Reference Material Certificate

121/03

Aluminium Base (Type of Standard)
Al pure (99.95-99.8% Al), Set 120

Certified Values

Element	Mass content [%]	Uncertainty [%]
Silicon (Si)	0.022	
Iron (Fe)	0.035	
Copper (Cu)	0.012	
Manganese (Mn)	0.011	
Magnesium (Mg)	0.011	
Chromium (Cr)	0.010	
Nickel (Ni)	0.012	
Zinc (Zn)	0.014	
Titanium (Ti)	0.010	
Silver (Ag)	0.010	
Beryllium (Be)	0.0008-0.0010	
Bismuth (Bi)	0.0045	
Calcium (Ca)	0.003-0.004	
Cadmium (Cd)	0.0021	
Cobalt (Co)	0.010	
Gallium (Ga)	0.010	
Lanthanum (La)	0.0063	
Lithium (Li)	0.0004-0.0006	
Sodium (Na)	0.0026-0.0032	
Phosphorus (P)	0.002	
Lead (Pb)	0.0036	
Antimony (Sb)	0.0043	
Tin (Sn)	0.0053	
Vanadium (V)	0.011	
Zirconium (Zr)	0.0094	

This certified reference material has elements with a range. Individually certified values for those elements are available on S-certificates only.

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

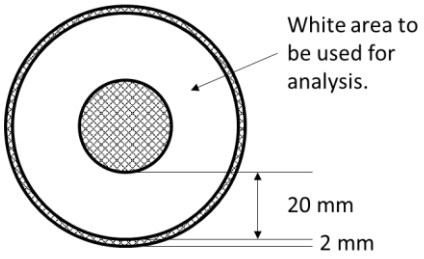
Homogeneity
Homogeneity testing is performed by means of spark emission spectroscopy. Tests involve making multiple measurements on individual samples taken at regular intervals along the entire length of each cast rod. Depending on the mass content of the element, the relative standard deviation of 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. 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 25 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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