Reference Material Certificate

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Aluminium Base (Type of Standard)

Certified Values

Element	Mass content [%]	Uncertainty [%]
Silicon (Si)	(0.11)	
Iron (Fe)	(0.27)	
Arsenic (As)	0.0021	± 0.0002
Boron (B)	0.00043	± 0.00011
Beryllium (Be)	0.00018	± 0.00002
Bismuth (Bi)	0.00054	± 0.00005
Calcium (Ca)	(0.0002)	
Mercury (Hg)	0.00053	± 0.00003
Lithium (Li)	(0.000006)	
Molybdenum (Mo)	0.00042	± 0.00004
Sodium (Na)	<0.00002	
Antimony (Sb)	0.0016	± 0.0002
Selenium (Se)	0.0006	± 0.0001
Zirconium (Zr)	0.0023	± 0.0004

The uncertainty reported is the result of standard deviation of all results multiplied with a factor of two and represents approximately the 95% confidence interval.

Values in brackets ( ) are not certified but given for information only.

Manufacturing
This certified reference material for the analysis of aluminum and its alloys is produced using continuous casting out of a single melt.

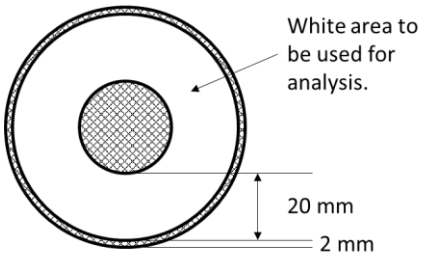
Homogeneity
Homogeneity testing is performed by means of spark emission spectroscopy. Tests involve making multiple measurements on individual samples taken at regular intervals along the entire length of each cast rod. Depending on the mass content of the element, the relative standard deviation of multiple measurements between discs or within one disc is typically found between 0.3% - 1% for alloying and other elements and 0.5% - 5% for trace elements.

Analysis
This reference material was analysed by the accredited laboratory of former Pechiney Research Center in Voreppe (COFRAC accreditation number 1-1656). At least two primary chemical or radiochemcal methods of analysis are used to determine each of the certified elements listed on the certificated.

Description of Sample
This reference material is available in the form of discs (approx. Ø 55 x 30 mm).

Intended use and Stability
This certified reference material is primarily intended for use in spark optical emission spectroscopy. Other applications are X-ray fluorescence spectrometry (XRF) and classical wet chemical procedures. The minimum sample size for wet chemical analysis is 0.2g. The material will remain stable for the period given below (certification validity) if it is stored in a dry and clean environment at room temperature.

Instructions for Use
Calibration measurements should be made within a ring between 2mm and 22mm from the edge of the CRM face. For wet chemical analysis chips have to be prepared by turning or milling of the sample surface.



Traceability
Traceability of the certified mass contents to the SI (Système International d'Unités) is ensured by calibration using certified standard solutions or pure metals or substances of known stoichiometry.

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This certificate is valid until: Dec-2069