

Catalogue Certified Reference Materials For Spectrochemical Analysis

ALUMINIUM AND ALUMINIUM ALLOYS
Distributed by



Rio Tinto Certified Reference Materials

RIO TINTO CERTIFIED REFERENCE MATERIALS FOR SPECTROCHEMICAL ANALYSIS

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Rio Tinto Certified Reference Materials

1. INTRODUCTION

The Arvida Research and Development Centre (ARDC) produces, certifies and distributes standard samples of aluminium and its alloys for use as certified reference materials (CRM)

These standards are designed for use with direct reading optical emission spectrometers for spark emission analysis.

ARDC has produced these standards since 1949, primarily to analyse aluminium alloys produced by the Rio Tinto group.

2. INTENT OF USE

Rio Tinto Certified Reference Material (CRM) for the spectrochemical analysis of aluminium and its alloys is produced by a direct chill, continuous cast method.

The cast billets measure generally 70 mm in diameter and up to 3 m in length. They are subsequently scalped and sliced, producing about 300 to 600 disks per cast.

Each finished disk measures 57 mm in diameter by 25 mm thick. The disk is permanently stamped or labelled with:

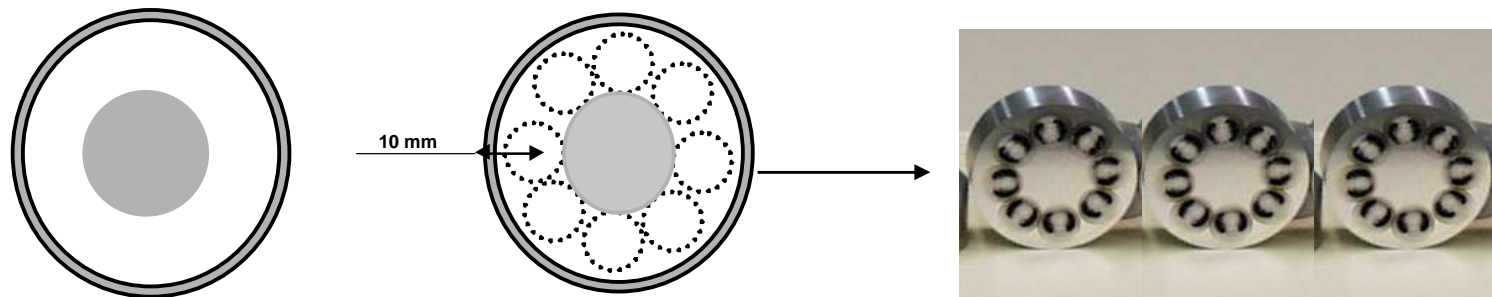
- The Rio Tinto logo
- The reference material name
- A unique identifier indicating the source billet and the disk position within the billet.

Some older standards may also have individually certified concentration values stamped on their back.

Rio Tinto Certified Reference Materials

The Rio Tinto CRMs are specifically prepared and certified for the Spark Atomic Emission Spectroscopy (Spark-AES) of metallic aluminium and its alloys.

To minimize any residual effects of macro and microstructure on the spectral response, the CRMs should be analyzed by Spark Atomic Emission Spectroscopy method, on the annular band at a distance of 10 mm from the edge of the sample, as specified in the Rio Tinto Method of analysis 1304 or ASTM E1251.



3. NOMENCLATURE

Rio Tinto reference material names take the form **AAAASSS**, where “**AAAA**” is generally the identification of the alloy using the Aluminum Association nomenclature and “**SSS**” identifies the particular cast (series) with the exception of special CRMs (examples: the boron standards).

The series identification is two-letters, in the sequence from “AA” to “ZZ”, with an optional single letter prefix indicating the category of standard.

Rio Tinto Certified Reference Materials

ARDC produces five basic types of drift RM and OES CRMs:

➤ **High purity standards** use HP as the alloy identification followed by the two-letter series identification, for example HP FK. HP standards are samples of aluminium with very high purity, >99.999%. They are used during the standardization of the instrument to fix the bottom of the analytical curve for alloying elements.

➤ **Blank standards** use the alloy identification with a “C” prefix to the two-letter series identification, for example 3104 CAP. Blank standards are aluminium alloy standards fabricated from high purity aluminium, so therefore have trace element concentrations < 1 ppm. They are used during the standardization to fix the bottom of the analytical curve generally for minor and trace elements to compensate for matrix effects of the alloying elements.

➤ **Working standards** use the alloy identification followed by the two-letter series identification, for example 3104 AR. They are also known as TOP standards and are generally certified for 24 or more alloying and trace elements.

➤ **Boron standards** are aluminium samples containing only three elements used for boron analysis. They are certified for boron, silicon and iron. Example: 1S CAM.

➤ **Drift samples** use the alloy identification with a “D” prefix to the two-letter series identification, for example 3104 DAS. They are aluminium alloy samples with a low concentration of trace elements.

Drift samples are very homogeneous but are not certified. They are used to determine whether the measuring instrument has drifted enough to require standardization.

Rio Tinto Certified Reference Materials

4. METHOD OF ANALYSIS

Methods of analysis used for certification vary from classical wet chemistry to modern instrumental techniques. They include:

- Photometric method (UV)
- Atomic Absorption Spectrometry (AAS)
- Inductively Coupled Plasma- Atomic Emission Spectrometry and Mass Spectrometry (ICP/AES and ICP/ MS)
- Spark Atomic Emission Spectroscopy (Spark-AES)
- Glow Discharge Mass Spectrometry (GDMS).

Values below 0.5 ppm are indicated by “L” within the catalogue, uncertified values used for alloy identification are indicated by “N” within the catalogue.

5. TRACEABILITY

The traceability of the certified values is ensured by the comparative use of other internationally recognized certified reference materials produced by NIST, and other suppliers of OES CRMs.

Rio Tinto Certified Reference Materials

6. ASSIGNMENT OF UNCERTAINTY

The certified values listed are the mean values from several analyses, using at least two methods performed by two different analysts when possible. Generally values from an external laboratory are also included in the certification process.

Each analytical measurement has the uncertainty reported with a 95% level of confidence. The uncertainty reported for the certified value includes the standard deviation of the homogeneity within the billet (for elements not certified individually)

7. INDIVIDUAL CERTIFICATION

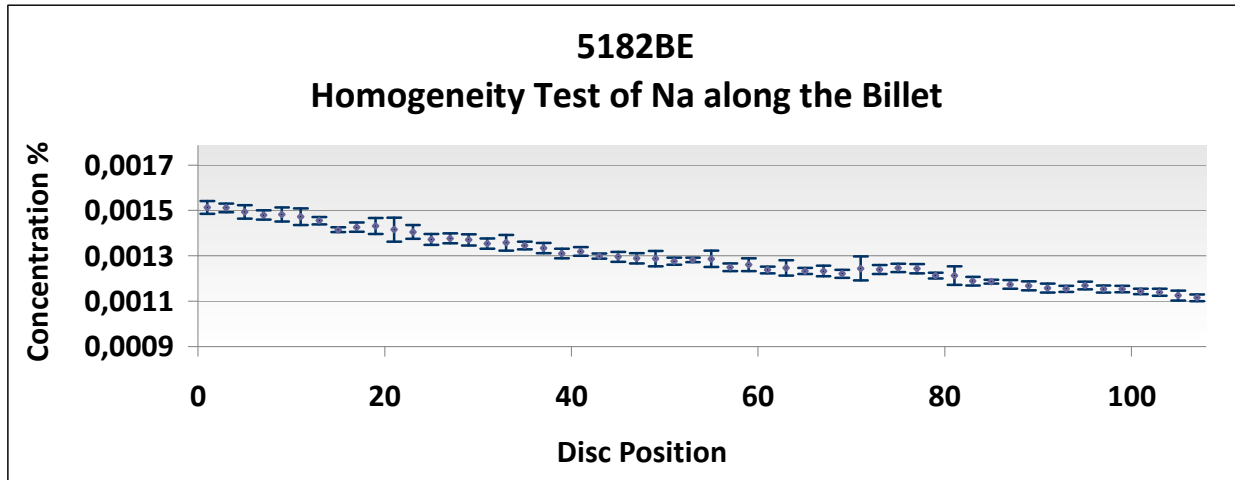
All billets are tested for cast homogeneity using OES. When indicated by the homogeneity test, each disk is assigned an individual certified value.

- Homogeneity testing reveals that some elements are not always uniformly distributed, usually because of the loss (burn off) of light elements (e.g. Li, Na, Ca, Mg) during casting. In these cases, each disk is assigned an individual value as determined from the homogeneity test.

- The uncertainty reported for individually certified elements is on the individual value and does not include any variation due to billet homogeneity.

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- Individually certified elements are indicated by an “i” on the global certificate and in the catalogue



8. CERTIFICATE OF ANALYSIS

There are two formats of certificate of analysis.

- A global certificate of analysis indicates the certified values with the uncertainties and the elements individually certified.
- Individual certificates are generated for standards with individually certified elements. The certificate for each disc reports its certified composition, including the individual values.

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- For blank, boron and HP standards, only the global certificate is provided; these CRMs do not contain individually certified elements.

RioTinto

Centre de recherche et de développement Arvida
Arvida Research and Development Centre
1955 boul. Mellon, Jonquière (Québec), Canada, G7S 4K8
Téléphone : (418) 699-6585; Télécopie : (418) 699-2919

**Certificat d'analyse
Matériau de référence certifié
Certificate of Analysis
Certified Reference Material**

5182 BE

Certifié le / Certified : 03/07/2017

Éléments	Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn
% (ppb)	Weight % (w/w)	0.13	0.26	0.058	0.35	5.06	0.030	0.020	0.050
Incertitude	Uncertainty	± 0.004	± 0.009	± 0.0010	± 0.009	± 0.068	± 0.006	± 0.0009	± 0.0010

Éléments	Element	Ti	Ag	As	B	Ba	Be	Bi	Ca
% (ppb)	Weight % (w/w)	0.052					0.0012	0.0068	0.0031
Incertitude	Uncertainty	± 0.0006					± 0.00010	± 0.00065	± 0.00022

Éléments	Element	Cd	Co	Ga	Hg	In	Li	Mo	Na
% (ppb)	Weight % (w/w)	0.0011		0.021			0.0021		0.0013
Incertitude	Uncertainty	± 0.00010		± 0.0005			± 0.00020		± 0.00011

Éléments	Element	P	Pb	Sb	Sn	Sr	Tl	V	Zr
% (ppb)	Weight % (w/w)	0.0017	0.0014	0.0012	0.016	0.0028		0.022	0.0022
Incertitude	Uncertainty	± 0.00005	± 0.00000	± 0.00002	± 0.0005	± 0.00024		± 0.0006	± 0.00018

(* valeur individuelle, "L" plus petit que, "N" valeur non certifiée)
(* individual value, "L" less than, "N" value not certified)

Par la présente, nous certifions les analyses ci-dessus
We hereby certify the above analysis

Hélida Hamouche

Le CRMA est accrédité (SCCR) 17025 par le Conseil National des Normes (CNC), laboratoire 58
ARDC is accredited to ISO/IEC 17025 by the Standards Council of Canada (SCC), laboratory number 58

Global Certificate

RioTinto

Centre de recherche et de développement Arvida
Arvida Research and Development Centre
1955 boul. Mellon, Jonquière (Québec), Canada, G7S 4K8
Téléphone : (418) 699-6585; Télécopie : (418) 699-2919

**Certificat d'analyse
Matériau de référence certifié
Certificate of Analysis
Certified Reference Material**

5182 BE - F095

Certifié le / Certified : 03/07/2017

Éléments	Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn
% (ppb)	Weight % (w/w)	0.13	0.26	0.058	0.35	5.06	0.030	0.020	0.050
Incertitude	Uncertainty	± 0.004	± 0.009	± 0.0010	± 0.009	± 0.068	± 0.006	± 0.0009	± 0.0010

Éléments	Element	Ti	Ag	As	B	Ba	Be	Bi	Ca
% (ppb)	Weight % (w/w)	0.052					0.0012	0.0068	0.0031
Incertitude	Uncertainty	± 0.0006					± 0.00010	± 0.00065	± 0.00022

Éléments	Element	Cd	Co	Ga	Hg	In	Li	Mo	Na
% (ppb)	Weight % (w/w)	0.0011		0.021			0.0021		0.0012
Incertitude	Uncertainty	± 0.00010		± 0.0005			± 0.00020		± 0.00011

Éléments	Element	P	Pb	Sb	Sn	Sr	Tl	V	Zr
% (ppb)	Weight % (w/w)	0.0017	0.0014	0.0012	0.016	0.0028		0.022	0.0022
Incertitude	Uncertainty	± 0.00005	± 0.00000	± 0.00002	± 0.0005	± 0.00024		± 0.0006	± 0.00018

(* valeur individuelle, "L" plus petit que, "N" valeur non certifiée)
(* individual value, "L" less than, "N" value not certified)

Par la présente, nous certifions les analyses ci-dessus
We hereby certify the above analysis

Hélida Hamouche

Le CRMA est accrédité (SCCR) 17025 par le Conseil National des Normes (CNC), laboratoire 58
ARDC is accredited to ISO/IEC 17025 by the Standards Council of Canada (SCC), laboratory number 58

**Individual Certificate
Slice 95 of Billet F**

Rio Tinto Certified Reference Materials

9. PERIOD OF VALIDITY

The Rio Tinto certification is valid within the stated uncertainty for the lifetime of the CRM when used for the intended methods of analysis.

A certification revision may be required when an improved method of analysis becomes available.

10. SIGNATURES

The original unmodified certificate provided by Rio Tinto is valid without signature (refer to ISO Guide 31) as long as it includes, in the heading of the certificate, the name of the organization, the full address, the telephone and fax numbers, and the name of the person responsible for the information appearing on the certificate.

11. ACCREDITATION TESTING

The Arvida Research and Development Centre analytical laboratory is accredited ISO 17025 and is audited biannually by the Standard Council of Canada. The laboratory prides itself in maintaining its high standards in performing the methods of analysis referred to above. The original certification date is August 8th, 1989.

List of RioTinto Certified Reference Materials
(Revision 165)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
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	0.00000	0.00000	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	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					
												0.005 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							0.10 N	0.017 N		
PROF C1	0.27 N	0.30 N						0.11 N					
					0.0015 N	0.0027 N	0.0017 N	0.095 N					
PROF D1	0.32 N	0.12 N				0.31 N	0.009 N		0.11 N		0.11 N		
		0.034 N							0.28 N	1.0 N		0.045 N	0.10 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
	0.0020	0.0043	0.0059	0.0018	0.0007i	0.0012i	0.0054	0.0062	0.0054	0.0098	0.0031i	0.0020	0.0031
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	0.0020	0.013	0.0051	0.0017i	0.0024i	0.0065	0.012	0.0087 N	0.021	0.0013i	0.0040	0.0058
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	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	0.79 N	0.47 N	0.50 N	0.49 N	0.57 N	0.48 N	0.46 N	0.52 N					
										0.48 N			
1S CAF	0.065 N	0.135 N									0.029		
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	0.0001L	0.0001	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	0.007 N	0.001	0.021		0.022	0.0023	0.015	

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
161 CAH	12.0 N 0.0001	0.14 N 0.0001L	0.0001 0.0001L	0.0001	0.34 N 0.0001L	0.0001L 0.0002	0.0001L 0.0004	0.0001 0.0001L	0.0001L 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001 0.0001L
B206 AA	0.078 0.0011	0.16	4.68 0.017	0.43	0.30i 0.0030i	0.028 0.0033i	0.029 0.003	0.029 0.011	0.22 0.0038		0.0008 0.0037i	0.009 0.020	0.0037i 0.020
B319.1 AF	6.14 0.0013	0.64	3.11 0.024	0.43	0.33 0.0024i	0.015 0.0026i	0.049 0.0016i	0.72 0.013	0.060 0.002 N		0.0017 0.014	0.022i 0.044i	0.0040i 0.0030
B319.1 CAG	6.30 N 0.0001	0.65 N 0.0001L	3.34 N 0.0001	0.43 N	0.32 N 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	0.70 N 0.0002	0.0001 0.0002	0.0002 0.0002	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001
A320 AC	0.54	0.20	0.057 0.018	0.036	4.10	0.020	0.032	0.047 0.042	0.15		0.005 0.038	0.037 0.012	
A320 CAB	0.001 N		0.003 N 0.001L	0.001L	3.90 N	0.001L	0.001L	0.001L 0.001 N	0.001L			0.001L 0.001L	
B320 AA	0.83	0.80	0.054 0.017	0.54	3.38	0.032	0.029	0.041 0.041	0.047			0.042 0.011	
B320 CAB	0.76 N	0.78 N	0.003 N 0.001L	0.47 N	3.4 N	0.001L	0.001L	0.001L 0.002 N	0.001L		0.001 N	0.001L 0.001L	
332.0 AB	10.47	0.62	2.65 0.031	0.42	1.67 0.0026i	0.058 0.0039i	0.21 0.001	0.65 0.030	0.22i 0.0042		0.0013 0.034	0.028i 0.018	0.0064 0.042
332.0 CAC	10.62 0.0001L	0.59 0.0001L	2.70 0.0001L	0.41 0.0001L	1.49 0.0001L	0.0001 0.0001L	0.19 0.0001L	0.67 0.0001L	0.20 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0002 0.0003
X332.0 AC	11.33 0.0013	0.20 0.0021	3.28 0.021	0.032	1.29 0.0032	0.030 0.0062	0.031 0.0031	0.067 0.028	0.25 0.0030		0.0011 0.020	0.005 0.0030	0.0039 0.019
A333.0 AI	9.7 0.0012	0.90	3.47 0.017	0.33	0.14 0.0022i	0.11 0.0028i	0.15 0.0032i	2.56 0.13	0.12 0.0039		0.0012 0.17	0.019 0.0031i	0.0021 0.020
A333.0 CAH	9.64 N 0.0001L	1.00 N 0.0001L	3.55 N 0.0001L	0.37 N	0.0003 0.0001L	0.0001 0.0001L	0.0001L 0.0005	2.56 N 0.0001	0.0001L 0.0028	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
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	0.0020
			0.031		0.0009	0.0025	0.0061	0.046	0.0010	0.046	0.0021	0.032	0.0029
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	0.0010		0.0001L	0.0011	0.0003	0.0001	0.0003	0.0001	0.0001	0.0008	0.0009
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	0.0001L	0.0001	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	0.0001L	0.0001	0.0001L	0.0003	0.0001	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	0.0026i	0.0019	0.008	0.0029	0.014	0.0151i	0.020	0.0021
356.2 AW	7.27	0.21	0.081	0.033	0.39	0.027	0.031	0.082	0.18		0.0010	0.0086	0.0037i
	0.0011		0.020		0.0024i	0.0028i	0.002	0.0082	0.0029	0.015	0.031i	0.020	0.0021
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	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
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	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	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	0.0025i	0.0021	0.0080	0.003 N	0.020	0.0031i	0.022	0.0034
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	0.0001	0.0003	0.0001	0.0001L	0.0001	0.0001L	0.0002	0.0010
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	0.0023i	0.0020	0.10	0.0069	0.11	0.0034i	0.036	0.017
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	0.0001L	0.0007	0.0004	0.0001	0.0001L	0.0001L	0.0002	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				0.0037	0.0035	0.0028	0.046		0.018	0.0032

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
A413.2 AD	12.06 0.0014	0.40	0.033 0.029	0.039	0.026 0.0029i	0.016 0.0040i	0.031 0.0026	0.030 0.0080	0.031 0.0039		0.0009 0.014	0.0069 0.019	0.0025i 0.0034
A413.2 CAE	11.74 N 0.0001L	0.34 N 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0002 0.0001	0.0001L 0.0001L	0.0001L 0.0001L	0.001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
443.2 AC	5.31 0.0012	0.35	0.048 0.021	0.046	0.022i 0.0017i	0.027 0.0024i	0.028 0.0032	0.041 0.0073	0.155 0.0033		0.0010 0.012	0.0085i 0.024	0.0024i 0.0026
443.2 CAB	5.46 N 0.0001L	0.35 N	0.0002 0.0001L	0.0001L	0.0003 0.0001L	0.0001 0.0001L	0.0001L 0.0001	0.0002 0.0001L	0.0001L 0.001	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
A535.0 AA	0.12 0.0012	0.17	0.053 0.021	0.17	7.30 0.0033	0.053 0.0019i	0.052 0.0010i	0.044 0.044	0.16 0.0024		0.0012 0.047	0.043i 0.0025i	0.0025i 0.020
A535.0 CAX	0.14 0.0001L	0.17 0.0001L	0.0001L 0.0001L	0.16 0.0001L	7.38 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	0.0002 0.0001L	0.16 0.0001L	0.0001L 0.0001L	0.0001L 0.0002 N	0.0001L 0.0001L	0.0001 0.0001L
1050 AJ	0.174 0.0011	0.297	0.040 0.019	0.0374	0.0264i 0.0022i	0.0172 0.0013i	0.0227 0.0014	0.0399 0.0080	0.0287 0.002		0.0010i 0.0148	0.0081 0.0018i	0.0016i 0.0168
1100 AK	0.18 0.0011	0.60	0.084 0.020	0.029	0.0123 0.0019i	0.018 0.0045i	0.030 0.0023	0.031 0.0085	0.030 0.0016		0.0011 0.014	0.0056 0.0018i	0.0013i 0.0178
1100 AY	0.17 0.0013	0.59	0.084 0.020	0.029	0.0096i 0.0018i	0.019 0.0057i	0.031 0.0027	0.032 0.0082	0.030 0.0021		0.0009 0.014	0.0048 0.0016i	0.0008i 0.020
X1100 AH	0.43 0.0010	0.42	0.088 0.022	0.037	0.015 0.0014i	0.016 0.0021i	0.031 0.0038	0.026 0.013	0.028 0.0039		0.0010 0.015	0.016 0.0024i	0.0021i 0.0215
X1120 AC	0.10 0.0012	0.15	0.45 0.019	0.15	0.015i 0.0020i	0.019 0.0021i	0.022 0.0016	0.020 0.0078	0.019 0.002		0.0010i 0.021	0.007 0.0019i	0.0016i 0.021
1145 AE	0.10 0.0011	0.40	0.028 0.019	0.031 0.0018 N	0.022i 0.0019i	0.020 0.0021i	0.030 0.0025	0.030 0.0080	0.031 0.0021		0.0008 0.020	0.0082 0.0017i	0.0014i 0.020
1170 AM	0.090 0.0012	0.179	0.0365 0.019	0.036	0.0257i 0.0024i	0.033 0.0014i	0.030 0.0021	0.0342 0.0082	0.0302 0.0012		0.0010i 0.020	0.0081 0.0022i	0.0023i 0.020

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
1188 AD	0.052	0.053	0.0052i	0.0066	0.0051i	0.0070	0.0073	0.0070	0.0072		0.0009i	0.0058	0.0010i
	0.0011	0.0011	0.020	0.0021	0.0009i	0.0013i	0.0031	0.0071	0.0028	0.0065	0.0013i	0.020	0.0026
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	0.020	0.0012i	0.0029i	0.0024i	0.0020	0.0063	0.0027	0.0076	0.0029i	0.021	0.0031
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		0.020		0.0027i	0.0018i	0.0028	0.0081	0.0021	0.019	0.0023i	0.020	0.0028
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	0.0023i	0.0023	0.0079	0.0056	0.018	0.0026i	0.021	0.0023
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	0.0001L	0.0001	1.1 N	0.01	0.006	0.0001	0.0002	0.0003
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		0.020		0.0007i	0.0005i	0.0024	0.53	0.0029	0.019	0.0009i	0.017	0.0027
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	0.0001L	0.0001L	0.60 N	0.0010	0.0035	0.0001L	0.0001L	0.0001L
2014 AE	0.90	0.56	4.67	0.92	0.69	0.065	0.029	0.11	0.120		0.0010	0.007	0.0027
	0.0012i		0.018		0.0022i	0.0026i	0.003	0.0074	0.0028	0.019	0.0026	0.022	0.0030
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	0.0001L	0.0003	0.0002	0.0002	0.0001L	0.0001L	0.0001L	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		0.020		0.0025i	0.0019i	0.0031i	0.015	0.0032i	0.015	0.0028i	0.022	0.0026
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	0.0001L	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001
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	0.020		0.0017i	0.0009i	0.0030	0.017	0.0025	0.015	0.0026	0.016	0.0018
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	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
2024 AF	0.25 0.0011i	0.25	4.55 0.022	0.66	1.57 0.0030i	0.028 0.0026i	0.031 0.0023	0.073 0.0077	0.032 0.0030		0.0010 0.0029	0.008 0.022	0.0031i 0.0024
2024 CAE	0.26 N 0.0001L	0.30 N 0.0001L	5.0 N 0.0001	0.69 N	2.0 N 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	0.0002 0.0001	0.0001L 0.0001L	0.0001 0.0005	0.0001L 0.0001L	0.0001L 0.0001	0.0001L 0.0001L
2219 AC	0.15 0.0020	0.21	6.70 0.015	0.24	0.013 0.0012i	0.013 0.0012i	0.016 0.0021	0.088 0.0087	0.050 0.0029		0.0011 0.017	0.0067 0.0018i	0.0011i 0.092 0.13
2219 CAB	0.15 N 0.0001L	0.18 N 0.0001	6.53 N 0.0001	0.29 N	0.0001 0.0001L	0.0001L 0.0001L	0.0002 0.0001	0.0005 0.0001L	0.0003 0.0001	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	0.0001L 0.14 N
2618 AC	0.23 0.0018	1.12 0.0022 N	2.55 0.018	0.18	1.66 0.0030i	0.019 0.0040i	1.36 0.0021	0.077 0.011	0.058 0.0027		0.0010 0.021	0.011 0.0034	0.0035 0.019 0.0027
2618 CAB	0.22 N 0.0001	1.13 N 0.0005	2.44 N 0.0007	0.18 N	1.52 N 0.0001L	0.0005 0.0001L	1.43 N 0.0001	0.0005 0.0001L	0.0010 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0006	0.0001L 0.0003
3003 AI	0.25 0.0012	0.64	0.085 0.020	1.10	0.014i 0.0019i	0.021 0.0024i	0.019 0.0028	0.020 0.0082	0.021 0.0037		0.0010 0.021	0.008 0.0017i	0.0019i 0.019 0.0025
3003 AJ	0.45 0.0010	0.22	0.130 0.020	1.07	0.0065 0.0021i	0.016 0.0025i	0.020 0.0034	0.083 0.0086	0.040 0.0025		0.0011 0.022	0.0073 0.0021i	0.0017i 0.021 0.0027
3003 AK	0.24 0.0013	0.63	0.090 0.014	1.14	0.011i 0.0023i	0.0142 0.0014i	0.023 0.0016	0.0253 0.0081	0.025 0.0020		0.0010i 0.0148	0.0078 0.0019i	0.0017i 0.020 0.0020
X3003 AD	0.37 0.0011	0.53	0.16 0.021	1.17	0.014 0.0021i	0.015 0.0025i	0.018 0.0030	1.39 0.0077	0.021 0.0025		0.0011 0.018	0.0064 0.0019i	0.0019i 0.019 0.0024
X3003 CAE	0.25 N 0.0001L	0.58 N 0.0001L	0.0001L 0.0001L	1.11 N 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	1.01 N 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
3004 AO	0.23 0.0013	0.48	0.21 0.022	1.20	1.24 0.0019i	0.029 0.0028i	0.027 0.0020	0.13 0.008	0.029 0.0035 N		0.0012 0.013	0.0069 0.0031	0.0038 0.019 0.0033
3004 CAN	0.22 N 0.0001L	0.62 N 0.0001L	0.17 N 0.0008	1.23 N	1.27 N 0.0001L	0.0001 0.0001L	0.0001 0.0001L	0.0008 0.0001	0.0004 0.0001L	0.0002 0.0001	0.0001L 0.0001L	0.0001L 0.0001	0.0001L 0.0002

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
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	0.0034i	0.0029	0.009	0.0041	0.017	0.0035i	0.020	0.0030
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		0.020		0.0023i	0.0022i	0.0035	0.0080	0.0024	0.019	0.0030	0.022	0.0031
3005 CAF	0.21 N	0.44 N	0.0002	1.16 N	0.43 N	0.0001	0.0001	0.0010	0.0002	0.0002	0.0001L	0.0001L	0.0001L
	0.0001L	0.0001L	0.0001L		0.0001L	0.0001L	0.0001	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
	0.0020		0.020		0.0018i	0.0018i	0.0030	0.009	0.002	0.018	0.0021	0.020	0.0018
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	0.0001	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0002
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		0.020		0.0012i	0.0014i	0.0036	0.0085	0.002	0.022	0.0019i	0.020	0.0030
3102 AD	0.35	0.54	0.086	0.37	0.028	0.021	0.019	0.029	0.0271		0.0010	0.008	0.0016
	0.0012		0.019		0.0014i	0.0010i	0.0030	0.009	0.0035	0.021	0.0018i	0.0191	0.0040
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	0.0001L	0.0001	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	0.0030i	0.0017	0.0083	0.0021	0.015	0.0022i	0.021	0.0019
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	0.0017i	0.003	0.0077	0.0023 N	0.0145	0.0029	0.021	0.0020
3104 CAP	0.23 N	0.42 N	0.23 N	0.99 N	1.13 N	0.0001	0.0001L	0.0001	0.0001	0.0003	0.0001L	0.0001L	0.0001
	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	0.0003	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L
3104 DAS	0.17 N	0.42 N	0.19 N	0.93 N	1.21 N	0.015 N	0.009 N	0.13 N	0.0085 N		0.0013 N	0.001 N	0.0020 N
	0.0011 N		0.017 N		0.0017 N	0.0010 N	0.0020 N	0.0062 N	0.0021 N	0.0012 N	0.0016 N	0.014 N	0.0011 N
3105 AG	0.26	0.54	0.22	0.54	0.71	0.015	0.018	0.014	0.016		0.0011	0.0073i	0.0020
	0.0014		0.019		0.0018i	0.0022i	0.0031	0.0075	0.0031	0.017	0.0021	0.019	0.0028

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
3105 AH	0.51 0.0013	0.59	0.25 0.021	0.54	0.52 0.0017i	0.016 0.0022i	0.021 0.0031	0.13 0.0086	0.045 0.0026		0.0010 0.0021	0.0081 0.021	0.0023 0.0026
3105 CAI	0.24 N 0.0001L	0.54 N 0.0001L	0.098 N 0.0001L	0.52 N	0.49 N 0.0001L	0.099 N 0.0001L	0.0001L 0.0001	0.16 N 0.0001L	0.0001L 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0003
3203 AG	0.33 0.0016	0.54	0.052 0.022	1.14	0.032 0.0017i	0.029 0.0021i	0.033 0.0069	0.039 0.021	0.029 0.0042		0.0011 0.0023i	0.028 0.025	0.0022i 0.0039
3203 CAX	0.30 N 0.0001L	0.54 N 0.0001L	0.0001L 0.0001L	1.08 N 0.0001L	0.0002 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
3204 AA	0.23	0.43	0.21 0.018	0.91	1.34 0.0016i	0.027 0.0018i	0.031 0.001	0.028 0.012	0.035		0.0010 0.0026i	0.017 0.022	0.0024i 0.0029
3916 AA	0.22 0.0008	0.17	0.75 0.019	1.38	0.025i 0.0017i	0.030 0.0021i	0.088 0.0034	0.030 0.0081	0.028 0.0033		0.0011i 0.0017i	0.0087i 0.020	0.0016i 0.0029
4002 AB	4.52 0.67	0.32	0.10 0.016	0.077	0.12	0.045	0.050	0.052 0.062	0.050			0.040 0.013	
4002 AD	4.38 1.28	0.39	0.15 0.016	0.032	0.14	0.019	0.027	0.028 0.022	0.019			0.018 0.007	
4002 CAC	4.00 N 1.10 N	0.30 N	0.003 0.001L	0.001L	0.003 0.0001L	0.001L 0.0003	0.001L 0.0009	0.001L 0.001L	0.002		0.0001L 0.0004	0.003 N 0.001L	
X4002 AA	4.10 0.041	0.29	0.13 0.031	0.037	0.13 0.0022i	0.028 0.0016	0.038 0.006	0.045 0.034	0.019			1.06i 0.027	0.0065i 0.014
X4002 CAB	3.90 N	0.30 N	0.10 N 0.0001L	0.0001	0.11 N 0.0001L	0.0001 0.0001L	0.0002 0.0001	0.0001L 0.0001L	0.0001L		0.0001L 0.0001L	1.00 N 0.0001	0.0001L 0.0001L
4007 AA	1.62 0.0012	0.55	0.011 0.019	1.43	0.008 0.0009i	0.091 0.0012i	0.21 0.0023	0.029 0.0041	0.029 0.0042		0.0011 0.0022	0.007 0.0012i	0.0011i 0.015
X4045 AC	10.03 0.0013	0.32	0.015 0.016	0.013	0.015 0.0019i	0.013 0.0041i	0.014 0.0058	0.99 0.008	0.0129 0.0038		0.0009 0.012	0.008 0.0029i	0.0024i 0.0123

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
X4045 CAB	9.75 N	0.33 N	0.002 N 0.001L	0.003 N	0.001L 0.0001L	0.001L 0.0001L	0.001 N 0.0008	1.0 N 0.001L	0.003 N		0.0001L 0.0001L	0.001L 0.001L	0.003 N 0.0001L
4104 AE	10.06 0.0013	0.59	0.10 0.019	0.050	1.48 0.0024	0.030 0.0024	0.030 0.0027	0.10 0.028	0.027 0.0028		0.0012 0.0030	0.11 0.019	0.0029 0.0025
4104 CAD	10.0 N 0.0001	0.60 N 0.0001L	0.10 N 0.0001L	0.0010	1.60 N 0.0001L	0.0001 0.0001L	0.0004 0.0002	0.0005 0.002	0.0002 0.0011	0.0002 0.0001L	0.0001L 0.0001	0.10 N 0.0001L	0.0001L 0.0001L
4145 AB	10.66 0.0012	0.54	4.12 0.019	0.050	0.050 0.0016i	0.050 0.0018i	0.054 0.0033i	0.058 0.031	0.046 0.0038N		0.0012 0.0031	0.032 0.020	0.0023 0.0028
4147 AA	11.37 0.0011	0.32	0.071 0.021	0.066	0.17 0.0031i	0.071 0.0036i	0.031 0.0036	0.031 0.0076	0.12 0.0033		0.0011 0.0025i	0.0071 0.020	0.0036i 0.0030
425A1 AA	4.58 0.0011	0.27	0.19 0.019	0.12	0.34 0.0019i	0.11 0.0027i	0.020 0.0034	0.020 0.0067	0.057 0.0027		0.0012 0.0027	0.007 0.018	0.0026 0.0030
4343 AF	7.84 0.0010	0.50	0.050 0.023	0.052	0.031 0.0022i	0.032 0.0027i	0.029 0.0042i	0.050 0.021	0.031 0.0042		0.0013 0.018	0.037 0.011	0.0028i 0.0029
4343 CAG	7.83 N 0.0001L	0.50 N 0.0001L	0.0001L 0.0001L	0.0001L	0.0005 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.002 N	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
X4343 AA	7.57	0.53	0.048 0.025	0.046	0.051 0.0004i	0.025 0.0006i	0.029 0.0019	0.98 0.016	0.031		0.0016 0.017	0.019 0.028	0.0023i 0.026
462A1 AA	12.12 0.0012	0.15	3.86 0.018	0.025	1.05 0.0029	0.028 0.0053	1.07 0.0043 N	0.031 0.0091	0.17 0.0023		0.0011 0.0027	0.009 0.020	0.0049 0.0035
4643 AD	3.88 0.0011i	0.25	0.029 0.019	0.029	0.11i 0.0028i	0.029 0.0032i	0.029 0.0030	0.029 0.0077	0.028 0.0031		0.0012 0.0098i	0.0053 0.017	0.0031i 0.0032
4643 CAC	3.78 N 0.0001L	0.18 N 0.0001	0.0001 0.0001L	0.0001L	0.0001 0.0001L	0.0001 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0010	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
5000 CAB	0.001 N		10.0 N 0.002 N	0.001L	0.001 N	0.001L	0.001L	0.003 N 0.002 N	0.001L			0.001L 0.002 N	

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Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
5001 BI	0.36 0.0013	0.30	19.5 0.020	0.050	0.053 0.0020i	0.049 0.0011i	0.052 0.0039i	0.045 0.048	0.049 0.0040		0.0012 0.0027i	0.052 0.025	0.0018 0.0030
5001 CBG		0.02 N	20.0 N 0.002 N	0.001 N	0.002 N	0.001 N	0.003 N	0.001L 0.002 N	0.001 N			0.001L 0.002 N	
5005 AG	0.217 0.0011	0.59	0.088 0.023	0.045	1.00 0.0024i	0.0303 0.0022i	0.0254 0.0025	0.0253 0.0076	0.024 0.0018		0.0012 0.0026	0.0084 0.024	0.0026 0.0023
5005 CAF	0.17 N 0.0001L	0.58 N 0.0001L	0.080 N 0.0001L	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	0.0001L 0.0001L	0.0001L 0.0001L
5010 AE	0.18 0.0016	0.44	0.032 0.026	0.26	0.57 0.0034i	0.025 0.0031i	0.022 0.0058i	0.027 0.016	0.025		0.0014 0.0020i	0.023 0.024	0.0031i 0.0034
5010 CAF	0.17 N 0.0001L	0.44 N 0.0001L	0.0001 0.0001L	0.21 N	0.46 N 0.0001L	0.00001L 0.0001L	0.0001L 0.0001	0.0001 0.0001L	0.0001 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
5016 AA	0.25 0.0012	0.76	0.036 0.023	0.50	2.48 0.0028i	0.017 0.0026i	0.015 0.0014i	0.080 0.014	0.015 0.0025		0.0038 0.0029i	0.019i 0.023	0.0031i 0.0033
5017 AB	0.28	0.27	0.40 0.020	0.28	2.01 0.0046i	0.018 0.0042	0.030 0.001	0.026 0.020	0.056		0.0035 0.021	0.013 0.015	0.0054 0.014
5017 CAC	0.25 N 0.0001L	0.29 N 0.0001	0.38 N 0.0001L	0.35 N	2.00 N 0.0001L	0.0002 0.0001L	0.0003 0.0001	0.0001L 0.0003	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	0.0001L 0.0001L
5017 CAD	0.36 N 0.0001L	0.38 N 0.0003L	0.19 N 0.0001L	0.80 N	2.0 N 0.0001L	0.0003 0.0001L	0.0005 0.0003	0.0003L 0.0001L	0.0004 0.0001	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0002	0.0001L 0.0002
5042 AC	0.15 0.0012	0.25	0.031i 0.020	0.35	3.74 0.0043i	0.060 0.0029i	0.031 0.0008	0.030 0.0081	0.030 0.0012		0.0013 0.0028i	0.009 0.018	0.0036i 0.0016
5042 CAB	0.0018 0.0001L	0.25 N 0.0001	0.0001 0.0001L	0.33 N	3.68 N 0.0001L	0.0001 0.0001L	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 0.0001L
5052 AN	0.20 0.0011	0.25	0.080 0.019	0.073	2.68 0.0038i	0.26 0.0029i	0.028 0.0018	0.032 0.0070	0.059 0.0028		0.0011 0.0033	0.0077 0.019	0.0038 0.0028

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
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	0.00000	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	0.0001 N	0.0007 N	0.0011 N		0.0005 N	0.0000 N	0.013 N	0.0023 N
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	0.0034	0.0014i	0.008	0.0032	0.012	0.0025i	0.020	0.0023
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	0.0001L	0.0001	0.001L		0.001L	0.0001L	0.001L	0.0001
5082 AA	0.079	0.20	0.030	0.022	4.62	0.030	0.032	0.051	0.047		0.0015	0.006	0.0010
			0.026		0.0005	0.0010		0.008		0.007		0.020	0.019
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	0.0002	0.0002	0.001L		0.0004	0.0001L	0.001L	0.001L
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	0.0039i	0.0014	0.0077	0.0012	0.020	0.0033	0.021	0.0035
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	0.0001L	0.0001	0.0001	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	0.0006N	0.002 N	0.035		0.043		0.013	0.02
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					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
			0.020		0.0020i	0.0060i	0.001	0.014	0.0025	0.015	0.0026	0.021	0.0030
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	0.0001L	0.0001	0.0001L	0.0001L	0.0001L	0.0001L	0.0001	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	0.0012i	0.001	0.026	0.0035	0.014	0.0025i	0.024	0.0031

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
A5154 CAB	0.21 N 0.0001L	0.19 N 0.0001L	0.0017 0.0001L	0.20 N	3.53 N 0.0001	0.0001 0.0001L	0.0003 0.0003	0.0003 0.0001	0.0001 0.0001L	0.0001 0.0001	0.0001L 0.0002	0.0001L 0.0001L	0.0001L 0.0001L
5182 AV	0.12 0.0013	0.27	0.041 0.021	0.34 0.0001L	5.02 0.0023i	0.029 0.0034i	0.014 0.0014 N	0.047 0.0074	0.048 0.0010	0.0012i 0.014	0.0013 0.0021i	0.0070 0.020	0.0028i 0.0031
5182 BA	0.11 0.0014	0.26	0.037 0.020	0.36	4.96 0.0028	0.031 0.0039i	0.015 0.0014	0.050 0.009	0.051 0.0025		0.0012 0.015	0.008 0.0024	0.0031 0.0031
5182 BE	0.13 0.0011	0.26	0.058 0.021	0.35	5.06 0.0027i	0.030 0.0013i	0.020 0.0017	0.050 0.0074	0.052 0.0012		0.0012 0.019	0.0068 0.0026	0.0031 0.0022
5182 CBB	0.13 N 0.0001 L	0.25 N 0.0001 L	0.0001 0.0001L	0.33 N 0.0001 L	4.86 N 0.0001L	0.0001 0.0001 L	0.0008 0.0001 L	0.0002 0.0001 L	0.0001 L 0.0001 L	0.0001 L 0.0001 L	0.0001 L 0.0001 L	0.0001 L 0.0001 L	0.0001 0.0001 L
5182 CBG	0.18 N 0.0001L	0.26 N 0.0001L	0.0001L 0.0001L	0.36 N 0.0001L	5.02 N 0.00000	0.0001L 0.00000	0.0001L 0.0001	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.00000 0.0001L	0.0001L 0.0001L	0.00001 0.00001L
5182 DAU	0.097 N 0.0000 N	0.23 N 0.0002 N	0.037 N 0.017 N	0.345 N	4.82 N 0.0000 N	0.0011 N 0.0000 N	0.0049 N 0.0003 N	0.012 N 0.0009 N	0.0059 N	0.0001 N 0.0005 N	0.0000 N 0.0000 N	0.0000 N 0.012 N	0.0002 N 0.0022 N
5251 AF	0.36 0.0010	0.45	0.102 0.020	0.29	2.14i 0.0040i	0.096 0.0041i	0.030 0.001	0.091 0.0093	0.098 0.003		0.0010 0.0200	0.006 0.0036i	0.0036 0.0205
5251 CAE	0.28 N 0.0001 L	0.44 N 0.0001 L	0.0001 0.0001 L	0.41 N 0.0001 L	2.20 N 0.0001 L	0.0001 0.0001	0.0002 0.0001	0.0003 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	0.0002 0.0001 L
5454 AC	0.25 0.0014	0.40 0.0015	0.10 0.022	0.75	3.16 0.0030i	0.030 0.0038i	0.033 0.0013	0.030 0.0035	0.064 0.0032		0.0011 0.0029	0.0048 0.0020	0.0022i 0.0029
5454 CAD	0.20 N 0.0001 L	0.32 N 0.0001 L	0.0001 L 0.0001 L	0.73 N 0.0001 L	2.94 N 0.0001 L	0.0001 0.0001	0.0009 0.0001 L	0.0004 0.0001 L	0.0001 0.0001 L	0.0001 L 0.0001 L	0.0001 L 0.0001 L	0.0001 L 0.0001 L	0.0001 0.0001 L
5457 AB	0.100i 0.0010i	0.12	0.16 0.020	0.42	0.99 0.0034i	0.026 0.0031i	0.027 0.0027	0.030i 0.0078	0.028i 0.0024		0.0013 0.021	0.0081 0.0037i	0.0035i 0.022
5754 AE	0.20 0.0012	0.24	0.050 0.021	0.28	3.17 0.0028i	0.110 0.0022i	0.029 0.0015	0.011 0.0075	0.051 0.0029		0.0011 0.016	0.007 0.0033	0.0033 0.020

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
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	0.0002	0.0004	0.0001L	0.0001L	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	0.0045i	0.0018	0.0038	0.0018	0.026	0.0017i	0.021	0.0024
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	0.0001L	0.0001	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	0.0018i	0.0029	0.0085	0.0040	0.017	0.0036i	0.023	0.0028
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		0.020		0.0028i	0.0025i	0.004	0.008	0.0024	0.020	0.0035	0.021	0.0033
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	0.0001	0.0002	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		0.020		0.0024i	0.0025i	0.0034	0.016	0.0031	0.015	0.0031	0.0197	0.0030
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	0.0023i	0.0034	0.0039	0.0034	0.0035	0.0034	0.021	0.0033
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	0.0001L	0.0001	0.0001	0.0001L	0.0001	0.0001L	0.0001L	0.0001L
6008 AA	0.67	0.21	0.30	0.067	0.60	0.015	0.030	0.019	0.030		0.0012	0.0080	0.0035
	0.0014		0.021		0.0024i	0.0029i	0.004	0.0080	0.0032	0.013	0.0031	0.101	0.0030
6012 AF	0.13	0.21	6.05	0.28	0.020	0.047	0.045	0.049	0.14			0.038	
			0.016					0.037		0.040		0.010	
6016 AA	1.17	0.27	0.17	0.12	0.44i	0.049	0.0200	0.040	0.026		0.0011i	0.0072i	0.0030i
	0.0012		0.020		0.0017i	0.0022i	0.0027	0.0079	0.0027	0.019	0.0028i	0.020	0.0028
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	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0001L	0.0004L

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
6061 AR	0.73 0.0013	0.33	0.36 0.019	0.081	1.03 0.0022i	0.21 0.0021i	0.031 0.0017	0.040 0.0081	0.040 0.0019		0.0012 0.0025i	0.0069i 0.020	0.0032i 0.0018
6061 CAS	0.71 N 0.0001L	0.35 N 0.0001L	0.31 N 0.0001L	0.0001L 0.0001L	1.11 N 0.0001L	0.20 N 0.0001L	0.0001L 0.0001	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	0.0001 0.0001L
6061 DAO	0.65 N 0.0000 N	0.24 N 0.0002 N	0.30 N 0.017 N	0.0081 N	0.96 N 0.0000 N	0.14 N 0.0001 N	0.0048 N 0.0008 N	0.013 N 0.0010 N	0.014 N	0.0002 N 0.0005 N	0.0000 N 0.0000 N	0.0000 N 0.012 N	0.0001 N 0.0023 N
6063 BD	0.56 0.0013	0.20	0.079 0.020	0.077	0.63 0.0020i	0.080 0.0027i	0.020 0.0030	0.021 0.0082	0.0152 0.002 N		0.0012 0.0030i	0.0079 0.0211	0.0036i 0.0025
6063 CBB	0.47 N 0.0001L	0.20 N 0.0001L	0.0001 0.0001L	0.0008 0.0001L	0.55 N 0.0001L	0.0001L 0.0001	0.0001L 0.0004	0.0001 0.0001L	0.0001 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
6063 CBF	0.53 N 0.0001L	0.24 N 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.61 N 0.0001L	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 0.0001L	0.0001 0.0001L
6063 DAZ	0.44 N 0.0000 N	0.20 N 0.0003 N	0.021 N 0.018 N	0.078 N	0.52 N 0.0000 N	0.0039 N 0.0001 N	0.0048 N 0.0008 N	0.013 N 0.0011 N	0.010 N 0.0002 N	0.0003 N 0.0006 N	0.0000 N 0.0000 N	0.0000 N 0.012 N	0.0001 N 0.0026 N
6066 AF	0.97 0.0011	0.60	0.96 0.021	0.71	0.97 0.0034i	0.018 0.0039i	0.032 0.0032	0.28 0.0075	0.032 0.0026		0.0013 0.0029	0.007 0.021	0.0028 0.0032
6066 CAG	1.05 N 0.0001L	0.61 N 0.0001L	0.96 N 0.0001L	0.67 N	1.00 N 0.0001L	0.0002 0.0001L	0.0001 0.0001L	0.0001 0.0001	0.0001 0.0001L	0.0004 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
6070 AC	1.25 0.0010	0.26	0.33 0.020	0.74	0.75 0.0029i	0.019 0.0033i	0.019 0.0036	0.021 0.008	0.021 0.0027		0.0012 0.0069	0.0063 0.0036	0.0029 0.016 0.0030
6070 CAB	1.35 0.0001L	0.28 N 0.0001L	0.32 N 0.0001L	0.72 N	0.77 N 0.0001L	0.0001L 0.0001L	0.0001L 0.0002	0.0010 0.0002	0.0001L 0.0004	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
6082 AA	1.06 0.0012	0.42	0.076 0.020	0.77	0.67 0.0023i	0.124 0.0021i	0.030 0.003	0.052 0.0075	0.031 0.0018		0.0010 0.0029i	0.0055i 0.025	0.0032i 0.0026
6111 AE	0.60 0.0014	0.24	0.75 0.019	0.20	0.77 0.0025i	0.072 0.0019i	0.028 0.003	0.027 0.016	0.065 0.0031		0.0013 0.0026i	0.025 0.023	0.0023i 0.0031

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
6111 CAF	0.64 N	0.15 N	0.69 N	0.17 N	0.69 N	0.068 N	0.0001	0.0001L	0.066 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	0.0001L	0.0001L	0.0001L	0.0002
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	0.0016i	0.0024	0.0077	0.0017	0.014	0.0020i	0.020	0.016
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		0.020		0.0022i	0.0029i	0.002	0.0086	0.003	0.019	0.0028i	0.020	0.0029
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	0.0001L	0.0001	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					0.033		0.028		0.012	
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	0.0026i	0.0046i	0.019	0.0043	0.021	0.0031i	0.022	0.0032
6205 AA	2.45	1.25	20.4	1.05		0.05	0.051	5.55				0.036	0.02 N
								0.04		0.052			
6252 AE	5.41	0.33	3.01	0.60	0.33	0.034	0.041	3.46	0.12			0.029	
			0.011					0.026		0.029		0.012	
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					0.001L		0.001L		0.004 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		0.020		0.0020i	0.0026i	0.0023	0.0075	0.0029	0.012	0.0029i	0.022	0.0034
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	0.0001L	0.0001	0.0001L	0.0002	0.0001L	0.0001L	0.0001	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					0.038		0.036		0.012	
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		0.020		0.0024	0.0028i	0.0032i	0.044	0.0041	0.047	0.0034	0.023	0.0031

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
6348 CAD	0.08 N 0.0001L	0.07 N 0.0001L	0.0001 0.0001L	0.0001	0.98 N 0.0001L	0.14 N 0.0001L	0.0001L 0.0001	6.98 N 0.0003	0.19 N 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
6351 AM	1.09 0.0011	0.21 0.019	0.077 0.019	0.57	0.64 0.0032i	0.029 0.0025i	0.030 0.0025	0.050 0.0083	0.051 0.0023 N	0.018	0.0012 0.0035	0.0070 0.020	0.0034 0.0025
6351 CAL	1.13 N 0.0001L	0.32 N 0.0001L	0.0001L 0.0001L	0.63 N 0.0001L	0.59 N 0.0001L	0.0001L 0.0001	0.0001L 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001 0.0001L	0.0001L 0.0001	0.0001L 0.0001L	0.0001 0.0001L
6363 AC	0.57	0.35	0.99 0.016	0.043	0.94	0.046	1.82	0.037 0.05 N	0.04 N			0.037 7.33	
6365 AB	11.89	0.33	1.09	0.17	0.94	0.03	1.09	0.06 0.03	0.090			0.02	
6392 AC	0.10	0.11	0.10 0.021	0.055	1.26	0.051	0.046	4.26 0.044	0.043		0.006 N 0.042	0.042	0.042 0.011
6463 AC	0.35 0.0012	0.12	0.14 0.018	0.019	0.49 0.0024i	0.020 0.0026i	0.020 0.0048	0.020 0.007	0.017 0.0038		0.0011 0.019	0.012 0.0047i	0.0033i 0.020 0.0031
6475 CAB	1.05 N		0.51 N 0.001 N	0.001L	5.0 N	0.001L	0.001L	0.001L 0.001L	0.001L			0.001L 0.001L	0.001L 0.002 N
7003 AC	0.14 0.0016	0.28	0.15 0.020	0.12	0.90 0.0032	0.18 0.0030i	0.030 0.0031	6.23 0.008	0.032 0.0035		0.0012 0.017	0.007 0.0029	0.0026 0.019 0.17
7003 CAB	0.001 N	0.002 N	0.004 N 0.001L	0.001L	0.70 N 0.0001L	0.001L 0.0001	0.001L	5.60 N 0.001L	0.001L		0.001L	0.001L 0.001L	0.0001
7004 AA	0.17 0.0014	0.27	0.052 0.030	0.52	1.76 0.0015	0.034 0.0049i	0.043 0.001	5.15 0.029	0.051 0.0028		0.0013 0.032	0.022 i 0.0027	0.0040 0.032 0.14
7010 AC	0.11 0.0013	0.12	1.84 0.035	0.084	2.37 0.0029i	0.057 0.0027i	0.049 0.0014i	6.22 0.027	0.062 0.0026		0.0013 0.020	0.020i 0.0024i	0.0024i 0.024 0.14
7010 CAD	0.10 N 0.0001L	0.14 N 0.0001L	1.83 N 0.0001L	0.09 N	2.41 N 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	6.22 N 0.0001L	0.0001	0.0001	0.0001L	0.0001	0.0001L 0.15 N

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Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
7018 CAB	0.20 N 0.0001L	0.39 N 0.0001	0.15 N 0.0001	0.29 N	1.03 N 0.0001L	0.14 N 0.0001L	0.0003 0.0001	4.81 N 0.0001	0.0002 0.0001	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	0.0001L 0.14 N
7019 AA	0.15	0.22	0.19 0.021	0.25	2.01 0.0009	0.033 0.0005	0.021 0.0001	3.95 0.032	0.034		0.0001L 0.0003	0.029 0.028	0.0015 0.16
7021 AA	0.22	0.38	0.029 0.015 N	0.037	1.48	0.033	0.035	5.42 0.033	0.041			0.027 0.012	0.16
7021 CAB	0.005	0.006	0.003 N 0.0001L	0.001L	1.6 N 0.0001L	0.001L 0.0001	0.001L	5.5 N 0.001L	0.001L			0.002 N 0.0001L	0.0001L
7022 AC	0.38 0.0013	0.43	0.88 0.021	0.30	3.40 0.0028	0.25 0.0028	0.018 0.0018	4.80 0.008	0.015 0.0021		0.0012 0.018	0.007 0.0029	0.0024 0.018 0.0019
7031 AA	0.13	1.15	0.029 0.015	0.21	0.013 0.0032i	0.024 0.0033i	0.019 0.005	1.12 0.017	0.025		0.0035i 0.015	0.008i 0.015	0.0028i 0.007
7031 CAB	0.13 N	1.23 N	0.0005 0.0001L	0.21 N	0.0002 0.0001L	0.0005 0.0001L	0.001 0.0003	1.04 N 0.0001L	0.0002 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0004	0.0001L 0.0001L
7050 AE	0.13 0.0012	0.120	2.35 0.022	0.089	2.44 0.0024i	0.031 0.0017i	0.0249 0.0012	6.32 0.0095	0.063 0.0024		0.0011 0.0192	0.0071 0.0026	0.0028 0.025 0.145
7050 CAD	0.11 N 0.0001L	0.15 N 0.0001L	2.0 N 0.0001L	0.08 N	2.0 N 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	7.0 N 0.0002	0.0001 0.0002	0.0001 0.002	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.14 N
7075 CAE	0.18 N 0.0001	0.29 N 0.0001L	1.65 N 0.0001L	0.0005	2.58 N 0.0001L	0.21 N 0.0001L	0.0001 0.0001	5.76 N 0.0002	0.0002 0.0001L	0.0001 0.0003	0.0001L 0.0001L	0.0001L 0.0001	0.0001L 0.0001L
7079 AA	0.20 0.0014	0.24	0.66 0.020	0.25	3.28 0.0038	0.22 0.0018	0.029 0.0015	4.55 0.014	0.056 0.0034		0.0013 0.022	0.020 0.0028	0.0026 0.021 0.0037
7146 AA	0.22	0.36	0.031 0.015	0.037	1.41	0.028	0.036	6.86 0.030	0.042			0.025 0.011	0.16
7146 CAD	0.22	0.33	0.0006 0.014	0.0029	1.39 0.0001L	0.0011 0.0002	0.0043 0.0001L	6.40 0.0027	0.0065 0.0001L		0.0001L 0.0004	0.0001L 0.0002	0.0001L 0.010 0.15

("i" individual value, "L" less than, "N" value not certified)

Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
7146 CAE	0.23	0.34			1.41			7.64					0.001
8006 AG	0.22 0.0015	1.60	0.042 0.020	0.55	0.0030i 0.0014i	0.020 0.0015i	0.021 0.0034	0.046 0.010	0.014 0.004		0.0012 0.0019i	0.009 0.021	0.0017i 0.0030
8006 CAF	0.17 N 0.0001L	2.0 N 0.0001L	0.0001 0.0001	0.53 N	0.0002 0.0001L	0.0001L 0.0001L	0.0001L 0.0001	0.0002 0.0001	0.0001 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L
8007 CAF	0.002	1.57 N	0.0008 0.001L	0.55 N	0.0008 0.0001L	0.0007 0.0001L	0.0008 0.0004	1.09 N 0.001L	0.0002		0.0001L 0.0001L	0.001L 0.001	0.0001L 0.001L
8008 AC	0.19 0.0014	1.12	0.17 0.024	0.74	0.013 0.0017i	0.053 0.0017i	0.028 0.0042	0.049 0.016	0.030 0.0037		0.0012 0.0025i	0.024 0.032	0.0022i 0.0039
8008 CAD	0.21 N 0.0001L	1.08 N 0.0001L	0.15 N 0.0001L	0.78 N 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0002 0.0001	0.0001L 0.0001L	0.0001L 0.0001L	0.0001 0.0001L	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0001
A8011 AC	0.75 0.0013	0.74	0.028 0.019	0.022	0.014i 0.0009i	0.020 0.0013i	0.021 0.0029	0.021 0.0084	0.020 0.0016		0.0007i 0.0012i	0.0075 0.019	0.0009i 0.0022
8015 AA	0.13	1.05	0.030 0.015	0.18	0.012 0.0026i	0.016 0.0041i	0.020 0.004	0.026 0.016	0.021		0.0033 0.0016i	0.02 0.010	0.0025i 0.014
8015 CAB	0.13 N 0.0001L	1.10 N	0.0005 0.0001L	0.22 N	0.0003 0.0001L	0.0004 0.0001L	0.001 0.0003	0.0005 0.0001L	0.0002	0.0001L 0.0001L	0.0001L 0.0001L	0.0001L 0.0004	0.0001L 0.0001L
8018 AB	0.76 0.0016	0.77	0.46 0.015	0.069	0.0075i 0.0015i	0.017 0.0017i	0.015 0.0026	0.015 0.0094	0.043 0.0036		0.0010 0.0031i	0.0076 0.016	0.0016i 0.0030
8021 AA	0.11 0.0013	1.43	0.014 0.032	0.0075	0.0048i 0.0014	0.010 0.0010i	0.010 0.0028	0.010 0.0082	0.021 0.003		0.0011 0.0083	0.010 0.0020	0.0018 0.0033
8030 AC	0.066 0.0018	0.83	0.20 0.029	0.0032	0.018 0.0016i	0.020 0.0018i	0.024 0.006	0.014 0.016	0.003 0.006 N		0.0009 0.0027i	0.027 0.020	0.0025i 0.0028
8079 AF	0.21 0.0012	1.08	0.020i 0.020	0.020i	0.0028i 0.0016i	0.020 0.0015i	0.020 0.0017	0.020 0.0073	0.020 0.0029		0.0008i 0.0016i	0.0078 0.020	0.0015i 0.0019

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Revision:165

Date : 2017-09-12

Concentration reported in % (w/w)

Standard	Si Cd	Fe Co	Cu Ga	Mn Hg	Mg Li	Cr Na	Ni P	Zn Pb	Ti Sb	B Sn	Be Sr	Bi V	Ca Zr
8079 CAE	0.21 N 0.0001L	1.06 N 0.0001L	0.0001 0.0001L	0.0001 0.0001L	0.0002 0.0001L	0.0001 0.0001L	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 0.0001
8081 CAB	0.003 N	0.40 N	0.97 N 0.001 N	0.005 N	0.001 0.0001L		0.003 N	0.02 N 0.08 N	0.002 N			0.001 N 0.001 N	0.0001L
8112 AA	0.52 0.0035	0.66	0.26 0.028	0.11	0.014 0.0012i	0.024 0.0026i	0.020 0.0056	0.035 0.008	0.028 0.0051		0.0011 0.0044i	0.011 0.028	0.0025i 0.015
8280 CAC	1.4 N	0.4 N	1.0 N	0.001L	0.002 N 0.0001L	0.001L 0.0003N	0.45 N 0.0002	0.005L 0.05 N	0.002 N			0.002 N	0.002 N 0.0001L