SUISSE TECHNOLOGY PARTNERS

Reference Material Certificate

116/03

Aluminium Base (Type of Standard)
Al pure (99.99-99.95% Al), Set 110

Certified Values

Element	Mass content [%]	Uncertainty [%]
Silicon (Si)	0.0117	± 0.0005
Iron (Fe)	0.0115	± 0.0005
Copper (Cu)	0.0071	± 0.0003
Manganese (Mn)	0.0052	± 0.0003
Magnesium (Mg)	0.0037	± 0.0003
Chromium (Cr)	0.0052	± 0.0003
Nickel (Ni)	0.0050	± 0.0003
Zinc (Zn)	0.0056	± 0.0004
Titanium (Ti)	0.0017	± 0.0002
Silver (Ag)	0.0020	± 0.0002
Arsenic (As)	0.0013	± 0.0003
Boron (B)	0.0003	± 0.0001
Barium (Ba)	(<0.0001)	
Beryllium (Be)	0.00036	± 0.00004
Bismuth (Bi)	0.0016	± 0.0002
Calcium (Ca)	(<0.0001)	
Cadmium (Cd)	0.0010	± 0.0002
Cerium (Ce)	0.0007	± 0.0001
Cobalt (Co)	0.0020	± 0.0002
Gallium (Ga)	0.0023	± 0.0002
Mercury (Hg)	0.0041	± 0.0003
Indium (In)	0.0021	± 0.0002
Lanthanum (La)	0.0013	± 0.0002
Lithium (Li)	0.000007	± 0.000005
Molybdenum (Mo)	0.0020	± 0.0002
Sodium (Na)	(<0.0001)	
Phosphorus (P)	0.0020	± 0.0002
Lead (Pb)	0.0015	± 0.0002
Antimony (Sb)	0.0032	± 0.0003
Selenium (Se)	0.00024	± 0.00006
Tin (Sn)	0.0022	± 0.0003
Strontium (Sr)	(<0.0001)	
Tantalum (Ta)	0.0002	± 0.0001
Thallium (Tl)	0.0030	± 0.0003
Vanadium (V)	0.0023	± 0.0002
Tungsten (W)	0.0020	± 0.0002
Zirconium (Zr)	0.0015	± 0.0001

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 standard is produced using six strand hot top vertical continuous casting out of single melt.

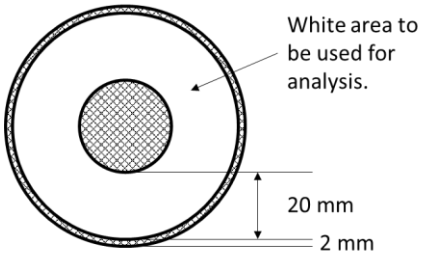
Homogeneity
Homogeneity testing is performed by means of spark emission spectroscopy. Tests involve making multiple measurements on individual samples taken at regular intervals along the entire length of each cast rod. Depending on the mass content of the element, the relative standard deviation of 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
The values listed in this analysis certificate are the results of multiple analyses performed in our chemical analysis laboratory which is an accredited test facility for aluminium alloys according to the international standard ISO 17025. The analyses are based on established wet chemical procedures.

Description of Sample
This reference material is available in the form of discs (approx. Ø 60 x 26 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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Certificate version 004: 12-Jan-2022
This certificate is valid until: Mar-2075