

## Reference Material Certificate

# 116/01

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

### Certified Values

Element	Mass content [%]	Uncertainty [%]
Silicon (Si)	0.0095	
Iron (Fe)	0.0080	
Copper (Cu)	0.0054	
Manganese (Mn)	0.0050	
Magnesium (Mg)	0.0080	
Chromium (Cr)	0.0045	
Nickel (Ni)	0.0050	
Zinc (Zn)	0.0055	
Titanium (Ti)	0.0037	
Barium (Ba)	0.0009	
Beryllium (Be)	<0.0001	
Calcium (Ca)	0.0003-0.0004	
Cadmium (Cd)	<0.0002	
Gallium (Ga)	0.0001	
Sodium (Na)	0.0011-0.0015	
Lead (Pb)	0.0012	
Antimony (Sb)	0.00005	
Tin (Sn)	0.0020	
Vanadium (V)	0.0041	
Zirconium (Zr)	<0.0002	

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

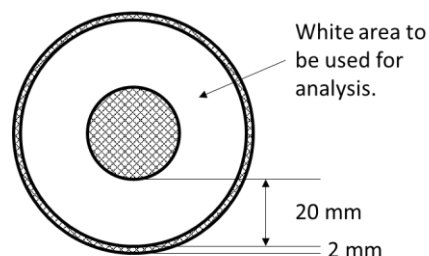
This reference material is available in the form of discs (approx. Ø 60 x 26 mm).

## 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.

Dr. Benedikt Moser  
CTO

Patrik Bachmann  
Head of Inorganic Analytics

Suisse Technology Partners Ltd.  
Querstrasse 5  
8212 Neuhausen am Rheinfall  
Switzerland

Phone: +41 52 551 11 00  
Fax : +41 52 551 11 99  
Email: [refmat@suisse-tp.ch](mailto:refmat@suisse-tp.ch)  
Internet: <https://reference-materials.ch>

Date of certification: 1987  
Certificate version 002: 31-Mar-2020  
This certificate is valid until: Dec-2062