LGC ARMI

Reference Materials and Sample Preparation Equipment

2018 Catalog

Analytical Reference Materials International

An LGC Standards company

armi.com

Content

Introduction

IARM Products

- Carbon and Low Alloy Steel
- Special Low Alloy Steel 10
- Stainless Steel 1
- Tool Steel 1
- Aluminum Alloys 2
- Nickel Alloys 2
- High Purity Nickel 2
- Titanium Alloys 2
- Copper Brass and Bronze 3
- SUS Set up Samples 3
- CKD Low Alloy Steel 3
- CKD Cast Iron 3

Aluminum Alloy Reference Materials from Rio Tinto ALCAN 4

Aluminum Process Powders 6

- Bauxite 6
- Red Mud 6
- Alumina 6
- Raw Fluorite 6
- Aluminum Fluoride 6

Cryolite 6
Pitch 6
Bath 6
Joint Research Centre Metal Alloys 6
Proficiency Testing Program 6
Sample Preparation Equipment 6
ColdBlock™ IR Digestion Systems for ICP Sample Preparation 6
Sample Grinder HK150EX 7
Disc Grinder HK200 7
autofluxer® classic 7
autofluxer® plus 7

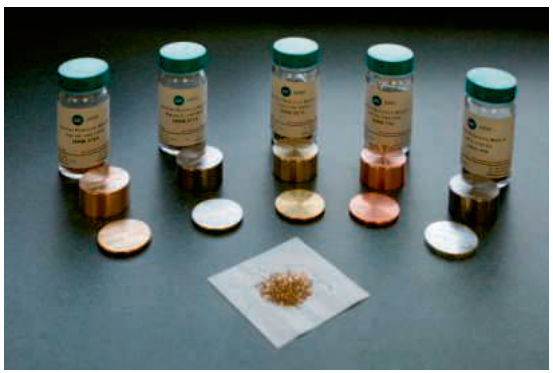
Introduction

LGC ARMI is a producer of high quality reference materials for the chemical analysis of metal alloys. Our certification process follows ISO 17034 procedures for reference material manufacturers and includes both homogeneity testing of candidate material and chemical analysis of major and trace elements using a wide range of analytical methods including XRF, ICP-OES/MS, Arc-Spark Optical Emission, GD-AES and GDMS. The homogeneity testing is all performed in house in our ISO 17025 analytical laboratory. The chemical analyses used for the certification process are collected both in our laboratory using XRF, ICP-OES and ICP-MS as well as through a network of external laboratories using multiple analytical techniques. This approach insures that we produce high quality reference materials with the largest number of certified elements while limiting inter-technique biases. Our reference materials are available in several forms to suit various analytical techniques. Most of our products are 38mm in diameter and cut as 3mm thick discs for XRF analysis, 19mm thick discs for OE analysis. We also provide chips for ICP and AA analysis. Custom forms are available upon request.

We recognize that sample preparation along with reference materials are critical components in producing high quality analytical data. We therefore provide sample preparation equipment including disc and pendulum grinders for the surface preparation of metal samples for XRF and OE analysis, fusion systems for the preparation of powdered materials for XRF analysis and a unique ColdBlock™ digestion system for ICP and AA sample preparation.

This catalog includes our own current certified reference materials for metal alloys well as high quality reference materials from Rio Tinto Alcan and the European Commission's Joint Research Centre with whom we both have close distribution relationship. ARMI is the exclusive global distributor of Rio Tinto Alcan Aluminum alloy and process powder certified reference materials. ARMI is also one of a select group of approved distributors for the high quality European Commission reference materials. We are proud to include the products from both of these organizations in our catalog.

IARM Products



IARM products are available as 38mm diameter discs in either a thickness of 19mm for optical emission or 3mm for XRF. All of the products are also available as chips for analysis by ICP-OES and ICP-MS. Chips are packaged in bottles containing 100g of material for all alloy types with the exception of titanium which is packaged in bottles containing 65g.

All concentrations listed for IARM products are in % unless otherwise noted. Values in parentheses indicate an informational value.

Carbon and Low Alloy Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	Bi	C	Ca	Cd	Co	Cr	Cu	Mg	Mn	Mo	N	Nb
27G	CRM	*CP Iron*	*K00095*	0.0013	0.0016	(0.0002)	(<0.002)	0.003	(0.0002)	(<0.003)	0.0009	0.043	0.040	(0.0002)	0.003	(0.002)	(0.0003)	(0.002)
27F	CRM	*CP Iron*	*K00095*	(0.0009)	(0.0023)	(<0.002)	(<0.01)	0.002	(<0.001)	(<0.003)	0.0025	(<0.005)	(<0.005)	(<0.001)	(<0.005)	(<0.005)	(<0.002)	(<0.002)
28K	CRM	*AISI 1018*	*G10180*	0.0019	(0.005)	(0.0004)	(<0.001)	0.174	(<0.001)	(<0.001)	0.006	0.107	0.17	(<0.005)	0.805	0.0209	0.008	0.0015
29E	CRM	*AISI 1117*	*G11170*	0.0032	0.0085	0.0007	(<0.013)	0.193	0.0012		0.008	0.105	0.253	(0.0003)	1.19	0.0269	0.0093	0.0024
30D	CRM	*AISI 4140*	*G41400*	0.035	0.008	0.0004		0.391	(0.0006)		0.013	0.978	0.241	(0.005)	0.83	0.220	0.0097	0.002
30H	CRM	*AISI 4140*	*G41400*	0.020	0.0046	0.0007	(0.002)	0.425	(0.0009)		0.0071	0.97	0.131	(0.001)	0.937	0.199	0.0081	0.003
30J	CRM	*AISI 4140*	*G11180*	0.023	0.005	(0.0004)	(<0.02)	0.405	(<0.001)	(<0.001)	0.0098	0.972	0.173	(<0.005)	0.884	0.205	0.0100	0.0016
31A	CRM	*AISI 4340*	*G43400*	0.036	(0.006)	(0.002)		0.41	(0.0012)		0.011	0.85	0.19		0.75	0.220	0.0114	0.003
31G	CRM	*AISI 4340*	*G43400*	0.021	0.004	0.0004	(<0.02)	0.40	(<0.0009)	(0.001)	0.0083	0.820	0.183		0.689	0.223	0.0069	0.0023
33D	CRM	*AISI 4620*	*G46200*	0.026	0.0035	0.0002		0.209	(0.0003)		0.008	0.139	0.072		0.593	0.229	0.0053	0.002
34A	CRM	*AISI E6150*	*G61500*	0.014	(0.006)	(0.0002)		0.51	(0.0002)		0.009	0.99	0.18		0.78	0.044	0.0076	0.003

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
27G	CRM	*CP Iron*	*K00095*	0.045	0.025	0.003	(<0.003)	0.0011	(<0.01)	(<0.02)	0.07	(0.001)	(<0.008)	(0.0009)	(0.0007)	(<0.002)	(<0.005)	(<0.01)
27F	CRM	*CP Iron*	*K00095*	(<0.005)	0.079	(<0.005)	(<0.005)	0.0011	(<0.001)	(<0.005)	0.004	(<0.002)	(<0.005)	(<0.002)	(0.0007)	(<0.005)	(<0.002)	(<0.005)
28K	CRM	*AISI 1018*	*G10180*	0.064	(0.0029)	0.012	(0.0005)	0.027	(0.002)	(<0.005)	0.290	0.008	(<0.008)	(0.0014)	0.0010	(0.0023)	(<0.003)	(0.00016)
29E	CRM	*AISI 1117*	*G11170*	0.082	0.005	0.0157	0.001	0.121	0.003	(0.0006)	0.239	0.0109	(0.0004)	0.0014	0.0255	(<0.007)	(0.004)	(<0.004)
30D	CRM	*AISI 4140*	*G41400*	0.159	0.0014	0.013	(0.0003)	0.020			0.24	0.017	(0.003)	0.002	(0.004)	0.003		
30H	CRM	*AISI 4140*	*G41400*	0.063	0.0016	0.015	0.0005	0.022	0.0013	(<0.005)	0.253	0.008	(0.004)	0.0024	0.0040	0.007	(0.002)	0.002
30J	CRM	*AISI 4140*	*G11180*	0.187	(0.003)	0.010	(0.002)	0.036	(0.004)	(<0.005)	0.256	0.0109	(<0.008)	0.0013	0.0045	0.005	(<0.002)	(0.003)
31A	CRM	*AISI 4340*	*G43400*	1.660	(0.0015)	0.0120		0.028	(0.002)		0.220	0.008		0.0030	0.004			(0.003)
31G	CRM	*AISI 4340*	*G43400*	1.814	(0.002)	0.0136	(<0.007)	0.013	(<0.002)		0.262	0.0077	(<0.02)	0.0015	0.0036	0.004	(<0.003)	0.0012
33D	CRM	*AISI 4620*	*G46200*	1.78	0.0013	0.009	(<0.001)	0.023	(0.002)		0.207	0.005		0.003	0.0020	(<0.005)		(<0.002)
34A	CRM	*AISI E6150*	*G61500*	0.140	(0.0014)	0.0100		0.01			0.220	0.009		0.0030	0.170	(0.016)		(0.002)

Carbon and Low Alloy Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	Bi	C	Ca	Cd	Co	Cr	Cu	Mg	Mn	Mo	N	Nb
34C	CRM	*AISI E6150*	*G61500*	0.068	0.0024	0.0003		0.50	(0.0004)		0.005	0.914	0.078		0.739	0.022	0.0030	0.004
35B	CRM	*1¼Cr ½Mo*	*K11572*	0.016	0.006	0.0005		0.13	0.0001		0.008	1.12	0.11		0.45	0.46	0.0079	0.003
35A	CRM	*1¼Cr ½Mo*	*K11572*	0.028	(0.003)	(0.0002)		0.12	(0.0002)		0.008	1.23	0.078		0.52	0.49	0.0081	0.003
35C	CRM	*1¼Cr ½Mo*	*K11572*	0.029	0.008	0.0004		0.115	(0.0004)		0.011	1.09	0.271		0.44	0.52	0.0093	0.002
35L	CRM	*1¼Cr ½Mo*	*K11572*	0.017	0.004	(0.0004)		0.119	(<0.002)	(<0.001)	0.0068	1.35	0.124	(0.002)	0.54	0.61	0.007	(0.003)
36B	CRM	*2¼Cr 1Mo*	*K21590*	0.030	0.009	(0.0002)		0.14	0.0002		0.012	2.18	0.13		0.49	0.950	0.0102	0.004
36C	CRM	*2¼Cr 1Mo*	*K21590*	0.017	0.005	(<0.01)	(<0.01)	0.14	(<0.001)	(<0.001)	0.008	2.43	0.142	(<0.003)	0.49	0.98	0.008	(0.004)
37C	CRM	*5Cr ½Mo*	*K42544*	0.010	0.009	(0.0003)	(<0.03)	0.0960	(<0.002)		0.015	4.34	0.121	(<0.001)	0.408	0.500	0.0080	0.004
38A	CRM	*9Cr 1Mo*	*K90941*	0.009	(0.023)	(0.0003)		0.13	(0.0005)		0.029	8.67	0.15		0.41	0.96	0.0190	0.008
41D	CRM	*AISI D-2*	*T30402*	0.014	(0.01)	(0.0006)	(<0.002)	1.519	(0.0008)		0.020	11.5	0.047	(<0.001)	0.256	0.74	0.0152	0.004
49E	CRM	*AISI E52100*	*G52986*	0.024	0.0029	(<0.005)	(<0.001)	1.03	(<0.003)	(<0.001)	0.006	1.43	0.076	(<0.0005)	0.364	0.017	0.0030	0.003

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
34C	CRM	*AISI E6150*	*G61500*	0.085	0.0008	0.0090	(0.0003)	0.0011	(0.001)		0.30	0.0058		0.0045	0.206	(0.003)		(0.001
35B	CRM	*1¼Cr ½Mo*	*K11572*	0.084	0.0016	0.006	(<0.01)	0.015			0.58	0.006		0.003	0.005	(<0.01)		(<0.005)
35A	CRM	*1¼Cr ½Mo*	*K11572*	0.088	(0.0014)	0.005	(<0.005)	0.006			0.61	0.004		0.002	0.020			(0.002)
35C	CRM	*1¼Cr ½Mo*	*K11572*	0.102	0.0016	0.012	(0.001)	0.014	(0.005)		0.56	0.017		0.003	0.005	(0.005)		(0.002)
35L	CRM	*1¼Cr ½Mo*	*K11572*	0.070	(0.003)	0.007	(<0.001)	0.0139	(0.0025)	(<0.002)	0.679	0.0088	(<0.002)	0.002	0.0037	(0.003)	(<0.003)	(<0.005)
36B	CRM	*2¼Cr 1Mo*	*K21590*	0.180	0.0018	0.010	(0.003)	0.0038			0.21	0.008		0.003	0.006	(<0.01)		(<0.005)
36C	CRM	*2¼Cr 1Mo*	*K21590*	0.085	(0.004)	0.009	(<0.001)	0.014	(<0.002)	(<0.002)	0.25	0.008		(0.0022)	0.0061	(<0.006)	(<0.004)	(<0.004)
37C	CRM	*5Cr ½Mo*	*K42544*	0.148	(<0.02)	0.0140	(<0.002)	0.004	(<0.01)	(<0.006)	0.31	0.009	(<0.002)	0.0025	0.017	0.0120	(<0.008)	(0.002)
38A	CRM	*9Cr 1Mo*	*K90941*	0.24	(0.0050)	0.008		0.018	(0.001)		0.38	0.014		0.003	0.020	(0.023)		(0.003)
41D	CRM	*AISI D-2*	*T30402*	0.114	0.003	0.021	(0.0008)	0.012	(<0.01)	(<0.002)	0.256	0.005	(<0.01)	0.003	0.77	0.034	(<0.002)	(0.002)
49E	CRM	*AISI E52100*	*G52986*	0.043	0.002	0.006	(<0.001)	0.002	(0.001)	(<0.002)	0.248	0.007	(<0.005)	0.0006	0.066	(0.002)	(0.001)	(0.002)

Carbon and Low Alloy Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	Bi	C	Ca	Cd	Co	Cr	Cu	Mg	Mn	Mo	N	Nb
143F	CRM	*AISI 4130*	*G41300*	0.026	0.0051	(<0.003)	(<0.02)	0.308	(<0.001)		0.010	0.865	0.221	(<0.005)	0.573	0.163	0.0098	0.0015
155F	CRM	*AISI 4820*	*G48200*	0.0356	0.0006	(0.0004)		0.199	(<0.001)	(<0.001)	0.012	0.144	0.219	(<0.001)	0.617	0.244	0.005	0.0016
183C	CRM	*AISI 12L14*	*G12144*	0.0021	0.003	0.0011	(<0.001)	0.079			(0.002)	0.055	0.016	(<0.0005)	1.06	0.010	0.0049	0.0010
196A	CRM	*SPC 3*		0.015	0.025	0.0017		1.08	0.0002			2.35	0.25		2.40	0.129	0.0084	0.087
199C	CRM	*AISI 1144*	*G11440*	0.002	0.0059	(0.003)		0.469	(0.0011)		0.007	0.190	0.19	(0.0002)	1.550	0.029	0.0070	0.002
200D	CRM	*AISI 1045*	*G10450*	0.004	0.0050	(0.0002)		0.453	(0.0009)		0.007	0.109	0.232	(<0.001)	0.749	0.0217	0.009	0.001
206B	CRM	*AISI 1215*	*G12150*	0.0025	0.0045	0.0006		0.074			0.007	0.038	0.113		1.01	0.018	0.0075	0.002
209D	CRM	*AISI 1030*	*G10300*	0.003	0.0060	0.0002		0.322	0.002		0.007	0.137	0.243		0.68	0.037	0.0107	0.0014
210D	CRM	*AISI 1040*	*G10400*	0.002	0.0059	0.0004		0.412	0.0009		0.007	0.096	0.273	(0.001)	0.73	0.034	0.011	0.001
213B	CRM	*A36*	*K02600*	0.0009	0.0060	0.0002		0.153	(0.0001)		0.008	0.138	0.28		0.78	0.035	0.0094	0.002
213C	CRM	*A36*	*K02600*	0.0019	0.0058	0.0003		0.201	0.0014		0.0074	0.099	0.149		0.922	0.022	0.0116	0.0011

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
143F	CRM	*AISI 4130*	*G41300*	0.088	0.003	0.011	(<0.003)	0.0177	(<0.009)	(<0.005)	0.23	0.010	(<0.008)	0.0012	0.0046	0.003	(<0.005)	(<0.01)
155F	CRM	*AISI 4820*	*G48200*	3.36	0.003	0.008	(<0.006)	0.013	(<0.003)		0.223	0.0084	(<0.005)	0.0020	0.0015	0.004	(<0.001)	(<0.002)
183C	CRM	*AISI 12L14*	*G12144*	0.019	0.016	0.078	0.18	0.31	(0.001)		0.004	0.003	(<0.001)	0.0009	0.002	(0.002)	(<0.001)	0.001
196A	CRM	*SPC 3*		0.61	0.0021	0.040	0.001	0.014	0.006		0.35	0.033		0.014	0.157	0.189		0.006
199C	CRM	*AISI 1144*	*G11440*	0.085	0.0037	0.016	0.001	0.281	(0.003)	(<0.006)	0.21	0.0084	(0.0007)	0.002	0.0037	0.0023	(0.0006)	(<0.0040)
200D	CRM	*AISI 1045*	*G10450*	0.097	(0.004)	0.0103	(<0.002)	0.024	(0.0019)		0.225	0.0079	(<0.005)	0.00013	0.0244	0.003	(0.002)	(0.001)
206B	CRM	*AISI 1215*	*G12150*	0.053	0.016	0.050	(0.001)	0.293	(0.002)		0.012	0.0064		0.0008	0.0016	(0.003)		0.002
209D	CRM	*AISI 1030*	*G10300*	0.079	0.005	0.0084	0.001	0.021	0.004		0.268	0.012		0.0011	0.042	0.002	(0.003)	
210D	CRM	*AISI 1040*	*G10400*	0.122	0.0034	0.0052	0.001	0.030	0.002		0.230	0.010		0.0104	0.024	0.002		(0.001)
213B	CRM	*A36*	*K02600*	0.149	0.009	0.0094	(0.001)	0.041			0.214	0.010		0.0009	0.016	0.0030	0.0029	0.0013
213C	CRM	*A36*	*K02600*	0.068	0.0042	0.007	0.0011	0.025	0.002		0.25	0.0081	(0.007)	0.0010	0.035	0.002	(0.006)	(0.0004)

Carbon and Low Alloy Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	Bi	C	Ca	Cd	Co	Cr	Cu	Mg	Mn	Mo	N	Nb
213D	CRM	*A36*	*K02600*	0.003	(0.006)	(0.0004)		0.158	(<0.001)		0.009	0.09	0.21		0.725	0.0131	0.0080	0.0012
229B	CRM	*C ½Mo*	*K12822*	0.025	0.002	0.0006	(<0.0005)	0.22	(0.0003)		0.0116	0.017	0.0153	(<0.001)	0.858	0.495	0.0072	0.0019
252B	CRM	*AISI 8740*	*G87400*	0.028	0.005	0.0002		0.419	0.0002		0.005	0.486	0.084		0.91	0.223	0.0081	0.002
252C	CRM	*AISI 8740*	*G87400*	0.017	0.004	(0.0001)		0.416	(0.0003)		0.008	0.501	0.109		0.92	0.205	0.0083	0.002
252D	CRM	*AISI 8740*	*G87400*	0.024	0.005	0.0002	(0.0005)	0.423	(0.001)		0.0078	0.47	0.27	(0.0002)	0.84	0.204	0.0068	0.0013
252E	CRM	*AISI 8740*	*G87400*	0.028	0.005	(0.001)	(<0.02)	0.413	(<0.001)	(<0.001)	0.009	0.49	0.16	(<0.005)	0.87	0.204	0.0064	(0.003)
252F	CRM	*AISI 8740*	*G87400*	0.026	0.006	(0.001)	(<0.02)	0.406	(<0.001)	(<0.001)	0.0086	0.463	0.182	(<0.005)	0.88	0.21	0.0059	0.0016
254A	CRM	*AISI 1050*	*G10500*	0.025	0.005	0.0002		0.500	0.0010		0.006	0.05	0.09		0.78	0.013	0.0096	0.001
255B	CRM	*AISI H-11*	*T20811*	0.032	(0.004)	(0.0004)	(<0.004)	0.389	(<0.0003)	(<0.0001)	0.009	4.82	0.07	(<0.0001)	0.32	1.30	0.0050	0.006
268B	CRM	*STA 361*		0.002	(<0.005)	0.0011		0.087			0.003	0.094	0.31		0.58	0.033	0.0015	0.006
299A	CRM	*D6-AC*	*K24728*	0.092	0.003	0.0003		0.469	(0.001)		0.0054	1.03	0.100		0.70	0.99	0.0028	0.006

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
213D	CRM	*A36*	*K02600*	0.076	(0.01)	0.0120	(<0.001)	0.031	(0.0032)		0.226	0.015	(<0.005)	0.0011	0.001	0.0030	(0.002)	(0.0015)
229B	CRM	*C ½Mo*	*K12822*	0.03	0.0017	0.0073	0.0005	0.0106	(0.0006)	(<0.0012)	0.329	0.0012	(0.003)	0.0019	0.0059	0.003	(<0.003)	0.0008
252B	CRM	*AISI 8740*	*G87400*	0.461	0.0016	0.007	0.0004	0.019	(0.002)		0.236	0.021		0.002	0.004	0.002		0.001
252C	CRM	*AISI 8740*	*G87400*	0.505	(0.002)	0.025	0.0010	0.008	(<0.005)		0.248	0.007		0.001	0.005	(<0.005)		(<0.002)
252D	CRM	*AISI 8740*	*G87400*	0.424	0.0013	0.008	0.0004	0.013	0.0024	(<0.003)	0.26	0.012	(<0.005)	0.0012	0.002	0.004	0.0005	0.0013
252E	CRM	*AISI 8740*	*G87400*	0.407	(0.003)	0.0090	(0.005)	0.012	(0.003)	(<0.005)	0.257	0.008	(<0.008)	0.0010	0.003	(0.006)	(<0.002)	(<0.003)
252F	CRM	*AISI 8740*	*G87400*	0.412	(0.003)	0.011	(0.003)	0.009	(0.003)	(<0.005)	0.247	0.008	(<0.008)	0.0010	0.003	0.003	(<0.002)	(0.003)
254A	CRM	*AISI 1050*	*G10500*	0.044	(0.003)	0.0100	(0.0003)	0.024	(0.004)		0.211	0.005		0.001	0.002	(0.001)		(0.001)
255B	CRM	*AISI H-11*	*T20811*	0.062	(0.002)	0.0100	(<0.0005)	0.002	(<0.002)	(<0.011)	0.910	0.006	(<0.008)	(0.0048)	0.515	(0.007)	(<0.011)	(<0.005)
268B	CRM	*STA 361*		0.127	(0.015)	0.011	(<0.003)	0.035			0.21	0.010		(<0.001)	0.047	0.01		(<0.001)
299A	CRM	*D6-AC*	*K24728*	0.57	(0.002)	0.008	(0.001)	0.002	(0.002)		0.22	0.0055		0.0038	0.120	0.010		(0.001)

Carbon and Low Alloy Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	Bi	C	Ca	Cd	Co	Cr	Cu	Mg	Mn	Mo	N	Nb
305B	CRM	*NIT 135M*	*K24065*	0.92	0.006	0.0006	(<0.002)	0.425	0.0007		0.007	1.63	0.214	(0.002)	0.58	0.32	0.0044	0.002
307A	CRM	*AISI 1118*	*G11180*	0.032	0.008	(<0.005)	(<0.02)	0.163	(<0.0005)	(<0.001)	0.010	0.104	0.190	(<0.006)	1.44	0.045	0.0108	(0.002)
307B	CRM	*AISI 1118*	*G11180*	0.034	(0.008)	(0.0005)	(<0.014)	0.162	(<0.001)	(<0.001)	0.0101	0.105	0.191	(<0.005)	1.45	0.045	0.011	0.0013
321A	CRM	*Grade 722*		0.004	0.0052	0.0008		0.53	0.0016		0.007	0.24	0.212		1.53	0.026	0.0100	0.0017
322A	CRM	*Grade 75S*		0.002	0.005	0.0009		0.317	0.0019		0.006	0.16	0.33		1.40	0.021		
323A	CRM	*420/60*	*N/A*	0.003	0.006	0.0003	(0.0001)	0.41	0.0008		0.007	0.15	0.30	(0.0004)	1.14	0.023	0.0105	0.0012
324A	CRM	*M10*	*N/A*	0.002	0.006	0.0004		0.99	0.0009		0.007	0.42	0.22		1.01	0.022	0.0082	0.014
330A	CRM	*AISI 4330M*	*K23080*	0.045	0.003	0.0003		0.299	0.0010			0.90	0.074		1.00	0.404	0.0024	0.003
330B	CRM	*AISI 4330M*	*K23080*	0.023	(<0.1)	(0.001)	(<0.001)	0.302	(0.0011)	(<0.001)	0.013	0.807	0.084	(<0.001)	0.82	0.406	(0.0043)	0.002
340A	CRM	*AISI 300M*	*K44220*	0.062	0.004	0.0004		0.414	(0.0004)		0.006	0.84	0.103	(0.0002)	0.755	0.39	0.0020	0.015
341A	CRM	*HP9-4-30*	*K91283*	0.032	0.003	0.0005		0.298	0.0011		4.44	0.99	0.143		0.226	1.01	0.0025	0.005

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
305B	CRM	*NIT 135M*	*K24065*	0.156	0.0006	0.011	(0.0003)	0.014	0.004		0.349	0.011	(<0.005)	0.0044	0.004	0.004	(0.002)	0.0011
307A	CRM	*AISI 1118*	*G11180*	0.197	0.003	0.0113	0.002	0.096	(<0.004)	(<0.006)	0.281	0.0090	(<0.005)	0.0015	0.0028	(0.005)	(<0.002)	(0.002)
307B	CRM	*AISI 1118*	*G11180*	0.195	(0.004)	0.012	(0.006)	0.094	(<0.006)	(<0.005)	0.30	0.010	(<0.008)	0.003	0.003	(0.005)	(<0.004)	(0.004)
321A	CRM	*Grade 722*		0.47	(0.005)	0.012	(0.001)	0.017	(0.002)		0.65	0.019		0.0036	0.089	0.0050		(0.001)
322A	CRM	*Grade 75S*		0.28	0.006	0.009	(0.001)	0.021	0.0027		0.42	0.016		0.0016	0.124	0.003		(0.001)
323A	CRM	*420/60*	*N/A*	0.084	0.010	0.0178	(0.001)	0.061	(0.002)		0.19	0.011	(0.005)	0.0012	0.020	0.004		(0.001)
324A	CRM	*M10*	*N/A*	0.081	0.003	0.009		0.028	(0.002)		0.163	0.011		0.0016	0.0017	(0.003)	(0.003)	(0.001)
330A	CRM	*AISI 4330M*	*K23080*	1.80	0.0009	0.005	(0.0004)	0.001	(0.001)		0.273	0.0039		0.006	0.071	(0.004)		0.0015
330B	CRM	*AISI 4330M*	*K23080*	1.856	(0.004)	0.0075	(<0.01)	0.003	(<0.01)	(<0.001)	0.277	0.0047		(0.001)	0.076	0.024	(<0.001)	(.0013)
340A	CRM	*AISI 300M*	*K44220*	1.80	(0.001)	0.011	(0.001)	0.001	0.0021		1.63	0.005		0.0098	0.064	0.005	(0.0001)	(0.002)
341A	CRM	*HP9-4-30*	*K91283*	7.16	0.0008	0.0038	(0.001)	0.0008	(0.001)		0.10	0.005		0.003	0.086	(0.01)	(0.0002)	(0.003)

Carbon and Low Alloy Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	Bi	C	Ca	Cd	Co	Cr	Cu	Mg	Mn	Mo	N	Nb
342A	CRM	*Hy-Tuff*	*K32550*	0.019	0.006	0.0004		0.257	(0.0001)		0.008	0.38	0.110	(0.0002)	1.37	0.42	0.1020	(0.002)
348A	CRM	*AISI 1141*	*G11410*	0.002	0.007	0.0013	(<0.02)	0.384	0.0010	(<0.001)	0.010	0.123	0.230	(<0.006)	1.46	0.026	0.010	0.027
349A	CRM	*AISI 1541*	*G15410*	0.0020	0.005	0.0003		0.41	0.0015		0.0085	0.189	0.300	(0.0004)	1.49	0.059	0.0100	0.0012
359A	CRM	*AISI 1026*	*G10260*	0.002	0.0073	0.0003		0.267	0.0013		0.0069	0.121	0.186	(0.0005)	0.686	0.023	0.0094	0.002
360A	CRM	*AISI 1035*	*G10350*	0.0016	0.0060	0.0004		0.331	0.0017		0.0067	0.113	0.235	(0.0003)	0.733	0.024	0.0102	0.0015
373A	CRM	*AISI 1060*	*G10600*	0.002	0.0046	0.0003		0.63	0.0005		0.005	0.096	0.107	(0.0004)	0.70	0.0176	0.0088	0.001
378A	CRM	*Grade A615-75*		0.0029	(0.0055)	0.0006	(<0.015)	0.274	(<0.002)		0.013	0.187	0.299	(<0.005)	1.38	0.031	0.02	0.003
380A	CRM	*Grade A706-60*		0.0029	0.007	(0.0005)		0.268	(<0.001)	(<0.001)	0.010	0.192	0.265	(<0.001)	1.24	0.059	0.0120	0.002
380B	CRM	*Grade A706-60*		0.0021	0.0058	(0.0005)	(<0.001)	0.243	(0.0004)	(<0.001)	0.014	0.153	0.307	(<0.001)	1.27	0.055	0.0130	0.0016
381A	CRM	*Grade A706-80*		0.0023	0.0055	(0.0007)	(<0.001)	0.272	(0.0004)	(<0.001)	0.011	0.129	0.379	(<0.001)	1.16	0.0341	0.0140	0.0018

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
342A	CRM	*Hy-Tuff*	*K32550*	1.76	0.0006	0.006	0.0008	0.0051	0.0021		1.63	0.021		0.0028	0.023	(0.005)	(0.001)	(0.002)
348A	CRM	*AISI 1141*	*G11410*	0.081	0.003	0.0121	(0.002)	0.102	(0.003)	(<0.005)	0.270	0.0112	(<0.008)	0.0015	0.0029	(0.009)	(<0.003)	(0.003)
349A	CRM	*AISI 1541*	*G15410*	0.178	0.003	0.011	(0.001)	0.025	0.003		0.192	0.015	(0.007)	0.0013	0.027	0.004	(0.003)	(0.002)
359A	CRM	*AISI 1026*	*G10260*	0.068	0.0044	0.0094	(0.001)	0.020	(0.002)		0.233	0.0100		0.0009	0.027	(0.001)		(0.001)
360A	CRM	*AISI 1035*	*G10350*	0.078	0.004	0.008	(0.001)	0.023	0.0023		0.260	0.010		0.0010	0.039	(0.001)	(0.003)	(0.001)
373A	CRM	*AISI 1060*	*G10600*	0.048	0.002	0.0123	(0.001)	0.031	(0.002)		0.22	0.0069		0.0017	0.023	0.002	(0.003)	(0.003)
378A	CRM	*Grade A615-75*		0.142	(<0.014)	0.018	(0.003)	0.037	(0.004)		0.307	0.0236	(<0.008)	0.003	0.0844	0.006	(0.002)	(0.003)
380A	CRM	*Grade A706-60*		0.114	(0.007)	0.0210	(<0.005)	0.025	(0.0038)		0.181	0.0117	(0.001)	(0.003)	0.0475	0.009	(0.002)	(0.0014)
380B	CRM	*Grade A706-60*		0.182	(<0.014)	0.0160	(0.002)	0.027	(0.003)	(<0.001)	0.238	0.0132	(<0.001)	0.0011	0.049	0.003	(<0.004)	(<0.002)
381A	CRM	*Grade A706-80*		0.185	(0.005)	0.0130	(<0.007)	0.043	(0.005)	(<0.001)	0.269	0.0137	(<0.005)	0.0020	0.0299	0.0030	(<0.003)	(<0.002)

Special Low Alloy Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	Bi	C	Ca	Cd	Co	Cr	Cu	Mg	Mn	Mo	N	Nb
164A	CRM	*CLA1*	*N/A*	0.72	(0.002)	(0.0001)		0.004	0.0002		0.006	0.032	0.88		1.57	0.009	0.0003	0.006
166A	CRM	*CLA3*	*N/A*	0.55	(0.004)	(0.0002)		0.003	0.0003		0.004	0.014	0.64		1.29	1.08	0.0002	0.006
168A	CRM	*CLA5*	*N/A*	0.19	(0.003)	0.0004		0.003	0.0002		0.003	0.004	0.009		0.12	0.69	0.0002	0.003
169B	CRM	*CLA6*	*N/A*	0.36	(0.002)	0.0003	(<0.011)	0.232	(<0.006)		0.003	0.01	0.005	(<0.005)	0.75	0.004	(0.004)	0.004
170B	CRM	*CLA7*	*N/A*	0.230	(0.005)	0.0004	(<0.01)	0.400	(<0.004)	(<0.001)	0.005	0.009	0.005	(<0.005)	0.821	0.003	(0.005)	0.004
172A	CRM	*CLA9*	*N/A*	0.39	(0.005)	0.0003		0.78	0.0001		0.006	3.52	0.40		0.010	0.014	0.0004	0.004
180A	CRM	*CLA11*	*N/A*	0.76	(0.004)	0.0004		0.007	0.0001		0.004	0.037	0.89		0.41	0.006	0.0096	(0.005)

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
164A	CRM	*CLA1*	*N/A*	1.29	0.0005	0.004	(0.004)	0.070			0.019	0.002		0.002	0.78	1.44		(<0.005)
166A	CRM	*CLA3*	*N/A*	0.77	0.0006	0.005	(<0.01)	0.073			0.91	(0.003)		0.002	0.40	1.02		(<0.01)
168A	CRM	*CLA5*	*N/A*	2.32	0.0008	0.030	(<0.01)	0.064			0.46	0.003		0.004	0.004	0.52		(0.003)
169B	CRM	*CLA6*	*N/A*	0.010	(0.004)	0.004	(0.001)	0.004	(0.0009)	(0.005)	0.32	0.002	(0.008)	0.23	0.002	0.003	(<0.001)	(0.004)
170B	CRM	*CLA7*	*N/A*	0.197	(<0.006)	0.005	(<0.002)	0.004	(0.0007)	(<0.005)	0.21	0.002	(0.008)	0.19	0.002	(0.002)	(<0.002)	0.005
172A	CRM	*CLA9*	*N/A*	0.025	0.0006	0.007	(<0.01)	0.004			1.29	0.003		0.003	0.003	0.038		(<0.005)
180A	CRM	*CLA11*	*N/A*	1.29	0.0006	0.004	(0.002)	0.046			0.023	0.002		0.002	0.76	1.48		0.003

Stainless Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Ce	Co	Cr	Cu	Fe	Mg	Mn	Mo	N	Nb
26D	CRM	*A286*	*S66286*	0.29	(0.003)	0.0063	0.038	(<0.0005)	(<0.015)	0.040	14.29	0.047		(<0.005)	0.224	1.23	0.0035	0.007
242A	CRM	*Aermet 100*	*K92580*	0.004		(0.0005)	0.24			13.5	3.00	0.007			0.018	1.21	0.0003	0.004
22C	CRM	*AISI 15-5PH*	*S15500*	0.006	0.004	0.0006	0.042	(0.0002)		0.086	14.28	3.24		(0.0001)	0.63	0.48	0.030	0.290
152C	CRM	*AISI 17-7 PH*	*S17700*	0.94	(0.004)	0.0029	0.072			0.113	16.99	0.316			0.74	0.36	0.0172	0.012
289B	CRM	*AISI 301*	*S30100*	0.007	(<0.004)	0.0008	0.161	(0.001)	(<0.001)	0.013	17.09	0.241		(<0.001)	1.92	0.008	0.0110	0.013
241D	CRM	*AISI 302*	*S30200*	0.022	(0.001)	0.0011	0.125	(0.001)		0.022	18.1	0.24			1.94	(0.003)	0.006	0.03
234C	CRM	*AISI 302 HQ*	*S30430*	0.035	(0.0010)	0.0023	0.092	(0.0017)		0.03	18.2	3.41		(0.0020)	1.93	0.012	0.010	0.05
1D	CRM	*AISI 303*	*S30300*			(<0.002)	0.061			0.208	18.24	0.51			1.98	0.130	0.027	(<0.005)
Fe303-18	CRM	*AISI 303*	*S30300*	(0.004)	0.007	0.0012	0.046	(0.002)		0.140	17.2	0.61		(<0.001)	1.55	0.42	0.069	0.015
253A	CRM	*AISI 303Se*	*S30323*	0.003		0.0003	0.041			0.088	17.90	0.223			1.50	0.348	0.0373	0.016
253B	CRM	*AISI 303Se*	*S30323*	0.004	0.0052	0.0007	0.051	(0.0006)	(<0.001)	0.145	17.64	0.44		(0.0006)	1.61	0.59	0.031	0.021

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
26D	CRM	*A286*	*S66286*	24.6	(0.001)	0.013	(<0.03)	0.0008	(<0.004)	(<0.03)	0.05	0.0039	(<0.008)	2.17	0.223	0.036	(<0.02)	(0.0016)
242A	CRM	*Aermet 100*	*K92580*	11.1	0.0006	0.002		0.0004			0.02	(0.001)	0.008	0.009	0.01	(<0.01)		(0.002)
22C	CRM	*AISI 15-5PH*	*S15500*	4.63	0.0021	0.027	0.00003	0.0004			0.39	0.013	(0.004)	0.002	0.068	0.031	(0.0005)	(0.002)
152C	CRM	*AISI 17-7 PH*	*S17700*	7.30	0.001	0.024		0.0006			0.263	0.007	(0.005)	0.098	0.072	0.026		
289B	CRM	*AISI 301*	*S30100*	7.02	0.017	0.004	(0.005)	0.0025	(<0.001)	(<0.006)	0.99	0.002	(0.003)	0.005	0.018	0.012	(<0.03)	0.007
241D	CRM	*AISI 302*	*S30200*	9	(0.004)	0.003	(0.0004)	0.0021		(0.002)	0.99	0.002	(0.004)	0.018	0.034	(0.01)		(0.007)
234C	CRM	*AISI 302 HQ*	*S30430*	9.00	0.0050	0.009	(0.0010)	0.0027	(0.0040)	(0.0030)	0.88	0.002	0.0030	0.026	0.055	0.01	(0.0010)	0.006
1D	CRM	*AISI 303*	*S30300*	9.50	0.007	0.025		0.34			0.22	0.006	(<0.005)	(0.002)	0.101	0.015		
Fe303-18	CRM	*AISI 303*	*S30300*	8.12	0.006	0.033	(<0.0001)	0.35	(<0.001)	(<0.001)	0.47	0.015	(<0.005)	(0.004)	0.072	0.029	(<0.005)	(<0.005)
253A	CRM	*AISI 303Se*	*S30323*	9.17	0.009	0.140		0.0089		0.21	0.50	0.01		0.002	0.106	0.10		
253B	CRM	*AISI 303Se*	*S30323*	9.11	0.007	0.13	(0.0002)	0.011	(0.0018)	0.13	0.46	0.012	(0.003)	0.0027	0.092	0.05	(<0.002)	(<0.008)

Stainless Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Ce	Co	Cr	Cu	Fe	Mg	Mn	Mo	N	Nb
2H	CRM	*AISI 304*	*S30400*	0.003	0.007	0.0005	0.05	(0.0021)	(<0.005)	0.13	18.28	0.437		(<0.025)	1.86	0.264	0.08	0.010
162D	CRM	*AISI 304L*	*S30403*	0.003	0.007	0.0027	0.024	(0.003)		0.074	18.31	0.52		(0.0001)	1.82	0.573	0.097	0.009
Fe304L-18	CRM	*AISI 304L*	*S30403*	0.003	0.007	0.0012	0.024	(0.002)	(<0.002)	0.156	18.34	0.54		(<0.001)	1.39	0.462	0.081	0.013
3E	CRM	*AISI 309*	*S30900*	0.005	(0.005)	0.0005	0.0553	0.0015		0.12	22.47	0.259		(0.0003)	1.62	0.215	0.063	0.014
4E	CRM	*AISI 310*	*S31000*	0.004	(0.005)	0.0011	0.044			0.066	24.25	0.234			1.07	0.32	0.038	0.024
4D	CRM	*AISI 310*	*S31000*	0.009	(0.003)	0.0008	0.052			0.070	24.34	0.217		(0.0003)	1.20	0.39	0.046	0.010
4G	CRM	*AISI 310*	*S31000*	0.008	0.005	0.0032	0.0454	(0.001)		0.085	24.9	0.320		0.007	1.36	0.580	0.058	0.008
4F	CRM	*AISI 310*	*S31000*	0.015	0.003	0.0012	0.047	(0.002)	(<0.005)	0.067	24.5	0.146		(<0.002)	1.17	0.142	0.056	0.007
5I	CRM	*AISI 316*	*S31600*	0.004	0.006	0.0006	0.049	(0.0016)	(<0.005)	0.1850	16.67	0.487		(<0.005)	1.44	2.027	0.048	0.013
339A	CRM	*AISI 316H*	*S31609*	0.004	(0.001)	0.0006	0.16	0.0014		0.007	17.0	0.021		(0.0001)	1.71	2.79	0.0060	0.005
Fe316L-18	CRM	*AISI 316L*	*S31603*	0.006	(<0.023)	(0.001)	0.021	(0.002)	(<0.002)	0.209	16.7	0.550		(0.0004)	1.70	2.02	0.067	0.027

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
2H	CRM	*AISI 304*	*S30400*	8.23	0.007	0.032	(<0.003)	0.0278	(0.0018)	(<0.03)	0.248	0.011	0.006	0.0019	0.066	0.022	(<0.006)	0.003
162D	CRM	*AISI 304L*	*S30403*	8.15	0.005	0.030	(<0.003)	0.0271	(0.0019)	(<0.03)	0.57	0.0102	0.005	0.013	0.063	0.028	(<0.007)	(<0.007)
Fe304L-18	CRM	*AISI 304L*	*S30403*	8.17	0.006	0.034	(<0.001)	0.029	(0.002)	(<0.001)	0.43	0.013	(<0.005)	0.0056	0.076	0.056	(<0.005)	(<0.005)
3E	CRM	*AISI 309*	*S30900*	11.99	0.0048	0.0259	0.0003	0.0009	0.0013	(<0.022)	0.307	0.007	(0.005)	0.0022	0.126	0.018	(0.0004)	0.0018
4E	CRM	*AISI 310*	*S31000*	20.18	0.0021	0.0224		0.0006			0.514	0.0060	0.005	0.003	0.052	0.046		(0.001)
4D	CRM	*AISI 310*	*S31000*	20.20	0.004	0.022	(0.0003)	0.0009			0.49	0.007	0.005	0.0042	0.073	0.026		(0.001)
4G	CRM	*AISI 310*	*S31000*	19.2	0.003	0.027	(0.0005)	0.0008	(0.001)	(0.001)	0.630	0.008	0.008	0.029	0.092	0.017	(0.0005)	0.002
4F	CRM	*AISI 310*	*S31000*	20.1	0.004	0.0195	(<0.001)	0.0015	(0.001)	(0.001)	0.494	0.005	0.007	0.0031	0.146	0.012	(0.001)	0.002
5I	CRM	*AISI 316*	*S31600*	10.04	0.0057	0.028	(0.0001)	0.033	(0.0019)	(0.001)	0.435	0.0080	(0.006)	0.002	0.064	0.185	(0.005)	(0.002)
339A	CRM	*AISI 316H*	*S31609*	12.9	0.016	0.004	(0.002)	0.009		(0.0003)	0.64	0.002	(0.005)	0.002	0.007	0.0119	(0.001)	0.003
Fe316L-18	CRM	*AISI 316L*	*S31603*	10.12	0.005	0.033	(<0.003)	0.029	(0.0018)	(<0.004)	0.438	0.013	(<0.005)	0.003	0.067	0.060	(<0.005)	(<0.005)

Stainless Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Ce	Co	Cr	Cu	Fe	Mg	Mn	Mo	N	Nb
153C	CRM	*AISI 317L*	*S31703*	0.003	0.006	0.0009	0.023	(0.0026)		0.251	18.22	0.442			1.60	3.00	0.0860	0.015
6J	CRM	*AISI 321*	*S32100*	0.0195	(<0.04)	0.0024	0.045	(<0.001)		0.191	17.74	0.383		(<0.001)	1.52	0.387	0.0109	0.010
6I	CRM	*AISI 321*	*S32100*	0.084	(0.005)	0.0034	0.049	(0.0004)	(<0.005)	0.052	17.76	0.202		(<0.03)	1.76	0.133	0.013	0.018
8G	CRM	*AISI 347*	*S34700*	0.0030	(0.007)	0.0005	0.042	(<0.0005)		0.162	17.20	0.39		(<0.0200)	1.468	0.359	0.046	0.53
8I	CRM	*AISI 347*	*S34700*	0.0030	(<0.008)	(0.0005)	0.0424	(<0.001)		0.301	17.08	0.441			1.395	0.416	0.052	0.60
8H	CRM	*AISI 347*	*S34700*	0.005	(<0.01)	(0.0002)	0.049	(<0.002)		0.083	17.14	0.192		(<0.001)	1.81	0.237	0.027	0.48
9D	CRM	*AISI 410*	*S41000*	0.003	0.003	0.0005	0.143	(0.001)		0.0213	12.51	0.11		(0.0004)	0.57	0.038	0.0225	0.0023
327A	CRM	*AISI 415*	*S41500*	0.003	(0.004)	0.001	0.018			0.019	12.73	0.082		(0.0003)	0.54	0.53	0.0157	0.008
10D	CRM	*AISI 416*	*S41600*	0.003	0.007	0.002	0.110	(0.0011)		0.0187	12.42	0.192		(<0.09)	1.11	0.148	0.0241	0.0027
154A	CRM	*AISI 420*	*S42000*	0.008			0.39			0.021	12.82	0.044			0.47	0.052	0.0294	0.004
154C	CRM	*AISI 420*	*S42000*	0.003	(0.004)	0.0007	0.339	(<0.001)		0.016	12.41	0.120		(<0.001)	0.423	0.036	0.054	0.014

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
153C	CRM	*AISI 317L*	*S31703*	11.10	0.0060	0.029	(0.001)	0.0288	(0.0020)	(<0.04)	0.35	0.010	(0.006)	0.004	0.058	0.043	(<0.001)	0.004
6J	CRM	*AISI 321*	*S32100*	9.00	(0.001)	0.028	(<0.03)	0.002	(<0.005)	(<0.001)	0.62	0.009	(0.01)	0.34	0.081	0.026	(<0.001)	(<0.002)
6I	CRM	*AISI 321*	*S32100*	9.20	0.0012	0.0208	(<0.02)	0.023	(0.0008)	(<0.03)	0.31	0.0060	(<0.01)	0.60	0.048	0.023	(0.003)	(0.003)
8G	CRM	*AISI 347*	*S34700*	9.02	0.003	0.0327	(<0.02)	0.0126	(<0.02)	0.01	0.36	0.0107	0.004	0.0024	0.062	0.032	(<0.005)	0.002
8I	CRM	*AISI 347*	*S34700*	9.01	(0.004)	0.0352	(<0.03)	0.0118	(<0.002)	(<0.001)	0.38	0.012	(<0.005)	0.0080	0.057	0.060	(<0.001)	(<0.005)
8H	CRM	*AISI 347*	*S34700*	9.08	(0.004)	0.025	(<0.03)	0.002	(<0.002)	(<0.001)	0.40	0.008	(0.01)	0.0027	0.049	0.016	(<0.001)	(<0.002)
9D	CRM	*AISI 410*	*S41000*	0.200	0.0053	0.033	(0.0002)	0.028		(0.0001)	0.38	0.006	0.004	0.0016	0.022	0.004	(0.0001)	(0.001)
327A	CRM	*AISI 415*	*S41500*	3.83	0.0047	0.018	(0.0001)	0.0010			0.43	0.006	(0.004)	0.0026	0.036	0.009		(0.002)
10D	CRM	*AISI 416*	*S41600*	0.291	0.005	0.0178	(0.0003)	0.334	(0.0022)	(<0.02)	0.475	0.01		0.0015	0.051	0.005	(0.006)	(<0.005)
154A	CRM	*AISI 420*	*S42000*	0.19	(0.0068)	0.018		0.003			0.35	0.004		0.002	0.045	0.011		
154C	CRM	*AISI 420*	*S42000*	0.215	0.0042	0.0174	(<0.01)	0.0043	(0.001)	(0.0003)	0.37	0.0058	(<0.005)	0.0015	0.043	0.005	(<0.005)	(0.0014)

Stainless Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Ce	Co	Cr	Cu	Fe	Mg	Mn	Mo	N	Nb
352A	CRM	*AISI 420FS*	*42020*	0.0025	0.005	0.0007	0.341	(<0.005)	(<0.005)	0.016	13.11	0.148		(<0.009)	1.13	0.38	0.0290	0.012
205C	CRM	*AISI 422*	*S42200*	0.003	0.004	0.0003	0.231	(0.0005)		0.058	12.14	0.109			0.74	1.00	0.040	0.010
205D	CRM	*AISI 422*	*S42200*	0.002	0.004	0.0007	0.23	(0.002)	(<0.0010)	0.043	12.2	0.122		(0.0007)	0.74	1.00	0.048	0.013
11D	CRM	*AISI 430*	*S43000*	0.015	(0.005)	0.0006	0.070	(0.002)		0.024	17.35	0.085		(0.0003)	0.400	0.075	0.021	0.009
355A	CRM	*AISI 430FS*	*S43020*	0.0016	0.004	0.0011	0.0274	(<0.005)	(<0.005)	0.047	17.81	0.083		(0.0008)	0.47	0.337	0.0439	0.0095
12B	CRM	*AISI 431*	*S43100*	(0.003)		(0.0003)	0.174			0.018	16.02	0.143			0.60	0.057	2.150	0.011
12C	CRM	*AISI 431*	*S43100*	0.004	0.004	0.0004	0.155	0.0007		0.048	15.78	0.33		(0.0002)	0.55	0.125	0.056	0.020
13D	CRM	*AISI 440C*	*S44004*	0.006	0.008	0.0005	1.04	(0.0007)		0.0212	16.36	0.184			0.70	0.488	0.0492	0.0074
353A	CRM	*AISI 440F Se*	*44023*	0.0018	0.004	0.0006	0.98	(0.0003)	(<0.005)	0.032	17.01	0.13		(0.004)	0.95	0.50	0.027	0.011
14B	CRM	*AISI 446*	*S44600*	0.004	(<0.005)	(0.0004)	0.016	(<0.005)		0.030	23.60	0.071		(<0.001)	0.426	0.095	0.043	0.006
14C	CRM	*AISI 446*	*S44600*	0.0041	0.003	0.0005	0.061	(0.001)		0.043	24.9	0.19		(0.0005)	0.385	0.101	0.058	0.013

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
352A	CRM	*AISI 420FS*	*42020*	0.269	0.005	0.0182	(<0.001)	0.21	(0.004)	(0.006)	0.357	0.0046	(0.0007)	0.0015	0.028	0.005	(<0.02)	(<0.003)
205C	CRM	*AISI 422*	*S42200*	0.68	0.0041	0.017		0.0034			0.39	0.004	(0.002)	0.002	0.21	1.03	(0.001)	0.002
205D	CRM	*AISI 422*	*S42200*	0.84	0.0053	0.021	0.002	0.0028	(<0.0070)	(<0.0050)	0.26	0.005	(<0.0050)	0.002	0.32	1.07	(<0.0050)	0.0022
11D	CRM	*AISI 430*	*S43000*	0.60	0.004	0.023	(0.0005)	0.004		(0.001)	0.83	0.006	(0.003)	0.003	0.052	0.008	(0.004)	(0.001)
355A	CRM	*AISI 430FS*	*S43020*	0.427	0.010	0.0186	(0.0002)	0.31	(<0.004)	(0.0001)	0.435	0.005	(0.001)	0.0020	0.038	0.018	(0.0007)	(0.002)
12B	CRM	*AISI 431*	*S43100*	2.15	0.0101	0.016	(<0.0005)	0.003			0.56	0.006		0.003	0.037	0.014		(0.002)
12C	CRM	*AISI 431*	*S43100*	2.23	0.005	0.022	(0.0005)	0.0032			0.34	0.008	(0.0005)	0.002	0.040	0.015		(0.001)
13D	CRM	*AISI 440C*	*S44004*	0.256	0.0031	0.020	(<0.0090)	0.0012	0.0027	(<0.02)	0.614	0.011	0.004	0.0035	0.058	0.046	(<0.02)	0.0017
353A	CRM	*AISI 440F Se*	*44023*	0.265	0.005	0.019	(0.002)	0.025	(0.002)	0.17	0.49	0.0056	0.004	0.0015	0.116	0.041	(0.005)	0.002
14B	CRM	*AISI 446*	*S44600*	0.29	0.0054	0.022	(<0.001)	0.0015			0.51	0.005	(<0.001)	0.0024	0.11	0.011		(<0.005)
14C	CRM	*AISI 446*	*S44600*	0.364	0.006	0.021	(0.0001)	0.0015	(0.002)	(0.0001)	0.63	0.004	(0.002)	0.013	0.078	0.031	(0.0003)	(0.001)

Stainless Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Ce	Co	Cr	Cu	Fe	Mg	Mn	Mo	N	Nb
318B	CRM	*Alloy 16-6-2-2*	*N/A*	0.004	(0.004)	0.0003	0.050			0.100	15.9	1.63			1.02	1.57	0.032	0.086
292A	CRM	*Alloy 2101*	*S32101*	0.010	(<0.01)	0.0011	0.030			0.031	21.35	0.29			5.0	0.097	0.245	0.009
Fe2205-18	CRM	*Alloy 2205*	*S32205*	0.007	(0.003)	(0.002)	0.018	(0.002)		0.104	22.60	0.208		(<0.001)	1.18	3.20	0.17	0.011
317A	CRM	*Alloy 2304*	*S32304*	0.005	(0.006)	0.0019	0.025	(0.0003)		0.064	22.5	0.21			1.26	0.249	0.123	0.004
301B	CRM	*Alloy 2507*	*S32750*	0.005	(0.004)	0.0024	0.0206	(0.0009)		0.055	25.06	0.192		(0.0003)	0.807	3.75	0.297	0.02
316A	CRM	*Alloy 253MA*	*S30815*	0.006	0.007	(0.0003)	0.070	0.0017	0.064	0.118	21.07	0.19			0.61	0.250	0.1605	0.003
302B	CRM	*Alloy 254SMO*	*S31254*	0.016	(0.009)	0.0027	0.0226	(0.0031)		0.072	20.33	0.70		0.0009	0.93	6.24	0.18	0.012
239C	CRM	*Alloy 255*	*S32550*	0.007	(0.004)	0.0014	0.017	(<0.004)	(<0.005)	0.039	25.8	1.49		(<0.03)	0.87	3.33	0.228	0.006
335A	CRM	*Alloy AM355*	*S35500*	0.019	(0.01)	0.0007	0.138	(0.001)		0.063	15.30	0.086			0.85	2.72	0.085	0.015
308A	CRM	*Alloy C-250*	*K92890*	0.097	(0.003)	0.0029	0.003	(0.0003)		7.80	0.023	0.018			0.019	4.78	0.0013	0.003
99D	CRM	*Alloy C-300*	*K93120*	0.117	(<0.002)	0.0026	0.006	(<0.001)		9.240	0.120	0.05		(<0.005)	0.013	4.80	0.0014	0.011

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
318B	CRM	*Alloy 16-6-2-2*	*N/A*	5.71	0.009	0.022		0.0006			0.41	0.004	(0.004)	0.014	0.115	0.087		(0.003)
292A	CRM	*Alloy 2101*	*S32101*	1.47	0.0024	0.018		0.001			0.75	0.004	(0.006)	0.005	0.084	0.01		
Fe2205-18	CRM	*Alloy 2205*	*S32205*	5.57	0.004	0.023	(<0.003)	0.001	(0.001)	(<0.001)	0.46	0.006	(0.02)	0.003	0.063	0.024	(<0.005)	(<0.005)
317A	CRM	*Alloy 2304*	*S32304*	4.19	0.0032	0.028	(0.001)	0.0007			0.39	0.008	(0.004)	(0.002)	0.061	0.015		
301B	CRM	*Alloy 2507*	*S32750*	7.01	0.0069	0.251	(0.0003)	0.001	(0.0006)	(0.00008)	0.419	0.0051	0.003	0.003	0.07	0.05	(0.0004)	0.0008
316A	CRM	*Alloy 253MA*	*S30815*	10.81	0.0052	0.023	(0.0001)	0.0011			1.50	0.006	0.003	0.002	0.042	0.022	(0.0008)	
302B	CRM	*Alloy 254SMO*	*S31254*	17.7	0.0032	0.0256	(0.001)	0.0007	(0.0018)	(0.0006)	0.56	0.0075	0.004	0.0031	0.052	0.025	(<0.01)	(<0.01)
239C	CRM	*Alloy 255*	*S32550*	6.14	(0.007)	0.023	(0.004)	0.0010	(0.0004)	(<0.03)	0.38	0.003	(0.004)	0.004	0.083	0.05	(<0.03)	(0.003)
335A	CRM	*Alloy AM355*	*S35500*	4.27	0.0020	0.016	(0.002)	0.0005			0.39	0.0034	(0.01)	(0.002)	0.094	0.008		(0.002)
308A	CRM	*Alloy C-250*	*K92890*	18.53	0.0005	0.004		0.0005			0.014	0.001	(<0.01)	0.46	0.01	0.01		0.01
99D	CRM	*Alloy C-300*	*K93120*	18.4	(<0.003)	0.0040	(0.01)	0.0011	(<0.004)		0.030	(0.002)	(<0.032)	0.6700	0.037	0.01	(<0.002)	(0.008)

Stainless Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Ce	Co	Cr	Cu	Fe	Mg	Mn	Mo	N	Nb
309A	CRM	*Alloy C-350*	*K93540*	0.11	(0.004)	0.0032	0.0059	(<0.001)		12.3	0.053	0.023			0.018	4.71	0.0010	0.004
15B	CRM	*Custom 450*	*S45000*	0.006			0.047			0.24	14.53	1.53			0.39	0.82	0.0355	0.65
15C	CRM	*Custom 450*	*S45000*	0.005	0.0044	0.0006	0.032	(0.0004)	(<0.01)	0.024	14.39	1.54		(<0.005)	0.760	0.722	0.0148	0.63
16C	CRM	*Custom 455*	*S45500*	0.072	0.003	0.0011	0.003			0.017	11.34	2.08		(0.0001)	0.024	0.009	0.0030	0.248
354A	CRM	*Custom 465*	*S46500*	0.05	(0.002)	0.0023	0.0076	(0.0003)	(<0.001)	0.022	11.61	0.018		(0.0001)	0.012	0.95	0.0018	0.02
239B	CRM	*Ferralium 255*	*S32550*	0.008	(0.003)	0.0008	0.013			0.048	25.9	1.48			0.86	3.42	0.25	0.024
20C	CRM	*Greek Ascoloy*	*S41800*	(0.004)			0.18			0.031	12.15	0.060			0.30	0.12	0.0222	0.010
20B	CRM	*Greek Ascoloy*	*S41800*	0.006			0.18			0.030	12.42	0.069			0.35	0.32	0.0434	0.010
100C	CRM	*Haynes 556*	*R30556*	0.350		(0.002)	0.104			17.9	21.9	0.105	31.2	(0.001)	0.97	3.06	0.126	0.172
24B	CRM	*Invar-36*	*K93601*	0.002	(<0.005)	(0.001)	0.053			0.036	0.121	0.052			0.82	0.011	0.0017	(<0.01)
98B	CRM	*Kovar*	*K94610*	0.07	(<0.002)	0.001	0.007	(<0.0005)		17.0	0.012	0.028		0.0040	0.18	0.010	0.0024	0.002

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
309A	CRM	*Alloy C-350*	*K93540*	18.4	0.0005	0.004		0.0006			0.020	(0.001)	(0.006)	1.47	0.01	0.01		0.008
15B	CRM	*Custom 450*	*S45000*	6.94	0.0039	0.013		0.001			0.33	0.009		0.005	0.033	0.12		
15C	CRM	*Custom 450*	*S45000*	6.35	0.003	0.019	(0.003)	0.0018	(0.003)	(0.0003)	0.26	0.009	(0.004)	0.002	0.041	0.020	(0.01)	0.003
16C	CRM	*Custom 455*	*S45500*	8.23	0.0014	0.007		0.0046			0.03	0.003	(0.005)	1.16	0.070	0.008		0.0010
354A	CRM	*Custom 465*	*S46500*	11.05	0.0012	0.0029	(0.004)	0.0019	(0.0002)	(<0.003)	0.04	0.002	(<0.004)	1.56	0.020	0.02	(<0.005)	(<0.005)
239B	CRM	*Ferralium 255*	*S32550*	5.78	0.004	0.025	(0.001)	0.0005			0.39	0.003	(0.004)	0.002	0.099	0.106		0.002
20C	CRM	*Greek Ascoloy*	*S41800*	1.93	0.0068	0.018		0.007			0.35	0.004		(0.003)	0.086	2.59		
20B	CRM	*Greek Ascoloy*	*S41800*	1.94	0.0056	0.019		0.004			0.40	0.005		0.004	0.17	3.52		
100C	CRM	*Haynes 556*	*R30556*	20.5	0.001	0.013		0.0005			0.441	0.003	0.67	0.013	0.039	2.49		0.006
24B	CRM	*Invar-36*	*K93601*	35.86	0.003	0.009		0.0010		0.19	0.28	0.0018	(<0.005)	0.002	(<0.005)	(<0.04)		(<0.005)
98B	CRM	*Kovar*	*K94610*	29.4	0.0021	0.002	(<0.0005)	0.0007			0.17	0.002	(<0.05)	0.03	(0.003)	(0.02)	(<0.0005)	(<0.01)

Stainless Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Ce	Co	Cr	Cu	Fe	Mg	Mn	Mo	N	Nb
291A	CRM	*M-152*	*S64152*	(0.004)	(0.005)	0.001	0.11	(0.001)		0.021	11.3	0.060			0.71	1.61	0.035	0.022
99B	CRM	*Maraging 300*	*K93120*	0.095		0.0026	0.005			9.24	0.081	0.094			0.036	4.88	0.0011	(0.005)
19C	CRM	*Nitronic 40*	*S21900*	0.007	(0.004)	0.0011	0.012			0.087	19.51	0.45			9.02	0.40	0.32	0.028
17D	CRM	*Nitronic 50*	*S20910*	0.0032	0.005	0.001	0.041	(0.002)		0.23	21.06	0.412		(0.0003)	4.15	1.52	0.311	0.14
18D	CRM	*Nitronic 60*	*S21800*	0.006	(0.007)	0.0011	0.069	(0.002)	(<0.005)	0.086	16.70	0.421		(<0.021)	8.1	0.325	0.170	0.031
295A	CRM	*NMS 140*	*N/A*	(0.01)		0.002	0.021			0.021	18.0	0.113			19.7	0.97	0.62	0.018
294A	CRM	*NMS J38*	*N/A*	(0.01)		(0.003)	0.017			0.021	19.7	0.34			21.6	1.8	0.78	0.03
296A	CRM	*NMS MDC*	*N/A*	(0.005)		(0.001)	0.074			0.018	11.2	0.12			10.6	0.60	0.23	0.043
214A	CRM	*NMS-100*	*N/A*	(0.002)		(0.001)	0.018			0.021	12.36	0.36			18.3	0.44	0.27	0.23
21D	CRM	*PH13-8Mo*	*S13800*	1.03	(0.003)	(0.0004)	0.032	(0.0004)		0.078	12.69	0.017		(<0.0005)	0.052	2.23	0.0037	0.005
FeZ100-18	CRM	*Zeron 100*	*S32760*	0.017	(0.0045)	0.002	0.017	(<0.002)		0.123	25.5	0.55		(0.002)	0.52	3.61	0.22	0.005

IARM Part Number	Type	Grade	UNS#	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Ta	Ti	V	W	Zn	Zr
291A	CRM	*M-152*	*S64152*	2.62	0.014	0.016		0.009			0.23	0.004	(0.001)	0.0011	0.29	(0.01)		(<0.005
99B	CRM	*Maraging 300*	*K93120*	18.46	0.0015	0.005		0.0005			0.022	(0.003)		0.74	0.012	0.016		(<0.01)
19C	CRM	*Nitronic 40*	*S21900*	6.40	0.003	0.027		0.0007			0.31	0.0061	0.005	0.003	0.090	0.037		
17D	CRM	*Nitronic 50*	*S20910*	11.83	0.003	0.026	(0.0002)	0.0018	(0.001)	(0.001)	0.416	0.0044	0.003	0.010	0.118	0.056	(0.0004)	0.002
18D	CRM	*Nitronic 60*	*S21800*	8.39	(0.004)	0.032	(<0.11)	0.0025	(<0.004)	(<0.03)	3.68	0.007	(0.01)	0.012	0.064	0.026	(<0.02)	(0.005)
295A	CRM	*NMS 140*	*N/A*	1.84	0.003	0.028		0.0041			0.36	0.004		0.0019	0.046	0.016		(0.001)
294A	CRM	*NMS J38*	*N/A*	2.9	0.003	0.026	(0.001)	0.0028			0.43	(0.006)	(0.003)	(0.002)	0.046	0.01		(0.002)
296A	CRM	*NMS MDC*	*N/A*	1.71	0.003	0.027		0.002			0.38	0.001		0.002	0.056	0.01		
214A	CRM	*NMS-100*	*N/A*	2.33	0.0026	0.033		0.002			1.00	0.008		0.002	0.04	0.02		
21D	CRM	*PH13-8Mo*	*S13800*	8.29	(0.0006)	0.008	(<0.001)	0.0014	(<0.001)	(<0.001)	0.039	(0.001)	(<0.003)	0.016	0.017	0.012	(<0.002)	(0.002)
FeZ100-18	CRM	*Zeron 100*	*S32760*	7.1	0.003	0.026	(<0.003)	0.0009	(0.001)	(<0.004)	0.24	0.006	(<0.045)	(0.004)	0.090	0.56	(<0.005)	(<0.005

Tool Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Co	Cr	Cu	Mg	Mn	Mo	N	Nb	Ni	O
39B	CRM	*AISI A-2*	*T30102*	0.006			0.99		0.014	4.79	0.10		0.54	1.01	0.0096	0.006	0.14	
39C	CRM	*AISI A-2*	*T30102*	0.017	(0.005)	0.001	0.99	(0.001)	0.013	4.99	0.077		0.45	0.97	0.011	0.0040	0.144	0.001
40A	CRM	*AISI A-6*	*T30106*	0.009	(0.007)	(0.0003)	0.68		0.011	1.04	0.092		2.15	1.05	0.0077	0.004	0.14	(0.0024)
40B	CRM	*AISI A-6*	*T30106*	(0.006)		(0.0010)	0.68		0.015	1.04	0.500		1.98	1.22	0.0107	0.005	0.096	(0.0014)
40C	CRM	*AISI A-6*	*T30106*	0.019	0.008	0.0009	0.72	(0.001)	0.010	0.99	0.142		1.91	1.27	0.0083	0.003	0.255	0.0013
42C	CRM	*AISI H-13*	*T20813*	0.018	(0.01)	0.0011	0.382	(0.0005)	0.022	4.86	0.066		0.4	1.29	0.0201	0.004	0.051	0.003
43B	CRM	*AISI L-6*	*T61206*	0.021	0.005	0.0002	0.711	(0.002)	0.012	0.651	0.180	(<0.003)	0.56	0.206	0.0093	0.004	1.39	0.0016
44C	CRM	*AISI M-2*	*T11302*	0.05	(0.01)	(0.002)	0.82		0.247	4.04	0.12		0.301	5.02	0.033	0.012	0.132	0.003
45A	CRM	*AISI O-6*	*T31506*	0.011	(0.003)	(0.0001)	1.39	(0.0005)	0.004	0.13	0.049		0.88	0.250	0.0079	0.002	0.11	(0.0017)
45B	CRM	*AISI O-6*	*T31506*	0.010	0.002	(0.0001)	1.42	(0.001)	0.004	0.061	0.018		0.90	0.24	0.0080	0.002	0.024	0.0005
46B	CRM	*AISI S-1*	*T41901*	0.011	(0.01)	0.0003	0.45		0.013	1.09	0.147		0.27	0.222	0.0069	0.003	0.108	0.002

IARM Part Number	Type	Grade	UNS#	P	Pb	S	Sb	Si	Sn	Ta	Ti	V	W	Zn	Zr
39B	CRM	*AISI A-2*	*T30102*	0.017		0.003		0.35	0.004		0.003	0.22	(0.026)		
39C	CRM	*AISI A-2*	*T30102*	0.019	(0.0001)	0.007	(0.002)	0.28	0.005		0.0029	0.21	0.011		(0.002)
40A	CRM	*AISI A-6*	*T30106*	0.024		0.010		0.25	0.006		0.003	0.007	(0.013)		
40B	CRM	*AISI A-6*	*T30106*	0.012		0.003		0.39	0.004		0.003	0.014	0.013		
40C	CRM	*AISI A-6*	*T30106*	0.014		0.012		0.32	0.008		0.008	0.010	0.009		(0.002)
42C	CRM	*AISI H-13*	*T20813*	0.022	0.0007	0.0037	(0.004)	0.85	0.006	(0.004)	0.0125	0.84	0.32	(0.008)	(0.002)
43B	CRM	*AISI L-6*	*T61206*	0.008	(<0.0005)	0.013	(<0.002)	0.251	0.013	(<0.001)	0.0047	0.0035	(<0.005)		(<0.001)
44C	CRM	*AISI M-2*	*T11302*	0.027	(0.002)	0.004	(0.004)	0.31	0.010	(0.004)	0.004	1.91	6.0	0.006	0.002
45A	CRM	*AISI O-6*	*T31506*	0.0140	(<0.005)	0.012	(0.002)	1.02	0.005		0.0030	0.005			(<0.005)
45B	CRM	*AISI O-6*	*T31506*	0.010		0.008	(0.001)	0.92	0.008		0.002	0.003	(0.004)		(0.001)
46B	CRM	*AISI S-1*	*T41901*	0.019	(<0.002)	0.0040		0.89	0.016		0.007	0.170	1.96		

Tool Steel

IARM Part Number	Type	Grade	UNS#	Al	As	B	C	Ca	Co	Cr	Cu	Mg	Mn	Mo	N	Nb	Ni	O
47A	CRM	*AISI S-5*	*T41905*	0.017	(0.014)	(0.0003)	0.58		0.009	0.29	0.25		0.80	0.41	0.0084	(0.004)	0.23	(0.0021)
47B	CRM	*AISI S-5*	*T41905*	0.014		(<0.001)	0.59		0.007	0.23	0.17		0.79	0.20	0.0092	(0.002)	0.090	(0.0014)
48C	CRM	*AISI T-1*	*T12001*	0.017	0.012	(0.001)	0.77		0.22	4.24	0.13	(0.0002)	0.39	0.17	0.0165	0.005	0.204	0.003
251A	CRM	*AISI M-4*	*T11304*	0.01	0.016	(0.002)	1.398	(0.0005)	0.129	4.1	0.13		0.33	5.16	0.044	0.016	0.131	(0.01)
255A	CRM	*AISI H-11*	*T20811*	0.01	(0.002)	0.0004	0.403	(0.0004)	0.009	4.84	0.049		0.27	1.33	0.0067	0.004	0.083	0.0011
259A	CRM	*AISI S-7*	*T41907*	0.016	0.006	0.0003	0.479	(0.0003)	0.011	3.27	0.081		0.399	1.43	0.0077	0.003	0.194	0.0014
281A	CRM	*AISI T-4*	*T12004*	0.007	(0.02)	(0.003)	0.74		4.8	3.89	0.096	(0.003)	0.3	0.49	0.0064	0.094	0.15	0.003
304A	CRM	*AISI M-1*	*T11301*	0.009	(0.01)	0.002	0.857	(0.002)	0.278	3.55	0.14		0.260	8.04	0.034	0.021	0.133	0.002
306B	CRM	*AISI M-50*	*T11350*	0.082	0.004	0.0007	0.837	(0.001)	0.010	4.12	0.058	(<0.002)	0.24	4.23	0.005	0.005	0.095	0.0009
320A	CRM	*AISI M-35*	*T11335*	0.023	0.013	0.0011	0.093	(<0.003)	4.9	4.22	0.091	(<0.003)	0.33	4.79	0.014	0.015	0.204	0.0021

IARM Part Number	Type	Grade	UNS#	P	Pb	S	Sb	Si	Sn	Ta	Ti	V	W	Zn	Zr
47A	CRM	*AISI S-5*	*T41905*	0.015	(<0.005)	0.010	(0.003)	1.92	0.031		0.008	0.22	(0.016)		(<0.01)
47B	CRM	*AISI S-5*	*T41905*	0.017	(0.0003)	0.006		1.96	0.008		0.010	0.17	(0.016)		
48C	CRM	*AISI T-1*	*T12001*	0.029	(0.0004)	0.018	(0.002)	0.45	0.012	(0.01)	0.006	1.27	17.5		(0.003)
251A	CRM	*AISI M-4*	*T11304*	0.014	(0.002)	0.058		0.58	0.011		0.003	3.9	5.5		(0.002)
255A	CRM	*AISI H-11*	*T20811*	0.013	(<0.001)	0.0012		0.93	0.006	(<0.005)	0.002	0.43	0.007		(<0.005)
259A	CRM	*AISI S-7*	*T41907*	0.020	(<0.0005)	0.0007	(0.002)	0.44	0.004	(0.005)	0.0026	0.256	0.035	(<0.005)	0.001
281A	CRM	*AISI T-4*	*T12004*	0.015		0.019		0.29	0.02		0.004	0.9	17.6		(0.002)
304A	CRM	*AISI M-1*	*T11301*	0.019		0.0016	(0.001)	0.36	0.006	(0.002)	0.002	1.23	1.65		(0.002)
306B	CRM	*AISI M-50*	*T11350*	0.0061	(0.0008)	0.0011	(0.002)	0.213	0.0042	(<0.011)	0.0016	0.98	0.009	(<0.055)	0.0014
320A	CRM	*AISI M-35*	*T11335*	0.021	(<0.007)	0.0015	(<0.0011)	0.36	0.008	(<0.0020)	0.0032	1.76	6.01	(<0.001)	(0.003)

Aluminum Alloys

IARM Part Number	Type	Grade	UNS#	Ag	B	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	Mg	Mn	Na	Ni
104B	CRM	*AA2024*	*A92024*	(0.0005)	0.0016	0.00021	(<0.002)	(<0.002)	(<0.0002)	(0.0005)	0.0088	4.63	0.262	0.011	1.56	0.645	(0.0005)	0.0053
109C	CRM	*AA6061*	*A96061*	(0.0004)	(0.0012)	(0.001)	0.003	0.002	(0.0003)	(0.0006)	0.10	0.30	0.529	0.013	0.83	0.108		0.0123
111B	CRM	*AA7075*	*A97075*	(<0.002)	(0.0008)	0.00087	(<0.002)	(0.001)	(0.0003)	(0.0005)	0.205	1.38	0.225	0.008	2.2	0.093	(0.003)	0.0098
343A	CRM	*AA7055*	*A97055*	(<0.003)	0.0007	(<0.004)	(<0.009)	0.0024	(0.0002)	(0.0008)	0.0009	2.29	0.084	0.012	2.04	0.002	(0.0005)	0.005

IARM Part Number	Type	Grade	UNS#	P	Pb	Sb	Si	Sn	Ti	V	Zn	Zr
104B	CRM	*AA2024*	*A92024*	(<0.005)	0.014	(<0.02)	0.15	0.003	0.056	0.006	0.065	0.001
109C	CRM	*AA6061*	*A96061*	(0.002)	0.0072	(<0.005)	0.616	0.0040	0.0176	0.009	0.121	0.0018
111B	CRM	*AA7075*	*A97075*	(<0.0040)	0.0063	(<0.015)	0.192	(0.002)	0.0427	0.0035	5.7	0.0132
343A	CRM	*AA7055*	*A97055*	0.001	0.0012	(<0.004)	0.05	(<0.005)	0.0175	0.0058	8.15	0.152

Nickel Alloys

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Ca	Cd	Ce	Co	Cr	Cu	Fe	Ga
7B	CRM	Alloy 330	N08330		0.023		(0.002)			0.062				0.069	19.32	0.21	(43.0)	
7C	CRM	Alloy 330	N08330		0.017	(0.002)	0.0027			0.064	(0.002)			0.041	18.4	0.031	43.5	
25D	CRM	Alloy 20	N08020	(0.0004)	0.015	(0.004)	0.0036	(<0.0001)	(<0.0001)	0.028	(<0.009)	(<0.005)	(<0.0001)	0.14	20.00	3.46	38.700	(0.002)
50C	CRM	Ni 200	N02200	(<0.0001)	0.004	(<0.003)	0.0027	(<0.0001)	(<0.005)	0.015	(0.0012)	(<0.0001)	(<0.0001)	0.011	0.005	0.028	0.084	(<0.0001)
51D	CRM	Alloy 400	N04400	(<0.0004)	0.036	(<0.003)	(<0.0003)	(<0.0001)	(<0.003)	0.139	(<0.001)	(<0.0001)	(<0.0001)	0.011	0.064	32.6	1.68	(0.00019)
52D	CRM	Alloy K500	N05500	(0.0006)	2.95	(<0.003)	0.0020	(<0.0001)	(<0.003)	0.125	(<0.003)	(<0.0001)	(<0.0001)	0.005	0.004	29.6	1.38	(0.00032)
53F	CRM	Alloy 600	N06600	(<0.0001)	0.17	(<0.001)	0.0026	(<0.0001)	(<0.0001)	0.077	(<0.001)	(<0.0003)	(<0.0001)	0.056	16.0	0.077	9.5	(0.0016)
54G	CRM	Alloy 625	N06625	(0.00007)	0.150	(0.002)	0.0027	(<0.0001)	(<0.0001)	0.053	(0.00004)	(<0.02)	(<0.0001)	0.06	21.1	0.066	4.03	(0.0026)

IARM Part Number	Type	Grade	UNS#	Ge	Hf	In	La	Mg	Mn	Mo	N	Nb	Ni	O	P	Pb	Pd	Re
7B	CRM	Alloy 330	N08330						1.47	0.19	0.0130	0.023	35.84	0.0026	0.018			
7C	CRM	Alloy 330	N08330					0.0015	1.32	0.095	0.034	0.189	34.9	0.0021	0.014	(0.0001)		
25D	CRM	Alloy 20	N08020	(<0.002)	(<0.0005)	(<0.0001)	(<0.001)	0.0016	1.14	2.1	0.0340	0.66	32.6	0.005	0.019	(0.004)	(<0.0001)	(<0.007)
50C	CRM	Ni 200	N02200	(<0.0001)	(<0.01)	(<0.0001)	(<0.0001)	0.005	0.220	(<0.023)	(0.0005)	0.002	99.400	(0.006)	0.0014	(0.001)	(<0.0001)	(<0.01)
51D	CRM	Alloy 400	N04400	(<0.002)	(<0.0001)	(<0.0001)	(<0.0001)	0.016	1.03	0.019	(0.00019)	0.006	64.1	(<0.0007)	0.01	(<0.001)	(<0.0001)	(<0.0001)
52D	CRM	Alloy K500	N05500	(0.0002)	(0.00008)	(<0.0001)	(<0.0001)	0.0065	0.59	(0.002)	(<0.002)	0.002	64.5	(0.0004)	0.002	0.002	(<0.002)	(<0.0001)
53F	CRM	Alloy 600	N06600	(<0.0008)	(<0.0001)	(<0.0001)	(<0.0001)	0.016	0.260	0.084	(0.007)	0.088	72.7	(0.001)	0.0070	(0.0006)	(<0.0001)	(<0.0001)
54G	CRM	Alloy 625	N06625	(<0.0003)	(<0.01)	(<0.0001)	(<0.0001)	0.004	0.172	8.52	0.022	3.48	61.9	(0.0011)	0.007	(<0.005)	(<0.0001)	(0.0004)

IARM Part Number	Type	Grade	UNS#	Ru	S	Sb	Se	Si	Sn	Ta	Te	Ti	V	W	Y	Zn	Zr
7B	CRM	Alloy 330	N08330		(0.001)			1.38	0.004			(0.005)	0.048	(0.031)			
7C	CRM	Alloy 330	N08330		0.0004	(0.0003)		1.21	0.0020	(0.002)		0.022	0.060	(0.02)			(0.001)
25D	CRM	Alloy 20	N08020	(<0.0001)	0.0013	(0.0008)	(<0.0003)	0.70	0.008	(0.002)	(<0.0007)	0.009	0.089	0.13	(<0.0005)	(0.0013)	(0.003)
50C	CRM	Ni 200	N02200	(<0.0001)	0.0012	(<0.007)	(<0.0002)	0.031	(<0.001)	(<0.03)	(<0.0001)	0.026	(0.0006)	(<0.1)	(<0.0005)	(0.00009)	(<0.003)
51D	CRM	Alloy 400	N04400	(<0.0001)	0.0015	(<0.0001)	(<0.0004)	0.16	(0.00016)	(<0.001)	(<0.0001)	0.033	(0.001)	(0.0017)	(<0.0005)	(<0.0005)	(0.0008)
52D	CRM	Alloy K500	N05500	(<0.0001)	0.0012	(<0.004)	(<0.0007)	0.17	0.0013	(<0.01)	(<0.0001)	0.6	0.001	(<0.008)	(<0.0005)	(0.0011)	0.026
53F	CRM	Alloy 600	N06600	(<0.0001)	0.0022	(0.00011)	(<0.001)	0.17	0.002	0.0040	(<0.0001)	0.255	0.024	0.014	(<0.0001)	(<0.002)	(0.002)
54G	CRM	Alloy 625	N06625	(<0.0002)	(0.002)	(0.00048)	(<0.0008)	0.27	0.0009	(<0.03)	(<0.001)	0.24	0.025	0.03	(<0.0001)	(<0.002)	(<0.002)

Nickel Alloys

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Ca	Cd	Ce	Co	Cr	Cu	Fe	Ga
54H	CRM	Alloy 625	N06625		0.310		(0.0020)			0.018				0.0990	21.95	(0.1)	4.050	
56H	CRM	Alloy 718	N07718	(<0.0001)	0.510	(<0.001)	0.0045	(<0.0001)	(<0.0001)	0.0248	(<0.0001)	(<0.007)	(<0.0001)	0.049	17.86	0.012	18.6	(0.0014)
57E	CRM	Alloy X750	N07750	(0.00002)	0.740	(0.0004)	0.008	(<0.0001)	(0.000002)	0.060	(<0.0005)	(<0.0001)	(<0.0001)	0.021	15.300	0.010	8.010	(0.0013)
58B	CRM	Alloy 800	N08800		0.45	(0.002)	0.0003			0.073				0.02	19.6	0.011	47.7	
59A	CRM	Alloy 825	N08825		0.05		(0.002)			0.02				0.25	22.12	1.71	30.82	
63D	CRM	Alloy B-2	N10665	(<0.001)	0.13	(<0.001)	0.0017	(<0.0001)	(<0.0001)	0.0079	(<0.001)	(<0.07)	(<0.0001)	0.013	0.153	0.003	1.56	(0.0001)
65D	CRM	Alloy C-22	N06022	(0.0001)	0.29		(0.001)			0.0021				1.22	21.5	0.050	3.66	
67C	CRM	Alloy G-30	N06030		0.14		0.001			0.0058				1.75	28.9	1.24	13.48	

IARM Part Number	Type	Grade	UNS#	Ge	Hf	In	La	Mg	Mn	Mo	N	Nb	Ni	O	P	Pb	Pd	Re
54H	CRM	Alloy 625	N06625		(<0.001)			(<0.001)	0.11	8.680	(<0.02)	3.5100	60.700	(<0.001)	0.006			
56H	CRM	Alloy 718	N07718	(<0.0001)	(<0.01)	(<0.0001)	(<0.0001)	0.001	0.04	2.9	0.0062	5.2	53.8	(0.0004)	0.0052	(<0.0001)	(<0.0001)	(0.00003)
57E	CRM	Alloy X750	N07750	(0.0001)	(<0.004)	(<0.0001)	(0.00002)	0.0013	0.079	0.014	(0.0025)	1.000	72.100	(0.0012)	0.005	(0.0003)	(<0.0001)	(<0.004)
58B	CRM	Alloy 800	N08800					(0.001)	0.51	0.01	0.010	0.01	30.7	0.001	0.010	(0.0001)		
59A	CRM	Alloy 825	N08825					(<0.001)	0.33	2.68		0.02	(40.91)		0.017			
63D	CRM	Alloy B-2	N10665	(<0.0001)	(<0.01)	(<0.0001)	(<0.01)	0.0013	0.76	26.6	(0.0007)	0.04	70.4	(<0.006)	0.004	(<0.001)	(<0.0001)	(0.0001)
65D	CRM	Alloy C-22	N06022					0.007	0.28	13.1	0.019	0.033	56.8	0.0005	0.008			
67C	CRM	Alloy G-30	N06030					0.0069	1.01	4.93	0.035	0.36	45.8	0.0016	0.011			

IARM Part Number	Type	Grade	UNS#	Ru	S	Sb	Se	Si	Sn	Ta	Te	Ti	V	W	Y	Zn	Zr
54H	CRM	Alloy 625	N06625		0.001			0.14	(<0.001)	(<0.03)		0.2860	(<0.02)	(<0.08)			(<0.002)
56H	CRM	Alloy 718	N07718	(<0.0002)	0.0005	(0.00009)	(<0.0008)	0.054	0.00026	0.006	(<0.0007)	0.96	0.025	0.014	(<0.01)	(0.00004)	(<0.01)
57E	CRM	Alloy X750	N07750	(<0.0002)	0.0009	(0.00007)	(<0.0006)	0.052	(<0.016)	(<0.023)	(<0.0001)	2.540	0.021	0.009	(<0.002)	(<0.005)	0.037
58B	CRM	Alloy 800	N08800		0.001			0.282	0.002	(<0.01)		0.50	0.035	0.01			(<0.005)
59A	CRM	Alloy 825	N08825		0.001			0.10	(0.001)	(<0.01)		0.83	0.03	0.13			(<0.01)
63D	CRM	Alloy B-2	N10665	(<0.0001)	0.0006	(<0.0005)	(<0.0002)	0.03	(0.002)	(<0.011)	(<0.0003)	0.14	0.007	0.02	(<0.001)	(<0.0003)	0.002
65D	CRM	Alloy C-22	N06022		0.0004			0.035	(0.001)	(0.01)		0.005	0.012	2.81			(0.002)
67C	CRM	Alloy G-30	N06030		0.0006	(0.0003)		0.14	0.0014	(0.006)		0.005	0.031	1.97			0.002

Nickel Alloys

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Ca	Cd	Ce	Co	Cr	Cu	Fe	Ga
68D	CRM	Haynes 230	N06230	(<0.00002)	0.03	(<0.001)	0.004		(0.001)	0.099	(0.001)			0.158	21.59	0.016	1.11	
68E	CRM	Haynes 230	N06230	(0.00005)	0.300	(0.0003)	0.0070	(<0.0001)	(0.000004)	0.0990	(0.00002)	(<0.002)	(<0.0001)	0.160	21.88	0.022	1.060	(<0.003
68F	CRM	Haynes 230	N06230	(<0.001)	0.26		0.0050		(<0.001)	0.101	(<0.005)			0.24	21.9	0.031	1.50	
157D	CRM	AL 6XN	N08367	(<0.0005)	0.020	(<0.004)	0.0007	(<0.0001)	(<0.03)	0.015	(<0.005)	(<0.02)	(<0.0001)	0.1020	20.31	0.20	48.0	(0.003
203A	CRM	Alloy 909	N19909		0.066		(0.002)			0.005				12.9	0.72	0.05	40.6	
272A	CRM	Alloy 617	N06617	(0.0001)	1.16	(0.0002)	0.003		(<0.00001)	0.082				12.89	21.98	0.015	1.10	
273A	CRM	Alloy C263	N07263	(<0.0001)	0.490	0.001	0.0012			0.06	(<0.0020)			20.12	20.43	0.007	0.285	
274A	CRM	Alloy 725	N07725		0.26		0.002			0.007				0.143	21.0	0.10	7.60	

IARM Part Number	Type	Grade	UNS#	Ge	Hf	In	La	Mg	Mn	Mo	N	Nb	Ni	O	P	Pb	Pd	Re
68D	CRM	Haynes 230	N06230				0.01	0.0062	0.492	1.291	0.0476	0.029	60.3	0.0007	0.0059	(0.0002)		
68E	CRM	Haynes 230	N06230	(<0.0001)	(<0.002)	(<0.0001)	0.008	0.006	0.51	1.18	0.05	0.035	(59.9)	0.0007	0.005	(0.0002)	(<0.0001)	(0.0003
68F	CRM	Haynes 230	N06230					0.006	0.499	1.35	0.045	0.084	(59.6)	0.0007	0.006	(<0.001)		
157D	CRM	AL 6XN	N08367	(0.001)	(<0.07)	(<0.0001)	(<0.07)	(<0.0003)	0.63	6.080	0.2030	0.1490	23.900	(0.004)	0.016	(<0.002)	(<0.0001)	(0.0005
203A	CRM	Alloy 909	N19909					(<0.002)	0.023	0.09	0.0010	5.00	38.4		0.006			
272A	CRM	Alloy 617	N06617					0.002	0.067	9.34	0.0049	0.015	52.68	0.0007	0.003	(0.0001)		
273A	CRM	Alloy C263	N07263					0.003	0.214	5.84	0.0037	0.019	50.3	0.0012	0.003	(<0.0001)		
274A	CRM	Alloy 725	N07725					0.0019	0.08	8.06	0.007	3.48	57.5	0.0006	0.007			

IARM Part Number	Type	Grade	UNS#	Ru	S	Sb	Se	Si	Sn	Ta	Te	Ti	V	W	Y	Zn	Zr
68D	CRM	Haynes 230	N06230		0.0002	0.0001		0.422	0.001	0.014		0.0108	0.009	14.16			0.0023
68E	CRM	Haynes 230	N06230	(<0.0001)	0.0005	(0.00006)	(<0.0007)	0.39	(0.0004)	(<0.015)	(<0.0001)	0.015	0.007	14.6	(<0.001)	(0.00009)	(0.001)
68F	CRM	Haynes 230	N06230		0.0005	(<0.001)		0.381	(<0.001)	(0.009)		0.010	0.007	14.5	(<0.001)		(0.002)
157D	CRM	AL 6XN	N08367	(<0.0001)	0.0005	(0.0007)	(<0.0002)	0.28	0.0036	(0.003)	(<0.002)	0.0090	0.050	0.036	(<0.001)	(0.0001)	(0.001)
203A	CRM	Alloy 909	N19909		0.0009			0.41				1.58	(<0.01)	(0.02)			(<0.01)
272A	CRM	Alloy 617	N06617		0.0002	(0.0001)		0.07	(0.0003)	(0.01)		0.50	0.005	0.061			0.002
273A	CRM	Alloy C263	N07263		0.0003	(<0.001)		0.078	0.001	0.007		2.12	0.007	0.019			0.001
274A	CRM	Alloy 725	N07725		0.0004			0.02	0.001	(0.002)		1.55	0.019	0.06			(0.001)

Nickel Alloys

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Ca	Cd	Ce	Co	Cr	Cu	Fe	Ga
276A	CRM	Alloy C-22HS	N/A	0.00010	0.245	(0.0009)	0.0038		(0.000003)	0.0040	(<0.007)			0.041	20.54	0.04	1.300	
277A	CRM	Rene 77	N/A		4.38		0.015			0.080				14.5	14.35	0.004	0.16	
282A	CRM	Alloy HR-120	N08120	(0.0001)	0.085	(0.003)	0.0050		(<0.0001)	0.054				0.12	24.6	0.0615	0.0615	
283A	CRM	B 1900	N/A		6.05		0.014			0.114				9.8	8.05	(0.01)	0.044	
287A	CRM	Udimet 500	N07500		3.02		0.009			0.079				16.99	18.47	(0.001)	0.086	
325A	CRM	Rene 41	N07041	(0.00001)	1.56	(0.0004)	0.0082			0.067	(0.0003)			10.46	18.52	(0.003)	0.07	
328A	CRM	Alloy 945	N09945	(<0.00001)	0.189	0.0009	0.0011		(<0.001)	0.006	(<0.004)			0.003	20.57	1.94	22.41	
329A	CRM	Alloy G-35	N06035	0.00007	0.29	0.001	0.0010		(<0.0001)	0.0086	(<0.006)			0.052	33.7	0.065	0.92	

IARM Part Number	Type	Grade	UNS#	Ge	Hf	In	La	Mg	Mn	Mo	N	Nb	Ni	O	P	Pb	Pd	Re
276A	CRM	Alloy C-22HS	N/A				(<0.007)	0.007	0.305	16.200	0.0388	0.014	61.1	0.0010	0.006	0.00004		
277A	CRM	Rene 77	N/A					0.0021	0.01	4.22	0.0017	0.034	58.9	0.0005	0.002			
282A	CRM	Alloy HR-120	N08120					0.004	0.81	0.21	0.207	0.57	37.1	0.0023	0.016	(0.001)		
283A	CRM	B 1900	N/A				(0.002)	0.0033	0.001	5.94	0.0003	0.020	64.4	0.0004	0.003			
287A	CRM	Udimet 500	N07500					0.0023	0.002	3.51	0.0007	0.022	54.8	0.0005	0.001			
325A	CRM	Rene 41	N07041					0.0044	0.004	9.98	0.0016	0.007	56.1	0.0005	0.003	(0.00004)		
328A	CRM	Alloy 945	N09945				(<0.0005)	0.0008	0.017	3.16	0.0056	3.14	47.03	0.0006	0.004	0.00002		
329A	CRM	Alloy G-35	N06035					0.0124	0.222	8.38	0.073	0.131	55.8	0.0027	0.0059	0.00003		

IARM Part Number	Type	Grade	UNS#	Ru	S	Sb	Se	Si	Sn	Ta	Te	Ti	V	W	Y	Zn	Z
276A	CRM	Alloy C-22HS	N/A		0.0005	0.00019		0.043	0.0004	0.011		0.004	0.008	0.03			0.0
277A	CRM	Rene 77	N/A		0.0010			0.037	(<0.003)	(0.02)		3.40	0.011	0.047			0.0
282A	CRM	Alloy HR-120	N08120		0.0003	(0.0004)		0.63	0.003	(0.005)		0.019	0.052	0.043			(0.0
283A	CRM	B 1900	N/A		0.0006	(0.00002)		0.019	(0.0002)	4.3		0.98	0.0058	0.056			0.0
287A	CRM	Udimet 500	N07500		0.0008			0.02	0.0002	0.010		3.02	0.004	0.013			0.0
325A	CRM	Rene 41	N07041		0.0003			0.012	(0.0002)	0.003		3.16	0.01	0.03			0.0
328A	CRM	Alloy 945	N09945		0.0006	0.00023		0.021	0.0002	0.004		1.53	0.008	0.015			0.0
329A	CRM	Alloy G-35	N06035		0.0003	0.0001		0.053	0.0005	(<0.008)		0.005	0.009	0.021			0.0

Nickel Alloys

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Ca	Cd	Ce	Co	Cr	Cu	Fe	Ga
332A	CRM	CMSX-4	N/A		5.79	(0.0003)	0.0009		(0.00001)	0.0039	(<0.0022)			9.45	6.3	0.007	0.028	
338A	CRM	Alloy 602CA	N06025	(0.0001)	2.13	(<0.0005)	0.005		(<0.0001)	0.168	0.002			0.035	25	0.0059	9.74	
347A	CRM	Alloy 904L	N08904	(0.0001)	0.016	0.006	0.0020		(0.00001)	0.023	0.0029			0.083	20.14	1.34	47.4	
357A	CRM	Alloy 028	N08028	(<0.0005)	0.09	(<0.01)	0.0014		(<0.0001)	0.0199	(<0.005)			0.17	27.0	0.81	34.3	
358A	CRM	Alloy 740		(<0.0001)	1.33	(<0.01)	0.0011		(<0.002)	0.026	(0.001)	(<0.0005)		20.1	24.6	0.005	0.122	
362B	CRM	Alloy 686	N06686	(<0.0001)	0.32	(<0.01)	(0.003)		(<0.001)	0.0079	(<0.001)	(<0.0005)		0.010	20.4	(0.003)	0.10	
366A	CRM	Alloy 601	N06601	(<0.00001)	1.51		(0.0026)		(<0.0001)	0.025				0.041	22.0	0.038	14.3	
372A	CRM	Alloy 693	N06693	(<0.0002)	3.28	(<0.0002)	0.0016		(<0.0001)	0.030	(<0.001)			0.009	28.3	0.004	3.12	

IARM Part Number	Type	Grade	UNS#	Ge	Hf	In	La	Mg	Mn	Mo	N	Nb	Ni	O	P	Pb	Pd	Re
332A	CRM	CMSX-4	N/A		0.099			0.0052	0.003	0.6	0.00026	0.0053	60.7	0.0004	0.002	(0.00002)		2.9
338A	CRM	Alloy 602CA	N06025					0.0058	0.052	0.0017	0.0276	0.004	62.3	0.001	0.003	0.00007		
347A	CRM	Alloy 904L	N08904				(0.0006)	0.0008	1.24	4.16	0.062	0.01	24.88	0.0026	0.023	0.0003		
357A	CRM	Alloy 028	N08028		(<0.009)		(<0.001)	0.005	1.63	3.48	0.011	0.089	31.9	0.005	0.013	(<0.002)		(<0.0005)
358A	CRM	Alloy 740			(<0.0003)			0.0019	0.259	0.310	0.0045	1.51	50.3	0.001	0.004	(<0.005)		
362B	CRM	Alloy 686	N06686		(<0.01)			0.008	0.229	16.1	0.0060	0.015	58.7	0.0006	0.005	(<0.004)		
366A	CRM	Alloy 601	N06601		(<0.06)			0.004	0.205	0.079	0.0136	0.069	60.9	0.0010	0.008	(<0.003)		
372A	CRM	Alloy 693	N06693		(0.03)		(<0.0001)	0.016	0.285	0.006	0.011	0.71	63.6	0.0008	0.003	(0.001)		(<0.003)

IARM Part Number	Type	Grade	UNS#	Ru	S	Sb	Se	Si	Sn	Ta	Te	Ti	V	W	Y	Zn	Zr
332A	CRM	CMSX-4	N/A		0.0003	(0.00002)		0.03	(0.0002)	6.5		0.991	0.002	6.45	(0.0012)		0.005
338A	CRM	Alloy 602CA	N06025		0.0008	(0.00009)		0.02	0.00037	(0.002)		0.13	0.0026	(<0.02)	0.06		0.081
347A	CRM	Alloy 904L	N08904		0.0009	0.0013		0.56	0.011	(0.005)		0.007	0.078	0.020			(0.002)
357A	CRM	Alloy 028	N08028		0.0021	(<0.001)		0.458	(0.002)	(0.008)		0.079	0.091	0.108	(<0.001)	(<0.001)	(0.005)
358A	CRM	Alloy 740			0.0018	(<0.001)		0.145	(<0.001)	(0.006)		1.36	0.009	0.002			0.022
362B	CRM	Alloy 686	N06686		0.0004	(<0.013)	(<0.005)	0.04	(<0.003)	(0.005)		0.052	0.010	3.90	(<0.0001)	(<0.001)	(0.004)
366A	CRM	Alloy 601	N06601		0.0003			0.019	(<0.005)	(<0.02)		0.43	0.028	0.02	(<0.0001)		0.012
372A	CRM	Alloy 693	N06693		0.0016	(0.056)		0.020	(0.001)	(<0.022)		0.486	0.008	0.02	(<0.0001)	(<0.001)	0.017

High Purity Nickel

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Ca	Cd
187A	CRM	*HPNI*		0.1	11	0.1	(<5)	(<1)	(<0.1)	13	(<10)	(<0.1)
188A	CRM	*HPNI-LO*		1.1	24	0.7	(<5)	(<1)	0.9	22	(<10)	0.2
189A	CRM	*HPNI-MI*		2.4	44	0.7	(<5)	(<1)	2.6	23	(<10)	0.8
190A	CRM	*HPNI-HI*		10.9	50	28	(<5)	(<1)	11.1	22	(<10)	5
191A	CRM	*ELNI-HP*		0.1	1.5	13	(<5)	(<1)	(<0.1)	14	(<10)	

Values listed are in ppm

Titanium Alloys

IARM Part Number	Type	Grade	UNS#	Al	B	C	Co	Cr	Cu	Fe	H	Hf	Mg	Mn	Mo	N	Nb	Ni
175D	CRM	*Ti 6-4*	*R56400*	6.380	(0.0008)	0.008		0.015	0.002	0.22	0.0028			0.002	0.003	0.030	(0.008)	0.016
176C	CRM	*Ti 6-4 ELI*	*R56407*	5.95		0.012	(0.001)	0.011	0.003	0.14	0.0034			0.0011	0.004	0.005	(0.005)	0.012
178C	CRM	*Ti 6-6-2*	*R56620*	5.44	0.0010	0.022	(0.003)	0.014	0.61	0.66	0.0025			0.002	0.012	0.011	(<0.01)	0.013
178D	CRM	*Ti 6-6-2*	*R56620*	5.49	(0.001)	0.028	0.005	0.031	0.52	0.550	0.0016			0.003	0.10	0.017	(0.01)	0.067
261A	CRM	*Ti 3-2.5*	*R56320*	3.00		0.007	(0.001)	0.013	0.002	0.19	0.0023			0.0011	0.003	0.007	(0.01)	0.006
261B	CRM	*Ti 3-2.5*	*R56320*	2.98	0.0004	0.011	(<0.004)	0.016	0.003	0.19	(0.001)			(0.003)	0.004	0.004	(0.002)	0.023
261D	CRM	*Ti 3-2.5*	*R56320*	3.02	0.0003	0.011	(<0.001)	0.016	0.0028	0.185	(0.0005)			(0.002)	0.003	0.0051	(0.003)	0.018
261C	CRM	*Ti 3-2.5*	*R56320*	3.05	0.0004	0.011	(0.005)	0.014	0.003	0.180	0.001			(0.003)	0.004	0.005	(0.003)	0.016
261E	CRM	*Ti 3-2.5*	*R56320*	3.05	0.0003	0.012	(0.0004)	0.016	0.0025	0.18	(0.0005)			(0.001)	0.003	0.006	(0.005)	0.018
269B	CRM	*Ti 8-1-1*	*R54810*	7.86	(<0.001)	0.014	(<0.0005)	0.0014	0.0023	0.071	0.007		(<0.0001)	0.0071	0.98	0.006	0.004	(0.001)
271A	CRM	*Ti 5-2.5*	*R54520*	5.28		0.026	(0.002)	0.016	0.004	0.31	0.013			0.002	0.011	0.012	(0.003)	0.035

IARM Part Number	Type	Grade	UNS#	O	P	Pb	Pd	Ru	S	Sb	Si	Sn	Ta	Ti	V	W	Y	Zr
175D	CRM	*Ti 6-4*	*R56400*	0.177							0.009	0.01		(89.2)	4.00	(0.002)	(0.001)	(0.002)
176C	CRM	*Ti 6-4 ELI*	*R56407*	0.110			(0.004)		(0.0005)		0.017	0.005		89.8	4.00		(0.0001)	0.0023
178C	CRM	*Ti 6-6-2*	*R56620*	0.168	(0.003)		(0.003)	(0.002)	(0.002)		0.045	1.98	(<0.002)	(85.8)	5.41		(0.001)	0.0038
178D	CRM	*Ti 6-6-2*	*R56620*	0.17	(0.002)		(0.003)	(0.001)	(0.001)		0.053	1.84	(0.001)	(85.8)	5.47	(0.001)	(0.001)	0.026
261A	CRM	*Ti 3-2.5*	*R56320*	0.10					(0.001)		0.012	0.008			2.48		(0.001)	(0.002)
261B	CRM	*Ti 3-2.5*	*R56320*	0.083	(0.004)			(0.001)	(0.0004)		0.008	0.004		(94.4)	2.23	(0.003)	(0.0004)	0.002
261D	CRM	*Ti 3-2.5*	*R56320*	0.083	(<0.004)		(0.002)	(0.0005)	(0.001)		0.008	0.005	(0.0005)	(94.2)	2.50	(0.001)	(0.0005)	0.003
261C	CRM	*Ti 3-2.5*	*R56320*	0.085	(0.003)		(0.002)	(0.001)	(0.001)		0.007	0.006		(94.1)	2.46	(0.001)	(0.0004)	0.003
261E	CRM	*Ti 3-2.5*	*R56320*	0.084	(<0.003)		(0.002)	(0.001)	(0.001)		0.007	0.005		(94.1)	2.51	(0.001)	(0.001)	(0.003)
269B	CRM	*Ti 8-1-1*	*R54810*	0.09	(0.003)		(<0.005)	(0.004)	(0.003)		0.025	0.008	(<0.005)	(89.9)	1.03	(0.001)	(<0.001)	0.002
271A	CRM	*Ti 5-2.5*	*R54520*	0.02	(0.002)				(0.002)		0.021	2.49			0.09			0.015

Titanium Alloys

IARM Part Number	Type	Grade	UNS#	Al	B	C	Co	Cr	Cu	Fe	H	Hf	Mg	Mn	Mo	N	Nb	Ni
271B	CRM	*Ti 5-2.5*	*R54520*	5.21	0.0012	0.0128	(0.0010)	0.010	0.007	0.196	0.014		(0.001)	0.0036	0.0063	0.013	0.005	0.009
280A	CRM	*Ti 4-4-2-0.5*	*IMI 550*	4.11		0.005	(0.002)	0.0055	0.003	0.044	0.0015			(0.002)	4.01	0.0014	(0.001)	0.012
300A	CRM	*Ti 6-7*	*R56700*	5.96	(0.0008)	0.007	(0.001)	0.0097	0.0039	0.191	0.0018		(0.0004)	0.0012	(0.001)	0.0033	6.86	0.0081
300C	CRM	*Ti 6-7*	*R56700*	5.97	(0.0006)	0.01	(0.001)	0.008	0.003	0.181	(0.0006)		(<0.001)	(0.003)	0.0023	0.0061	6.8	0.014
300D	CRM	*Ti 6-7*	*R56700*	6.06	(0.001)	0.01	(0.004)	0.006	0.003	0.183	0.183		(<0.001)	(<0.005)	0.0019	0.005	6.82	0.013
300B	CRM	*Ti 6-7*	*R56700*	6.090	(0.0012)	0.008	(0.002)	0.0174	0.014	0.175	0.0025		(<0.002)	0.0060	0.0013	0.0030	6.8400	0.012
300E	CRM	*Ti 6-7*	*R56700*	6.16	(<0.002)	0.008	(0.004)	0.007	(<0.02)	0.17	(0.001)	(<0.001)	(<0.001)	(<0.02)	0.0028	0.0059	6.85	0.011
303B	CRM	*Ti Grade 7*	*R52400*	0.015	(<0.001)	0.035	(<0.002)	0.0018	0.002	0.12	0.0008	(<0.003)	(<0.001)	0.001	0.002	0.017	0.006	0.0013
311A	CRM	*Ti CP*	*BT1-0*	0.32		0.009		0.013	0.0013	0.060	0.0021			0.0013	0.0012	0.012	(0.002)	0.014
312A	CRM	*Ti CP Gr. 1*	*R50250*	0.006		0.004	(0.001)	(0.002)	0.002	0.028	0.0049			(0.001)	(0.002)	0.0023		(0.002)
312B	CRM	*Ti CP4 (Grade 1)*	*R50250*	0.018	(<0.001)	0.0092	(<0.002)	0.01	0.003	0.072	0.0004	(0.0004)	(<0.002)	(0.001)	0.003	0.007	(0.001)	0.019

IARM Part Number	Type	Grade	UNS#	O	P	Pb	Pd	Ru	S	Sb	Si	Sn	Ta	Ti	V	W	Y	Zr
271B	CRM	*Ti 5-2.5*	*R54520*	0.155	(0.0011)		(0.0011)	(0.003)	(0.001)		0.010	2.52	(0.0104)	(91.9)	0.057	(0.0021)	(0.00018)	0.059
280A	CRM	*Ti 4-4-2-0.5*	*IMI 550*	0.19			(0.002)		(0.001)		0.47	2.07		(88.7)	0.023		(0.0003)	0.002
300A	CRM	*Ti 6-7*	*R56700*	0.162	(0.001)						0.018	0.007	0.004	86.71	0.005	(<0.002)	(0.0004)	0.003
300C	CRM	*Ti 6-7*	*R56700*	0.174	(<0.001)	(<0.0001)	(<0.005)		(0.0005)	(0.0005)	0.018	(0.006)	(0.005)	(86.7)	0.03	(<0.002)	(0.002)	(0.005)
300D	CRM	*Ti 6-7*	*R56700*	0.166	(<0.002)	(<0.0005)	(<0.005)	(<0.001)	(0.001)	(0.0004)	0.021	(0.005)	(0.005)	(86.7)	0.03	(<0.002)	(0.003)	(0.005)
300B	CRM	*Ti 6-7*	*R56700*	0.1710	(<0.004)		(0.005)		(0.001)		0.02	0.0040	0.0050	(86.3)	0.004	(<0.005)	(<0.005)	0.0130
300E	CRM	*Ti 6-7*	*R56700*	0.18	(<0.001)	(<0.0001)	(<0.001)	(<0.01)	(<0.001)	(<0.001)	0.017	0.005	(0.006)	(86.5)	0.03	(<0.002)	0.003	(<0.02)
303B	CRM	*Ti Grade 7*	*R52400*	0.176	(<0.002)		0.13	(<0.01)	(<0.002)		0.006	0.006	(<0.005)	(99.6)	0.0023	(<0.002)	(<0.001)	0.0028
311A	CRM	*Ti CP*	*BT1-0*	0.083							0.005	0.0020		(99.4)	0.004	(0.002)	(0.0002)	0.012
312A	CRM	*Ti CP Gr. 1*	*R50250*	0.066			(0.004)		(0.001)		0.006	0.0012		99.7	(0.002)		(0.0004)	(0.001)
312B	CRM	*Ti CP4 (Grade 1)*	*R50250*	0.128	(<0.002)		(<0.005)	(<0.001)	(0.0008)	(0.0003)	0.006	0.004	(<0.005)	(99.7)	0.009	(<0.005)	(<0.001)	0.0014

Titanium Alloys

IARM Part Number	Type	Grade	UNS#	Al	B	C	Co	Cr	Cu	Fe	H	Hf	Mg	Mn	Mo	N	Nb	Ni
314A	CRM	*Ti 5-5-5-3*	*Ti5553*	5.50		0.008	(0.003)	3.09	0.002	0.46	0.004			0.002	4.78	0.0034		0.022
314B	CRM	*Ti 5-5-5-3*	*Ti5553*	5.57	(0.001)	0.010	(0.004)	3.08	0.002	0.39	0.0057			0.001	4.88	0.0045	0.009	0.0044
336A	CRM	*Ti 6-2-4-6*	*R56260*	5.9	(0.001)	0.005	0.002	0.002	0.002	0.115	0.0022				6.16	0.0015		0.002
336B	CRM	*Ti- 6-2-4-6*	*R56260*	6.04	(0.001)	0.006	(0.002)	(0.001)	0.002	0.132	0.0029				6.16	0.0016		0.002
337A	CRM	*Ti 6-2-2-2-2*	*Ti 6-22-22*	5.60	(0.001)	0.008	0.0011	2.01	0.002	0.114	0.005				2.05	0.0017	(0.004)	0.011
344A	CRM	*Ti 15-3-3-3*	*R58153*	3.15	0.0011	0.011	(0.001)	3.09	0.002	0.20	(0.015)			(0.003)	0.004	0.005	(0.005)	0.011
344B	CRM	*Ti 15-3-3-3*	*R58153*	3.03	(<0.001)	0.0095	(<0.004)	2.91	0.0024	0.118	0.007	(<0.001)	(<0.004)	0.003	0.006	0.016	(0.003)	0.021
345A	CRM	*Ti 5-2-2-4-4*	*R58650*	5.12	(0.001)	0.010	(0.002)	3.89	0.002	0.121	0.0040			0.0009	4.09	0.0025	(0.002)	0.015
361A	CRM	*Ti Grade 12*	*R53400*	0.013	(0.0005)	0.012	(<0.002)	0.008	0.003	0.095	0.0027	(<0.004)	(<0.002)	(<0.05)	0.288	0.006	(0.004)	0.88
367A	CRM	*Ti 2-1.5*	*RA OT4-1*	2.020	(<0.001)	0.014	(<0.002)	0.012	0.002	0.064	0.0030	(<0.001)	(<0.001)	1.61	0.00	0.007	(<0.01)	0.013

IARM Part Number	Type	Grade	UNS#	O	P	Pb	Pd	Ru	S	Sb	Si	Sn	Ta	Ti	V	W	Y	Zr
314A	CRM	*Ti 5-5-5-3*	*Ti5553*	0.155	(0.005)						0.02	(0.01)		(81)	4.98		(0.0003)	0.002
314B	CRM	*Ti 5-5-5-3*	*Ti5553*	0.130	(0.001)		(0.003)		(0.001)		0.041	0.022	(0.002)	(81)	5.04	(0.003)	(0.001)	(0.002)
336A	CRM	*Ti 6-2-4-6*	*R56260*	0.102					(0.002)		0.019	2.03		81.7	0.005	(0.004)	(0.0003)	3.92
336B	CRM	*Ti- 6-2-4-6*	*R56260*	0.101	(0.002)				(0.002)		0.020	2.04		81.4	0.004	(0.005)	(0.0002)	4.12
337A	CRM	*Ti 6-2-2-2-2*	*Ti 6-22-22*	0.104					(0.001)		0.14	1.96		(86.0)	(0.003)	(0.003)	(0.0004)	1.89
344A	CRM	*Ti 15-3-3-3*	*R58153*	0.107	(0.002)		(0.001)		(0.001)		0.03	3.09	(0.001)	(74.9)	15.3	(0.003)	<0.001	(0.002)
344B	CRM	*Ti 15-3-3-3*	*R58153*	0.118	(<0.003)	(<0.001)	(<0.03)	(<0.02)	(<0.003)	(<0.001)	0.03	3.01	(<0.04)	(76.0)	14.7	(<0.03)	(<0.006)	0.002
345A	CRM	*Ti 5-2-2-4-4*	*R58650*	0.120	(0.002)		(0.002)		(0.001)		0.013	1.99	(0.003)	(82.8)	0.005	(0.002)	0.0003	1.90
361A	CRM	*Ti Grade 12*	*R53400*	0.15	(<0.003)		(0.002)	(<0.006)	(<0.004)		0.012	0.004	(<0.005)	(98.5)	0.006	(<0.03)	(0.0004)	0.0016
367A	CRM	*Ti 2-1.5*	*RA OT4-1*	0.105	(<0.005)	(<0.001)	(<0.01)	(<0.01)	(0.0012)	(<0.0005)	0.011	0.00	(<0.005)	(96.1)	0.005	(<0.002)	(<0.001)	0.003

Copper, Brass and Bronze

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Cd	Co	Cr	Cu	Fe	Mg	Mn	N
70C	CRM	CDA 110	C11000	0.0011	0.0014	0.0009	(0.0004)	(<0.002)	(0.002)	0.002	(0.0008)	0.001	(0.0002)	99.94	0.0016	(0.0003)	(0.0002)	(<0.008)
72A	CRM	CDA 314	C31400	(<0.005)	(<0.01)			(<0.001)		(0.014)		(<0.01)		(89.71)	0.011		(<0.01)	
72B	CRM	CDA 314	C31400	(0.002)		(0.003)				0.002				90.08	0.007			(0.0002)
73C	CRM	CDA 360	C36000	0.006	(0.001)	0.005	(0.0004)		0.011	(0.003)	0.0014	0.002	0.001	61.3	0.199	(0.001)	0.003	
74A	CRM	CDA 464	C46400	(0.002)	(<0.01)	(<0.01)				(0.012)					0.01		(<0.01)	
74B	CRM	CDA 464	C46400	(0.005)	0.003	(<0.01)			(<0.005)		(0.002)			60.4	0.011		(<0.01)	
75A	CRM	CDA 482	C48200		(<0.01)	(<0.01)				(0.01)				(59.79)	0.052		(<0.01)	
75B	CRM	CDA 482	C48200	(0.005)	(0.005)	(0.004)			(0.001)	(0.004)	(0.002)	(0.003)		60.63	0.06		(0.003)	
75C	CRM	CDA 482	C48200	(0.004)	(0.003)	0.005	(<0.1)	(<0.001)	0.0012	(0.002)	0.0015	0.0007	0.0009	60.7	0.06	(0.0003)	0.0024	(0.0006)
76D	CRM	CDA 485	C48500	0.0014	0.002	0.004	(<0.001)	0.0006	0.0011	0.002	0.001	0.001	0.0006	60.7	0.013	0.0005	0.0006	(<0.001)
77B	CRM	CDA 510	C51000	(0.002)	(0.001)	(0.001)			(0.004)	0.003				95.2	0.002		(0.002)	(0.0001)

IARM Part Number	Type	Grade	UNS#	Nb	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Te	Zn	Zr
70C	CRM	CDA 110	C11000	(0.004)	(0.0004)	(0.002)	0.0014	0.0013	0.0008	(0.003)	(0.001)	0.0006	0.0005	(0.001)	(0.002)	(0.001)
72A	CRM	CDA 314	C31400		(<0.01)		(0.007)	1.78	0.0014	(<0.01)		(<0.01)	(<0.01)		8.48	
72B	CRM	CDA 314	C31400		0.004	0.002	0.005	1.99	0.0015	0.006		(0.002)	0.029		7.81	
73C	CRM	CDA 360	C36000	(0.001)	0.095	(0.0003)	0.003	2.97	0.002	0.008		0.003	0.256		35.1	
74A	CRM	CDA 464	C46400		0.01		0.006	0.02	0.001	(<0.01)		(<0.01)	0.50		38.14	
74B	CRM	CDA 464	C46400		0.006		(0.008)	0.017	(0.003)	0.003		0.003	0.70		38.9	
75A	CRM	CDA 482	C48200		0.025		0.005	0.83	0.002	(<0.01)		(<0.01)	0.89		38.39	
75B	CRM	CDA 482	C48200		0.02		0.003	0.63	(0.001)	(0.004)		(0.003)	0.59		38.0	
75C	CRM	CDA 482	C48200	(<0.001)	0.013	(0.0007)	0.004	0.42	0.0015	0.007	(0.005)	0.005	0.69	(0.003)	38.1	(<0.001)
76D	CRM	CDA 485	C48500	(<0.002)	0.003	(0.0006)	0.0018	1.69	0.0012	0.0040	(<0.001)	0.0037	0.73	(<0.0009)	36.8	(<0.0001)
77B	CRM	CDA 510	C51000		0.002	(0.002)	0.148	0.016	0.002	0.0050		(0.003)	4.66		0.007	(0.001)

Copper, Brass and Bronze

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Cd	Co	Cr	Cu	Fe	Mg	Mn	N
78B	CRM	CDA 544	C54400	0.008	(0.002)	(<0.003)			(0.001)	(<0.002)		(<0.0005)		87.7	0.02		(0.002)	
79B	CRM	CDA 623	C62300	0.002	9.19				(0.003)	0.002		(0.002)	(0.003)	88.4	2.13		0.16	(0.001)
79C	CRM	CDA 623	C62300	(<0.005)	9.20	0.003				0.003		(<0.005)	(0.002)	87.6	2.28		0.20	(<0.0001)
80C	CRM	CDA 630	C63000		10.100	0.006				0.008		0.008	0.013	80.5	3.86		0.58	(0.0003)
80D	CRM	CDA 630	C63000	0.04	9.67	0.009	(0.003)	(<0.002)	0.004	(0.004)	(0.002)	0.022	0.005	(81.7)	2.99	0.003	0.346	(0.002)
82B	CRM	CDA 655	C65500		0.002	(<0.002)				(0.003)			0.004	95.3	0.080		1.04	(<0.0005)
83B	CRM	CDA 675	C67500	(0.002)	0.002					0.003	(0.003)	(0.003)	(0.003)	58.7	0.97	(0.001)	0.13	
84C	CRM	CDA 706	C70600	0.002	(0.002)	(0.002)		(<0.002)	(<0.005)	0.003	(0.001)	0.006	(0.0008)	89.4	0.28	(0.0007)	0.04	
85C	CRM	CDA 715	C71500	(<0.002)	(<0.01)	0.0009				0.008		0.016	0.002	67.3	0.63	0.01	0.65	(<0.0003)
88C	CRM	CDA 863	C86300	0.004	5.79	0.007	(<0.1)	(<0.005)	0.004	0.005	0.0009	0.0010	0.008	64.5	2.98	0.0006	2.99	(0.00016)
89C	CRM	CDA 903	C90300	0.005	(0.002)	0.004		(0.0005)	(0.003)	0.002	(0.001)	(0.001)	(0.002)	87.5	0.004	(0.0004)	(0.001)	c

IARM Part Number	Type	Grade	UNS#	Nb	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Te	Zn	Zr
78B	CRM	CDA 544	C54400		0.077		0.19	3.87	0.010	0.01		(<0.002)	4.73		3.55	
79B	CRM	CDA 623	C62300		0.075	(0.002)	0.005	(0.003)	(0.001)			0.019	0.017		0.013	
79C	CRM	CDA 623	C62300		0.55	(0.001)	0.006	(<0.005)	(<0.001)	(<0.005)		0.033	0.010		0.014	
80C	CRM	CDA 630	C63000		4.71	0.0007	0.004	0.0040	(0.001)	(0.005)		0.077	0.003		0.096	
80D	CRM	CDA 630	C63000	(<0.02)	5.01	(0.001)	0.005	0.005	0.003	(<0.02)	(<0.03)	0.025	0.093	(0.04)	0.007	(<0.002)
82B	CRM	CDA 655	C65500		0.011	(0.001)	0.004	0.011	0.003	(<0.01)		3.22	0.017		0.38	
83B	CRM	CDA 675	C67500		0.010	(0.001)	0.004	0.017	(0.001)	(0.004)		(0.003)	0.85		39.3	
84C	CRM	CDA 706	C70600		9.8	(0.008)	0.06	0.047	0.006	0.0012	(0.002)	0.004	0.13	(<0.03)	0.13	(0.0004)
85C	CRM	CDA 715	C71500		31.3	(0.003)	0.003	0.004	0.002			0.01	0.005		0.057	
88C	CRM	CDA 863	C86300	(0.0001)	0.276	(0.0006)	0.02	0.133	0.001	(0.003)	(<0.005)	0.091	0.147	(0.0001)	22.86	0.0004
89C	CRM	CDA 903	C90300	(0.005)	0.008	0.006	0.004	0.17	0.0011	0.008	(0.001)	0.003	9.14	(0.0004)	3.0	(0.001)

Copper, Brass and Bronze

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Cd	Co	Cr	Cu	Fe	Mg	Mn	N
90C	CRM	CDA 922	C92200	0.011	(0.001)	0.0020		(0.0003)	0.009	(0.002)	0.0003	0.0012	0.0010	87.5	0.101	(0.0002)	0.0030	(0.0003)
91E	CRM	CDA 932	C93200	0.015	0.002	0.008	(0.0005)	0.0005	0.109	0.003	0.0011	0.0024	0.0008	81.3	0.11	(<0.0050)	0.0007	(0.0004)
92C	CRM	CDA 937	C93700	0.05	0.0013	0.005		(<0.001)	0.011	(0.002)		(0.0007)	(0.0007)	80.35	0.008		0.0016	
94B	CRM	CDA 955	C95500	0.017	10.80	(<0.01)				(0.006)		0.011	0.017	80.6	3.99		0.071	
151B	CRM	CDA 875	C87500	(0.01)	0.002	(0.002)				0.005			(0.003)	84.0	0.025		0.002	
158C	CRM	CDA 815	C81500	(0.01)	0.002	(0.001)				0.002	(0.005)	0.002	1.04	98.5	0.090		0.019	(<0.0005)
158B	CRM	CDA 815	C81500	(0.01)	0.002	(0.001)				0.002		0.002	0.85	98.5	0.090		0.019	(<0.0005)
159A	CRM	NARloy-A	N/A	3.48	(<0.01)					(0.002)		(<0.01)	(<0.01)	(96.5)	(<0.01)		(<0.01)	0.0003
160A	CRM	NARloy-Z	N/A	3.03	(<0.01)					0.003		(<0.01)	(<0.01)	(96.6)	(<0.01)		(<0.01)	0.002
184A	CRM	CDA 941	C94100	(0.01)	0.0016	0.010			0.03	(0.004)		(0.001)	(0.001)	(74)	0.003		0.002	
204A	CRM	CDA 954M	C95410	0.009	10.55	(<0.01)				0.006		0.008	0.008	83.3	3.87		0.052	

IARM Part Number	Type	Grade	UNS#	Nb	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Te	Zn	Zr
90C	CRM	CDA 922	C92200	(0.0005)	0.266	(0.001)	0.026	1.4	0.010	0.022	0.0013	0.0012	6.3	(0.003)	4.3	(0.0002)
91E	CRM	CDA 932	C93200	(0.0005)	0.3	(0.0020)	0.026	7.59	0.028	0.1680	0.004	0.0021	6.69	(<0.04)	3.68	
92C	CRM	CDA 937	C93700		0.170	(0.004)	0.073	9.42	0.026	0.078	(0.001)	0.0019	9.65		0.15	
94B	CRM	CDA 955	C95500		4.31		0.011	0.004	0.002	(0.011)		0.028	(0.003)		0.14	
151B	CRM	CDA 875	C87500		0.011	(0.002)	0.003	0.013	(<0.001)	(0.001)		3.11	0.009		12.94	
158C	CRM	CDA 815	C81500		0.32	0.002	0.005	0.01	0.003	0.002		0.02	0.01		0.014	
158B	CRM	CDA 815	C81500		0.32	0.002	0.005	0.01	0.003	0.002		0.02	0.01		0.014	
159A	CRM	NARloy-A	N/A		(<0.01)	0.0006	(<0.01)	(<0.01)	(<0.01)			(<0.01)	(<0.01)		(<0.01)	
160A	CRM	NARloy-Z	N/A		(<0.01)	0.0030	(0.004)	(<0.01)	(<0.003)			(<0.01)	(<0.01)		(<0.01)	0.40
184A	CRM	CDA 941	C94100		0.30		0.008	19.0	0.021	0.27	(0.002)	0.002	6.0		0.37	
204A	CRM	CDA 954M	C95410		1.95		0.007	0.004	(0.002)	(<0.01)		0.034	0.005		0.22	

Copper, Brass and Bronze

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Cd	Co	Cr	Cu	Fe	Mg	Mn	N
211A	CRM	Magnolia B	C89320	0.005	0.002	(0.01)			4.98			(0.001)	(0.002)	88.4	0.004		(0.003)	
226A	CRM	EnviroBrass 2-1	C89520M	0.004	0.002	0.003			1.7	0.003		0.001	(0.001)	86.7	0.054		0.002	(<0.0005)
227A	CRM	EnviroBrass 2-2	C89520M	0.004	0.002	0.003			2.3	0.003		0.001	(0.001)	85.9	0.060		0.001	(0.0002)
228A	CRM	EnviroBrass 2-3	C89520M	0.003	0.002	0.003			1.53	0.003		0.001	0.001	89.0	0.052		0.001	(<0.0005)
235A	CRM	CDA 958	C95800	(<0.005)	8.9	(<0.005)			(0.004)	0.009		0.01	0.01	81.2	4.07		1.17	(0.0001)
236A	CRM	CDA 964	C96400		0.003				0.003	0.010		0.004	0.002	66.7	0.91		1.04	0.0002
263A	CRM	Federalloy I-848A	N/A	0.006	0.002	0.003			2.55	(<0.005)		0.001	0.002	(78)	0.047		0.002	
264A	CRM	Federalloy I-844	C89831	(0.005)	0.003	(0.004)			3.6	(0.004)		0.001	(0.002)	(87.3)	0.048		0.002	
265A	CRM	Federalloy I-836	C89833	(0.002)	0.003	(0.005)			2.4			(0.001)	(0.001)	(90)	0.013		(0.002)	
266A	CRM	Federalloy I-932	C89835	0.001	0.002	0.004			2.37	0.0020		(0.001)	(0.002)	(87)	0.035		0.002	
267A	CRM	CDA 947	C94700	0.002	0.003	(0.004)			(0.005)	(0.003)		0.002	(0.001)	87.8	0.019		0.002	

IARM Part Number	Type	Grade	UNS#	Nb	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Te	Zn	Zr
211A	CRM	Magnolia B	C89320		0.003		0.19	0.014	0.002	0.057		0.003	6.23		0.006	
226A	CRM	EnviroBrass 2-1	C89520M		0.54	(0.001)	0.005	0.040	0.005	0.004	0.93	0.002	5.1		4.8	
227A	CRM	EnviroBrass 2-2	C89520M		0.53	0.0013	0.003	0.042	0.005	(<0.01)	1.21	0.002	5.1		4.70	
228A	CRM	EnviroBrass 2-3	C89520M		0.45	(0.002)	0.032	0.026	0.004	0.010	0.67	0.002	4.1		4.1	
235A	CRM	CDA 958	C95800		4.44	(0.001)	0.012	0.012	0.002	(0.004)		0.061	0.018		0.083	
236A	CRM	CDA 964	C96400	0.92	30.0	0.002	0.003	0.004	0.003	(<0.005)		0.19	0.005		0.002	
263A	CRM	Federalloy I-848A	N/A		0.66		0.040	0.022	0.002	0.06	0.002	0.003	3.5		15.8	
264A	CRM	Federalloy I-844	C89831		0.54		0.027	0.057	0.0013	0.074	(0.001)	0.003	3.03		5.33	
265A	CRM	Federalloy I-836	C89833		0.69		0.024	0.011	(0.002)	0.015	(0.002)	0.003	4.4		2.45	
266A	CRM	Federalloy I-932	C89835		0.46		0.032	0.010	0.002	0.010	0.001	0.002	6.9		3.48	
267A	CRM	CDA 947	C94700		5.1		0.037	0.026	0.0014	(<0.03)	0.002	0.003	4.95		2.06	

Copper, Brass and Bronze

IARM Part Number	Type	Grade	UNS#	Ag	Al	As	B	Be	Bi	C	Cd	Co	Cr	Cu	Fe	Mg	Mn	N
278A	CRM	CDA 145	C14500	(0.001)	(<0.002)	(0.001)			(0.001)	0.003		0.001	(0.001)	99.5	0.004	(0.0005)	(0.0004)	(0.0001)
279A	CRM	CDA 182	C18200	0.003	0.002	(0.002)			(0.001)	0.002	(0.0005)	0.002	0.86	99.1	0.025	(0.001)	(0.002)	(0.0003)
298A	CRM	CDA 976	C97600	0.009	0.003	0.004	(<0.005)	(<0.001)	0.014	0.013	(<0.001)	0.016	0.005	65.3	0.73	0.0004	0.34	(<0.001)
310A	CRM	CDA 907	C90700	0.0020	0.0009	0.002		(0.001)	(0.001)	(0.005)	(0.001)	0.0011	(0.001)	89.2	0.006	(0.001)	(0.001)	
313A	CRM	CDA 693	C69300	0.0017	(0.001)	0.001	0.0008	(0.0003)	(0.001)	(0.002)	(0.0003)	(0.004)	(0.001)	75.4	0.011	(0.0003)	(0.001)	(0.0001)
334A	CRM	CDA 955M	C95510	(0.001)	9.760	(0.004)	(0.001)	(0.001)	(0.001)	0.0058	(0.001)	(0.003)	(0.01)	80.7	3.82	(0.001)	0.69	(0.0001)
334B	CRM	CDA 955M	C95510	0.0013	9.91	(0.003)	(0.002)	(0.001)	(0.001)	0.005	(0.001)	(0.003)	(0.004)	80.8	3.7	(0.001)	0.60	(0.0004)

IARM Part Number	Type	Grade	UNS#	Nb	Ni	O	P	Pb	S	Sb	Se	Si	Sn	Te	Zn	Zr
278A	CRM	CDA 145	C14500		(<0.005)	(0.0004)	0.011	0.003	0.002	(<0.005)		0.002	0.001	0.53	0.002	
279A	CRM	CDA 182	C18200		0.014	(0.001)	0.005	0.01	0.0015	(0.004)		0.020	0.021		0.01	0.012
298A	CRM	CDA 976	C97600	(<0.01)	19.6	(<0.005)	0.004	4.0	0.011	0.04	(<0.02)	0.019	4.0	(<0.005)	5.8	(<0.01)
310A	CRM	CDA 907	C90700		0.043	(0.001)	0.094	0.064	0.0021	(0.002)	(0.001)	(0.001)	10.56		0.10	
313A	CRM	CDA 693	C69300	(0.001)	0.002	(0.001)	0.09	0.042	0.0016	0.014	(0.001)	3.09	0.006	(0.003)	21.3	(0.0004)
334A	CRM	CDA 955M	C95510		4.77	(0.0003)	(0.005)	0.010	0.0007	0.0043		0.073	0.025		0.110	
334B	CRM	CDA 955M	C95510	(0.001)	4.70	(0.0006)	0.005	0.006	0.0008	(0.004)	(0.004)	0.075	0.019		0.122	

SUS – Set up Samples

IARM Part Number	Type	Grade	Ag	Al	As	B	Be	Bi	C	Ca	Cd	Ce	Co	Cr	Cu	Ga	Hf
220G	Al SUS	*QA 10*	(<0.00001)		(0.000012)	(0.00057)	(<0.00001)	(<0.00001)		(0.000010)	(<0.00001)	(0.00034)	(<0.00001)			(0.00014)	(<0.00001)
217A	LAS SUS	*QA A*		(0.0002)	(0.003)	(<0.0001)			(0.01)	(0.0001)			(0.004)	(0.01)	(0.001)		
218A	LAS SUS	*QA C*		(0.003)	(0.1)	(0.0004)			(0.05)	(<0.0001)			(0.01)	(0.1)	(0.6)		
219A	LAS SUS	*QA D*		(0.2)	(0.01)	(0.01)			(0.9)	(<0.00001)			(1.0)	(5.0)	(0.6)		

IARM Part Number	Type	Grade	In	La	Mg	Mn	Mo	N	Na	Nb	Ni	O	P	Pb	Re	Ru	S
220G	Al SUS	*QA 10*	(<0.00001)	(0.00026)	(0.00087)		(0.000015)		(0.000030)	(<0.00001)			(0.00060)	(0.000015)	(<0.00001)	(<0.00001)	(0.000010)
217A	LAS SUS	*QA A*				(0.003)	(0.01)	(0.0005)		(0.001)	(0.01)		(0.002)	(0.004)			(0.001)
218A	LAS SUS	*QA C*				(2.0)	(0.1)	(0.007)		(<0.0001)	(5.0)		(0.1)	(<0.001)			(0.07)
219A	LAS SUS	*QA D*				(0.02)	(1.5)	(0.002)		(0.4)	(2.8)		(0.003)	(0.003)			(0.002)

IARM Part Number	Type	Grade	Sb	Se	Si	Sn	Ta	Te	Ti	V	W	Y	Zn	Zr
220G	Al SUS	*QA 10*	(0.000010)	(<0.00005)		(<0.00001)	(<0.00001)	(<0.00001)		(0.00052)	(0.000010)	(<0.00001)		(0.000088)
217A	LAS SUS	*QA A*	(0.006)		(0.01)	(0.0005)	(0.01)		(0.0001)	(0.002)	(0.005)		(<0.0001)	(0.005)
218A	LAS SUS	*QA C*	(0.02)		(0.1)	(0.1)	(0.02)		(0.01)	(1.0)	(0.7)		(<0.001)	(<0.001)
219A	LAS SUS	*QA D*	(0.1)		(2.0)	(0.06)	(0.01)		(1.7)	(0.3)	(0.01)		(0.01)	(0.002)

CKD Low Alloy Steel

Available as 38mm diameter disks in thicknesses of either 13mm or 25mm. Concentrations are listed in % w/w.

Part Number	Type	Al	Sb	As	Bi	B	C	Cr	Co	Cu	Fe	Pb	Mn	Mo	Ni	Nb	N	P
CKD-183C	CKD	0.15	0.001	0.005	0.0000	0.0005	0.049	0.205	0.12	0.575	Bal.	(0.000)	1.76	0.036	1.1	0.006	0.004	0.009
CKD-184A	CKD	0.022	0.27	0.006		0.0005	1.013	2.33	0.007	0.089	(93.58)	(0.000)	2.23	0.016	0.25	0.013	0.0104	0.028
CKD-186D	CKD	0.042	0.002	0.007		0.0009	0.392	1.51	0.006	0.226	Bal.	(0.000)	1.312	0.254	1.58	0.004	(0.005)	0.013
CKD-187A	CKD	0.019	0.023	(0.007)	0.003	0.0006	0.119	3.51	0.071	0.036	(93.01)	0.003	0.525	0.565	0.085	0.028	0.0122	0.035
CKD-187C	CKD	0.038	0.023	(0.007)	0.003	0.0006	0.118	3.5	0.071	0.041	Bal.	0.003	0.53	0.563	0.085	0.028	0.0153	0.035
CKD-187D	CKD	0.024	0.022	(0.007)	0.003	0.0006	0.119	3.51	0.071	0.035	Bal.	0.003	0.529	0.566	0.085	0.028	0.012	0.035
CKD-188A	CKD	0.093	0.006	(0.005)		0.0047	0.332	5.11	0.006	0.057	(90.53)	0.001	0.169	1.28	0.445	0.122	0.0076	0.006
CKD-189A	CKD	0.041	(0.003)	0.08		0.003	0.175	1.065	0.007	0.06	(90.01)	0.002	0.262	0.837	5.34	0.017	(0.004)	0.032

Part Number	Type	Se	Si	S	Ta	Sn	Ti	W	V	Zr
CKD-183C	CKD		1.03	0.012	(0.000)	0.053	0.003	0.353	0.004	0.081
CKD-184A	CKD	(0.008)	0.348	(0.01)	0.000	0.008	0.01	(0.001)	0.017	(0.002)
CKD-186D	CKD		1.41	0.007	0.008	0.018	0.047	0.054	0.021	(0.002)
CKD-187A	CKD	(0.004)	0.567	0.018	0.015	0.013	0.087	0.67	0.558	0.013
CKD-187C	CKD		0.588	0.013	0.016	0.014	0.11	0.67	0.559	0.011
CKD-187D	CKD		0.576	0.015	0.016	0.013	0.096	0.67	0.56	0.012
CKD-188A	CKD		0.775	0.033	0.022	0.005	0.034	0.091	0.802	0.052
CKD-189A	CKD		0.286	0.051	(0.005)	0.029	0.326	1.3	0.054	0.005

CKD Cast Iron

Available as 38mm diameter disks in thicknesses of either 13mm or 25mm. Concentrations are listed in % w/w.

Part Number	Type	Al	Sb	As	Bi	B	C	Ce	Cr	Co	Cu	Fe	La	Pb	Mg	Mn	Mo	Ni
CZ02033-2F	CRM	0.024	0.028		0.002	0.002	3.77	0.018	0.022	0.003	0.89			0.005	0.053	0.091	0.002	0.658
CZ02033-2G	CRM	0.019	0.029		0.006	0.0023	3.78	0.013	0.027	0.012	0.88			0.008	0.036	0.096	0.002	0.65
CZ2002-242A	CRM	0.036	0.007	0.015	0.015	0.008	1.84		0.029	0.002	0.055			0.012		0.05	1.13	0.039
CZ02033-4E	CRM	0.003			(0.002)		4.45		0.03	0.033	0.005			(0.002)		0.034	0.002	0.049
CZ2002-242B	CRM	0.042	0.005	0.009	0.02	0.005	2.06		0.031	0.004	0.04	(92.6)		0.027		0.189	1.21	0.022
CZ02033-1F	CRM	0.073			0.001	0.0043	3.23	0.036	0.035	0.024	0.018			0.009	0.07	0.693	0.182	0.373
CZ02033-1E	CRM	0.058			0.002	0.0036	3.15	0.027	0.037	0.022	0.012			0.007	0.044	0.718	0.185	0.367
CZ02033-4A	CRM	0.015					4.18		0.04	0.002	0.081			0.006		0.236	0.002	0.056
CZ02033-2E	CRM	0.025	0.028		0.005	0.0024	3.47	0.017	0.043	0.005	0.89			0.004	0.038	0.168	0.002	0.62
CZ02033-1G	CRM	0.062			0.005	0.0034	3.22	0.023	0.044	0.01	0.027			0.016	0.05	0.701	0.185	0.357
CZ02033-4B	CRM	0.003	(0.001)				3.95		0.049	0.005	0.062			0.004		0.145	0.005	0.023

Part Number	Type	Nb	N	P	Se	Si	S	Te	Sn	Ti	W	V	Zn	Zr
CZ02033-2F	CRM			0.159		1.23	0.009		0.014	0.021	0.003	0.01	0.018	(0.005)
CZ02033-2G	CRM			0.125		1.1	0.009	(0.004)	0.015	0.029	0.004	0.017	0.02	
CZ2002-242A	CRM	0.013		0.039		3.06	0.036	0.08	0.01	0.19	0.007	0.37		--
CZ02033-4E	CRM			0.023		0.09	0.006		0.001	0.011		0.015		
CZ2002-242B	CRM	0.009	0.0092	0.044	(0.002)	2.81	0.028	0.031	0.01	0.28	-0.002	0.46		
CZ02033-1F	CRM			0.043		2068	0.005	(0.007)	0.03	0.041	0.022	0.014	0.004	(0.008)
CZ02033-1E	CRM			0.037		2.72	0.006		0.032	0.046	0.021	0.015	0.009	(0.007)
CZ02033-4A	CRM			0.053		0.71	0.034		0.007	0.015		0.004	0.007	
CZ02033-2E	CRM			0.106		1.03	0.01	(0.006)	0.015	0.039	0.008	0.026	0.025	
CZ02033-1G	CRM			0.036		2.53	0.007		0.028	0.054	0.015	0.019	0.003	(0.004)
CZ02033-4B	CRM			0.041		0.252	0.046		0.001	0.006		0.004	0.008	

CKD Cast Iron

Part Number	Type	Al	Sb	As	Bi	B	C	Ce	Cr	Co	Cu	Fe	La	Pb	Mg	Mn	Mo	Ni
CZ02033-5A	CRM	0.06					2.3		0.054		0.014					0.804	0.1	0.096
CZ02033-4D	CRM	0.007		(0.012)	(0.002)	(0.0001)	4.19		0.056	0.003	0.084			0.007		0.112	0.024	0.063
CZ02033-5C	CRM	0.103	(0.002)		0.007	0.0078	2.3		0.085	0.013	0.013					0.704	0.104	0.188
CZ02033-3C	CRM	0.024		(0.007)	0.002	0.0044	3.68	0.013	0.1	0.026	0.421			0.005	0.006	0.333	0.49	0.04
CZ02033-8C	CRM	0.004	0.014	(0.006)	0.009		3.41		0.125	0.03	0.158			0.008		0.408	0.041	0.102
CZ2002-245B	CRM	0.038	0.052	0.006	0.009	0.003	2.95		0.197	0.007	0.081	(92.5)		0.02	0.003	1.38	0.115	0.194
CZ02033-3D	CRM	0.055	0.007	(0.018)	0.002	0.0071	3.24	0.006	0.236	0.014	0.396			0.005	0.016		0.453	0.025
CZ2002-244B	CRM	0.019	0.004	0.04		0.093	2.57	0.018	0.36	0.049	0.308	(93.0)	0.009	0.002	0.025	0.68	0.056	0.336
CZ02033-7A	CRM	0.029					3.11		0.479	0.044	0.022					0.321	1.07	1.29
CZ02033-7C	CRM	0.04			(0.002)	0.0008	3.55		0.542	0.048	0.016					0.389	0.966	1.26
CZ2002-246B	CRM	0.101	0.004	0.003	0.001		2.73	0.007	1.16	0.012	1.39	(92.6)	0.003	-0.002	0.016	0.354	0.009	0.065

Part Number	Type	Nb	N	P	Se	Si	S	Te	Sn	Ti	W	V	Zn	Zr
CZ02033-5A	CRM			0.035		1.26	0.1			0.008		0.005		
CZ02033-4D	CRM			0.05		0.259	0.041		0.001	0.009		0.012	0.009	
CZ02033-5C	CRM			0.027		1.4	0.091	(0.010)	0.002	0.008		0.054		(0.009)
CZ02033-3C	CRM			0.026		2.15		(0.005)	0.009	0.021	0.003	0.016		0.317
CZ02033-8C	CRM			0.168		1.93	0.058		0.067	0.022		0.015		
CZ2002-245B	CRM	0.029		0.42	(0.029)	1.59	0.035	0.017	0.076	0.11	0.02	0.055		0.004
CZ02033-3D	CRM			0.008		2.12	0.006		0.009	0.016		0.072		
CZ2002-244B	CRM	0.006		0.022		2.06	0.011		0.179	0.019	0.052	0.002	0.026	0.025
CZ02033-7A	CRM			0.043		1.83	0.019			0.027	0.022	0.0005		
CZ02033-7C	CRM			0.028		1.73	0.026	(0.006)	0.004	0.026	0.037	0.067		
CZ2002-246B	CRM	0.001		0.66		0.76	0.02		0.002	0.014	0.011	0.013		

CKD Cast Iron

Part Number	Type	Al	Sb	As	Bi	B	C	Ce	Cr	Co	Cu	Fe	La	Pb	Mg	Mn	Mo	Ni
CZ2002-246	CRM	0.006	0.003	0.005			2.82	0.01	1.2	0.008	1.38	(92.9)	0.003	0.0003	0.01	0.302	0.005	0.043
CZ02033-6C	CRM	0.024	0.044			0.0024	3.11		1.33	0.005	0.273			0.003		1.25	0.006	0.021
CZ02033-6A	CRM	0.022	0.056				3.14		1.4		0.225					1.22	0.005	0.023

Part Number	Type	Nb	N	P	Se	Si	S	Te	Sn	Ti	W	V	Zn	Zr
CZ2002-246	CRM	0.001		0.6		0.62	0.022		0.002	0.001	0.007	0.002		
CZ02033-6C	CRM			0.097		3.25	0.019			0.107	0.007	0.192		
CZ02033-6A	CRM			0.077		3.37	0.032		0.119	0.066		0.3		

Aluminum Alloys – Rio Tinto Alcan

Available as 57 mm diameter disks with a thickness of 25mm. Concentrations are listed in % w/w. "L" indicates a value that is less than. "N" indicates a value that is not certified.

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
HP FK	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	
HP FL	0.0001	0.0001	0.0001L	0.0001L	0.0001	0.0001L	0.00001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
PROF A1	1.0 N	0.18 N	1.0 N	0.95 N	1.0 N		0.88 N	0.98 N										
PROF B2	0.20 N		0.030 N	0.105 N	0.028 N					0.006 N	0.029 N	0.14 N	0.027 N	0.23 N		0.031 N		
PROF C1	0.27 N	0.30 N						0.11 N										0.0015 N
PROF D1	0.32 N	0.12 N				0.31 N	0.009 N		0.11 N		0.11 N				0.034 N			
LIM E	0.023	0.013	0.0088	0.0062	0.0028	0.0099	0.012	0.0049	0.0046i	0.0017i	0.0007	0.0063	0.0013i	0.002	0.0043	0.0059	0.0018	0.0007i
LIM G	0.050	0.034	0.020	0.012	0.0044	0.020	0.024	0.011	0.0103i	0.0031i	0.0018	0.010	0.0033i	0.0038	0.002	0.013	0.0051	0.0017i
PREC A2	0.11 N	0.31 N	0.049 N	0.036 N	0.023 N	0.018 N	0.041 N	0.048 N	0.059 N		0.0034 N	0.005 N	0.012 N	0.015 N	0.015 N	0.031 N		0.0103 N
PREC B1	0.79 N	0.47 N	0.50 N	0.49 N	0.57 N	0.48 N	0.46 N	0.52 N										
1S CAF	0.065 N	0.135 N								0.029								

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
HP FK		0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
HP FL	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
PROF A1							0.005 N	
PROF B2					0.10 N	0.017 N		
PROF C1	0.0027 N	0.0017 N	0.095 N					
PROF D1				0.28 N	1.0 N		0.045 N	0.10 N
LIM E	0.0012i	0.0054	0.0062	0.0054	0.0098	0.0031i	0.002	0.0031
LIM G	0.0024i	0.0065	0.012	0.0087 N	0.021	0.0013i	0.004	0.0058
PREC A2	0.0118 N	0.0037 N	0.031 N	0.0037 N	0.039 N	0.0069 N	0.014 N	0.014 N
PREC B1					0.48 N			
1S CAF								

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
1S CAI	0.125	0.263	0.0001	0.0001L	0.0003	0.0001L	0.0001	0.0002	0.0001L	0.0081	0.0009	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
F3S AA	7.14	0.19	0.15	0.019	0.98	0.015	0.024	0.022	0.16		0.0041	0.017	0.005 N			0.020		0.004 N
161 CAH	12.0 N	0.14 N	0.0001	0.0001	0.34 N	0.0001L	0.0001L	0.0001	0.0001L	0.0001	0.0001L	0.0001L	0.0001	0.0001	0.0001L	0.0001L		0.0001L
B206 AA	0.078	0.16	4.68	0.43	0.30i	0.028	0.029	0.029	0.22		0.0008	0.009	0.0037i	0.0011		0.017		0.0030i
B319.1 AF	6.14	0.64	3.11	0.43	0.33	0.015	0.049	0.72	0.060		0.0017	0.022i	0.0040i	0.0013		0.024		0.0024i
B319.1 CAG	6.30 N	0.65 N	3.34 N	0.43 N	0.32 N	0.0001L	0.0001L	0.70 N	0.0001	0.0002	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001		0.0001L
A320 AC	0.54	0.20	0.057	0.036	4.10	0.020	0.032	0.047	0.15		0.005	0.037				0.018		
A320 CAB	0.001 N		0.003 N	0.001L	3.90 N	0.001L	0.001L	0.001L	0.001L			0.001L				0.001L		
B320 AA	0.83	0.80	0.054	0.54	3.38	0.032	0.029	0.041	0.047			0.042				0.017		
B320 CAB	0.76 N	0.78 N	0.003 N	0.47 N	3.4 N	0.001L	0.001L	0.001L	0.001L			0.001L				0.001L		
332.0 AB	10.47	0.62	2.65	0.42	1.67	0.058	0.21	0.65	0.22i		0.0013	0.028i	0.0064			0.031		0.0026i

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
1S CAI	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
F3S AA	0.007 N	0.001	0.021		0.022	0.0023	0.015	
161 CAH	0.0002	0.0004	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
B206 AA	0.0033i	0.003	0.011	0.0038	0.020	0.0037i	0.020	0.003
B319.1 AF	0.0026i	0.0016i	0.013	0.002 N	0.014	0.044i	0.020	0.003
B319.1 CAG	0.0001L	0.0001	0.0002	0.0002	0.0002	0.0001L	0.0001L	0.0001
A320 AC			0.042		0.038		0.012	
A320 CAB			0.001 N		0.001L		0.001L	
B320 AA			0.041		0.040		0.011	
B320 CAB			0.002 N		0.001 N		0.001L	
332.0 AB	0.0039i	0.001	0.030	0.0042	0.034	0.018	0.042	0.026

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
332.0 CAC	10.62	0.59	2.70	0.41	1.49	0.0001	0.19	0.67	0.20	0.0001	0.0001L	0.0001L	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
X332.0 AC	11.33	0.20	3.28	0.032	1.29	0.030	0.031	0.067	0.25		0.0011	0.005	0.0039	0.0013	0.0021	0.021		0.0032
A333.0 AI	9.7	0.90	3.47	0.33	0.14	0.11	0.15	2.56	0.12		0.0012	0.019	0.0021	0.0012		0.017		0.0022i
A333.0 CAH	9.64 N	1.00 N	3.55 N	0.37 N	0.0003	0.0001	0.0001L	2.56 N	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
339.0 AD	12.73	0.48	1.40	0.37	1.23	0.051	1.12	0.099	0.048		0.0013	0.04	0.002			0.031		0.0009
339.0 CAB	12.5 N	0.50 N	1.40 N	0.27 N	1.17 N	0.0004	1.10 N	0.0005	0.0007		0.0001L	0.0001	0.0004		0.0014	0.001		0.0001L
354.0 CAB	9.35 N	0.47 N	2.19 N	0.0001	0.49 N	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
A355.0 CAA	4.0 N	0.21 N	0.95 N	0.0001L	0.60 N	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
356.2 AV	7.26	0.201	0.080	0.037	0.39	0.027	0.031	0.081	0.178		0.0011i	0.0076	0.0037i	0.0011i		0.019		0.0020i
356.2 AW	7.27	0.21	0.081	0.033	0.39	0.027	0.031	0.082	0.18		0.001	0.0086	0.0037i	0.0011		0.020		0.0024i
356.2 CAU	7.42	0.16	0.0001L	0.0001L	0.42	0.0001L	0.0001L	0.0001L	0.11	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
332.0 CAC	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0003
X332.0 AC	0.0062	0.0031	0.028	0.003	0.020	0.003	0.019	0.003
A333.0 AI	0.0028i	0.0032i	0.13	0.0039	0.17	0.0031i	0.020	0.0029
A333.0 CAH	0.0001L	0.0005	0.0001	0.0028	0.0001L	0.0001L	0.0001L	0.0001L
339.0 AD	0.0025	0.0061	0.046	0.001	0.046	0.0021	0.032	0.0029
339.0 CAB	0.0011	0.0003	0.0001	0.0003	0.0001	0.0001	0.0008	0.0009
354.0 CAB	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
A355.0 CAA	0.0001L	0.0001	0.0001L	0.0003	0.0001	0.0001L	0.0001L	0.0001L
356.2 AV	0.0026i	0.0019	0.008	0.0029	0.014	0.0151i	0.020	0.0021
356.2 AW	0.0028i	0.002	0.0082	0.0029	0.015	0.031i	0.020	0.0021
356.2 CAU	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
356.2 DAO	7.36 N	0.16 N	0.068 N	0.0035 N	0.42 N	0.0011 N	0.0031 N	0.0045 N	0.11 N	0.0000 N	0.0000 N	0.0042 N	0.0008 N	0.0000 N	0.0002 N	0.014 N		0.0000 N
A380.2 AD	9.08	0.39	3.63	0.027	0.026i	0.030	0.033	0.031	0.030		0.0009i	0.0078	0.0027i	0.0009i		0.020		0.0025i
A380.2 CAC	9.45 N	0.39 N	3.64 N	0.0008	0.0005	0.0006	0.0003	0.0002	0.0011	0.0002	0.0001L	0.0001L	0.0001	0.0002	0.0001L	0.0001L		0.0001L
383.1 AB	11.24	0.97	2.67	0.35	0.12	0.10	0.22	2.65	0.15		0.0013	0.016	0.0033i	0.0009		0.026		0.0030i
383.1 CAC	10.93 N	1.03 N	2.69 N	0.38 N	0.0001	0.0007	0.0005	2.63 N	0.0011	0.0004	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001L		0.0001L
A390.1 AA	17.70	0.38	4.84	0.052	0.62	0.050	0.051	0.047	0.13		0.0011	0.0029	0.0016	0.0014	0.0016 N	0.016		
A413.2 AD	12.06	0.40	0.033	0.039	0.026	0.016	0.031	0.030	0.031		0.0009	0.0069	0.0025i	0.0014		0.029		0.0029i
A413.2 CAE	11.74 N	0.34 N	0.0001L	0.0001L	0.0001	0.0001L	0.0002	0.0001L	0.0001L	0.001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
443.2 AC	5.31	0.35	0.048	0.046	0.022i	0.027	0.028	0.041	0.155		0.001	0.0085i	0.0024i	0.0012		0.021		0.0017i
443.2 CAB	5.46 N	0.35 N	0.0002	0.0001L	0.0003	0.0001	0.0001L	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L		0.0001L
A535.0 AA	0.12	0.17	0.053	0.17	7.30	0.053	0.052	0.044	0.16		0.0012	0.043i	0.0025i	0.0012		0.021		0.0033

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
356.2 DAO	0.0000 N	0.0014 N	0.0010 N	0.0004 N	0.0004 N	0.011 N	0.012 N	0.0014 N
A380.2 AD	0.0025i	0.0021	0.008	0.003 N	0.020	0.0031i	0.022	0.0034
A380.2 CAC	0.0001	0.0003	0.0001	0.0001L	0.0001	0.0001L	0.0002	0.001
383.1 AB	0.0023i	0.002	0.10	0.0069	0.11	0.0034i	0.036	0.017
383.1 CAC	0.0001L	0.0007	0.0004	0.0001	0.0001L	0.0001L	0.0002	0.0001L
A390.1 AA		0.0037	0.0035	0.0028	0.046		0.018	0.0032
A413.2 AD	0.0040i	0.0026	0.008	0.0039	0.014	0.064i	0.019	0.0034
A413.2 CAE	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
443.2 AC	0.0024i	0.0032	0.0073	0.0033	0.012	0.0038i	0.024	0.0026
443.2 CAB	0.0001L	0.0001	0.0001L	0.001	0.0001L	0.0001L	0.0001L	0.0001L
A535.0 AA	0.0019i	0.0010i	0.044	0.0024	0.047	0.0025i	0.02	0.0048

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
A535.0 CAX	0.14	0.17	0.0001L	0.16	7.38	0.0001L	0.0001L	0.0002	0.16	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
1050 AJ	0.174	0.297	0.040	0.0374	0.0264i	0.0172	0.0227	0.0399	0.0287		0.0010i	0.0081	0.0016i	0.0011		0.019		0.0022i
1100 AK	0.18	0.60	0.084	0.029	0.0123	0.018	0.030	0.031	0.030		0.0011	0.0056	0.0013i	0.0011		0.02		0.0019i
1100 AY	0.17	0.59	0.084	0.029	0.0096i	0.019	0.031	0.032	0.030		0.0009	0.0048	0.0008i	0.0013		0.02		0.0018i
X1100 AH	0.43	0.42	0.088	0.037	0.015	0.016	0.031	0.026	0.028		0.001	0.016	0.0021i	0.001		0.022		0.0014i
X1120 AC	0.10	0.15	0.45	0.15	0.015i	0.019	0.022	0.020	0.019		0.0010i	0.007	0.0016i	0.0012		0.019		0.0020i
1145 AE	0.10	0.40	0.028	0.031	0.022i	0.020	0.030	0.030	0.031		0.0008	0.0082	0.0014i	0.0011		0.019	0.0018 N	0.0019i
1170 AM	0.090	0.179	0.0365	0.036	0.0257i	0.033	0.030	0.0342	0.0302		0.0010i	0.0081	0.0023i	0.0012		0.019		0.0024i
1188 AD	0.052	0.053	0.0052i	0.0066	0.0051i	0.007	0.0073	0.007	0.0072		0.0009i	0.0058	0.0010i	0.0011	0.0011	0.02	0.0021	0.0009i
1188 AE	0.056	0.058	0.0056	0.0069	0.0062i	0.0067	0.0074	0.0077	0.0075		0.0009	0.0062	0.0031i	0.0013	0.0013	0.02	0.0012i	0.0029i
1200 AJ	0.20	0.64	0.031	0.034	0.024i	0.030	0.029	0.061	0.030		0.0010i	0.0075	0.0024i	0.0011		0.02		0.0027i

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
A535.0 CAX	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0002 N	0.0001L	0.0001L
1050 AJ	0.0013i	0.0014	0.008	0.002	0.0148	0.0018i	0.0168	0.0019
1100 AK	0.0045i	0.0023	0.0085	0.0016	0.014	0.0018i	0.0178	0.0032
1100 AY	0.0057i	0.0027	0.0082	0.0021	0.014	0.0016i	0.02	0.0034
X1100 AH	0.0021i	0.0038	0.013	0.0039	0.015	0.0024i	0.0215	0.0032
X1120 AC	0.0021i	0.0016	0.0078	0.002	0.021	0.0019i	0.021	0.0019
1145 AE	0.0021i	0.0025	0.008	0.0021	0.02	0.0017i	0.02	0.003
1170 AM	0.0014i	0.0021	0.0082	0.0012	0.02	0.0022i	0.02	0.0029
1188 AD	0.0013i	0.0031	0.0071	0.0028	0.0065	0.0013i	0.02	0.0026
1188 AE	0.0024i	0.002	0.0063	0.0027	0.0076	0.0029i	0.021	0.0031
1200 AJ	0.0018i	0.0028	0.0081	0.0021	0.019	0.0023i	0.02	0.0028

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
A1200 AA	0.060	0.78	0.012	0.0079i	0.012i	0.076	0.030	0.019	0.030		0.0012i	0.0067i	0.0025i	0.0009		0.019	0.0001L	0.0026i
2007 CAB	0.45 N	0.45 N	4.3 N	0.65 N	0.55 N	0.0002	0.0005	0.0001L	0.0001	0.0001L	0.0001L	0.0003	0.0001L	0.0001L	0.0002	0.0001L		0.0001L
2011 AC	0.12	0.26	5.62	0.023	0.015	0.019	0.024	0.047	0.017		0.0004	0.49	0.0009i	0.0011		0.02		0.0007i
2011 CAB	0.13 N	0.30 N	6.0 N	0.0001L	0.0001L	0.0001L	0.0003	0.0005	0.0001L		0.0001L	0.45 N	0.0001L	0.0001L	0.0001	0.0001L		0.0001L
2014 AE	0.90	0.56	4.67	0.92	0.69	0.065	0.029	0.11	0.120		0.001	0.007	0.0027	0.0012i		0.018		0.0022i
2014 CAC	0.90 N	0.48 N	4.56 N	0.90 N	0.43 N	0.0001L	0.0001	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001		0.0001L
2017 AC	0.57	0.41	4.24	0.63	0.75	0.017	0.034	0.015	0.018		0.0012	0.019	0.0025i	0.0013		0.02		0.0025i
2017 CAB	0.51 N	0.41 N	4.21 N	0.72 N	0.78 N	0.0001	0.0001L	0.0001	0.0001	0.0001	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L		0.0001L
2018 AB	0.48	0.34	4.14	0.015	0.62	0.028	2.15	0.030	0.027		0.0011	0.021	0.0025	0.0012	0.0017	0.02		0.0017i
2018 CAC	0.48 N	0.34 N	4.18 N	0.0001	0.65 N	0.0001	2.06 N	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
2024 AF	0.25	0.25	4.55	0.66	1.57	0.028	0.031	0.073	0.032		0.001	0.008	0.0031i	0.0011i		0.022		0.0030i

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
A1200 AA	0.0023i	0.0023	0.0079	0.0056	0.018	0.0026i	0.021	0.0023
2007 CAB	0.0001L	0.0001	1.1 N	0.01	0.006	0.0001	0.0002	0.0003
2011 AC	0.0005i	0.0024	0.53	0.0029	0.019	0.0009i	0.017	0.0027
2011 CAB	0.0001L	0.0001L	0.60 N	0.001	0.0035	0.0001L	0.0001L	0.0001L
2014 AE	0.0026i	0.003	0.0074	0.0028	0.019	0.0026	0.022	0.003
2014 CAC	0.0001L	0.0003	0.0002	0.0002	0.0001L	0.0001L	0.0001L	0.0001L
2017 AC	0.0019i	0.0031i	0.015	0.0032i	0.015	0.0028i	0.022	0.0026
2017 CAB	0.0001L	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001
2018 AB	0.0009i	0.003	0.017	0.0025	0.015	0.0026	0.016	0.0018
2018 CAC	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
2024 AF	0.0026i	0.0023	0.0077	0.003	0.015	0.0029	0.022	0.0024

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
2024 CAE	0.26 N	0.30 N	5.0 N	0.69 N	2.0 N	0.0001L	0.0001L	0.0002	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001		0.0001L
2219 AC	0.15	0.21	6.70	0.24	0.013	0.013	0.016	0.088	0.050		0.0011	0.0067	0.0011i	0.002		0.015		0.0012i
2219 CAB	0.15 N	0.18 N	6.53 N	0.29 N	0.0001	0.0001L	0.0002	0.0005	0.0003	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001		0.0001L
2618 AC	0.23	1.12	2.55	0.18	1.66	0.019	1.36	0.077	0.058		0.001	0.011	0.0035	0.0018	0.0022 N	0.018		0.0030i
2618 CAB	0.22 N	1.13 N	2.44 N	0.18 N	1.52 N	0.0005	1.43 N	0.0005	0.001	0.0001	0.0001L	0.0001L	0.0001L	0.0001	0.0005	0.0007		0.0001L
3003 AI	0.25	0.64	0.085	1.10	0.014i	0.021	0.019	0.020	0.021		0.001	0.008	0.0019i	0.0012		0.02		0.0019i
3003 AJ	0.45	0.22	0.130	1.07	0.0065	0.016	0.020	0.083	0.040		0.0011	0.0073	0.0017i	0.001		0.02		0.0021i
3003 AK	0.24	0.63	0.090	1.14	0.011i	0.0142	0.023	0.0253	0.025		0.0010i	0.0078	0.0017i	0.0013		0.014		0.0023i
X3003 AD	0.37	0.53	0.16	1.17	0.014	0.015	0.018	1.39	0.021		0.0011	0.0064	0.0019i	0.0011		0.021		0.0021i
X3003 CAE	0.25 N	0.58 N	0.0001L	1.11 N	0.0001	0.0001L	0.0001L	1.01 N	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
3004 AO	0.23	0.48	0.21	1.20	1.24	0.029	0.027	0.13	0.029		0.0012	0.0069	0.0038	0.0013		0.022		0.0019i

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
2024 CAE	0.0001L	0.0001	0.0001	0.0001L	0.0005	0.0001L	0.0001	0.0001L
2219 AC	0.0012i	0.0021	0.0087	0.0029	0.017	0.0018i	0.092	0.13
2219 CAB	0.0001L	0.0001	0.0001L	0.0001	0.0001L	0.0001L	0.0001	0.14 N
2618 AC	0.0040i	0.0021	0.011	0.0027	0.021	0.0034	0.019	0.0027
2618 CAB	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0006	0.0003
3003 AI	0.0024i	0.0028	0.0082	0.0037	0.021	0.0017i	0.019	0.0025
3003 AJ	0.0025i	0.0034	0.0086	0.0025	0.022	0.0021i	0.021	0.0027
3003 AK	0.0014i	0.0016	0.0081	0.002	0.0148	0.0019i	0.02	0.002
X3003 AD	0.0025i	0.003	0.0077	0.0025	0.018	0.0019i	0.019	0.0024
X3003 CAE	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
3004 AO	0.0028i	0.002	0.008	0.0035 N	0.013	0.0031	0.019	0.0033

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
3004 CAN	0.22 N	0.62 N	0.17 N	1.23 N	1.27 N	0.0001	0.0001	0.0008	0.0004	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0008		0.0001L
3005 AC	0.19	0.42	0.12	1.12	0.49	0.021	0.023	0.049	0.020		0.0012	0.012	0.0032			0.022		0.0023i
3005 AD	0.46	0.55	0.20	1.15	0.52	0.015	0.020	0.13	0.041		0.0011	0.0077	0.0026	0.0011		0.02		0.0023i
3005 CAF	0.21 N	0.44 N	0.0002	1.16 N	0.43 N	0.0001	0.0001	0.001	0.0002	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
X3005 AB	0.081	0.21	0.53	1.51	0.12	0.016	0.021	0.025	0.020		0.0011	0.008	0.0017	0.002		0.02		0.0018i
X3005 CAC	0.19 N	0.22 N	0.59 N	1.56 N	0.16 N	0.0001	0.0001L	0.0003	0.0001	0.0001	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
X3012 AA	0.49	0.20	0.52	1.23	0.031	0.016	0.020	0.084	0.014		0.0012	0.0078	0.0015i	0.0014		0.02		0.0012i
3102 AD	0.35	0.54	0.086	0.37	0.028	0.021	0.019	0.029	0.0271		0.001	0.008	0.0016	0.0012		0.019		0.0014i
3102 CAF	0.29 N	0.55 N	0.07 N	0.31 N	0.0002	0.0001L	0.0001L	0.0002	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
3104 AR	0.21	0.42	0.23	0.96	1.19	0.015	0.031	0.12	0.030		0.0012	0.007	0.0026i	0.0013		0.021		0.0024i
3104 AT	0.27	0.46	0.23	0.94	1.19	0.027	0.023	0.17	0.030			0.0072	0.0028	0.0011		0.019		0.0022i

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
3004 CAN	0.0001L	0.0001L	0.0001	0.0001L	0.0001	0.0001L	0.0001	0.0002
3005 AC	0.0034i	0.0029	0.009	0.0041	0.017	0.0035i	0.02	0.003
3005 AD	0.0022i	0.0035	0.008	0.0024	0.019	0.003	0.022	0.0031
3005 CAF	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
X3005 AB	0.0018i	0.003	0.009	0.002	0.018	0.0021	0.02	0.0018
X3005 CAC	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0002
X3012 AA	0.0014i	0.0036	0.0085	0.002	0.022	0.0019i	0.02	0.003
3102 AD	0.0010i	0.003	0.009	0.0035	0.021	0.0018i	0.0191	0.004
3102 CAF	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
3104 AR	0.0030i	0.0017	0.0083	0.0021	0.015	0.0022i	0.021	0.0019
3104 AT	0.0017i	0.003	0.0077	0.0023 N	0.0145	0.0029	0.021	0.002

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
4002 CAC	4.00 N	0.30 N	0.003	0.001L	0.003	0.001L	0.001L	0.001L	0.002		0.0001L	0.003 N		1.10 N		0.001L		0.0001L
X4002 AA	4.10	0.29	0.13	0.037	0.13	0.028	0.038	0.045	0.019			1.06i	0.0065i	0.041		0.031		0.0022i
X4002 CAB	3.90 N	0.30 N	0.10 N	0.0001	0.11 N	0.0001	0.0002	0.0001L	0.0001L		0.0001L	1.00 N	0.0001L			0.0001L		0.0001L
4007 AA	1.62	0.55	0.011	1.43	0.008	0.091	0.21	0.029	0.029		0.0011	0.007	0.0011i	0.0012		0.019		0.0009i
X4045 AC	10.03	0.32	0.015	0.013	0.015	0.013	0.014	0.99	0.0129		0.0009	0.008	0.0024i	0.0013		0.016		0.0019i
X4045 CAB	9.75 N	0.33 N	0.002 N	0.003 N	0.001L	0.001L	0.001 N	1.0 N	0.003 N		0.0001L	0.001L	0.003 N			0.001L		0.0001L
4104 AE	10.06	0.59	0.10	0.050	1.48	0.030	0.030	0.10	0.027		0.0012	0.11	0.0029	0.0013		0.019		0.0024
4104 CAD	10.0 N	0.60 N	0.10 N	0.001	1.60 N	0.0001	0.0004	0.0005	0.0002	0.0002	0.0001L	0.10 N	0.0001L	0.0001	0.0001L	0.0001L		0.0001L
4145 AB	10.66	0.54	4.12	0.050	0.050	0.050	0.054	0.058	0.046		0.0012	0.032	0.0023	0.0012		0.019		0.0016i
4147 AA	11.37	0.32	0.071	0.066	0.17	0.071	0.031	0.031	0.12		0.0011	0.0071	0.0036i	0.0011		0.021		0.0031i
425A1 AA	4.58	0.27	0.19	0.12	0.34	0.11	0.020	0.020	0.057		0.0012	0.007	0.0026	0.0011		0.019		0.0019i

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
4002 CAC	0.0003	0.0009	0.001L		0.0004		0.001L	
X4002 AA	0.0016	0.006	0.034		0.029	0.008	0.027	0.014
X4002 CAB	0.0001L	0.0001	0.0001L		0.0001L	0.0001L	0.0001	0.0001L
4007 AA	0.0012i	0.0023	0.0041	0.0042	0.0022	0.0012i	0.015	0.0022
X4045 AC	0.0041i	0.0058	0.008	0.0038	0.012	0.0029i	0.0123	0.0031
X4045 CAB	0.0001L	0.0008	0.001L		0.001L	0.0001L	0.001L	0.0001L
4104 AE	0.0024	0.0027	0.028	0.0028	0.033	0.003	0.019	0.0025
4104 CAD	0.0001L	0.0002	0.002	0.0011	0.0001L	0.0001	0.0001L	0.0001L
4145 AB	0.0018i	0.0033i	0.031	0.0038N	0.03	0.0031	0.02	0.0028
4147 AA	0.0036i	0.0036	0.0076	0.0033	0.027	0.0025i	0.02	0.003
425A1 AA	0.0027i	0.0034	0.0067	0.0027	0.019	0.0027	0.018	0.003

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
4343 AF	7.84	0.50	0.050	0.052	0.031	0.032	0.029	0.050	0.031		0.0013	0.037	0.0028i	0.001		0.023		0.0022i
4343 CAG	7.83 N	0.50 N	0.0001L	0.0001L	0.0005	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
X4343 AA	7.57	0.53	0.048	0.046	0.051	0.025	0.029	0.98	0.031		0.0016	0.019	0.0023i			0.025		0.0004i
462A1 AA	12.12	0.15	3.86	0.025	1.05	0.028	1.07	0.031	0.17		0.0011	0.009	0.0049	0.0012		0.018		0.0029
4643 AD	3.88	0.25	0.029	0.029	0.11i	0.029	0.029	0.029	0.028		0.0012	0.0053	0.0031i	0.0011i		0.019		0.0028i
4643 CAC	3.78 N	0.18 N	0.0001	0.0001L	0.0001	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L		0.0001L
5000 CAB	0.001 N		10.0 N	0.001L	0.001 N	0.001L	0.001L	0.003 N	0.001L			0.001L				0.002 N		
5001 BI	0.36	0.30	19.5	0.050	0.053	0.049	0.052	0.045	0.049		0.0012	0.052	0.0018	0.0013		0.02		0.0020i
5001 CBG		0.02 N	20.0 N	0.001 N	0.002 N	0.001 N	0.003 N	0.001L	0.001 N			0.001L				0.002 N		
5005 AG	0.217	0.59	0.088	0.045	1.00	0.0303	0.0254	0.0253	0.024		0.0012	0.0084	0.0026	0.0011		0.023		0.0024i
5005 CAF	0.17 N	0.58 N	0.080 N	0.0001L	0.87 N	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
4343 AF	0.0027i	0.0042i	0.021	0.0042	0.018	0.011	0.026	0.0029
4343 CAG	0.0001L	0.0001L	0.0001L	0.002 N	0.0001L	0.0001L	0.0001L	0.0001L
X4343 AA	0.0006i	0.0019	0.016		0.017		0.028	0.026
462A1 AA	0.0053	0.0043 N	0.0091	0.0023	0.013	0.0027	0.02	0.0035
4643 AD	0.0032i	0.003	0.0077	0.0031	0.019	0.0098i	0.017	0.0032
4643 CAC	0.0001L	0.0001L	0.0001L	0.001	0.0001L	0.0001L	0.0001L	0.0001L
5000 CAB			0.002 N		0.001L		0.002 N	
5001 BI	0.0011i	0.0039i	0.048	0.004	0.047	0.0027i	0.025	0.003
5001 CBG			0.002 N		0.002 N		0.002 N	
5005 AG	0.0022i	0.0025	0.0076	0.0018	0.021	0.0026	0.024	0.0023
5005 CAF	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
5010 AE	0.18	0.44	0.032	0.26	0.57	0.025	0.022	0.027	0.025		0.0014	0.023	0.0031i	0.0016		0.026		0.0034i
5010 CAF	0.17 N	0.44 N	0.0001	0.21 N	0.46 N	0.00001L	0.0001L	0.0001	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
5016 AA	0.25	0.76	0.036	0.50	2.48	0.017	0.015	0.080	0.015		0.0038	0.019i	0.0031i	0.0012		0.023		0.0028i
5017 AB	0.28	0.27	0.40	0.28	2.01	0.018	0.030	0.026	0.056		0.0035	0.013	0.0054			0.02		0.0046i
5017 CAC	0.25 N	0.29 N	0.38 N	0.35 N	2.00 N	0.0002	0.0003	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L		0.0001L
5017 CAD	0.36 N	0.38 N	0.19 N	0.80 N	2.0 N	0.0003	0.0005	0.0003L	0.0004	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0003L	0.0001L		0.0001L
5042 AC	0.15	0.25	0.031i	0.35	3.74	0.060	0.031	0.030	0.030		0.0013	0.009	0.0036i	0.0012		0.02		0.0043i
5042 CAB	0.0018	0.25 N	0.0001	0.33 N	3.68 N	0.0001	0.0001	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L		0.0001L
5052 AN	0.20	0.25	0.080	0.073	2.68	0.26	0.028	0.032	0.059		0.0011	0.0077	0.0038	0.0011		0.019		0.0038i
5052 CAO	0.20 N	0.37 N	0.0001	0.0001	2.68 N	0.28 N	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
5052 DAK	0.090 N	0.28 N	0.041 N	0.057 N	2.40 N	0.20 N	0.0051 N	0.013 N	0.015 N	0.0002 N	0.0000 N	0.0000 N	0.0001 N	0.0000 N	0.0003 N	0.019 N		0.0000 N

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
5010 AE	0.0031i	0.0058i	0.016		0.018	0.0020i	0.024	0.0034
5010 CAF	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
5016 AA	0.0026i	0.0014i	0.014	0.0025	0.014	0.0029i	0.023	0.0033
5017 AB	0.0042	0.001	0.02		0.021		0.015	0.014
5017 CAC	0.0001L	0.0001	0.0003	0.0001L	0.0001L	0.0001L	0.0001	0.0001L
5017 CAD	0.0001L	0.0003	0.0001L	0.0001	0.0001L	0.0001L	0.0002	0.0002
5042 AC	0.0029i	0.0008	0.0081	0.0012	0.015	0.0028i	0.018	0.0016
5042 CAB	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
5052 AN	0.0029i	0.0018	0.007	0.0028	0.018	0.0033	0.019	0.0028
5052 CAO		0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
5052 DAK	0.0001 N	0.0007 N	0.0011 N		0.0005 N	0.0000 N	0.013 N	0.0023 N

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
5056 AD	0.12	0.27	0.053	0.13	4.97	0.086	0.032	0.040	0.028		0.0011	0.010	0.0023i	0.0015		0.021		0.0031
5056 CAC	0.13 N	0.29 N	0.0003	0.14 N	5.06 N	0.10 N	0.0005	0.001L	0.0006	0.0001L	0.0001L	0.001L	0.0001L			0.001L		0.0001L
5082 AA	0.079	0.20	0.030	0.022	4.62	0.030	0.032	0.051	0.047		0.0015	0.006	0.001			0.026		0.0005
5082 CAB	0.08 N	0.20 N	0.001L	0.001L	4.57 N	0.001L	0.001L	0.001L	0.001L	0.0001L	0.0001L	0.001L	0.0001L			0.001L		0.0001L
5083 AF	0.17	0.34	0.078	0.74	4.85	0.15	0.030	0.050	0.027		0.0012	0.008	0.0031	0.0012		0.022		0.0039i
5083 CAE	0.15 N	0.30 N	0.0001	0.68 N	5.0 N	0.13 N	0.0001L	0.0001	0.0002	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001		0.0001L
5100 BS	0.20	3.9	0.06	0.041	0.026	0.031	0.046	0.040	0.038			0.040	0.0033N			0.032		0.0006N
5100 CBR	0.024	3.7 N	0.003 N	0.002 N	0.001L	0.001L	0.001L	0.001L	0.001L	0.0002		0.001L				0.001L		
5154 AA	0.12	0.23	0.053	0.033	3.46	0.22	0.037	0.030	0.029		0.0012	0.013i	0.0037			0.02		0.0020i
5154 CAB	0.12 N	0.21 N	0.0004	0.0003	3.56 N	0.22 N	0.0002	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
A5154 AA	0.19	0.19	0.040	0.18	3.40 i	0.031	0.031	0.032	0.031		0.0011	0.021i	0.0027	0.0015		0.017		0.0023

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
5056 AD	0.0034	0.0014i	0.008	0.0032	0.012	0.0025i	0.02	0.0023
5056 CAC	0.0001L	0.0001	0.001L		0.001L	0.0001L	0.001L	0.0001
5082 AA	0.001		0.008		0.007		0.02	0.019
5082 CAB	0.0002	0.0002	0.001L		0.0004	0.0001L	0.001L	0.001L
5083 AF	0.0039i	0.0014	0.0077	0.0012	0.02	0.0033	0.021	0.0035
5083 CAE	0.0001L	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001	0.0001L
5100 BS	0.0006N	0.002 N	0.035		0.043		0.013	0.02
5100 CBR			0.001L				0.001L	
5154 AA	0.0060i	0.001	0.014	0.0025	0.015	0.0026	0.021	0.003
5154 CAB	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L
A5154 AA	0.0012i	0.001	0.026	0.0035	0.014	0.0025i	0.024	0.0031

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
A5154 CAB	0.21 N	0.19 N	0.0017	0.20 N	3.53 N	0.0001	0.0003	0.0003	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001
5182 AV	0.12	0.27	0.041	0.34	5.02	0.029	0.014	0.047	0.048	0.0012i	0.0013	0.007	0.0028i	0.0013		0.021	0.0001L	0.0023i
5182 BA	0.11	0.26	0.037	0.36	4.96	0.031	0.015	0.050	0.051		0.0012	0.008	0.0031	0.0014		0.02		0.0028
5182 BE	0.13	0.26	0.058	0.35	5.06	0.030	0.020	0.050	0.052		0.0012	0.0068	0.0031	0.0011		0.021		0.0027i
5182 CBB	0.13 N	0.25 N	0.0001	0.33 N	4.86 N	0.0001	0.0008	0.0002	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001	0.0001 L	0.0001 L	0.0001L	0.0001 L	0.0001L
5182 CBG	0.18 N	0.26 N	0.0001L	0.36 N	5.02 N	0.0001L	0.0001L	0.0001	0.0001L	0.0001L		0.0001L	0.00001	0.0001L	0.0001L	0.0001L	0.0001L	
5182 DAU	0.097 N	0.23 N	0.037 N	0.345 N	4.82 N	0.0011 N	0.0049 N	0.012 N	0.0059 N	0.0001 N	0.0000 N	0.0000 N	0.0002 N	0.0000 N	0.0002 N	0.017 N		0.0000 N
5251 AF	0.36	0.45	0.102	0.29	2.14i	0.096	0.030	0.091	0.098		0.001	0.006	0.0036	0.001		0.02		0.0040i
5251 CAE	0.28 N	0.44 N	0.0001	0.41 N	2.20 N	0.0001	0.0002	0.0003	0.0001 L	0.0001	0.0001 L	0.0001 L	0.0002	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L
5454 AC	0.25	0.40	0.10	0.75	3.16	0.030	0.033	0.030	0.064		0.0011	0.0048	0.0022i	0.0014	0.0015	0.022		0.0030i
5454 CAD	0.20 N	0.32 N	0.0001 L	0.73 N	2.94 N	0.0001	0.0009	0.0004	0.0001	0.0001 L	0.0001 L	0.0001 L	0.0001	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
A5154 CAB	0.0001L	0.0003	0.0001	0.0001L	0.0001	0.0002	0.0001L	0.0001L
5182 AV	0.0034i	0.0014 N	0.0074	0.001	0.014	0.0021i	0.02	0.0031
5182 BA	0.0039i	0.0014	0.009	0.0025	0.015	0.0024	0.02	0.0031
5182 BE	0.0013i	0.0017	0.0074	0.0012	0.019	0.0026	0.022	0.0022
5182 CBB	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L
5182 CBG		0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.00001L
5182 DAU	0.0000 N	0.0003 N	0.0009 N		0.0005 N	0.0000 N	0.012 N	0.0022 N
5251 AF	0.0041i	0.001	0.0093	0.003	0.02	0.0036i	0.0205	0.003
5251 CAE	0.0001	0.0001	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L
5454 AC	0.0038i	0.0013	0.0035	0.0032	0.0029	0.002	0.02	0.0029
5454 CAD	0.0001	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L	0.0001 L

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
5457 AB	0.100i	0.12	0.16	0.42	0.99	0.026	0.027	0.030i	0.028i		0.0013	0.0081	0.0035i	0.0010i		0.02		0.0034i
5754 AE	0.20	0.24	0.050	0.28	3.17	0.110	0.029	0.011	0.051		0.0011	0.007	0.0033	0.0012		0.021		0.0028i
5754 CAF	0.18 N	0.34 N	0.0001	0.32 N	2.72 N	0.0001	0.0001L	0.0001	0.0001	0.0001	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L		0.0001L
X5754 AE	0.38	0.35	0.057	0.45	3.18	0.051	0.031	0.056	0.053		0.0011	0.0045	0.0024i	0.0009		0.029		0.0036i
X5754 CAF	0.35 N	0.34 N	0.0002	0.45 N	3.05 N	0.0002	0.0001L	0.0001	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
6005 AB	0.82	0.27	0.055	0.053	0.51	0.019	0.022	0.020	0.019		0.0012	0.012	0.0035	0.0014		0.021		0.0028i
A6005 AG	0.88	0.24	0.135	0.25	0.62	0.028	0.030	0.031	0.030		0.0011	0.007i	0.0036	0.0012		0.02		0.0028i
A6005 CAF	0.79 N	0.22 N	0.12 N	0.23 N	0.52 N	0.0001L	0.0001L	0.0001L	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6006 AB	0.45	0.29	0.24	0.17	0.57	0.016	0.032	0.044	0.043		0.0013	0.015	0.0029	0.0013		0.02		0.0024i
6006 AC	0.71	0.24	0.20	0.20	0.70	0.090	0.031	0.029	0.031		0.0012	0.0049	0.0034	0.0012		0.021		0.0029i
6006 CAD	0.69 N	0.18 N	0.14 N	0.15 N	0.69 N	0.08 N	0.0001L	0.0001	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
5457 AB	0.0031i	0.0027	0.0078	0.0024	0.021	0.0037i	0.022	0.003
5754 AE	0.0022i	0.0015	0.0075	0.0029	0.016	0.0033	0.02	0.0018
5754 CAF	0.0002	0.0004	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
X5754 AE	0.0045i	0.0018	0.0038	0.0018	0.026	0.0017i	0.021	0.0024
X5754 CAF	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6005 AB	0.0018i	0.0029	0.0085	0.004	0.017	0.0036i	0.023	0.0028
A6005 AG	0.0025i	0.004	0.008	0.0024	0.02	0.0035	0.021	0.0033
A6005 CAF	0.0001	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6006 AB	0.0025i	0.0034	0.016	0.0031	0.015	0.0031	0.0197	0.003
6006 AC	0.0023i	0.0034	0.0039	0.0034	0.0035	0.0034	0.021	0.0033
6006 CAD	0.0001L	0.0001	0.0001	0.0001L	0.0001	0.0001L	0.0001L	0.0001L

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
6008 AA	0.67	0.21	0.30	0.067	0.60	0.015	0.030	0.019	0.030		0.0012	0.008	0.0035	0.0014		0.021		0.0024i
6012 AF	0.13	0.21	6.05	0.28	0.020	0.047	0.045	0.049	0.14			0.038				0.016		
6016 AA	1.17	0.27	0.17	0.12	0.44i	0.049	0.02	0.040	0.026		0.0011i	0.0072i	0.0030i	0.0012		0.02		0.0017i
6052 CAE	0.19 N	0.60 N	0.56 N	0.0001L	0.52 N	0.0001L	0.0001L	8.0 N	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
6061 AR	0.73	0.33	0.36	0.081	1.03	0.21	0.031	0.040	0.040		0.0012	0.0069i	0.0032i	0.0013		0.019		0.0022i
6061 CAS	0.71 N	0.35 N	0.31 N	0.0001L	1.11 N	0.20 N	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6061 DAO	0.65 N	0.24 N	0.30 N	0.0081 N	0.96 N	0.14 N	0.0048 N	0.013 N	0.014 N	0.0002 N	0.0000 N	0.0000 N	0.0001 N	0.0000 N	0.0002 N	0.017 N		0.0000 N
6063 BD	0.56	0.20	0.079	0.077	0.63	0.080	0.020	0.021	0.0152		0.0012	0.0079	0.0036i	0.0013		0.02		0.0020i
6063 CBB	0.47 N	0.20 N	0.0001	0.0008	0.55 N	0.0001L	0.0001L	0.0001	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6063 CBF	0.53 N	0.24 N	0.0001	0.0001L	0.61 N	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6063 DAZ	0.44 N	0.20 N	0.021 N	0.078 N	0.52 N	0.0039 N	0.0048 N	0.013 N	0.010 N	0.0003 N	0.0000 N	0.0000 N	0.0001 N	0.0000 N	0.0003 N	0.018 N		0.0000 N

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
6008 AA	0.0029i	0.004	0.008	0.0032	0.013	0.0031	0.101	0.003
6012 AF			0.037		0.04		0.01	
6016 AA	0.0022i	0.0027	0.0079	0.0027	0.019	0.0028i	0.02	0.0028
6052 CAE	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0004L
6061 AR	0.0021i	0.0017	0.0081	0.0019	0.02	0.0025i	0.02	0.0018
6061 CAS	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L
6061 DAO	0.0001 N	0.0008 N	0.0010 N		0.0005 N	0.0000 N	0.012 N	0.0023 N
6063 BD	0.0027i	0.003	0.0082	0.002 N	0.022	0.0030i	0.0211	0.0025
6063 CBB	0.0001	0.0004	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6063 CBF	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6063 DAZ	0.0001 N	0.0008 N	0.0011 N	0.0002 N	0.0006 N	0.0000 N	0.012 N	0.0026 N

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
6066 AF	0.97	0.60	0.96	0.71	0.97	0.018	0.032	0.28	0.032		0.0013	0.007	0.0028	0.0011		0.021		0.0034i
6066 CAG	1.05 N	0.61 N	0.96 N	0.67 N	1.00 N	0.0002	0.0001	0.0001	0.0001	0.0004	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
6070 AC	1.25	0.26	0.33	0.74	0.75	0.019	0.019	0.021	0.021		0.0012	0.0063	0.0029	0.001		0.02		0.0029i
6070 CAB	1.35	0.28 N	0.32 N	0.72 N	0.77 N	0.0001L	0.0001L	0.001	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
6082 AA	1.06	0.42	0.076	0.77	0.67	0.124	0.030	0.052	0.031		0.001	0.0055i	0.0032i	0.0012		0.02		0.0023i
6111 AE	0.60	0.24	0.75	0.20	0.77	0.072	0.028	0.027	0.065		0.0013	0.025	0.0023i	0.0014		0.019		0.0025i
6151 AB	1.08	0.53	0.14	0.14	0.65	0.31	0.028	0.015i	0.036		0.0013	0.0079i	0.0030i	0.0012		0.022		0.0020i
A6181 AA	0.86	0.27	0.14	0.16	0.73	0.059	0.031	0.073	0.030		0.0012	0.007	0.0041i	0.0011		0.02		0.0022i
A6181 CAB	1.08 N	0.27 N	0.17 N	0.17 N	0.73 N	0.06 N	0.0001L	0.070 N	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6195 AE	10.70	0.70	3.45	0.43	1.05	0.027	0.028	0.93	0.017		0.001 N	0.020	0.01 N			0.015		
6201 AD	0.68	0.25	0.021	0.018	0.72	0.019	0.022	0.021	0.020		0.0013	0.030	0.0033i	0.0015		0.024		0.0028i

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
6066 AF	0.0039i	0.0032	0.0075	0.0026	0.014	0.0029	0.021	0.0032
6066 CAG	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6070 AC	0.0033i	0.0036	0.008	0.0027	0.0069	0.0036	0.016	0.003
6070 CAB	0.0001L	0.0002	0.0002	0.0004	0.0001L	0.0001L	0.0001L	0.0001L
6082 AA	0.0021i	0.003	0.0075	0.0018	0.014	0.0029i	0.025	0.0026
6111 AE	0.0019i	0.003	0.016	0.0031	0.018	0.0026i	0.023	0.0031
6151 AB	0.0016i	0.0024	0.0077	0.0017	0.014	0.0020i	0.02	0.016
A6181 AA	0.0029i	0.002	0.0086	0.003	0.019	0.0028i	0.02	0.0029
A6181 CAB	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6195 AE			0.033		0.028		0.012	
6201 AD	0.0026i	0.0046i	0.019	0.0043	0.021	0.0031i	0.022	0.0032

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
6205 AA	2.45	1.25	20.4	1.05		0.05	0.051	5.55				0.036	0.02 N					
6252 AE	5.41	0.33	3.01	0.60	0.33	0.034	0.041	3.46	0.12			0.029				0.011		
6252 CAC	5.5 N	0.02 N	3.0 N	0.60 N	0.30 N	0.001L	0.001L	3.5 N	0.003 N			0.001L				0.001 N		
6261 AD	0.64	0.22	0.27	0.28	0.84	0.062	0.031	0.11	0.079		0.0011	0.0072i	0.0030i	0.0013		0.02		0.0020i
6261 CAB	0.64 N	0.26 N	0.31 N	0.29 N	0.76 N	0.0001	0.0001	0.0001L	0.0005	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0002	0.0001L		0.0001L
6295 AB	5.80	0.23	0.051	0.31	0.57	0.040	0.038	0.037	0.11			0.039				0.021		
6348 AC	0.081	0.093	0.082	0.087	0.91	0.18	0.052	6.94	0.17		0.0012	0.055	0.0032	0.0012		0.02		0.0024
6348 CAD	0.08 N	0.07 N	0.0001	0.0001	0.98 N	0.14 N	0.0001L	6.98 N	0.19 N	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
6351 AM	1.09	0.21	0.077	0.57	0.64	0.029	0.030	0.050	0.051		0.0012	0.007	0.0034	0.0011		0.019		0.0032i
6351 CAL	1.13 N	0.32 N	0.0001L	0.63 N	0.59 N	0.0001L	0.0001L	0.0001	0.0001L	0.0001	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6363 AC	0.57	0.35	0.99	0.043	0.94	0.046	1.82	0.037	0.04 N			0.037				0.016		

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
6205 AA			0.04		0.052			
6252 AE			0.026		0.029		0.012	
6252 CAC			0.001L		0.001L		0.004 N	
6261 AD	0.0026i	0.0023	0.0075	0.0029	0.012	0.0029i	0.022	0.0034
6261 CAB	0.0001L	0.0001	0.0001L	0.0002	0.0001L	0.0001L	0.0001	0.0001L
6295 AB			0.038		0.036		0.012	
6348 AC	0.0028i	0.0032i	0.044	0.0041	0.047	0.0034	0.023	0.0031
6348 CAD	0.0001L	0.0001	0.0003	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
6351 AM	0.0025i	0.0025	0.0083	0.0023 N	0.018	0.0035	0.02	0.0025
6351 CAL	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001L
6363 AC			0.05 N		7.33			

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
6365 AB	11.89	0.33	1.09	0.17	0.94	0.03	1.09	0.06	0.090			0.02						
6392 AC	0.10	0.11	0.10	0.055	1.26	0.051	0.046	4.26	0.043		0.006 N	0.042				0.021		
6463 AC	0.35	0.12	0.14	0.019	0.49	0.020	0.020	0.020	0.017		0.0011	0.012	0.0033i	0.0012		0.018		0.0024i
6475 CAB	1.05 N		0.51 N	0.001L	5.0 N	0.001L	0.001L	0.001L	0.001L			0.001L				0.001 N		
7003 AC	0.14	0.28	0.15	0.12	0.90	0.18	0.030	6.23	0.032		0.0012	0.007	0.0026	0.0016		0.02		0.0032
7003 CAB	0.001 N	0.002 N	0.004 N	0.001L	0.70 N	0.001L	0.001L	5.60 N	0.001L		0.001L	0.001L	0.0001			0.001L		0.0001L
7004 AA	0.17	0.27	0.052	0.52	1.76	0.034	0.043	5.15	0.051		0.0013	0.022 i	0.004	0.0014		0.03		0.0015
7010 AC	0.11	0.12	1.84	0.084	2.37	0.057	0.049	6.22	0.062		0.0013	0.020i	0.0024i	0.0013		0.035		0.0029i
7010 CAD	0.10 N	0.14 N	1.83 N	0.09 N	2.41 N	0.0001L	0.0001L	6.22 N	0.0001	0.0001	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
7018 CAB	0.20 N	0.39 N	0.15 N	0.29 N	1.03 N	0.14 N	0.0003	4.81 N	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0001		0.0001L
7019 AA	0.15	0.22	0.19	0.25	2.01	0.033	0.021	3.95	0.034		0.0001L	0.029	0.0015			0.021		0.0009

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
6365 AB			0.03		0.02			
6392 AC			0.044		0.042		0.011	
6463 AC	0.0026i	0.0048	0.007	0.0038	0.019	0.0047i	0.02	0.0031
6475 CAB			0.001L		0.001L		0.002 N	
7003 AC	0.0030i	0.0031	0.008	0.0035	0.017	0.0029	0.019	0.17
7003 CAB	0.0001		0.001L		0.001L		0.001L	
7004 AA	0.0049i	0.001	0.029	0.0028	0.032	0.0027	0.032	0.14
7010 AC	0.0027i	0.0014i	0.027	0.0026	0.02	0.0024i	0.024	0.14
7010 CAD	0.0001L	0.0001L	0.0001L	0.0001L	0.0003	0.0001L	0.0001L	0.15 N
7018 CAB	0.0001L	0.0001	0.0001	0.0001	0.0001L	0.0001L	0.0001	0.14 N
7019 AA	0.0005	0.0001	0.032		0.034	0.0003	0.028	0.16

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
7021 AA	0.22	0.38	0.029	0.037	1.48	0.033	0.035	5.42	0.041			0.027				0.015 N		
7021 CAB	0.005	0.006	0.003 N	0.001L	1.6 N	0.001L	0.001L	5.5 N	0.001L			0.002 N	0.0001L					0.0001L
7022 AC	0.38	0.43	0.88	0.30	3.40	0.25	0.018	4.80	0.015		0.0012	0.007	0.0024	0.0013		0.021		0.0028
7031 AA	0.13	1.15	0.029	0.21	0.013	0.024	0.019	1.12	0.025		0.0035i	0.008i	0.0028i			0.015		0.0032i
7031 CAB	0.13 N	1.23 N	0.0005	0.21 N	0.0002	0.0005	0.001	1.04 N	0.0002	0.0001L	0.0001L	0.0001L	0.0001L			0.0001L		0.0001L
7050 AE	0.13	0.120	2.35	0.089	2.44	0.031	0.0249	6.32	0.063		0.0011	0.0071	0.0028	0.0012		0.022		0.0024i
7050 CAD	0.11 N	0.15 N	2.0 N	0.08 N	2.0 N	0.0001L	0.0001L	7.0 N	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L		0.0001L
7075 CAE	0.18 N	0.29 N	1.65 N	0.0005	2.58 N	0.21 N	0.0001	5.76 N	0.0002	0.0001	0.0001L	0.0001L	0.0001L	0.0001	0.0001L	0.0001L		0.0001L
7079 AA	0.20	0.24	0.66	0.25	3.28	0.22	0.029	4.55	0.056		0.0013	0.020	0.0026	0.0014		0.02		0.0038
7146 AA	0.22	0.36	0.031	0.037	1.41	0.028	0.036	6.86	0.042			0.025				0.015		
7146 CAD	0.22	0.33	0.0006	0.0029	1.39	0.0011	0.0043	6.40	0.0065		0.0001L	0.0001L	0.0001L			0.014		0.0001L

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
7021 AA			0.033		0.031		0.012	0.16
7021 CAB	0.0001		0.001L		0.001L			
7022 AC	0.0028	0.0018	0.008	0.0021	0.018	0.0029	0.018	0.0019
7031 AA	0.0033i	0.005	0.017		0.015		0.015	0.007
7031 CAB	0.0001L	0.0003	0.0001L	0.0001L	0.0001L	0.0001L	0.0004	0.0001L
7050 AE	0.0017i	0.0012	0.0095	0.0024	0.0192	0.0026	0.025	0.145
7050 CAD	0.0001L	0.0001	0.0002	0.0002	0.002	0.0001L	0.0001L	0.14 N
7075 CAE	0.0001L	0.0001	0.0002	0.0001L	0.0003	0.0001L	0.0001	0.0001L
7079 AA	0.0018	0.0015	0.014	0.0034	0.022	0.0028	0.021	0.0037
7146 AA			0.03		0.032		0.011	0.16
7146 CAD	0.0002	0.0001L	0.0027	0.0001L	0.0004	0.0002	0.01	0.15

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
7146 CAE	0.23	0.34			1.41			7.64										
8006 AG	0.22	1.60	0.042	0.55	0.0030i	0.020	0.021	0.046	0.014		0.0012	0.009	0.0017i	0.0015		0.02		0.0014i
8006 CAF	0.17 N	2.0 N	0.0001	0.53 N	0.0002	0.0001L	0.0001L	0.0002	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001		0.0001L
8007 CAF	0.002	1.57 N	0.0008	0.55 N	0.0008	0.0007	0.0008	1.09 N	0.0002		0.0001L	0.001L	0.0001L			0.001L		0.0001L
8008 AC	0.19	1.12	0.17	0.74	0.013	0.053	0.028	0.049	0.030		0.0012	0.024	0.0022i	0.0014		0.024		0.0017i
8008 CAD	0.21 N	1.08 N	0.15 N	0.78 N	0.0001	0.0001L	0.0002	0.0001L	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
A8011 AC	0.75	0.74	0.028	0.022	0.014i	0.020	0.021	0.021	0.020		0.0007i	0.0075	0.0009i	0.0013		0.019		0.0009i
8015 AA	0.13	1.05	0.030	0.18	0.012	0.016	0.020	0.026	0.021		0.0033	0.02	0.0025i			0.015		0.0026i
8015 CAB	0.13 N	1.10 N	0.0005	0.22 N	0.0003	0.0004	0.001	0.0005	0.0002	0.0001L	0.0001L	0.0001L	0.0001L			0.0001L		0.0001L
8018 AB	0.76	0.77	0.46	0.069	0.0075i	0.017	0.015	0.015	0.043		0.001	0.0076	0.0016i	0.0016		0.015		0.0015i
8021 AA	0.11	1.43	0.014	0.0075	0.0048i	0.010	0.010	0.010	0.021		0.0011	0.010	0.0018	0.0013		0.032		0.0014

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
7146 CAE								0.001
8006 AG	0.0015i	0.0034	0.01	0.004	0.012	0.0019i	0.021	0.003
8006 CAF	0.0001L	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
8007 CAF	0.0001L	0.0004	0.001L		0.001	0.0001L	0.001	0.001L
8008 AC	0.0017i	0.0042	0.016	0.0037	0.017	0.0025i	0.032	0.0039
8008 CAD	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001
A8011 AC	0.0013i	0.0029	0.0084	0.0016	0.015	0.0012i	0.019	0.0022
8015 AA	0.0041i	0.004	0.016		0.017	0.0016i	0.01	0.014
8015 CAB	0.0001L	0.0003	0.0001L		0.0001L	0.0001L	0.0004	0.0001L
8018 AB	0.0017i	0.0026	0.0094	0.0036	0.015	0.0031i	0.016	0.003
8021 AA	0.0010i	0.0028	0.0082	0.003	0.0083	0.002	0.022	0.0033

Aluminum Alloys – Rio Tinto Alcan

Standard	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	B	Be	Bi	Ca	Cd	Co	Ga	Hg	Li
8030 AC	0.066	0.83	0.20	0.0032	0.018	0.020	0.024	0.014	0.003		0.0009	0.027	0.0025i	0.0018		0.029		0.0016i
8079 AF	0.21	1.08	0.020i	0.020i	0.0028i	0.020	0.020	0.020	0.020		0.0008i	0.0078	0.0015i	0.0012		0.02		0.0016i
8079 CAE	0.21 N	1.06 N	0.0001	0.0001	0.0002	0.0001	0.0001	0.0002	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
8081 CAB	0.003 N	0.40 N	0.97 N	0.005 N	0.001		0.003 N	0.02 N	0.002 N			0.001 N	0.0001L			0.001 N		0.0001L
8112 AA	0.52	0.66	0.26	0.11	0.014	0.024	0.020	0.035	0.028		0.0011	0.011	0.0025i	0.0035		0.028		0.0012i
8280 CAC	1.4 N	0.4 N	1.0 N	0.001L	0.002 N	0.001L	0.45 N	0.005L	0.002 N			0.002 N	0.002 N					0.0001L

Standard	Na	P	Pb	Sb	Sn	Sr	V	Zr
8030 AC	0.0018i	0.006	0.016	0.006 N	0.016	0.0027i	0.02	0.0028
8079 AF	0.0015i	0.0017	0.0073	0.0029	0.019	0.0016i	0.02	0.0019
8079 CAE	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001
8081 CAB	0.0001L		0.08 N		19.5 N		0.001 N	
8112 AA	0.0026i	0.0056	0.008	0.0051	0.018	0.0044i	0.028	0.015
8280 CAC	0.0003N	0.0002	0.05 N		6.9 N	0.0001L		

Aluminum Process Powders- Rio Tinto Alcan

Aluminum Process Powders

Available in bottles containing 100g of material.

Bauxite

Part Number	Loss of Mass LOM	Al_2O_3	Fe_2O_3	SiO_2	TiO_2	Na_2O	CaO	SO_3	Cr_2O_3	ZrO_2	V_2O_5	P_2O_5	MgO	K_2O	MnO_2	ZnO	C
BXT-04	25.7	48.5	17.0	2.68	5.32	0.02	0.02	0.13	0.090	0.06	0.19	0.13	0.05	0.03	0.04	0.003	0.12
BXT-08	25.6	51.5	9.6	3.17	9.41	0.02	0.02		0.048	0.10	0.19	0.26	0.04	0.02	0.02	0.006	0.07
BXT-09	20.8	53.4	14.5	7.57	2.98	0.01	0.01	0.06	0.037	0.12	0.06	0.07	0.002	0.01	0.03	0.04	0.20
BXT-12	26.13	50.67	15.9	3.58	3.18	0.02	0.012	0.14	0.031	0.138	0.088	0.067	0.037	0.011		0.0021	0.243
BXT-13	28.52	53.4	11.44	4.82	1.54	0.01	0.02	0.09	0.016	0.08	0.04	0.02	0.01	0.01	0.01	0.002	0.051
BXT-14	28.35	51.2	13.17	5.86	1.11	0.01	0.01	0.11	0.01	0.131	0.01	0.062	0.01	0.01	0.02	0.005	0.162
BXT-15	12.20	51.1	24.9	3.09	3.83		3.34		0.20	0.089	0.089	0.053	0.16	0.040	0.020	0.005	

Red Mud

Part Number	Loss of Mass LOM	Al_2O_3	Fe_2O_3	SiO_2	TiO_2	CaO	Na_2O	Al 143 or g Al_2O_3	T.E.A.	Organic C
RM-01	12.0	16.8	53.8	5.4	5.9	3.5	1.4	0.6	4.6	0.36
RM-02	8.4	13.9	30.7	6.2	22.6	11.2	3.0	1.9	5.7	0.16
RM-06	15.4	28.6	4.3	17.1	9.1	12.9	9.2			
RM-07	18.4	26.9	4.0	15.7	8.2	16.5	8.4	0.05	12.2	0.25
RM-08	17.2	28.2	4.8	16.7	8.6	13.9	8.7	0.2	13.3	0.27
RM-09	10.00	21.5	34.1	12.6	7.9	4.3	7.0	1.2	8.20	0.23
RM-10	9.6	20.1	44.2	10.3	6.99	1.15	6.1	1.4	9.8	0.23

Aluminum Process Powders- Rio Tinto Alcan

Alumina

Part Number	Loss of Mass LOM	Na_2O	SiO_2	Fe_2O_3	CaO	V_2O_5	P_2O_5	Ga_2O_3	SO_3	TiO_2	ZnO
ALU-01	1.2	0.27	0.013	0.016	0.017	0.002	0.0005	0.011	0.12	0.004	0.001
ALU-03	0.77	0.44	0.010	0.011	0.010	0.001		0.009	0.05	0.006	0.001
ALU-04	0.49	0.46	0.021	0.017	0.020	0.003		0.009	0.07	0.009	0.001
ALU-05	0.83	0.37	0.014	0.008	0.033	0.001		0.007	0.13	0.002	0.010
ALU-06	1.31	0.36	0.017	0.008	0.043	0.001		0.005	0.11	0.001	0.009
ALU-08	0.57	0.42	0.007	0.022	0.008	0.003		0.014	0.09	0.002	0.001
ALU-10	0.6	0.37	0.005	0.015	0.004	0.002	0.002	0.013	0.08	0.002	
ALU-11	0.81	0.42	0.0056	0.0097	0.017	0.0005	0.0002	0.0139	0.03	0.0010	0.0086
ALU-12	1.02	0.36	0.021	0.0063	0.033	0.0021	0.0015	0.0057	0.185	0.0009	0.0094

Raw Fluorite

Part Number	F	Si	CO_2	Fe	Al	Mg	Pb	P
RF-CAA	35.4	8.3	3.3	0.46				0.0038
RF-CAB	35.0	8.6	3.3					0.0038
RF-CAC	35.6	8.5	2.6	0.57				0.0041
RF-CAG	40.5	2.61	5.5					0.021
RF-CAI	30.0	9.3	4.9	0.77	1.10	0.48	0.25	0.0070
RF-CAJ	46.4	0.42	0.7	0.063				0.025
RF-CAK	44.80	0.47	3.30	0.10	0.095			0.0052

Aluminum Process Powders- Rio Tinto Alcan

Aluminum Fluoride

Part Number	Fe	Si	Na	F	S	P	Ca
ALF-01	0.009	0.07	0.32	(62.0)	0.28	0.010	0.017
ALF-02	0.01	0.13	0.26	(63.0)	0.26	0.010	0.014
ALF-03	0.009	0.12	0.27	(64.3)	0.25	0.009	0.014
ALF-04	0.007	0.10	0.29	(63.0)	0.31	0.009	0.016
ALF-05	0.006	0.09	0.29	63.3	0.1	0.006	0.015
ALF-CAA	0.056	0.50	1.16	60.4	0.11	0.0017	0.026
ALF-CAB	0.056	0.42	1.00	57.2	0.16	0.0026	0.024
ALF-CAC	0.049	0.68	0.92	61.8	0.20	0.0017	0.024
ALF-CAN	0.018	0.10	0.22	(62.4)	0.23	0.009	0.16
ALF-CAO	0.020	0.13	0.69	(57.7)		0.004	0.18

Cryolite

Part Number	SiO_2	Fe_2O_3	Al_2O_3	Na_2SO_4	NaO_2	F
C-CAA	0.560	0.08	25.5	7.60	41.2	40.5
C-CAB	0.340	0.10	22.4	11.50	40.6	44.3
C-CAC	0.510	0.06	22.5	9.60	44.3	44.7
C-CAE	0.910	0.08	23.1	6.30	43.4	46.7
C-CAG	0.080	0.019	23.0	5.70	43.0	47.7

Pitch

Part Number	Fe	Mn	Ni	Si	Zn	Ca	V	S	Na	Pb	Ti	P	C	H
Pitch-03	0.042	0.0005	0.0004	0.066	0.01	0.017	0.0001	0.76	0.021	0.012	0.0015	0.0027	92.5	4.1
Pitch-04	0.015	0.0009	0.0003	0.075	0.047	0.0076	0.0001	1.05	0.011	0.036	0.0003	0.0066	91.500	4.400
Pitch-05	0.059	0.0004	0.0004	0.154	0.016	0.0066	0.00020	0.54	0.0020	0.027	0.0025	0.0030	91.900	4.200
Pitch-06	0.027	0.0003	0.0003	0.082	0.0074	0.0042	0.00010	0.50	0.013	0.0081	0.0015	0.0003	92.100	4.300
Pitch-07	0.032	0.0010	0.0004	0.0080	0.074	0.0082	0.00003	0.57	0.011	0.051	0.00030	0.0018	92.000	4.500
Pitch-08								0.55					93.5	4.1

Aluminum Process Powders- Rio Tinto Alcan

Bath

Part Number	CaF_2	Ratio NaF/AlF_3	Excess AlF_3	Magnesium as MgF_2	Free Alumina	Alpha Alumina	Cloride as NaCl	Lithum as LiF
BA-01	6.2	1.06	12.4		7.0	1.5		
BA-02	5.7	1.12	10.8		2.7	0.3		
BA-03	5.7	1.46	0.9		4.1			
BA-05	4.5	1.02	11.3		23.6	17.3		
BA-06	4.5	1.00	12.2		23.3	16.7	(0.25)	
BA-07	8.3	1.23	6.9		6.8	5.3		
BA-08	9.0	1.37	3.2		7.3	4.6		
BA-09	9.5	1.44	1.3		7.8	5.8		
BA-10	6.7	1.30	5.2		6.0	4.9		
BA-11	8.1	1.46	1.06		5.3	2.9		
BA-12	6.0		3.8	0.21	4.2	2.8		2.72
BA-13	5.4		0.6	0.24	4.2	0.7		2.47
BA-14	3.65		1.4	3.40	3.3	1.9	(0.25)	2.04
BA-15	6.9		5.7	0.28	6.0	4.4		0.95
BA-16	6.3		3.7	0.22	4.0	3.3		3.08
BA-17	5.4		0.6	0.16	5.1	3.4	(0.25)	2.61
BA-18								1.34
BA-19								1.7
BA-20								1.43
BA-21								0.64
BA-31	5.1	0.97	17					

Joint Research Centre Metal Alloys (BCR, ERM, IRMM)

Joint Research Centre Metal Alloys

Part Number	Matrix	Form	Grade	C	Cr	Hf	Fe	N	O	Sn
BCR-098	Zirconium	Bottle containing 10g of chips	Zircaloy-4		906	77.6	2.143			14.6
BCR-275	Zirconium	1 bottle of 10 discs 13mm x 1mm	Zircaloy-4	113				39	1670	
BCR-276	Zirconium	1 bottle of approximately 100 discs 4.5mm x 2mm	Zircaloy-4	108				41	1540	

Part Number	Matrix	Form	Grade	Ag	As	Bi	Cd	Cu	Sb	Se	Sn	Tl	Zn
BCR-286	Lead	160g chips in bottles	Electrolytically Refined Lead			21.5			0.099			2.47	<0.1
BCR-287	Lead	160g chips in bottles	Thermally Refined Lead	15.2		67.3	0.356	0.98	0.04		<0.05	0.73	<0.1
BCR-288	Lead	160g chips in bottles	Lead with added impurities		55.7	215.8	33.3	19.3		<0.2	32.8	2.26	8.2

Part Number	Matrix	Form	Grade	Al	C	B	Co	Cr	Cu	Fe	H	Hf	Mn
BCR-089	Titanium	Cylinder of 40mm x 20mm	TiAl6V4	59,700	38			122	10.3	515	31	0.126	4.2
BCR-90	Titanium	Cylinder of 40mm x 20mm or 25g of 0.2g cubes	Titanium with added impurities			28.2	501	533	513	563			314
BCR-024	Titanium	25 cubes of 0.4g cubes	Titanium										
BCR-059	Titanium	Cylinder of 42mm x 30mm or 25 cubes of 0.2g	TiAl6V4										
BCR-318	Titanium	100 discs of 7mm x 1mm	Titanium								12.2		

Joint Research Centre Metal Alloys (BCR, ERM, IRMM)

Part Number	Matrix	Form	Grade	Mo	N	Nb	Ni	O	Sb	Sn	Ta	V	W	Zr
BCR-089	Titanium	Cylinder of 40mm x 20mm	TiAl6V4	15.2	212		106	1660	1.94	10.4	0.3	39760	1.6	2.8
BCR-90	Titanium	Cylinder of 40mm x 20mm or 25g of 0.2g cubes	Titanium with added impurities	488		(492)	667			(710)			(500)	(436)
BCR-024	Titanium	25 cubes of 0.4g cubes	Titanium		117			608						
BCR-059	Titanium	Cylinder of 42mm x 30mm or 25 cubes of 0.2g	TiAl6V4		172			1750						
BCR-318	Titanium	100 discs of 7mm x 1mm	Titanium											

Part Number	Matrix	Form	Grade	O
BCR-022	Copper- Oxygen	Cylinder 9mm x 50mm	Electrolytic tough pitch copper	138
BCR-054R	Copper- Oxygen	Cylinder 9mm x 50mm	Low Oxygen Copper	0.47
BCR-058	Copper- Oxygen	Cylinder 9mm x 50mm	Continuous cast Copper	390

Part Number	Matrix	Form	Grade	Ag	Al	As	Au	Be	Bi	Cd	Co	Cr	Fe
ERM-EB074	Copper-Trace elements	Disc 39mm x 30mm	Electrolyic Copper	1.03		1.23	0.52	0.31	0.51	0.4	0.83	0.37	5.8
ERM-EB075	Copper-Trace elements	Disc 39mm x 30mm	Electrolytic copper with impurities	10.8	2.3	3.18	1.46	1.08	1.79	2.69	2.64	1.4	9.3
BCR-017	Copper-Trace elements	Disc 39mm x 30mm	Copper										

Joint Research Centre Metal Alloys (BCR, ERM, IRMM)

Part Number	Matrix	Form	Grade	Hg	In	Mg	Mn	Ni	P	Pb	S	Sb	Se
ERM-EB074	Copper-Trace elements	Disc 39mm x 30mm	Electrolyic Copper		0.49	2.03	0.93	0.61	1.53	2.7	(3.3)	0.57	0.55
ERM-EB075	Copper-Trace elements	Disc 39mm x 30mm	Electrolytic copper with impurities	(<0.35)	1.83	7	1.35	2.18	2.59	4.8	25	2.93	1.69
BCR-017	Copper-Trace elements	Disc 39mm x 30mm	Copper						6.85		10.4		

Part Number	Matrix	Form	Grade	Si	Sn	Te	Ti	W	Zn	Zr
ERM-EB074	Copper-Trace elements	Disc 39mm x 30mm	Electrolyic Copper		(1.5)	0.5	0.97		2.2	(8.8)
ERM-EB075	Copper-Trace elements	Disc 39mm x 30mm	Electrolytic copper with impurities	2.6	2.13	1.78	3.2	(<0.1)	6.51	(20)
BCR-017	Copper-Trace elements	Disc 39mm x 30mm	Copper							

Proficiency Testing

Proficiency Testing Program

Our unique metal alloy Proficiency Testing Program (PTP) is the only program that measures analytical performance against a CRM's "Assigned Value", and has been used in the metals industry for more than 30 years. This PTP was developed as an alternative to typical round-robin style proficiency testing schemes, which only measure performance with non-certified materials. Our PTP is compliant with ISO 17043:2010, Annex A as a Model 2 scheme.

It is important to monitor the quality of your analytical results, as stipulated in the ISO/IEC 17025 laboratory accreditation process. Our PTP gives you that ability with an unbiased and confidential assessment of your analytical performance against peer performance. Whether you have a single-instrument or a multiple-instrument/multiple-technique environment, our PTP is a trouble-free QA program that is traceable to NIST values, and can be easily integrated into your lab processes.

How it works

- You select the date and frequency (monthly, quarterly, biannually or annually).
- You choose the type of material by matrix group and sample configuration (solids, chips or pins).
- We send you a blind sample from our stock of CRMs based on your selection.
- You analyze the blind sample, and email or fax your results to us.
- You receive your report within 72 hours. All results are confidential.

Available Matrices include

- Carbon Steel
- High Temp Steel
- Copper Alloys
- Low Alloy Steel
- Cobalt Alloys
- Titanium Alloys
- Stainless Steel
- Aluminum Alloys
- Zinc Alloys
- Tool Steel
- Magnesium Alloys
- Others available upon request

Sample Preparation Equipment

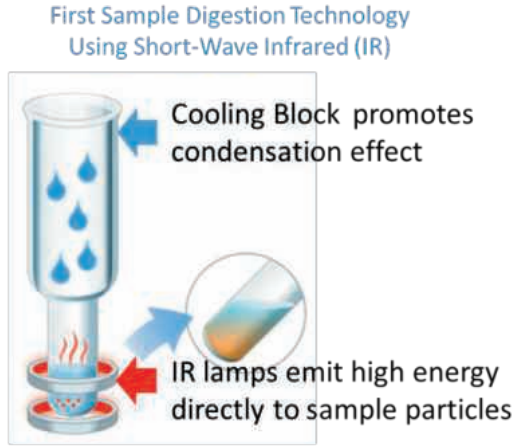
Sample Preparation Equipment

ColdBlock™ IR Digestion Systems for ICP Sample Preparation

The ColdBlock™ digestion system uses IR radiation to rapidly digest samples for analysis by ICP and AA. The IR radiation directly heats the sample rather than the acid leading to rapid digestion while the cooling block condenses the evolving vapor limits loss of volatile elements.

The ColdBlock™ system offers

- Rapid sample digestion (10-15 minutes)
- Increased safety – reduce or eliminate the need for HF and Perchloric acids
- Cost effective- lower acid volumes required
- Faster sample throughput – faster digestion than microwave digestion or hot block
- Simplify workflows – simple operation and fewer digestion recipes



The ColdBlock™ is available in 6, 12 and 15 position units. The 12 and 15 units are the building blocks for modular expansion of the system for higher throughput.

Sample Preparation Equipment

Sample Grinder HK150EX

Manual pendulum grinder with steel cabinet and integrated spark trap and dust exhauster

Clean, powerful sample grinding system with stone – ready to go

- Floor standing machine, dustproof, covered compartment, halogen spotlight
- Steel cabinet with switch board, dust trap, exhauster and drawer
- Reproducible flat surface, easily operated pendulum arm in taper bearings
- Simple and reliable machine construction
- Specially suitable for hard materials, like white cast irons
- Adaptable to various qualities by special stone cup wheels
- Vertical moving of grinding head by hand wheel with 0.1 mmv

Technical Specifications	
Grinder motor	3 x 400 V/50 Hz, 1.1 kW (three phases, each 230V) 1 x 230 V/50 Hz 3 x 220 V/60 Hz (USA/Canada)
Instrument dimensions	grinder 400 x 400 x 680 mm, cabinet 600 x 600 x 870 mm
Mass	grinder approx. 100 kg, cabinet approx. 50 kg
Revolution speed	2800 rpm/3440 rpm
Grinding stone	150 x 80 x 32 mm
Grinding height	min. 4 mm, max. 90 mm
Lighting	12 V/20 W halogen

Accessories

Part Number	Description
HK150ERS	Spare parts set (bellows, safety glass, lamp, fuses)
HK150MS	Magnetic plate, complete with arm, 100x65mm
HK150VICE	Vice for samples 44-58mm Ø
HKEXFILT	Round filter, exhauster HK150/350, PAS 11-21
HKEXFILT	Round filter, exhauster HK150/350, PAS 10-20
HKDUST	Spark arrester with metal tube for HK150 & HK350

Consumables

Part Number	Description	Quantity	
HKT46J1	Al2O3-grinding stone	1-3 packs	3 pcs/pack
HKT46J2	Al2O3-grinding stone	4-8 packs	3 pcs/pack
HKT46J3	Al2O3-grinding stone	9+ packs	3 pcs/pack
HKT49M1	SiC-grinding stone	1-3 packs	3 pcs/pack
HKT49M2	SiC-grinding stone	4-8 packs	3 pcs/pack
HKT49M3	SiC-grinding stone	9+ packs	3 pcs/pack

Sample Preparation Equipment

Disc Grinder HK200

Mobile but sturdy sample preparation machine for spectrometer samples

- Mobile desk-top model
- For use with self-adhesive grinding paper
- Solid steel cabinet, cast iron disc pan and motor base
- Easy to clean
- Disc pan with exhaust outlet.

Technical Specification	
Power supply	230 V / 50 Hz, 370 W
Instrument dimensions (W x D x H)	270 x 290 x 280 mm
Alternative power	230 V / 60 Hz or 115 V / 60 Hz
Mass	22 kg
Revolution speed	2880 rpm
Grinding disc diameter	205 mm

Sample Holders

Part Number	Description
HKHOLD3	Magnetic sample holder, round, 40-50mm Ø
HKHOLD4	Magnetic sample holder, rectangular, 35x35mm
HKHOLD5	Non-magnetic sample holder, round
HKHOLD6	Magnetic sample holder, rectangular, 50x50mm

Adhesive Grinding Paper

Part Number	Description	Quantity
PAP200K/40	Grinding paper Al2O3, 40 grit, PSA, 200mm Ø	100 pcs/pack
PAP200K/60	Grinding paper Al2O3, 60 grit, PSA, 200mm Ø	100 pcs/pack
PAP200K/80	Grinding paper Al2O3, 80 grit, PSA, 200mm Ø	100 pcs/pack
PAP200S/40	Grinding paper SiC, 40 grit, PSA, 200mm Ø	100 pcs/pack
PAP200S/60	Grinding paper SiC, 60 grit, PSA, 200mm Ø	100 pcs/pack
PAP200S/80	Grinding paper SiC, 80 grit, PSA, 200mm Ø	100 pcs/pack
PAP200Z/40	Grinding paper ZrO2, 40 grit, PSA, 200mm Ø	100 pcs/pack
PAP200Z/60	Grinding paper ZrO2, 60 grit, PSA, 200mm Ø	100 pcs/pack
PAP200Z/80	Grinding paper ZrO2, 80 grit, PSA, 200mm Ø	100 pcs/pack

Sample Preparation Equipment

autofluxer® classic

The automatic fusion machine with innovative features

The autofluxer is an automatic fusion machine for XRF and ICP/AAS with up to 4 stations arranged on a compact footprint of only 18.5 square inch.
With simple, clearly arranged controls, function display and status indicator the Autofluxer classic offers the most simple to use flux machine available. Applications range from mining to the process industry of minerals, cements, glasses ceramics, slags, and many other inorganic products.

autofluxer® classic - new and unique features

- Slow movement of the crucible during the melting process insuring homogenous heating of samples
- Cooling delay: A break between pouring and cooling is available for special applications
- Counter provides a memory function of the fusion processes to estimate gas consumption

The autofluxer fusion machine follows the principles of the classical German Schoeps machine with refinements following several hundreds of successful applications and technical innovations. Flexible for fusion both as solid or liquid samples, the autofluxer is the right choice for laboratories with changing or research applications. Autofluxer settings can be easily set in position for non-expert handling.

Base models: autofluxer® classic with 2 stations XRF
autofluxer® classic with 4 stations XRF
Upgrading for up to 4 ICP/AAS solution stations is possible at any time.

Technical Specifications	
Electric power	110-230 VAC, 50-60 Hz, 150 W
Instrument dimensions (L x W x H)	47 x 47 x 25 cm
Mass	Approx. 29 kg

Sample Preparation Equipment

autofluxer® plus

The automatic fusion machine with innovative features

This machine is especially designed for routine analysis, when reproducible melting conditions for various materials with specific fusion parameters are required, independent of the number of stations in use.

autofluxer® plus - unique features

- Slow movement of the crucible during the whole melting process protects valuable platinum crucibles and enables homogenous heating of samples
- Cooling-Delay: A break between pouring and cooling is available for special applications
- Counter provides a memory function of the fusion processes to estimate gas consumption
- Crucible lid, to allow a higher temperature in the crucible
- Temperature display: Separate for each station in all process stages
- Temperature stability: Reproducible operating with 1, 2, 3 or 4 stations
- Recipes: 1 + 9 individual programs with cycle times and temperatures
- Separate heating of molds independent of fusion cycle – Pt life extension
- Independent setting of swirling, pouring and cooling cycles

Technical Specifications	
Electric power	110-230 VAC, 50-60 Hz, 200 W
Instrument dimensions (L x W x H)	47 x 47 x 26 cm
Mass	Approx. 33 kg

LGC ARMI

Email: armi@lgcgroup.com
Phone: +1 603 935 4100

Order online at **armi.com**

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or any retrieval system, without the written permission of the copyright holder. © LGC Limited, 2017. All rights reserved. Updated 5/1/18.