Certificate of Analysis

SUISSE TECHNOLOGY PARTNERS
Materials | Engineering | Innovation

Suisse Technology Partners Ltd.
Badische Bahnhofstrasse 16
CH-8212 Neuhausen Switzerland

Certified Reference Material

Aluminium Base

613/05 (Type of Standard)

Date of certification: 1997

Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ag	As	B	Ba
Weight %	0.427	0.239	0.0104	0.0164	0.459	0.0052	0.0050	0.0108	0.0166		0.0016	<0.0001	
Tolerance ±	0.012	0.011	0.0005	0.0008	0.014	0.0004	0.0004	0.0006	0.0007		0.0002		

Element	Be	Bi	Ca	Cd	Ce	Co	Ga	Hg	In	La	Li	Mo	Na
Weight %	0.0011	0.0047	0.0002				0.0122				0.0005		0.0005
Tolerance ±	0.0001	0.0003	0.0001				0.0011				0.0001		0.0001

Element	P	Pb	Sb	Sc	Se	Sn	Sr	Ta	Tl	V	W	Zr
Weight %	0.0008	0.0105	0.0093			0.0094				0.0108		0.0071
Tolerance ±	0.0002	0.0005	0.0004			0.0006				0.0005		0.0005

We hereby certify the above analysis

Patrik Bachmann

Manufacturing

This reference material for the analysis of aluminium and its alloys has been thoroughly tested for homogeneity and analysed at our central analytical laboratory in the Suisse Technology Partners Ltd, Neuhausen, Switzerland. The standards are produced using single or multiple strand continuous casting techniques out of single melts. This permits production of large casts with narrow tolerances in composition and excellent homogeneity.

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. The standard deviation resulting from all measurements, expressed as % of the element concentration, is used as the measure of homogeneity for each certified element. Outlying data is eliminated, together with the respective samples, before the calculation. Depending on the concentration of the element, the relative standard deviations are typically found to be between 0.3-1% for alloying and other elements and 0.5-5% for trace elements.

Analysis Procedures

The analyses are based on the latest or internationally accepted analytical procedures. Some of them were developed by the Aluminium section of GDMB (Gesellschaft für Bergbau Metallurgie, Rohstoff- und Umwelttechnik e.V.). These procedures are traceable to pure substances. Suisse Technology Partners Ltd is a participating member in such bodies as GDMB and on the European level, the CEN, and significantly contributes to the development of standardised analytical procedures. Our certified values are evaluated against the certified values of commercially available certified reference material (CRM) in the course of their production, if a comparable sample is available, thereby complying with the international standard ISO 17025. To comply to ISO 17025 where no comparable CRM is available, the analyses are evaluated against single element standards, which are available for all elements and traceable to pure substances. Additional confidence in the certified values is achieved by organising and taking part in international comparison analysis programs which evaluates our central laboratories ability to perform the analysis of aluminium and its alloys to the high standard required.

Certification

The values listed in the analysis certificate, which accompanies each delivery, are the result of multiple analyses performed in our Central Analytical Laboratory which, as in accordance with the international standard ISO 17025, has been approved by the Swiss Authorities as an accredited test facility for aluminium and its alloys. This requires our laboratory to comply with the above standard, which defines in detail the requirements for testing laboratories. The accreditation guarantees the laboratories status as an independent testing facility.

Values listed in brackets in either the catalogue or certificates are not certified and are to be used for orientation purposes only.

Tolerances

The tolerance values reported are the result of a detailed evaluation of all analytical data available at a probability level (P) of 95%. Known inadequacies and influencing factors of the individually applied analysis methods are also taken into account on evaluation of the data.

Intended use

Suisse Technology Partners Ltd CRM's are primarily intended for use in optical emission spectroscopy. Other applications are X-ray fluorescence spectrometry (XRF) and classical wet chemical procedures. Calibration measurements should be made within a ring between 2mm and 22mm from the edge of the CRM face.