

**Reference Material Certificate**

**121/02**

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

**Certified Values**

<b>Element</b>	<b>Mass content [%]</b>	<b>Uncertainty [%]</b>
Silicon (Si)	0.020	
Iron (Fe)	0.030	
Copper (Cu)	0.010	
Manganese (Mn)	0.010	
Magnesium (Mg)	0.0075	
Chromium (Cr)	0.010	
Nickel (Ni)	0.010	
Zinc (Zn)	0.010	
Titanium (Ti)	0.010	
Silver (Ag)	0.005	
Boron (B)	0.0002	
Beryllium (Be)	0.0006-0.0007	
Bismuth (Bi)	0.009	
Calcium (Ca)	0.0015-0.0023	
Cadmium (Cd)	0.002	
Cobalt (Co)	0.010	
Gallium (Ga)	0.010	
Lithium (Li)	0.0008-0.0012	
Sodium (Na)	0.0018-0.0032	
Lead (Pb)	0.0033	
Antimony (Sb)	0.01	
Tin (Sn)	0.005	
Vanadium (V)	0.011	
Zirconium (Zr)	0.011	

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

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

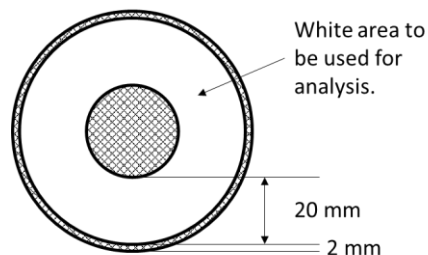
This reference material is available in the form of discs.

## 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: 1981  
Certificate version 002: 31-Mar-2020  
This certificate is valid until: Dec-2056