96.8	0.03	0.4	0.0252	0.011	0.0109	1.09	1.59

CRM CADMIUM ALLOY

30 mm Ø x 15 mm

Number	Ag	Cd	Sn	Zn
36X CCD1	(0.0014)	1.01	<0.001	(0.0017)
36X CCD2	(0.0012)	1.18	0.200	(0.0019)
36X CCD3	(0.0011)	1.10	0.473	(0.0018)

BERYLLIUM-COBALT ALLOY

BS: 38 mm Ø x 12 mm

CBC2: 40 mm Ø x 17 mm

CBC5: 40 mm Ø x 15 mm

CTIF: 60 mm Ø x 5 mm

IARM: 31 mm Ø x 2 or 18 mm

Number	Be	Co	Cu	Ag	Al	Cr	Fe	Mn	Ni	Pb	Si	Sn	Zn	C	P
CRM wrought															
IARM 71B	1.84	0.21	97.7	(0.002)	0.040	0.0030	0.042	0.0010	0.021	0.006	0.060	0.005	0.005	0.003	0.004
36X CBC 2	0.450	2.47	96.96	0.0020	0.0231	0.0044	0.0208	0.0015	0.0472	0.0099	0.0205	0.009	0.0103	.	.
36X CBC 5	0.32	0.14	97.6	.	0.021	0.006	0.028	(0.001)	1.69	0.009	0.036	0.01	0.038	.	.
RM wrought															
BS 172 Be-1	1.89	0.206	97.68	.	(0.02)	0.003	0.052	0.001	0.039	(0.002)	0.055	0.033	0.007	.	.
RM chill cast - typical analysis															
CTIF 4868	2.92	0.246	96.15	.	0.044	.	0.203	0.019	0.038	0.023	0.211	0.022	0.056	.	.
CTIF 4584	2.53	0.04	97.05	.	0.033	.	0.120	(0.002)	0.015	(0.002)	0.166	0.022	0.022	.	.
CTIF 4872	1.93	0.400	97.00	.	0.059	(0.04)	0.106	0.008	0.103	0.019	0.16	0.044	0.119	.	.
CTIF 4766	1.58	0.64	96.83	.	0.027	(0.2)	0.165	0.007	0.203	0.053	0.11	0.100	0.070	.	.
CTIF 4583	0.84	(0.002)	96.35	.	0.029	.	(0.15)	0.064	2.02	0.084	0.08	0.25	0.094	.	.
CTIF 4640	0.69	1.36	95.67	0.495	0.099	(0.1)	0.125	0.063	1.07	0.056	0.166	0.053	0.055	.	.
CTIF 4873	0.17	0.98	98.40	.	0.094	0.105	0.078	(0.002)	0.049	(0.003)	0.088	(0.007)	(0.003)	.	.
CTIF 4594	0.129	2.96	95.55	0.978	0.029	0.066	(0.12)	.	0.055	(0.005)	0.114	(0.003)	(0.006)	.	.
Number	Be	Co	Cu	Ag	Al	Cr	Fe	Mn	Ni	Pb	Si	Sn	Zn	C	P

RM CONTINUOUS CAST COPPER ALLOY

38 mm Ø x 12 mm

informational values

Number	Grade	As	Cu	Fe	Mn	Ni	P	Pb	S	Sb	Sn	Zn	Ag	Al	Si
BS 932E	CDA 932	0.048	82.15	0.029	0.0001	0.16	0.022	7.3	0.053	0.145	7.33	2.86	0.007	<0.001	<0.005

GUN METAL

C, CURM: 50 mm Ø x 10 - 12 mm

GM24: wrought 44 mm Ø x 17 mm

GM29: wrought 33 mm Ø x 19 mm

other GM: chill cast 40-42 mm Ø x 15-18 mm

Number	Zn	Sn	Pb	Ni	Fe	Cu	Ag	Al	As	Bi	Cr	Mn	P	S	Sb	Si
CRM																
33X GM4	7.24	2.50	4.96	2.00	0.0616	83.04	0.0120	0.005	0.0116	0.009	(0.0003)	0.0012	0.0108	0.143	0.022	(0.0013)
33X GM8	6.21	4.03	6.78	0.115	0.298	82.3	0.105	0.0067	(0.0051)	0.0138	<0.001	0.0010	0.0213	0.0055	<0.002	(0.0010)
33X GM5 *	4.21	5.00	4.98	0.804	0.080	84.66	0.0093	(0.001)	0.0148	0.080	.	0.0008	0.0107	0.043	0.086	0.0013
33X GM6	2.99	7.31	3.11	1.069	0.131	84.46	0.0114	0.136	0.175	0.037	0.0019	0.0912	0.0566	0.070	0.258	0.124
33X GM7	2.29	9.97	0.97	0.500	0.0278	85.49	0.0574	0.051	0.133	0.085	0.0146	0.151	0.034	0.0139	0.111	0.065
RM typical analysis																
CURM 71.32	6.52	6.46	4.43	0.70	0.35	80.48	0.34	0.12	0.25	0.051	0.05	0.046	0.016	0.08	0.26	0.022
CURM 71.33	4.75	4.91	5.01	1.00	0.003	83.91	0.0014	<0.001	<0.001	<0.002	<0.002	<0.0005	0.232	<0.001	<0.002	<0.002
CURM 71.31	4.27	4.38	6.44	2.07	0.098	82.30	0.052	0.045	0.11	0.027	<0.01	0.010	0.060	0.050	0.11	0.006
33X GM29	4.23	6.12	0.050	0.0289	0.0102	89.36	0.0026	(0.0004)	0.0017	0.0019	(0.0004)	(0.0005)	0.138	0.0024	0.0015	0.0027
33X GM24	3.67	3.85	3.35	0.0087	0.0083	88.88	0.0046	(0.0001)	0.0010	0.0009	(0.0013)	<0.0005	0.190	0.003	0.0012	0.0028
C71.34	1.55	8.20	2.47	<0.01	0.29	.	0.025	0.007	0.18	0.029	0.03	0.05	0.020	0.16	0.071	0.04
Number	Zn	Sn	Pb	Ni	Fe	Cu	Ag	Al	As	Bi	Cr	Mn	P	S	Sb	Si

* 33X GM5 also contains Co: 0.0399

CRM MANGANESE ALLOY

AVAILABLE IN SET/6 ONLY

40 mm Ø x 13 mm

Number	Ag	As	Fe	Mn	Ni	P	Pb	Sb	Si	Sn	Zn
IMN CK1	0.012	0.013	0.029	1.06	0.44	0.0011	0.0021	0.0049	0.049	0.13	0.24
IMN CK2	0.0094	0.010	0.11	1.51	0.38	0.0022	0.0062	0.0015	0.091	.	0.14
IMN CK3	0.0066	0.0095	0.17	1.78	0.27	0.0043	0.0098	0.0026	0.033	0.075	0.095
IMN CK4	0.0041	0.0055	0.26	1.91	0.13	0.0056	0.017	0.0041	0.0025	0.042	0.065
IMN CK5	.	0.0015	0.29	2.30	0.011	.	.	0.0051	0.011	0.0048	0.033
IMN CK6	0.0012	0.0039	0.40	2.64	0.073	0.013	.	0.0052	0.21	0.025	0.034

CRM MAGNESIUM ALLOY

cast

36 - 40 mm Ø x 15 mm

Number	Ag	Al	Co	Cr	Mg	P	S
36X CMG12	0.192	0.0076	0.089	0.074	1.16	0.09	0.0020
36X CMG11	0.151	0.043	(0.001)	<0.0005	0.771	0.079	0.0019
36X CMG10	0.076	0.024	0.042	0.038	0.379	0.027	0.0024

CUPRO-NICKEL

= class, where 1 = CRM and 2 = RM

#	Number	Ni	Cr	Fe	Mn	Nb	Zn	Cu	Al	C	Co	Mg	P	Pb	S	Si	Sn
1	36X CN6	33.46	1.10	0.878	0.451	0.51	0.026	63.34	(0.0023)	0.0180	0.0440	.	0.031	0.0066	0.0109	0.144	0.0307
1	36X CN5	32.26	0.118	0.791	0.090	0.441	0.232	65.1	0.006	0.0253	0.018	0.014	0.041	0.027	0.074	0.80	0.015
1	36X CN8	30.61	1.28	0.86	0.881	0.18	0.159	65.51	0.0009	0.0225	0.104	0.021	0.046	0.095	0.022	0.132	0.046
2	BS 715A	30.22	.	0.61	0.82	.	0.10	68.0	(0.01)	0.03	.	.	0.006	(0.007)	0.001	0.10	0.008
1	36X CN7	29.95	1.51	1.021	0.659	0.58	0.203	65.58	.	0.0106	0.108	0.0041	(0.021)	0.028	0.0151	0.304	0.039
2	C62.11	29.9	.	<0.005	0.33	.	.	.	.	.	<0.002	<0.002	.	<0.002	<0.002	0.32	.
1	IARM 85B	29.60	.	0.53	0.53	.	0.12	.	(<0.01)	0.011	0.034	.	0.007	0.005	0.010	(<0.01)	0.014
1	36X CN10	29.3	1.59	4.28	0.262	0.89	0.026	61.01	1.23	0.064	0.081	0.0026	(0.020)	0.004	0.055	1.02	(0.009)
1	36X CN9	28.00	2.11	1.25	1.156	1.21	0.014	64.2	0.022	0.011	0.018	.	0.034	0.04	0.009	0.61	(0.003)
2	C62.15	27.5	.	1.5	0.43	.	.	.	.	.	0.008	<0.002	.	0.01	0.009	0.06	.
1	36X CN4	27.49	0.022	2.67	0.164	0.0139	0.041	69.48	0.0013	0.0053	0.052	(0.0004)	0.0079	(0.023)	0.0076	0.025	0.009
2	C62.14	20.8	.	0.54	0.76	.	.	.	.	.	0.05	0.002	.	0.008	0.03	0.03	.
1	36X CN3	19.95	0.050	1.07	0.920	0.15	0.80	76.3	0.0055	0.035	0.072	0.012	0.032	0.053	0.029	0.490	0.063
1	36X CN2	15.47	0.240	1.70	1.26	(0.032)	0.0358	80.78	0.005	0.004	0.264	0.0006	0.015	0.048	0.035	0.044	0.061
2	C62.13	13.9	.	0.93	1.2	.	.	.	.	.	0.04	0.006	.	0.01	0.05	0.08	.
2	BS 706B	10.9	.	1.56	0.61	.	0.054	87.00	<0.003	(0.004)	0.005	.	0.009	0.006	0.009	<0.002	0.006
2	BS 706	10.49	.	1.61	0.55	.	0.08	(87.3)	<0.005	(0.003)	.	.	0.005	<0.01	0.015	<0.01	0.016
2	BS 706A	10.18	.	1.30	0.66	.	0.13	87.80	(0.002)	0.004	0.007	.	0.006	0.008	0.012	<0.005	0.011
2	CTIF CuNi 10	10.08	.	1.69	0.70	.	0.033	87.4	.	0.009	.	.	.	0.0027	(0.002)	.	(<0.01)
1	IARM 84B	10.03	.	1.30	0.62	.	0.082	87.9	(0.002)	(0.01)	0.013	.	0.004	0.008	0.008	0.01	0.014
1	BAM 367	9.72	.	1.443	0.723	.	0.0715	87.88	.	.	0.0498	0.0347	0.0124	0.0298	.	.	0.0105
1	36X CN1	9.31	0.118	2.41	2.27	(0.019)	0.331	85.3	<0.001	0.008	0.131	(0.0003)	0.008	0.008	0.010	0.058	0.006
2	C62.12	8.3	.	1.5	1.8	.	.	(72.4)	.	.	<0.002	0.002	.	0.02	0.08	0.04	.

Number	Ag	As	B	Be	Bi	Cd	Sb	Ti	Zr	Units
36X CN6	.	.	(0.016)	.	0.0058	.	.	0.0066	.	40 mm Ø x 15 mm
36X CN5	.	.	0.0091	0.011	.	.	.	.	.	40 mm Ø x 15 mm
36X CN8	.	.	0.0025	.	0.103	.	.	.	.	40 mm Ø x 15 mm
BS 715A	.	(0.0014)	.	.	.	.	(0.0003)	.	.	38 mm Ø x 12 mm
36X CN7	.	.	(0.004)	.	(0.014)	0.0024	.	(0.037)	(0.003)	40 mm Ø x 17 mm
C62.11	50 mm Ø x 10-12 mm
IARM 85B	(<0.01)	.	.	31 mm Ø x 2 or 18 mm
36X CN10	.	.	0.0029	0.014	.	.	.	0.03	.	40 mm Ø x 15 mm
36X CN9	0.019	.	.	0.77	0.37	40 mm Ø x 15 mm
C62.15	50 mm Ø x 10-12 mm
36X CN4	0.0077	.	.	(0.004)	.	40 mm Ø x 17 mm
C62.14	50 mm Ø x 10-12 mm
36X CN3	.	.	0.0064	0.0163	.	.	.	.	.	40 mm Ø x 15 mm
36X CN2	0.0045	.	.	0.0102	.	40 mm Ø x 17 mm
C62.13	50 mm Ø x 10-12 mm
BS 706B	.	<0.0005	.	.	.	.	<0.002	.	.	38 mm Ø x 12 mm
BS 706	.	<0.005	.	.	.	.	<0.005	.	.	38 mm Ø x 12 mm
BS 706A	.	<0.0005	.	.	.	.	0.0006	.	.	38 mm Ø x 12 mm
CTIF CuNi 10	40 mm Ø x 18 mm
IARM 84B	0.005	.	.	.	.	.	(0.002)	.	.	31 mm Ø x 2 or 18 mm
BAM 367	40 mm Ø x 30 mm
36X CN1	.	.	(0.008)	(0.001)	.	.	.	.	.	40 mm Ø x 15 mm
C62.12	50 mm Ø x 10-12 mm

RM CUPRO-NICKEL

typical analysis

60 mm Ø x 5 mm

Number	Ni	Fe	Mn	Zn	Cu	Al	Bi	C	Cd	Mg	Nb	P	Pb	S	Si	Sn	Te
CTIF CN33	29.75	1.6	0.45	0.37	67.1	(0.01)	0.0212	0.02	0.006	<0.06	0.06	0.02	0.053	0.013	0.47	(0.003)	0.0224
CTIF CN1	12.3	1.1	0.8	0.2	85.0	(0.003)	.	(0.002)	.	.	(0.1)	.	0.085	0.046	(0.05)	(0.005)	.
CTIF CN4	11.2	1.8	1.5	0.07	84.0	(0.02)	.	(0.001)	.	.	0.7	.	0.006	(0.001)	(0.01)	0.058	.
CTIF CN3 *	9	0.7	1.5	0.1	87.5	0.1	.	0.05	.	.	0.6	.	0.02	0.01	0.2	<0.01	.
CTIF CN2	7.80	1.68	1.19	0.515	88.40	(0.012)	.	(0.008)	.	.	(0.007)	.	0.055	0.028	0.26	(0.0065)	.

* Provisional Analysis

NICKEL SILVER ALLOY

34X NS1, 3, 4: 42 mm Ø x 17-18 mm

other 34X: 40 mm Ø x 15 mm

C: 50 mm Ø x 10 - 12 mm

Number	Ni	Zn	Cu	Fe	Mg	Mn	P	Pb	S	Si	Sn	Ag	Al	C	Co	Cr
CRM	chill cast															
34X NS5	19.4	24.2	54.3	0.56	0.0015	0.096	0.044	1.13	0.017	0.051	0.124	.	.	.	.	.
34X NS4	16.96	15.58	66.71	0.351	<0.0001	0.0100	0.0099	0.152	0.012	(0.0009)	0.020	0.0298	.	.	0.222	0.0005
34X NS3	14.86	17.99	66.30	0.201	0.0011	0.129	0.013	0.155	0.063	0.018	0.031	0.111	0.038	0.014	0.102	0.0022
34X NS2	13.12	26.0	60.6	0.065	<0.0005	0.145	0.005	0.057	0.018	0.06	0.009	.	.	.	.	.
34X NS1	7.81	33.41	58.63	0.064	0.0020	0.0009	0.0140	0.0141	(0.0004)	(0.002)	0.0110	0.069	(0.003)	(0.0018)	0.052	0.0003
RM	cast typical analysis															
C65.30	19.8	Rem	55.0	1.0	0.01	0.09	0.05	0.25	0.04	0.10	0.04	.	.	.	.	.
C65.29	16.8	Rem	58.9	0.39	<0.01	0.17	0.07	0.11	0.06	0.02	0.08	.	.	.	.	.
C65.28	15.3	Rem	56.9	0.13	0.01	0.57	0.06	0.06	0.03	0.01	0.15	.	.	.	.	.
C65.27	13.9	Rem	57.0	0.26	<0.01	0.13	0.02	0.04	0.03	<0.002	0.01	.	.	.	.	.
C65.26	11.9	Rem	56.7	<0.01	<0.01	0.70	0.11	0.06	0.0006	<0.002	<0.01	.	.	.	.	.
Number	Ni	Zn	Cu	Fe	Mg	Mn	P	Pb	S	Si	Sn	Ag	Al	C	Co	Cr

CRM NICKEL SILVER ALLOY

cast

SOLD IN SET/5 ONLY

35 mm x 45 mm x 30 mm

Number	Ni	Zn	As	Bi	Fe	Mg	Mn	Pb	Sb	Si
GBW 02105	(14.77)	(20.77)	0.013	0.0070	0.85	0.0071	0.068	0.0072	0.0118	0.033
GBW 02106	(14.96)	(21.20)	0.0070	0.0040	0.64	0.018	0.15	0.0098	0.0063	0.43
GBW 02107	(14.85)	(20.82)	0.034	0.0021	0.45	0.029	0.205	0.020	0.0021	0.140
GBW 02108	(14.86)	(21.08)	0.0041	0.0014	0.231	0.058	0.505	0.030	0.0036	0.281
GBW 02109	(14.11)	(21.17)	0.055	0.00074	0.112	0.101	0.82	0.049	0.0015	0.089

CRM SPINODAL NICKEL-TIN ALLOY

40 mm Ø x 15 mm

Number	Ni	Sn	Fe	Zn	Cu	Ag	Al	B	Bi	Co	Mg	Mn	Pb	S	Sb	Si
36X SP2	15.72	8.92	(0.09)	0.029	74.91	0.0181	0.0003	0.0005	(0.0027)	0.119	0.0002	0.0019	0.026	0.0030	0.006	(0.0023)
36X SP1	8.33	5.75	0.45	0.344	84.90	0.005	0.0020	0.0007	0.0039	0.057	.	0.084	0.0115	0.005	0.0177	0.004

RM CHILL CAST PHOSPHORUS DEOXIDIZED COPPER

typical analysis

CURM: 50 mm Ø x 10 - 12 mm

35X: 40 mm Ø x 15 mm

Number	P	Cu	Ag	Al	As	Bi	Co	Fe	Mn	Ni	Pb	Sb	Si	Sn	Zn
CURM 09.01	0.151	99.82	0.011	<0.0005	<0.001	<0.0003	<0.0003	0.0019	<0.0003	<0.0003	<0.0005	<0.0005	<0.001	<0.001	0.0008
CURM 09.02	0.078	99.90	0.0055	<0.0005	<0.001	<0.0005	<0.0005	0.0042	<0.0005	<0.0005	<0.001	<0.0005	<0.002	<0.001	<0.001
CURM 09.03	0.056	99.92	0.012	<0.0003	<0.001	<0.0003	<0.0003	0.0033	<0.0003	<0.0003	<0.0005	<0.0005	<0.001	<0.001	<0.001
CURM 09.04	0.0174	99.96	0.0033	<0.0005	<0.001	<0.0005	<0.0005	0.0047	<0.0005	<0.0005	<0.001	<0.0005	<0.002	<0.001	<0.001

RM PHOSPHORUS ALLOY

cast

SOLD IN SET/4 ONLY

40 mm Ø x 25 mm

Number	P	As	Bi	Fe	Ni	Pb	Sn	Sb	Se	Te	Zn	Cu
IMN CO2	11.60	0.0050	0.0049	0.096	0.013	0.070	0.35	0.065	(0.0045)	(0.0055)	0.15	REM
IMN CO3	8.56	0.011	0.015	0.11	0.10	0.10	0.037	0.14	(0.0073)	(0.0080)	0.24	REM
IMN CO4	5.54	0.016	0.0086	0.29	0.25	0.29	0.13	0.092	(0.010)	(0.012)	0.029	REM
IMN CO5	9.45	0.0023	0.00095	0.11	0.0082	0.0044	0.55	0.034	(0.0015)	(0.0023)	0.061	REM

CRM SEBILOY / ENVIROBRASS

chill cast

32X SEB6: 40 mm Ø x 15 mm

32X SEB4, 7: 42 mm Ø x 17 mm

other 32X: 40 mm Ø x 17 mm

IARM: 31 mm Ø x 2 or 18 mm

Number	Sn	Zn	Bi	Se	Al	As	B	Cd	Fe	Co	Mn	Ni	P	Pb	S	Si	Sb	Cu
32X SEB2	9.34	3.73	4.36	0.026	.	0.0094	.	.	0.078	0.0121	.	0.028	0.013	0.424	.	.	0.0120	(81.8)
32X SEB4	9.26	8.60	2.65	0.105	.	0.0012	0.0021	0.0004	0.366	0.48	.	0.0091	(0.006)	0.011	.	.	0.0056	78.6
32X SEB6	7.14	4.55	0.615	0.322	.	0.083	.	0.0036	0.151	0.231	.	0.860	0.0118	0.0463	.	.	0.235	85.66
32X SEB5	5.28	6.64	1.17	0.512	.	0.0121	0.0028	0.0067	0.360	0.0048	.	0.308	0.183	0.0149	.	.	0.0344	85.5
32X SEB1	4.23	8.79	5.31	0.97	.	0.043	.	(0.0002)	0.0293	0.0089	.	0.101	0.0054	0.209	0.0011	.	0.355	79.6
32X SEB7	3.20	4.42	3.58	1.19	.	0.038	.	0.0074	0.074	0.119	.	1.165	0.0206	0.343	0.067	.	0.262	85.46
32X SEB3	2.07	0.85	(5.4)	1.42	.	0.0161	0.0021	0.0016	0.082	0.025	.	1.52	0.040	0.109	.	.	0.054	(88.4)
provisional analysis																		
IARM 226A	5.14	4.76	1.71	0.94	0.002	0.005	.	.	0.055	.	0.003	0.54	0.005	0.043	0.005	0.002	0.006	86.8
IARM 227A	5.12	4.71	2.29	1.21	0.002	0.005	.	.	0.06	(0.001)	.	0.53	0.004	0.04	0.005	0.002	0.01	86.0
IARM 228A	4.10	4.06	1.52	0.68	0.002	0.005	.	.	0.05	(0.002)	0.002	0.46	0.03	0.02	0.004	0.002	0.02	89.1
Number	Sn	Zn	Bi	Se	Al	As	B	Cd	Fe	Co	Mn	Ni	P	Pb	S	Si	Sb	Cu

RM SILVER ALLOY

31 mm Ø x 2 or 18 mm

Number	Ag	C	P	S	Zr
IARM 159A	3.48	(0.002)	(<0.01)	(<0.01)	.
IARM 160A	3.03	0.003	(0.004)	(<0.003)	0.40

Al, Co, Cr, Fe, Mn, Ni, Pb, Si, Sn, and Zn: (<0.01)

RM COPPER-TIN BINARIES

cast typical analysis

Number	Sn	Units
32X 14957	9.30	40 mm Ø x 15 mm
C 11.04	9.3	50 mm Ø x 10 - 12 mm
32X 14956	7.35	40 mm Ø x 15 mm
C 11.03	7.3	50 mm Ø x 10 - 12 mm
C 11.02	5.4	50 mm Ø x 10 - 12 mm
32X 14955	5.25	40 mm Ø x 15 mm
C 11.01	3.3	50 mm Ø x 10 - 12 mm
32X 14954	3.15	40 mm Ø x 15 mm
32X 14953	1.37	40 mm Ø x 15 mm

BRASS

BAM: 40 mm Ø x 30 mm BS CC: 32 mm Ø x 17 mm others: 38 mm Ø x 12 mm

Number	CDA#	Zn	Cu*	Al	As	C	Fe	Mg	Mn	Ni	P	Pb	S	Sb	Si	Sn
CRM BAM 368		bal	77.049	1.972	0.0246	.	0.0193	0.00621	0.0203	0.0258	0.00899	0.01313	(0.1185)	.	.	0.0147
RM BS 464	464	39.0	[60.2]	<0.005	<0.005	(<0.002)	0.08	.	<0.005	0.02	0.009	0.034	(0.001)	0.007	<0.005	0.61
BS 464A	464	38.73	60.6	(0.001)	<0.002	(0.0006)	0.013	.	0.0002	0.004	0.012	0.056	0.001	(0.001)	<0.01	0.62
BS 482A	482	38.8	60.0	(0.003)	<0.002	(0.0015)	0.020	.	<0.002	(0.007)	<0.003	0.50	<0.002	0.0012	(0.002)	0.65
BS 675	675	39.7	[58.5]	<0.01	<0.005	(0.0004)	0.73	.	0.11	<0.01	<0.01	<0.01	(0.0013)	<0.01	<0.02	0.92
BS 675A	675	39.1	58.5	<0.002	0.003	(0.0007)	1.12	.	0.32	0.019	0.010	0.074	(0.0005)	0.0011	(0.005)	0.80
BS 857B-1	857	34.91	61.3	0.35	(0.001)	.	0.30	.	0.003	0.61	0.004	1.22	.	(0.002)	0.004	1.14

* Cu in brackets, [], calculated by difference

RM BRASS

chill-cast

45 mm Ø x 25 mm

Number	Cu	Al	As	Bi	Cd	Fe	Mn	Ni	Pb	Sb	Si	Sn	Zn
PB MS10	84.26	.	0.014	0.37	.	0.28	0.016	0.025	0.020	(0.009)	0.12	0.052	REM
PB MS9	82.87	.	0.026	0.036	0.11	0.17	.	0.14	0.12	0.052	0.022	0.92	REM
PB MS8	67.61	0.14	0.089	0.064	.	0.10	0.039	0.95	0.20	0.043	0.92	0.28	REM
PB MS3	65.60	0.66	0.20	0.21	0.28	0.046	0.046	0.057	1.01	0.19	0.10	1.57	REM
PB MS1	64.44	0.045	.	.	0.039	0.090	0.084	0.17	0.48	.	0.20	1.29	REM
PB MS2	64.44	0.15	.	(0.031)	.	0.063	1.00	0.34	0.64	.	0.079	0.64	REM
PB MS6	64.26	1.01	.	.	.	0.43	0.61	0.58	0.068	.	0.68	0.20	REM

RM BRASS

chill cast

typical analysis

60 mm Ø x 5 mm

Number	Zn	Cu	Al	As	Be	Fe	Ni	Mg	Mn	P	Pb	Sb	Si	Sn
CTIF L 7	42.45	55.6	0.308	.	.	0.031	0.020	.	0.62	.	0.71	.	0.13	0.038
CTIF L 1-1	39.7	59.60	0.015	.	.	0.017	0.106	.	.	0.080	0.062	.	0.36	0.046
CTIF L 2	35.55	61.55	0.485	.	.	0.216	0.71	.	0.350	.	0.408	.	0.202	0.48
CTIF L 4-1	34.55	61.75	0.100	.	.	0.466	0.227	.	0.109	.	2.017	.	0.12	0.693
CTIF L 3	32.70	62.35	0.91	.	.	0.36	0.90	.	0.205	.	1.02	.	0.034	1.50
CTIF L 5-1	31.5	60.9	0.64	0.13	.	(1.0)	0.494	.	0.50	(0.15)	2.99	0.174	(0.47)	0.88
CTIF L 6	30.26	66.55	0.139	.	.	0.085	1.21	.	0.055	.	0.205	.	1.25	0.250
CTIF L 23	17.90	81.20	.	0.051	.	0.246	0.033	.	.	0.05	0.058	.	0.280	0.20
CTIF UZ 52	16.90	81.18	.	.	0.014	0.32	0.084	0.04	0.002	0.068	0.11	0.08	0.12	1.06
CTIF UZ 53	16.67	82.60	.	0.01	.	0.255	0.025	.	<0.001	0.055	0.025	.	0.145	0.205
CTIF L 21	15.40	82.50	.	0.103	.	0.086	0.156	.	0.004	0.05	0.209	0.10	0.036	1.5
CTIF L 22	15.0	84.3	<0.02	<0.006	.	0.20	0.10	.	<0.01	.	0.10	.	<0.05	1.0
CTIF L 20	13.10	85.55	0.008	0.122	.	0.115	0.205	.	0.043	.	0.27	.	0.035	0.56

CRM BRASS

SOLD IN SET/5 ONLY

38 mm Ø x 35 mm

Number	Zn	Cu	Al	As	Bi	Fe	Mn	Ni	P	Pb	Sb	Sn
NCS HS45710-1	29.72	69.9	0.0022	0.007	0.00087	0.026	0.0081	0.18	0.0043	0.011	0.0021	0.182
NCS HS45710-2	27.38	71.2	0.068	0.024	0.0019	0.089	0.076	0.6	0.0112	0.041	0.0044	0.593
NCS HS45710-3	25.26	72.1	0.147	0.04	0.0037	0.154	0.143	0.99	0.0159	0.07	0.0066	0.996
NCS HS45710-4	23.16	73.2	0.249	0.056	0.0057	0.218	0.255	1.39	0.023	0.103	0.0088	1.41
NCS HS45710-5	21.26	74	0.344	0.085	0.008	0.274	0.34	1.8	0.03	0.135	0.0108	1.82

CRM BRASS
SOLD IN SET/7 ONLY
wrought 40 mm Ø x 18 mm

Number	Cu	Zn
IMN MB 1	60.66	39.39
IMN MB 2	67.17	32.80
IMN MB 3	73.26	26.67
IMN MB 4	78.77	21.20
IMN MB 5	84.25	15.63
IMN MB 6	90.07	9.95
IMN MB 7	95.00	4.99

CRM BRASS
SOLD IN SET/6 ONLY

Number	Cu	As	Bi	Fe	Mn	Ni	P	Pb	Sb	Si	Sn
IMN MD 1	67.92	0.0015	0.0026	0.043	0.097	0.021	0.0082	0.19	0.0096	0.078	0.0013
IMN MD 2	68.99	0.072	0.0025	0.18	0.082	0.050	0.0061	0.015	0.0011	0.059	0.0054
IMN MD 3	69.43	0.055	0.0018	0.085	0.062	0.070	0.0043	0.010	0.012	0.097	0.010
IMN MD 4	71.53	0.038	0.00053	0.018	0.015	0.091	.	0.054	0.0038	0.0066	0.21
IMN MD 5	71.06	0.018	(0.00004)	0.081	0.017	0.064	0.00089	0.0023	0.0065	0.016	0.021
IMN MD 6	70.77	(0.00022)	0.000044	.	0.00073	0.039	.	0.044	0.00058	.	0.019

40 mm Ø x 12 mm

CRM TRACE ELEMENTS IN BRASS

wrought IMN MF AVAILABLE INDIVIDUALLY, WC 1 - 6 SOLD IN SET/6 ONLY

40 mm Ø x 12 mm

Number	Cu	Al	As	Bi	Fe	Mn	Ni	P	Pb	Sb	Si	Sn	Zn
IMN MF 5	65.17	0.0098	.	0.00024	0.0064	0.11	0.14	0.0097	0.22	0.0063	0.070	0.0022	Rem
IMN WC 1	75.10	0.0034	0.0043	0.0028	0.031	.	.	0.015	0.046	0.0034	0.26	0.0032	Rem
IMN WC 2	75.05	0.0016	0.0024	0.0020	0.015	.	.	0.011	0.031	0.0023	0.41	0.0025	Rem
IMN WC 3	75.28	0.0018	0.0011	0.00093	0.021	.	.	0.0058	0.0085	0.0010	0.89	0.0011	Rem
IMN WC 4	75.32	0.00096	.	0.00047	0.0067	.	.	0.0048	0.0051	0.00080	0.76	0.0010	Rem
IMN WC 5	75.03	0.00084	0.0022	0.0019	0.18	.	.	.	0.0055	0.0011	0.48	0.0044	Rem
IMN WC 6	75.32	0.0019	0.00097	0.0012	0.051	.	.	0.0037	0.0036	0.00057	0.58	0.0028	Rem

TRACE ELEMENTS IN BRASS

Number	Cu	Zn	Al	As	B	Bi	C	Fe	Mn	Ni	Pb	Sb	Si	Sn	Units
CRM	chill-cast														
31X TB4	65.00	34.86	(0.0004)	0.0065	0.0021	0.0056	0.0018	0.0229	0.0021	0.0114	0.0225	0.0064	(0.0027)	0.0356	42 mm Ø x 17-18 mm
31X TB3	62.98	36.56	0.0247	0.0496	0.0004	0.0214	0.0023	0.032	0.0350	0.0401	0.110	0.026	0.0226	0.075	42 mm Ø x 17-18 mm
31X TB2	61.97	37.16	0.084	0.101	.	0.031	0.0040	0.072	0.088	0.093	0.107	0.051	0.042	0.105	42 mm Ø x 17-18 mm
RM	chill cast typical analysis														
31X TB1	62.0	.	0.20	0.15	.	0.05	.	0.05	0.30	0.20	0.20	0.10	0.10	0.20	40 mm Ø x 15 mm
RM	cast typical analysis														
C38.01	61.0	Rem	0.003	0.03	.	<0.001	.	0.01	0.009	0.01	0.20	0.02	<0.001	0.20	50 mm Ø x 10-12 mm
C38.02	61.0	Rem	0.005	0.06	.	0.005	.	0.09	0.14	0.03	0.10	0.06	0.01	0.09	50 mm Ø x 10-12 mm
C38.03	61.0	Rem	0.06	0.08	.	0.008	.	0.05	0.07	0.13	0.05	0.08	0.07	0.05	50 mm Ø x 10-12 mm
C38.04	61.0	Rem	0.02	0.04	.	0.008	.	0.04	0.22	0.06	0.02	0.12	0.12	0.02	50 mm Ø x 10-12 mm
C38.05	61.0	Rem	0.12	0.01	.	0.01	.	0.008	0.02	0.18	0.01	0.01	0.14	0.01	50 mm Ø x 10-12 mm
C38.06	61.0	Rem	<0.001	<0.001	.	<0.001	.	<0.005	<0.001	<0.005	0.002	<0.002	<0.001	<0.005	50 mm Ø x 10-12 mm

Number	Cu	Zn	Al	As	B	Bi	C	Fe	Mn	Ni	Pb	Sb	Si	Sn	Units
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ALUMINUM BRASS

Number	Al	Zn	Cu	As	Bi	Fe	Mn	Ni	P	Pb	Sb	Si	Sn	Units
CRM														
BAM 388	4.972	4.81	89.27	.	.	0.0303	0.0512	0.00736	.	0.000969	.	.	0.857	40 mm Ø x 30 mm
RM	cast		typical analysis											
CURM 43.01	2.75	22.44	74.36	0.118	<0.002	0.008	0.064	0.121	.	<0.002	<0.001	0.063	0.116	50 mm Ø x 10-12 mm
CURM 43.02	2.40	20.82	76.21	0.083	<0.001	0.128	0.035	0.068	.	0.064	<0.001	0.038	0.060	50 mm Ø x 10-12 mm
C43.03	1.6	Rem	79.7	<0.005	<0.005	0.07	<0.002	<0.005	.	0.10	<0.01	<0.005	<0.005	50 mm Ø x 10-12 mm
RM	chill cast		typical analysis											
CTIF LH 1-1	7.99	16.75	65.05	.	.	4.48	5.18	0.0944	0.079	0.022	0.081	0.205	(0.007)	60 mm Ø x 5 mm
CTIF LH 2	6.20	21.95	61.98	.	.	2.98	3.65	3.00	.	0.080	.	0.086	0.055	60 mm Ø x 5 mm
CTIF LH 6-1	6.09	18.98	63.18	.	.	(3.1)	4.54	3.19	.	0.25	.	0.20	0.257	60 mm Ø x 5 mm
CTIF LH 5-1	3.65	25.72	66.0	.	.	1.26	1.37	1.57	.	0.110	.	0.114	0.141	60 mm Ø x 5 mm
CTIF LH 7	3.16	(26.85)	63.40	.	.	(2.35)	2.96	0.70	.	0.327	.	0.055	0.227	60 mm Ø x 5 mm
CTIF LH 10	2.66	28.90	59.05	.	.	(1.0)	3.57	1.49	.	1.76	.	1.30	0.203	60 mm Ø x 5 mm
CTIF LH 13	2.00	31.8	55.75	.	.	(2.00)	3.14	3.22	.	0.67	.	0.21	1.19	60 mm Ø x 5 mm
CTIF LH 12	1.13	33.15	62.75	.	.	(1.2)	0.125	0.505	.	0.21	.	(0.06)	0.83	60 mm Ø x 5 mm
CTIF LH 11	0.46	26.20	66.80	.	.	0.36	0.71	2.91	.	1.26	.	0.88	0.44	60 mm Ø x 5 mm
Number	Al	Zn	Cu	As	Bi	Fe	Mn	Ni	P	Pb	Sb	Si	Sn	Units

CRM BISMUTH BRASS

cast except BIB4, which is chill cast analysis listed in mass % except * which is mg/kg 40-42 mm Ø x 17-18 mm

Number	Bi	Zn	Cu	Al	As	B*	Cd*	Fe	Mn	Ni	P	Pb	S*	Sb	Se	Si	Sn
31X BIB4	0.980	36.89	60.88	0.358	.	8	5	0.148	0.0039	0.175	0.0064	0.091	(7)	0.0144	0.0162	0.0018	0.400
31X BIB3	4.05	32.46	62.48	0.0298	0.057	.	29	0.099	0.243	0.098	0.0175	0.149	(05)	0.0417	0.003	0.061	0.111
31X BIB1	2.03	37.06	59.13	0.125	0.0335	.	53	0.203	0.0112	0.309	0.014	0.284	(34)	0.0054	0.004	0.206	0.540
31X BIB2	0.921	33.85	62.05	0.411	0.084	.	20	0.379	0.0451	0.466	0.0358	0.0617	(14)	0.119	0.0142	0.322	1.186

RM CARTRIDGE BRASS

cast typical analysis listed in mass % 50 mm Ø x 10 - 12 mm

Number	Zn	Cu	Al	As	Bi	Cd	Cr	Fe	Mg	Mn	Ni	P	Pb	S	Sb	Sn	Si
CURM 48.01	32.6	66.98	<0.001	0.067	0.038	<0.0003	*	0.049	0.0008	<0.001	0.134	0.016	0.106	<0.001	0.047	<0.002	0.041
CURM 48.02	32.58	67.16	0.013	0.025	0.004	*	0.004	0.053	*	0.067	<0.001	0.012	0.084	0.007	0.037	0.035	0.010
CURM 48.05	31.0	68.69	<0.002	<0.001	*	<0.0003	*	0.066	*	0.016	0.117	0.007	<0.003	0.013	*	0.083	0.026
C48.03	Rem	70.4	0.003	0.04	0.006	.	0.001	0.01	0.003	0.04	0.02	<0.001	0.05	0.006	0.07	0.05	<0.001
C48.06	Rem	71.6	0.002	0.008	0.004	.	0.0006	0.01	0.001	0.006	0.11	0.002	0.02	0.006	0.006	0.02	0.006
CURM 48.04	26.99	72.68	<0.001	0.034	0.014	<0.0003	<0.002	0.008	0.0005	0.012	0.096	0.006	0.043	0.011	0.026	0.018	0.004

* For the above chart, * indicates a value of <0.0005

CRM LEADED BRASS

Number	Pb	Sn	Zn	Cu	Al	As	Bi	Co	Fe	Mn	Ni	P	Sb	Si
IARM 250A	7.2	2.46	9.7	80.2	(0.002)	.	0.02	(0.002)	0.17	<0.002	0.33	0.003	0.052	0.003
IARM 86C	5.03	4.37	5.38	84.6	0.002	<0.005	(0.01)	<0.005	0.24	0.002	0.27	0.003	0.143	0.003
33X RB1	5.02	2.137	7.95	83.25	0.0048	0.0030	0.0029	0.0558	0.928	0.0167	0.0539	0.020	0.432	0.063
33X RB2	3.85	3.19	9.14	82.67	0.0362	0.0211	0.101	0.0352	0.493	0.0028	0.255	0.0208	0.019	0.0116
BAM 375	2.90	0.2090	38.02	58.32	0.0270	0.0231	0.00686	0.01964	0.207	0.0222	0.1053	(0.00086)	0.0122	0.0211
31X 7835-1	2.79	0.421	33.48	62.67	0.012	0.0050	0.0339	0.0173	0.203	.	0.123	0.0465	0.0048	0.054
IARM 73B	2.71	0.15	35.3	61.5	0.001	(0.005)	(0.005)	(0.003)	0.17	(0.001)	0.059	0.003	0.007	(0.002)
31X 7835-2	2.08	0.202	32.88	64.34	0.199	0.047	.	.	0.077	.	0.0088	Temporarily Unavailable		
31X 7835-5	1.64	0.116	6.23	91.25	0.078	0.104	.	.	0.126	.	0.249	0.018	0.114	.
IARM 87B	1.58	0.78	36.1	60.9	0.20	0.007	0.003	0.007	0.29	0.006	0.095	0.008	0.014	0.004
31X 7835-6	1.498	0.080	38.05	59.67	0.546	0.0006	0.0026	0.0005	0.091	.	0.0173	<0.0005	0.0127	(0.001)
31X 7835-3	1.35	0.113	36.50	60.67	0.386	0.097	0.025	0.0070	0.381	.	0.253	0.0378	0.096	0.055
31X 7835-4	1.03	0.046	30.09	67.11	0.561	0.206	.	.	0.020	.	0.492	0.125	0.188	.

Number	Pb	Sn	Zn	Cu	Al	As	Bi	Co	Fe	Mn	Ni	P	Sb	Si
Number	Ag	B	C	Cd	Cr	Mg	S	Se	Te	Units				
IARM 250A	0.02	.	<0.005	.	<0.003	.	0.046	.	.	31 mm Ø x 2 or 18 mm				
IARM 86C	(0.02)	.	0.003	.	.	.	0.035	.	.	31 mm Ø x 2 or 18 mm				
33X RB1	0.0174	.	.	.	0.0013	0.0153	0.0044	.	.	chill cast 42 mm Ø x 17 mm				
33X RB2	0.0029	.	.	.	0.0017	0.0008	0.078	.	.	chill cast 42 mm Ø x 17 mm				
BAM 375	0.0166	.	.	0.00859	.	.	.	.	0.00538	wrought 40 mm Ø x 30 mm				
31X 7835-1	.	0.0009	.	0.0004	.	.	(0.0037)	0.0111	.	chill cast 42 mm Ø x 18 mm				
IARM 73B	0.005	.	(0.004)	.	.	.	(0.004)	.	.	31 mm Ø x 2 or 18 mm				
31X 7835-2	.	.	.	.	.	.	.	.	.	chill cast 40 mm Ø x 15 mm				
31X 7835-5	.	.	.	.	.	.	.	.	.	chill cast 42 mm Ø x 18 mm				
IARM 87B	(0.01)	.	0.003	.	(0.002)	.	(0.001)	.	.	31 mm Ø x 2 or 18 mm				
31X 7835-6	.	0.0005	.	0.0010	.	.	0.0017	0.0007	.	chill cast 42 mm Ø x 18 mm				
31X 7835-3	.	(0.0009)	.	.	.	.	.	0.003	.	chill cast 42 mm Ø x 18 mm				
31X 7835-4	.	.	.	.	.	.	.	.	.	chill cast 40 mm Ø x 15 mm				
Number	Ag	B	C	Cd	Cr	Mg	S	Se	Te	Units				

CRM MANGANESE BRASS

chill cast

Number	Mn	Zn	Cu	Al	Fe	Ni	Pb	Sn	Si	Ag	As	Co	P	Sb	Units
31X MNB4	4.14	27.12	58.95	2.16	1.73	3.23	0.640	1.080	0.90	0.0171	0.0068	0.057	0.0252	(0.006)	42 mm Ø x 18 mm
31X MNB3	2.77	24.10	68.20	0.98	1.306	0.208	0.458	0.549	1.36	0.0103	0.0052	0.048	0.0170	0.0054	42 mm Ø x 18 mm
31X MNB2	2.23	32.19	63.02	0.268	0.66	0.118	1.02	0.319	0.233	.	.	.	.	.	40 mm Ø x 15 mm
31X MNB6	0.84	(28.0)	70.8	0.005	0.27	0.26	0.04	0.007	(0.007)	.	.	.	.	.	40 mm Ø x 15 mm
31X MNB5	0.243	37.91	51.14	3.35	0.56	1.31	0.127	1.75	0.49	.	.	.	.	.	40 mm Ø x 15 mm
31X MNB1	0.188	29.37	67.77	0.599	0.268	0.053	1.44	0.105	0.128	.	.	.	.	.	42 mm Ø x 18 mm

NAVAL BRASS

chill cast																	
31X NB 1, 4: 40 mm Ø x 15 mm						31X NB 2, 3: 42 mm Ø x 17-18 mm				CURM: 50 mm Ø x 10-12 mm				IARM 74: 31 mm Ø x 2 or 18 mm			
Number	Sn	Pb	Zn	Cu	Al	As	Bi	Fe	Mn	Ni	P	S	Sb	Si	Ag	B	Co
CRM																	
31X NB 4	2.07	0.044	.	62.3	0.21	<0.005	0.12	0.29	0.004	0.25	0.27	<0.001	0.42	0.22	.	.	.
31X NB 3	1.67	0.197	24.64	72.45	0.094	0.074	0.093	0.113	0.0166	0.0299	0.150	(0.006)	0.265	0.145	.	0.0026	.
31X NB 2	1.06	0.293	28.82	68.93	0.085	0.105	0.052	0.095	0.116	0.065	0.091	<0.002	0.115	0.096	.	.	.
IARM 74B	0.70	0.017	38.9	60.4	0.003	<0.01	.	0.011	<0.01	0.006	(0.008)	(0.003)	0.003	0.003	.	.	.
IARM 76B	0.69	1.94	36.71	60.5	(0.005)	(0.003)	.	0.060	(0.003)	0.015	0.005	0.003	0.006	.	0.005	.	0.0007
IARM 75B	0.59	0.63	38.0	60.63	(0.005)	(0.004)	(0.001)	0.06	(0.003)	0.02	0.003	(0.001)	(0.004)	(0.003)	.	.	.
IARM 74A	0.50	0.02	38.14	.	<0.01	.	.	0.01	<0.01	0.01	0.006	0.001	<0.01	.	.	.	.
RM																	
typical analysis																	
CURM 42.25	2.72	0.0023	39.20	57.78	0.021	0.118	<0.001	0.003	0.169	<0.001	0.050	0.005	<0.001	<0.001	.	.	.
CURM 42.24	2.25	0.91	33.75	62.45	0.067	0.065	0.054	0.066	0.065	0.025	0.226	0.012	0.060	0.093	.	.	.
CURM 42.23	1.63	0.575	22.13	74.36	0.008	0.168	0.034	0.354	0.019	0.168	0.128	0.045	0.356	0.015	.	.	.
CURM 42.22	1.10	1.10	26.32	70.46	0.042	0.217	0.046	0.23	0.122	0.061	0.177	<0.001	0.173	0.042	.	.	.
31X NB 1	0.60	0.54	29.8	.	<0.01	0.13	<0.005	0.05	0.01	0.16	0.049	0.004	<0.005	0.004	.	.	.
CURM 42.21	0.60	0.259	31.61	66.78	0.003	<0.003	0.013	0.119	<0.001	0.120	0.087	0.034	0.25	0.15	.	.	.
Number	Sn	Pb	Zn	Cu	Al	As	Bi	Fe	Mn	Ni	P	S	Sb	Si	Ag	B	Co

CRM NICKEL BRASS

Number	analysis listed in mass %			analysis listed in mg/kg					Units
	Cu	Ni	Zn	Fe	Mn	Pb	Sn		
BAM 387	75.18	5.020	19.57	617	796	10.8	30.1	40 mm Ø x 30 mm	

CRM NICKEL BRASS

SOLD IN SET/5 ONLY										38 mm Ø x 35 mm				
Number	Ni	Zn	Cu	Bi	Fe	Mg	P	Pb	Sb					
NCS HS45712-1	11.1	22.93	65.3	0.0078	0.514	0.0093	0.008	0.013	0.0106					
NCS HS45712-2	12.9	20.53	66.1	0.0058	0.379	0.035	0.0126	0.029	0.0084					
NCS HS45712-3	14.8	17.66	67.1	0.0041	0.259	0.061	0.019	0.05	0.0065					
NCS HS45712-4	16.6	14.02	68.9	0.0021	0.133	0.095	0.026	0.07	0.0043					
NCS HS45712-5	18.5	11.16	70	0.0011	0.036	0.121	0.03	0.099	0.0022					

RM NICKEL BRASS

SOLD IN SET/5 ONLY										analysis listed in mass% except * which is mg/kg								40 mm Ø x 25 mm		
Number	Ni	Cu	Zn	Al	As*	Bi	C*	Cd	Co	Fe	Mg	Mn	P	Pb	Sb	Sn	Si	S		
IMN WM2	6.66	68.41	24.18	0.050	30	0.014	52	0.022	0.017	0.022	0.019	0.53	0.023	0.011	0.013	0.011	0.0067	0.0058		
IMN WM3	6.09	69.85	23.57	0.033	53	0.0055	58	0.0024	0.011	0.077	0.0042	0.19	0.0052	0.0073	0.0043	0.098	0.037	0.0073		
IMN WM4	5.36	71.10	23.19	0.0080	72	0.0029	72	0.0021	0.0099	0.13	0.0027	0.011	0.0057	0.0044	0.0059	0.075	0.071	0.0058		
IMN WM1	5.03	69.06	25.35	0.083	2.6	0.011	44	0.0046	0.021	0.011	0.0054	0.38	0.0018	0.018	0.00098	0.0036	0.0026	0.017		
IMN WM5	4.68	68.99	25.90	0.0012	89	0.0007	90	0.00077	0.0021	0.22	0.00056	0.0024	0.016	0.0020	0.0068	0.035	0.094	0.0030		

SILICON BRASS

cast

Number	Si	Zn	Cu	Al	Pb	Fe	Mn	Ni	P	Sb	Sn
CRM											
31X WSB5	6.07	0.343	90.06	0.218	0.100	0.79	0.496	0.492	0.080	0.124	1.05
31X WSB1	5.45	8.96	81.61	1.82	0.84	0.249	0.049	0.045	0.0151	0.019	0.209
31X WSB7	4.82	6.80	73.3	3.83	0.054	1.73	3.19	3.05	0.212	0.61	1.91
31X WSB4	4.48	5.49	85.4	0.417	0.204	0.90	1.72	0.255	0.048	0.080	0.83
31X WSB2	3.92	13.94	79.22	0.760	0.621	0.393	0.330	0.154	0.021	0.0202	0.402
31X WSB3	3.44	11.96	81.14	0.509	0.397	0.22	1.06	0.371	0.033	0.028	0.607
IARM 151B	3.11	12.94	84.0	0.002	0.013	0.024	0.002	0.011	0.003	.	0.009
31X WSB6	2.48	0.881	94.74	0.059	0.95	0.032	0.248	0.117	(0.020)	0.007	0.056
RM typical analysis											
CTIF LS2	4.91	11.60	79.60	0.156	0.886	1.022	0.220	1.110	0.064	0.0103	0.338
CTIF LS1	4.35	16.3	77.7	(0.02)	0.213	0.448	0.039	0.55	0.128	.	0.243
CTIF UZS60	3.72	15.30	78.98	.	.	0.47	.	0.49	0.07	0.57	0.40
CTIF LS3	3.3	19	76	0.43	0.58	0.10	0.15	0.11	0.011	0.107	0.15

Number	Si	Zn	Cu	Al	Pb	Fe	Mn	Ni	P	Sb	Sn
Number As Bi Cd Co Cr Mg S Units											
31X WSB5	0.0284	0.030	0.0047	0.057	0.0087	0.0012	0.0081	43 mm Ø x 20 mm			
31X WSB1	0.109	0.035	.	0.405	0.116	0.0318	(0.005)	43 mm Ø x 20 mm			
31X WSB7	0.076	0.191	.	(0.0019)	0.014	(0.0006)	.	43 mm Ø x 20 mm			
31X WSB4	0.025	.	.	0.074	0.044	(0.0009)	(0.001)	43 mm Ø x 20 mm			
31X WSB2	0.077	0.0102	0.0015	0.174	0.096	0.0098	(0.0011)	43 mm Ø x 20 mm			
31X WSB3	0.053	0.0195	0.0028	0.129	0.0480	(0.004)	(0.0024)	43 mm Ø x 20 mm			
IARM 151B	.	.	.	.	(0.003)	.	<0.001	31 mm Ø x 2 or 18 mm			
31X WSB6	0.0051	0.0056	0.0071	0.247	0.058	(0.001)	(0.002)	43 mm Ø x 20 mm			
CTIF UZS60	.	.	.	.	.	.	.	60 mm Ø x 5 mm			
CTIF LS2	.	.	.	.	.	.	.	60 mm Ø x 5 mm			
CTIF LS1	.	.	.	.	.	.	.	60 mm Ø x 5 mm			
CTIF LS3	.	.	.	.	.	.	.	60 mm Ø x 5 mm			
Number As Bi Cd Co Cr Mg S Units											

CRM HIGH TENSILE BRASS

Number	Cu	Zn	Al	Fe	Mn	Si	As	C	Ni	P	Pb	S	Sb	Sn	Units
31X HT31	66.67	18.19	6.70	2.90	5.27	0.041	0.0006	0.006	0.196	0.0032	0.020	(0.0003)	(0.0011)	0.0149	50 mm Ø x 18 mm
31X HT37	60.33	34.69	0.0004	0.0344	2.88	1.38	0.0011	0.003	0.0105	0.003	0.623	<0.0005	0.0007	0.0116	40 mm Ø x 18 mm
31X HT38	58.77	36.66	0.960	0.0530	2.60	0.869	0.0008	0.003	0.0242	0.0024	0.051	(0.001)	(0.0006)	0.039	50 mm Ø x 18 mm

RM MAJOR ELEMENTS IN BRASS

Number	Cu	Zn	Al	Fe	Mn	Ni	Pb	Si	Sn	Units
cast typical analysis 50 mm Ø x 10 - 12 mm										
C30.10	95.3	Rem	<0.002	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	
C30.09	90.2	Rem	<0.002	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	
C30.08	85.1	Rem	<0.002	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	for samples listed on this chart:
C30.07	79.8	Rem	<0.002	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	<0.005 to <0.001 As, Bi, and Sb
C30.06	75.0	Rem	<0.005	<0.005	<0.005	<0.01	0.05	<0.005	<0.01	
C30.05	70.7	Rem	<0.005	0.005	<0.005	<0.01	<0.01	<0.005	<0.01	
C30.19	67.4	Rem	5.0	<0.005	<0.005	<0.01	<0.01	<0.005	1.0	
C30.04	64.8	Rem	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	
CURM 30.18	63.66	32.33	3.28	0.006	<0.001	<0.001	<0.005	0.131	0.58	
C30.17	61.7	Rem	<0.002	1.6	<0.005	<0.01	<0.01	<0.005	<0.01	
CURM 30.20	61.46	35.71	2.32	<0.005	<0.001	<0.001	<0.002	0.17	0.40	
C30.12	61.3	Rem	<0.002	<0.005	1.0	0.52	<0.005	<0.005	<0.005	
CURM 30.15	60.66	38.88	<0.001	0.50	<0.001	<0.001	<0.005	<0.005	<0.002	
C30.13	60.6	Rem	<0.002	<0.005	1.9	<0.01	<0.01	<0.005	<0.01	
CURM 30.16	60.53	38.33	<0.001	1.14	<0.001	<0.001	<0.005	<0.005	<0.002	
C30.03	60.2	Rem	0.002	<0.005	<0.005	0.01	<0.01	<0.005	<0.01	
CURM 30.11	59.86	38.17	<0.001	0.002	0.23	1.70	0.005	<0.001	<0.002	
C30.14	59.6	Rem	<0.002	<0.005	2.6	0.99	<0.01	<0.005	<0.01	
CURM 30.23	58.77	39.19	<0.001	0.005	<0.001	<0.001	2.04	<0.001	<0.001	
CURM 30.24	58.33	38.32	<0.001	0.001	<0.001	<0.001	3.31	<0.001	<0.002	
C30.22	58.1	Rem	<0.002	<0.005	<0.005	<0.01	1.0	<0.005	<0.01	
C30.25	57.2	Rem	<0.002	<0.005	<0.005	<0.01	4.7	<0.005	<0.01	
CURM 30.21	56.23	40.08	1.44	0.003	<0.001	<0.001	0.004	0.213	2.01	
C30.02	55.6	Rem	<0.002	<0.005	<0.005	<0.01	<0.01	<0.005	<0.01	
C30.01	51.5	Rem	<0.001	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	

Number	Cu	Zn	Al	Fe	Mn	Ni	Pb	Si	Sn
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RM		BRONZE														
		BS 955 MOD: 40 mm Ø x 17 mm							BS CC: chill-cast 32 mm Ø x 17 mm			all others: 38 mm Ø x 12 mm				
Number	CDA No.	Sn	Cu*	Al	Fe	Mn	Ni	Pb	Zn	Ag	As	C	P	S	Sb	Si
BS 314B	314	0.001	89.8	0.001	0.013	0.001	0.006	1.68	8.58	.	0.002	0.002	0.0007	(0.002)	0.001	0.01
BS 510A	510	4.6	95.10	<0.002	0.005	<0.002	0.020	0.016	0.21	.	0.0008	(0.0006)	0.11	0.008	(0.003)	<0.003
BS 544A	544	4.42	(88.4)	(0.0005)	0.092	<0.002	0.16	4.16	3.42	.	0.011	(0.003)	0.021	0.038	0.040	<0.002
BS 623A	623	0.002	88.13	9.12	2.19	0.273	0.146	0.001	0.008	.	(0.006)	(0.002)	<0.002	(0.0005)	<0.002	0.014
BS 630	630	0.013	[81.4]	10.05	2.78	0.64	4.94	<0.01	0.12	.	<0.01	(0.002)	0.007	(0.001)	<0.01	0.05
BS 630A	630	0.019	81.0	10.05	3.73	0.11	4.81	0.0069	0.17	.	(0.002)	0.005	<0.01	(0.001)	<0.001	0.037
BS 642A	642	0.018	91.0	6.70	0.17	0.005	0.025	0.001	0.011	.	<0.002	0.001	0.001	<0.001	(0.002)	1.80
BS 655A	655	0.07	95.74	(0.002)	0.075	0.91	0.008	0.008	0.02	.	<0.002	(0.0006)	(0.004)	(0.0006)	<0.002	3.14
BS 836A-1	836	4.59	84.64	(0.001)	0.023	(0.002)	0.46	5.32	4.52	0.023	0.008	.	0.08	0.042	0.068	0.003
BS 903B	903	7.9	86.7	(0.001)	0.049	0.0004	0.50	0.10	4.39	.	0.003	(0.0004)	0.073	0.006	0.003	0.002
BS 905A-1	905	10.25	87.3	(0.003)	0.015	(0.0003)	0.018	0.030	2.27	(0.002)	(0.001)	.	0.055	.	0.004	(0.004)
BS 922B-3	922	5.8	88.4	(0.001)	0.008	(0.002)	0.61	1.33	3.83	.	0.001	.	0.026	.	0.002	(0.001)
BS 932E	932	7.33	82.15	(0.001)	0.029	0.0001	0.16	7.3	2.86	.	0.048	(0.004)	0.022	0.053	0.145	(0.005)
BS 932A	932	6.26	82.9	<0.01	0.068	<0.002	0.12	7.09	3.35	.	0.014	(0.006)	0.005	(0.05)	0.097	<0.01
BS 937B-1	937	9.7	80.2	(0.003)	0.004	(0.002)	0.35	9.23	0.044	0.015	(0.008)	.	0.012	0.032	0.18	(0.004)
BS 938-1	938	7.16	77.1	(0.002)	0.015	(0.001)	0.49	14.8	0.26	0.0048	(0.004)	.	0.059	0.009	0.033	(0.004)
BS CC954	954	0.061	84.0	9.28	3.61	0.353	1.12	0.13	1.30	.	0.003	(0.007)	0.013	(0.002)	0.004	0.092
BS 954A	954	0.033	85.64	10.17	3.50	0.10	0.20	0.016	0.30	.	(0.006)	0.004	0.012	<0.0001	0.001	0.029
BS 954B	954	0.07	83.9	10.20	3.90	0.27	1.38	0.047	0.10	.	(0.005)	(0.005)	0.012	(0.0005)	(0.001)	0.07
BS 954C	954	0.08	83.9	10.21	3.9	0.29	1.38	0.050	0.09	.	(0.006)	(0.004)	0.011	(0.0005)	<0.003	0.07
BS 955 MOD		0.096	74.9	10.37	5.46	1.61	6.28	0.035	1.05	.	(0.003)	.	(0.002)	.	(0.003)	0.054
BS 955B	955	0.024	81.5	10.30	3.79	0.12	4.11	0.051	0.052	(0.009)	(0.002)	(0.007)	0.017	0.002	(0.002)	0.05
BS 955C	955	0.003	80.6	10.68	4.04	0.06	4.31	0.003	0.15	0.014	(0.002)	.	0.012	.	(0.002)	0.025

* Cu in brackets, [], calculated by difference.

RM BRONZE

chill cast typical analysis

60 mm Ø x 5 mm

Number	Sn	Cu	Al	As	Fe	Mn	Ni	P	Pb	S	Sb	Si	Zn
CTIF B 1	15.15	82.90	0.072	.	0.088	.	0.063	0.037	0.202	0.030	0.444	0.055	0.92
CTIF B 2	13.55	85.90	(0.002)	.	0.041	.	(0.003)	0.17	0.0206	0.048	(0.002)	0.17	0.11
CTIF B 3	12.8	80.2	0.1	.	0.2	0.20	1.5	0.45	1.6	0.04	0.2	0.07	2.2
CTIF B 4	11.10	83.75	.	.	0.021	.	0.57	0.52	2.53	0.019	0.10	0.015	1.34
CTIF B 14	10.75	87.00	<0.01	0.04	0.11	0.02	0.30	0.64	0.50	0.02	0.08	0.075	0.15
CTIF B 13	10.05	86.35	0.016	0.065	0.250	0.046	0.50	0.210	0.99	0.070	0.243	0.085	1.09
CTIF B 5	9.90	85.95	0.039	.	0.18	0.082	2.28	0.041	0.48	0.067	0.47	0.049	0.42
CTIF B 30	9.80	77.45	0.063	.	0.115	0.150	0.97	0.063	10.0	0.048	0.22	0.066	1.05
CTIF B 12	9.57	85.65	0.120	0.111	0.162	0.235	2.63	0.525	0.201	0.013	0.117	0.050	0.61
CTIF B 11	8.04	84.75	.	.	0.170	.	2.0	0.057	1.93	0.09	0.70	0.14	2.10
CTIF B 31	7.65	78.65	(0.031)	.	(0.015)	.	0.489	.	11.79	0.028	0.475	(0.047)	0.79
CTIF B 23	7.18	83.45	0.020	.	(0.040)	.	0.086	0.070	7.20	0.019	0.384	0.025	1.46
CTIF B 10	6.95	83.65	0.205	0.0075	0.165	(0.0045)	1.01	0.014	4.07	0.050	1.14	.	2.75
CTIF B 20	6.35	83.35	0.040	.	0.165	.	0.51	0.072	5.10	0.115	0.520	0.055	3.77
CTIF B 32	5.92	74.80	0.075	0.0056	0.11	.	1.49	0.039	16.10	0.027	0.13	0.070	1.17
CTIF B 21	5.13	83.05	0.13	.	0.285	.	1.21	(0.004)	3.79	0.047	0.18	.	6.17
CTIF B 22	3.5	83.0	.	.	<0.10	.	2.5	.	6.0	0.03	0.05	<0.1	4.0
CTIF UN 3S	0.215	92.65	0.11	.	0.30	0.073	3.45	.	0.20	.	.	1.24	1.62

Number	Sn	Cu	Al	As	Fe	Mn	Ni	P	Pb	S	Sb	Si	Zn
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ALUMINUM BRONZE

= class, where 1 = CRM and 2 = RM

Number	Al	Cu	As	Cr	Fe	Mg	Mn	Ni	P	Pb	Si	Sn	Zn
1 32X ALB 9	12.79	81.8	(0.001)	0.013	3.79	0.0023	0.069	0.773	0.019	0.285	0.160	0.032	0.040
1 32X ALB 3	11.56	79.4	0.0060	0.0089	4.15	0.088	0.374	3.72	0.025	0.11	0.135	0.10	0.325
1 32X ALB 10	11.25	74.28	0.017	0.0103	4.23	0.0029	1.73	7.58	0.040	0.107	0.169	0.202	0.315
1 IARM 94B	10.8	80.6	<0.01	0.017	3.99	.	0.071	4.31	0.011	0.004	0.028	(0.003)	0.14
2 C52.53	10.7	Rem	.	0.19	5.5	0.07	0.38	4.1	.	0.04	0.10	0.07	0.11
2 IARM 94A	10.63	.	(<0.01)	.	4.04	.	0.16	4.37	<0.01	0.009	<0.01	(<0.01)	0.09
1 IARM 204A	10.55	83.3	(<0.01)	0.008	3.87	.	0.052	1.95	0.007	0.004	0.034	0.005	0.22
1 IARM 93B	10.33	85.4	<0.01	(0.007)	3.87	.	0.024	0.088	(0.002)	0.012	0.024	0.009	0.17
1 IARM 80B	10.19	81.2	(0.004)	0.012	3.31	.	0.54	4.69	0.009	0.009	0.030	0.018	0.078
1 32X ALB 1	10.09	80.2	(<0.001)	0.012	3.04	0.084	0.088	6.03	0.017	0.223	0.13	0.023	0.032
2 C52.51	10.0	Rem	.	<0.01	4.3	<0.01	<0.01	5.1	.	<0.01	<0.01	<0.01	0.02
1 32X CA 1	9.79	80.03	.	0.0049	4.63	0.0003	0.296	4.94	0.003	0.007	0.090	0.0180	0.162
1 32X ALB 2	9.52	80.0	0.0114	0.0261	4.60	0.0104	0.393	4.64	0.027	0.09	0.302	0.08	0.229
1 32X CA 7	9.37	88.06	.	0.0028	2.09	0.0004	0.151	0.234	.	(0.004)	0.017	0.0172	0.006
2 C52.55	9.3	Rem	.	0.05	4.9	0.13	1.1	4.6	.	0.14	0.03	0.03	0.10
1 IARM 79C	9.20	87.6	0.003	(0.002)	2.28	.	0.20	0.55	0.006	<0.005	0.033	0.010	0.014
1 32X CA23	9.19	81.05	.	0.0018	3.63	0.0003	1.298	4.71	0.0011	(0.0026)	0.026	0.0164	0.031
1 IARM 79B	9.19	88.4	.	(0.003)	2.13	.	0.16	0.075	0.005	(0.003)	0.019	0.017	0.013
1 32X CA31	8.95	82.24	.	0.0026	4.06	0.0008	0.336	4.28	(0.003)	(0.0024)	0.036	0.0037	0.041
2 C52.56	8.9	Rem	.	0.14	4.6	0.09	0.74	5.6	.	0.17	0.15	0.11	0.28
1 IARM 235A	8.9	81.2	<0.005	0.01	4.07	.	1.17	4.44	0.012	0.012	0.061	0.018	0.083
2 C52.54	8.6	Rem	.	0.05	3.4	0.17	1.4	6.2	.	0.11	0.20	0.15	0.52
2 CURM 51.14	8.42	88.57	0.44	.	0.72	.	0.55	0.219	0.012	0.003	0.286	0.113	0.656
1 32X ALB 6	8.05	81.98	0.012	0.0097	2.53	0.0019	0.904	5.31	0.0101	0.096	0.295	0.147	0.685
1 32X ALB 4	7.96	(77.91)	0.010	0.0275	4.68	0.297	1.20	7.02	0.028	0.149	0.335	0.093	0.305
2 CURM 51.13	7.30	88.79	0.215	.	1.81	.	0.898	0.057	0.022	0.104	0.174	0.270	0.335
1 32X ALB 5	7.26	84.27	0.0158	0.0060	2.52	0.009	0.996	4.15	0.031	0.216	0.102	0.102	0.311
1 IARM 81B	6.70	91.2	0.058	0.002	0.047	.	0.012	0.003	0.004	0.006	1.84	0.008	0.176
1 32X ALB 8	6.60	76.29	0.155	0.046	5.58	0.0152	1.67	6.50	0.218	0.359	0.736	0.699	1.051
2 CURM 51.12	6.36	88.29	0.111	.	2.87	.	1.33	0.112	<0.001	0.219	0.005	0.196	0.45
1 32X CA12	6.14	90.48	.	0.0008	0.657	0.0005	0.0290	0.088	.	(0.0017)	2.57	0.0157	0.0405
2 CURM 51.11	5.27	93.95	<0.001	0.060	0.060	.	<0.001	0.012	0.035	0.33	0.159	0.027	0.111
1 32X ALB 7	3.97	83.98	0.048	0.094	4.97	0.013	0.575	4.87	0.051	0.029	0.41	0.351	0.513

Number	Al	Cu	As	Cr	Fe	Mg	Mn	Ni	P	Pb	Si	Sn	Zn
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Number	Ag	C	Co	S	Sb	Units
32X ALB 9	43 mm Ø x 20 mm
32X ALB 3	43 mm Ø x 20 mm
32X ALB 10	.	(0.0022)	.	.	.	42 mm Ø x 18 mm
IARM 94B	0.017	(0.006)	0.011	0.002	(0.011)	31 mm Ø x 2 or 18 mm
C52.53	.	.	.	.	.	50 mm Ø x 10 - 12 mm
IARM 94A	.	(0.014)	0.01	(0.003)	(<0.01)	31 mm Ø x 2 or 18 mm
IARM 204A	0.009	0.006	0.008	(0.002)	(<0.01)	31 mm Ø x 2 or 18 mm
IARM 93B	(0.004)	0.007	0.006	0.002	0.012	31 mm Ø x 2 or 18 mm
IARM 80B	0.006	(0.01)	0.014	(0.001)	(0.004)	31 mm Ø x 2 or 18 mm
32X ALB 1	.	.	.	.	.	43 mm Ø x 20 mm
C52.51	.	.	.	.	.	50 mm Ø x 10 - 12 mm
32X CA 1	0.0012	(0.007)	.	.	.	42 mm Ø x 18 mm
32X ALB 2	.	.	.	.	.	43 mm Ø x 20 mm
32X CA 7	0.0009	0.0028	0.0003	.	.	42 mm Ø x 18 mm
C52.55	.	.	.	.	.	50 mm Ø x 10 - 12 mm
IARM 79C	<0.005	0.003	<0.005	<0.001	<0.005	31 mm Ø x 2 or 18 mm
32X CA23	0.0008	(0.0050)	(0.0036)	.	.	50 mm Ø x 18 mm
IARM 79B	0.002	0.002	(0.002)	(0.001)	.	31 mm Ø x 2 or 18 mm
32X CA31	0.0008	0.006	0.0029	.	.	42 mm Ø x 18 mm
C52.56	.	.	.	.	.	50 mm Ø x 10 - 12 mm
IARM 235A	<0.005	0.009	0.01	0.002	(0.004)	31 mm Ø x 2 or 18 mm
C52.54	.	.	.	.	.	50 mm Ø x 10 - 12 mm
CURM 51.14	.	.	.	.	.	50 mm Ø x 10 - 12 mm
32X ALB 6	.	(0.0025)	.	.	.	42 mm Ø x 18 mm
32X ALB 4	.	.	.	.	.	43 mm Ø x 20 mm
CURM 51.13	.	.	.	.	.	50 mm Ø x 10 - 12 mm
32X ALB 5	.	.	.	.	.	43 mm Ø x 20 mm
IARM 81B	(0.004)	0.002	.	<0.001	0.003	31 mm Ø x 2 or 18 mm
32X ALB 8	.	0.018	.	.	.	42 mm Ø x 18 mm
CURM 51.12	.	.	.	.	.	50 mm Ø x 10 - 12 mm
32X CA12	0.0010	(0.002)	(0.0003)	.	.	42 mm Ø x 18 mm
CURM 51.11	50 mm Ø x 10 - 12 mm
32X ALB 7	43 mm Ø x 20 mm

Number	Ag	C	Co	S	Sb	Units
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RM ALUMINUM BRONZE

chill cast	typical analysis												60 mm Ø x 5 mm	
Number	Al	Cu	Fe	Mn	Ni	Pb	Si	Sn	Zn	Bi	Cd	Cr	Mg	
CTIF CA 36	12.60	77.25	2.93	0.131	6.33	0.0154	0.113	0.201	0.244	0.058	.	0.041	0.130	
CTIF 2158-W	11.95	85.00	2.53	0.26	0.10	<0.005	0.015	<0.01	<0.01	.	.	.	.
CTIF 4065-P	11.85	81.20	3.40	0.075	3.18	0.03	0.034	0.18	0.03	.	.	.	.
CTIF CA 35	11.4	75.6	6.1	1.6	3.80	0.10	0.25	0.30	0.55	.	.	.	.
CTIF 2154-V	11.25	85.00	3.05	0.12	0.41	<0.005	0.015	<0.01	<0.01	.	.	.	.
CTIF CA 13	11.20	82.45	3.82	1.22	0.50	0.0230	0.11	(0.01)	0.65	.	.	.	.
CTIF CA 3	10.9	86.5	0.80	0.06	0.80	0.15	0.08	0.20	0.30	.	.	.	.
CTIF CA 21	10.82	81.9	3.45	0.30	3.09	0.05	0.07	0.07	0.100	.	0.0095	.	.	
CTIF CA 22	10.45	80.50	2.51	0.745	4.54	0.0243	0.32	0.30	0.605	.	.	.	.
CTIF 3011-G	10.35	84.80	1.98	0.165	2.00	0.10	0.16	0.125	0.25	.	.	.	.
CTIF CA 27	10.25	81.1	2.81	1.195	3.88	0.11	0.127	0.054	0.428	.	0.012	.	.	
CTIF 3299-J	10.10	87.60	0.38	1.12	0.21	0.110	0.136	0.106	0.19	.	.	.	.
CTIF CA 10	10.10	80.70	4.55	0.333	3.39	0.16	0.46	0.16	0.067	.	.	.	.
CTIF 3297-Y	10.00	87.45	1.88	0.03	.	0.11	0.15	0.10	0.27	.	.	.	.
CTIF 4149-G	9.84	84.95	2.00	0.21	1.96	0.15	0.18	0.34	0.37	.	.	.	.
CTIF 2152-S	9.78	85.05	3.99	0.42	0.68	<0.005	0.015	.	<0.01	.	.	.	.
CTIF 2151-R	9.43	84.75	4.48	0.73	0.56	<0.005	0.015	<0.01	<0.01	.	.	.	.
CTIF 3296-L	9.40	88.55	0.07	0.37	0.41	0.30	0.20	0.06	0.62	.	.	.	.
CTIF CA 31	9.15	76.5	3.18	3.27	7.51	0.020	0.064	0.063	0.145	.	.	.	0.02	
CTIF CA 26	9.10	81.25	4.36	0.188	4.87	0.058	0.035	0.005	0.038	.	0.034	.	.	
CTIF 3300-M	8.73	89.5	0.45	0.165	0.205	0.205	0.415	0.205	0.085	.	.	.	.
CTIF 3301-Z	8.10	87.30	4.00	0.26	0.125	0.032	0.057	0.028	0.06	.	.	.	.
CTIF 2794-H	8.0	90.3	0.82	<0.01	0.69	<0.01	0.048	0.105	<0.01	.	.	.	.
CTIF CA 20	8.00	87.15	0.79	1.85	1.18	0.18	0.17	0.19	0.41	.	0.05	.	.	
CTIF CA 12	8.0	84.1	2.77	3.09	1.385	0.047	0.058	0.036	0.45	.	.	.	.
CTIF CA 25	7.97	79.12	6.10	0.51	5.74	0.03	0.084	0.177	0.252	.	.	.	.
CTIF CA 30	7.55	81.6	5.2	2.05	3.10	0.142	0.15	0.099	0.066	.	.	.	.
CTIF 3018-F	7.25	81.90	4.45	1.57	4.50	0.02	0.085	0.06	0.06	.	.	.	.
CTIF 3610-Q	7.10	82.32	3.98	0.045	5.40	0.23	0.065	0.25	0.51	.	0.090	.	.	

Number	Al	Cu	Fe	Mn	Ni	Pb	Si	Sn	Zn	Bi	Cd	Cr	Mg
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CRM BISMUTH BRONZE

31 mm Ø x 2 or 18 mm

Number	Ag	Al	As	Bi	Co	Cr	Cu	Fe	Mn	Ni	P	Pb	S	Sb	Si	Sn	Zn
IARM 211A	0.005	0.002	(0.01)	5.0	(0.001)	(0.002)	88.4	0.004	(0.003)	0.003	0.19	0.014	0.002	0.057	0.003	6.23	0.006

CRM LEADED BRONZE

32X LB 3, 13, 15: 40 Ø x 15 mm other 32X: 42 Ø x 18 mm IARM: 31 Ø x 2 or 18 mm

Number	Pb	Sn	Cu	Bi	Ni	Zn	Ag	Al	As	C	Co	Fe	Mn	P	S	Sb	Si
32X LB 15	20.02	1.163	78.53	0.011	0.095	0.076	.	0.0015	0.0218	.	0.0048	0.0012	(0.0002)	0.0019	(0.024)	0.030	0.0009
32X LB 14	15.48	4.02	79.01	1.142	0.099	0.028	.	0.0004	0.0658	.	.	0.0039	0.0007	0.0029	(0.019)	0.0527	0.0012
32X LB 10	12.15	8.30	76.16	0.0634	1.71	0.44	0.044	(0.0006)	0.240	.	0.128	0.0108	0.0011	0.0030	0.010	0.635	0.0005
32X LB 11	10.3	10.6	77.3	0.034	1.09	0.31	.	<0.002	0.094	.	.	0.019	0.005	0.008	0.047	0.061	(0.003)
32X LB 3	9.96	10.71	77.5	0.0091	1.54	0.051	.	(0.0006)	0.021	.	.	0.095	0.025	0.0050	(0.0015)	0.024	(0.0024)
32X LB 12	9.53	12.50	75.70	0.0245	0.398	1.262	0.0181	(0.0006)	0.0064	.	0.078	0.042	0.0032	0.173	0.085	0.314	0.0022
IARM 92B	9.50	9.75	.	.	0.36	0.28	.	(0.01)	.	.	.	0.009	(0.01)	0.028	0.036	0.35	(0.01)
32X LB 13	7.1	5.65	(85.3)	0.03	0.94	0.55	.	<0.005	0.09	.	.	<0.01	<0.002	0.08	0.041	0.029	0.01
IARM 91C	6.8	6.77	83.2	0.029	0.46	2.62	(0.02)	0.002	0.012	(0.002)	<0.005	0.027	0.0022	0.054	0.043	0.164	0.012
IARM 72B	1.99	0.029	90.08	.	0.004	7.81	.	.	(0.003)	0.002	.	0.007	.	0.005	0.0015	0.006	(0.002)

RM LEADED BRONZE

chill cast typical analysis 37X: 40 Ø x 10 mm CURM: 50 Ø x 10-12 mm

Number	Pb	Ni	Sn	Zn	Cu	Al	As	Bi	Fe	Mn	P	S	Sb	Si
37X HK8	21.0	5.01	10.4	0.17	63.2	.	.	.	0.23	.	.	.	.	.
CURM 50.01	11.74	2.24	9.45	1.17	74.08	0.018	0.22	0.029	0.243	0.024	0.113	0.113	0.59	0.007
CURM 50.02	10.67	<0.0005	10.34	0.006	78.84	<0.001	<0.002	<0.0005	<0.001	<0.0005	0.046	<0.001	<0.0005	<0.002
CURM 50.04	9.94	1.10	11.30	0.66	76.11	0.014	0.06	0.10	0.10	0.028	0.032	0.14	0.50	0.011
CURM 50.03	8.86	2.89	8.41	1.72	77.42	0.005	0.11	0.051	0.018	0.037	0.159	0.064	0.24	0.005

CRM LEADED BRONZE

AVAILABLE AS SET/5 ONLY

40 mm x 40 mm x 25 mm

Number	Al	Bi	Cu	Fe	Ni	P	Pb	Sb	Si	Sn	Zn
VS 2807-83	(0.0029)	(0.025)	(77.73)	0.062	0.81	0.55	12.5	0.80	(0.045)	6.3	1.17
VS 2808-83	(0.0034)	(0.031)	(79.70)	0.100	0.50	0.30	10.6	0.50	(0.025)	7.3	0.71
VS 2809-83	(0.0049)	(0.039)	(81.08)	0.209	0.31	0.20	9.0	0.34	(0.011)	8.3	0.38
VS 2810-83	(0.0084)	(0.041)	(81.89)	0.35	0.21	0.088	7.3	0.27	(0.0017)	9.4	0.26
VS 2811-83	(0.021)	(0.062)	(82.97)	0.60	0.110	(0.059)	5.4	(0.12)	(0.0021)	10.5	(0.14)

CRM MANGANESE BRONZE

31 Ø x 2 or 18 mm

Number	Mn	Al	Fe	Zn	Cu	C	Ni	P	Pb	S	Sb	Si	Sn
IARM 88B	2.93	5.66	2.12	25.1	63.9	0.003	0.065	0.011	0.066	<0.001	<0.005	0.09	0.020
IARM 83A	0.22	<0.01	0.99	39.81	.	(0.007)	0.01	0.005	0.058	0.002	0.008	<0.01	0.57
IARM 83B	0.13	0.002	0.97	39.3	58.7	0.003	0.010	0.004	0.017	(0.001)	(0.004)	(0.003)	0.85

NICKEL BRONZE

37X: 40 mm Ø x 10 mm

IARM: 31 mm Ø x 2 or 18

Number	Ni	Cu	Cr	Fe	Mn	Pb	Sn	Zn	Ag	Al	As	C	Co	P	S	Sb	Si
CRM	provisional analysis																
IARM 236A	30.1	66.6	0.91	0.002	1.05	(0.004)	(0.005)	(0.03)	<0.002	(0.004)	<0.005	0.012	0.006	0.004	0.003	<0.05	0.019
RM	typical analysis																
37X HK7	30.7	59.3	.	1.72	.	5.32	2.30	0.38	.	.	.	.	.	.	.	.	.

PHOSPHOR BRONZE

= class, where 1 = CRM and 2 = RM

#	Number	P	Sn	Cu	Mn	Ni	Pb	Zn	As	Fe	Mg	Sb	Si
2	CURM 54.03	0.954	7.30	91.74	<0.005	0.0019	0.003	0.003	0.006	0.005	<0.0003	0.0007	<0.002
1	32X PB11	0.799	3.75	90.55	0.111	0.768	0.900	1.43	0.199	0.75	0.0022	0.502	0.099
2	CURM 54.05	0.501	11.36	84.78	0.078	1.28	1.14	0.554	0.063	0.051	0.0021	0.111	0.006
1	32X PB 12	0.473	5.35	91.67	0.334	0.427	0.142	0.786	0.109	0.190	(0.0004)	0.272	0.150
2	C54.06	0.33	12.6	.	0.13	0.80	0.87	0.54	0.06	0.14	0.001	0.18	0.11
1	32X PB 23	0.319	7.56	92.04	<0.005	0.0033	0.0042	0.0020	0.0011	<0.005	.	0.0025	0.0016
2	CURM 54.04	0.250	9.47	86.54	0.419	0.536	0.79	1.09	0.106	0.316	0.0009	0.33	0.065
1	32X PB 13	0.211	7.41	91.19	0.097	0.212	0.195	0.199	0.060	0.099	0.119	0.100	0.040
1	32X PB 20	0.196	4.55	95.22	<0.005	0.0090	0.0045	0.007	0.0011	0.0013	.	0.0012	0.0046
1	IARM 78B	0.19	4.73	87.7	(0.002)	0.077	3.87	3.55	<0.003	0.02	.	0.01	<0.002
1	32X PB 4	0.178	9.75	88.4	1.17	0.081	0.114	0.107	<0.01	0.014	.	(0.0032)	0.099
1	IARM 77B	0.148	4.66	95.2	(0.002)	0.002	0.016	0.007	(0.001)	0.002	.	0.005	(0.003)
1	IARM 77A	0.12	4.60	.	0.01	<0.01	(0.011)	0.03	(<0.01)	0.01	.	<0.01	<0.01
2	CURM 54.02	0.107	5.53	92.87	0.101	0.109	0.663	0.410	0.023	0.102	0.0020	0.026	0.012
2	CURM 54.01	0.053	3.17	95.42	0.158	0.348	0.307	0.346	0.044	0.028	0.008	0.070	0.039
1	32X PB 10	0.0240	11.93	87.77	0.0009	0.0567	0.054	0.0362	0.010	0.009	0.0035	0.0050	0.0015
1	32X PB14	(0.008)	9.00	90.26	(0.0002)	0.144	0.048	0.038	0.0331	0.0056	0.0003	0.055	(0.0025)

Number	Al	Bi	C	Se	S	Units
CURM 54.03	<0.001	.	.	.	<0.001	50 mm Ø x 10-12 mm
32X PB11	(0.001)	0.0065	.	.	0.007	40 mm Ø x 17 mm
CURM 54.05	0.055	.	.	.	0.063	50 mm Ø x 10-12 mm
32X PB 12	<0.001	0.094	.	.	0.012	42 mm Ø x 18 mm
C54.06	0.008	.	.	.	0.09	50 mm Ø x 10-12 mm
32X PB 23	<0.005	.	0.004	.	0.0015	49 mm Ø x 17 mm
CURM 54.04	0.074	.	.	.	0.046	50 mm Ø x 10-12 mm
32X PB 13	0.042	0.0130	(0.002)	.	(0.0022)	42 mm Ø x 18 mm
32X PB 20	<0.005	.	.	.	0.0030	38 mm Ø x 17 mm
IARM 78B	(0.002)	.	.	.	0.010	31 mm Ø x 2 or 18 mm
32X PB 4	(0.0005)	.	.	.	.	40 mm Ø x 15 mm
IARM 77B	(0.001)	.	0.003	.	0.002	31 mm Ø x 2 or 18 mm
IARM 77A	(<0.01)	.	.	.	0.003	31 mm Ø x 2 or 18 mm
CURM 54.02	0.020	.	.	.	0.030	50 mm Ø x 10-12 mm
CURM 54.01	0.040	.	.	.	0.023	50 mm Ø x 10-12 mm
32X PB 10	<0.005	0.0239	.	0.0061	0.0189	40 mm Ø x 15 mm
32X PB14	(0.0009)	0.224	.	.	0.065	40 mm Ø x 17 mm

Number	Al	Bi	C	Se	S	Units
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CRM	SILICON BRONZE											31 Ø x 2 or 18 mm	
Number	Si	Cu	Al	Cr	Fe	Mn	Ni	P	Pb	S	Sn	Zn	
IARM 82B	3.22	95.3	0.002	0.004	0.080	1.04	0.011	0.004	0.011	0.003	0.017	0.38	

CRM	TIN BRONZE																40 mm Ø x 30 mm	
chill cast analysis listed in mg/kg except Sn, P and Cu which are listed in mass %																		
Number	Sn%	P%	Cu%	Ag	Al	As	Bi	Cr	Fe	Mn	Ni	Pb	S	Sb	Se	Si	Zn	
BAM 374	7.60	0.1697	92.22	12.1	.	(4.3)	(2.2)	.	40	4.3	32.7	8.3	(13)	(6.3)	(<2)	(<10)	40.4	
BAM 377	5.92	(<0.0010)	94.04	64.4	45.1	(<10)	42.2	66.9	104.2	9.21	107.4	44.9	(6.8)	13.0	55	(134)	100.6	
BAM 378 *	5.738	0.0602	94.13	26.6	(<1)	99.5	(<1)	311	182	(0.74)	18.3	(4.2)	(9.1)	86.1	(<2)	(<10)	(7.3)	

* BAM 378 also contains (in mg/kg) Cd: 100.7, Co: 89, Mg: 28.7, Te: 85.0

CRM	TIN BRONZE													32X: 42 mm Ø x 18 mm		IARM: 31 Ø x 2 or 18 mm	
chill cast																	
Number	Sn	Cu	Al	As	Co	Fe	Mn	Ni	P	Pb	S	Si	Sb	Zn			
32X SN4	18.80	77.88	0.034	0.0468	0.151	0.060	0.0065	0.556	0.988	1.059	0.040	(0.004)	0.102	0.342			
32X SN3	16.51	81.32	0.0004	.	.	0.0782	0.0026	0.513	0.297	0.270	0.096	(0.002)	0.260	0.43			
32X SN2	13.54	82.80	0.0004	.	.	0.0332	0.0043	0.104	0.082	1.97	0.0326	(0.0028)	0.100	1.28			
32X SN1	11.75	79.93	(<0.002)	.	.	0.0034	0.0018	2.17	0.0025	5.17	0.0064	(<0.001)	0.006	0.804			
IARM 89B	8.17	.	(<0.01)	.	.	0.013	(<0.01)	0.15	0.087	0.089	0.018	(<0.01)	(<0.01)	3.96			
IARM 90B	6.44	.	(<0.01)	.	.	0.019	(<0.01)	0.69	0.054	1.66	0.035	(<0.01)	0.06	2.98			

RM COPPER ALLOY XRF SET

Part Number: BS CU-22 Set of 21 samples, each 30 - 45 mm Ø x 7 mm discs

CDA	Number	Cu	Al	Fe	Mn	Ni	Pb	Si	Sn	Zn	As	C	P	S	Sb	Be	Co
110	BS 110A	99.9	0.002	0.003	<0.0003	0.002	0.003	0.001	0.002	(0.001)	(0.001)	0.0018	0.001	0.0008	0.0004	.	.
172	BS 172Be-1	97.68	(0.02)	0.052	0.001	0.039	(0.002)	0.055	0.033	0.007	(0.001)	(0.001)	0.003	.	.	1.89	0.206
314	BS 314A	89.75	0.002	0.019	0.001	0.009	1.47	(0.006)	0.0019	8.7	<0.003	0.002	<0.003	0.003	<0.002	.	.
360	BS 360A	61.42	<0.001	0.151	0.0007	0.058	2.51	<0.005	0.13	35.63	0.002	(0.0032)	0.001	(0.0003)	0.008	.	.
464	BS 464A	60.6	(0.001)	0.013	0.0002	0.004	0.056	<0.01	0.62	38.73	<0.002	(0.0006)	0.012	0.001	(0.001)	.	.
482	BS 482A	60.0	(0.003)	0.020	<0.002	(0.007)	0.50	(0.002)	0.65	38.8	<0.002	(0.0015)	<0.003	<0.002	0.0012	.	.
510	BS 510A	96.10	<0.002	0.005	<0.002	0.020	0.016	<0.003	4.6	0.21	0.0008	(0.0006)	0.11	0.008	(0.003)	.	.
544	BS 544A	88.4	(0.0005)	0.092	<0.002	0.16	4.16	<0.002	4.42	3.42	0.011	0.003	0.021	0.038	0.040	.	.
623	BS 623A	88.13	9.12	2.19	0.273	0.146	0.001	0.014	0.002	0.008	(0.006)	(0.002)	<0.002	<0.0005	<0.002	.	.
630	BS 630A	81.0	10.05	3.73	0.11	4.81	0.0069	0.037	0.019	0.17	(0.002)	0.005	<0.01	(0.001)	<0.001	.	.
642	BS 642A	91.0	6.70	0.17	0.005	0.025	0.001	1.80	0.018	0.011	<0.002	0.001	0.001	<0.001	<0.002	.	.
655	BS 655A	95.74	(0.002)	0.075	0.91	0.008	0.008	3.14	0.07	0.02	<0.002	(0.0006)	(0.004)	(0.0003)	<0.002	.	.
675	BS 675A	58.5	<0.002	1.12	0.32	0.019	0.074	(0.005)	0.80	39.1	<0.002	(0.0007)	0.010	(0.0005)	0.0011	.	.
706	BS 706A	87.60	(0.002)	1.30	0.66	10.18	0.008	<0.005	0.011	0.13	<0.0005	0.004	0.006	0.012	0.0006	.	.
715	BS 715A	69.0	(0.01)	0.61	0.82	30.22	(0.007)	0.10	0.008	0.10	(0.0014)	0.03	0.006	0.001	(0.003)	.	.
857	BS 857A	62.9	0.468	0.142	0.05	0.263	1.38	0.02	0.76	34.0	(0.002)	(0.003)	0.003	<0.002	0.005	.	.
863	BS 863A	64.1	5.21	2.41	3.00	0.29	0.022	0.034	0.013	24.8	0.010	0.003	(0.007)	<0.0005	0.003	.	.
903	BS 903B	86.7	(0.001)	0.049	0.0004	0.50	0.10	0.002	7.9	4.39	0.003	(0.0004)	0.073	0.006	0.003	.	.
932	BS 932A	82.9	<0.01	0.068	<0.002	0.12	7.09	<0.01	6.26	3.35	0.014	(0.006)	0.005	(0.05)	0.097	.	.
954	BS 954A	85.64	10.17	3.50	0.10	0.20	0.016	0.029	0.033	0.30	(0.006)	0.004	0.012	<0.0001	0.001	.	.
955	BS 955A	81.1	10.08	3.91	0.32	4.25	0.046	0.085	0.025	0.10	<0.002	0.005	0.019	<0.001	0.001	.	.
CDA	Number	Cu	Al	Fe	Mn	Ni	Pb	Si	Sn	Zn	As	C	P	S	Sb	Be	Co