

## Introduction

As Europe's longest established and one of the world's first producers of Aluminium reference material, Suisse Technology Partners Ltd (**former Alusuisse**) can look back on a long tradition of spectrometric analysis of Aluminium and its alloys. Very early, STP has started the production of Reference Materials for analysis and has been known for years as one of the world's leading and world-wide accepted suppliers for these products. By continually adjusting the composition and improving the quality of its products, STP responds to the changing requirements of the customers.

## Manufacturing

The Reference Materials in this catalogue for analysis of Aluminium and its alloys are manufactured in Europe, and thoroughly tested for homogeneity and analysed from the Suisse Technology Partners at Neuhausen (Switzerland). In production, single or multiple strand continuous casting techniques out of one single melt are applied. This allows production of large casts with narrow tolerances in composition and excellent homogeneity. For highly alloyed AlSi and AlFe Reference Materials, special techniques are applied.

## Homogeneity

Homogeneity testing is performed by means of spark emission spectrometry. Tests include multiple measurements on individual samples on various levels of all rods of the whole cast. The standard deviation resulting from all measurements reduced by those eliminated together with their respective material as outlayers expressed as % of the element concentration is used as the measure for the homogeneity of these elements. Depending on the concentration of the element, these relative standard deviations are typically found to be between 0.3 - 1 % for alloying and other elements and around 0.5 - 5 % for trace elements.

## Analysis procedures

The analyses are based on 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 trace-able to pure substances. Suisse Technology Partners AG 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. STP certified values are evaluated against the certified values of commercially available CRM in the course of their production, if a comparable sample is available, thereby complying with the International Standard ISO 17025. If no comparable CRM is available, the analyses are based on single element standards - available for all elements - which are

traceable to pure substances, thereby again complying with the above mentioned Standard. Additional certainty concerning the certified values is achieved by organising and taking part in international comparison analysis programs to ascertain and document our Central Laboratory's ability to perform analysis of Aluminium and its alloys to the high standard required.

## Certification

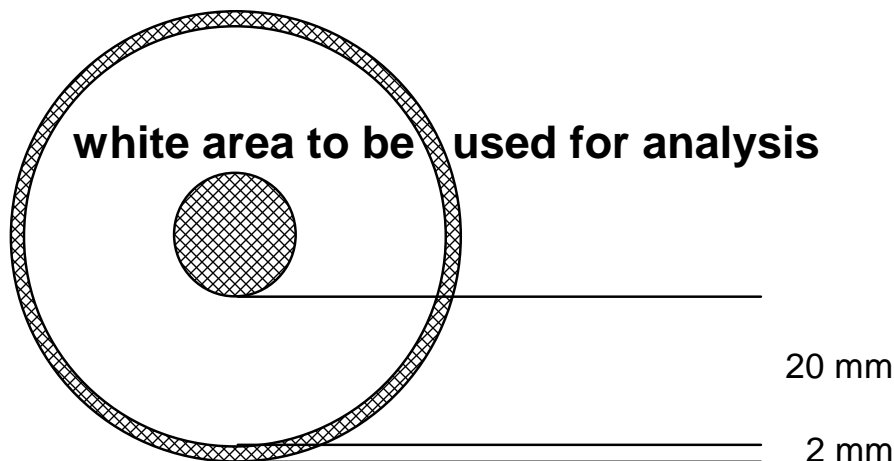
The values listed in the analysis certificate - accompanied with each delivery, are the results of multiple analyses performed in our Central Analytical Laboratory which, in accordance with the International Standard ISO 17025, has been approved by the Swiss Authorities as an accredited test facility 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 laboratory's status as an independent testing facility.

**Values listed in brackets in either catalogue or certificate, are not certified and to be used for orientation purpose 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



Primary intended use for STP Reference Materials is the optical emission spectrometry. Other applications are X-ray fluorescence spectrometry (XRF) and classical wet chemical procedures. Calibration measurements should be limited to the white area as defined on the above sketch.

## Sample range and -identification

All samples in the range of our Aluminium Reference Materials are available as discs only. The types available are divided into 3 groups depending on their application:

### **Calibration samples**

To establish and monitor line calibrations under consideration of the type of alloy to be analysed (certified analyses). The samples are grouped in Sets (calibration sets) of 4 - 8 types.

Sample size: approx. Ø 60 mm x 25 mm.

Identification :

**1 2 1 / 0 4** = Type 121, Cast 04

|| || ||    ℒ ℒ Cast number

|| ||    ℒ Sample number within the set

||    ℒ Set number (e.g. 120)

ℒ Alloy type(AA-Designation)

### **Type calibration samples**

For alloy-specific calibration / recalibration and monitoring of existing line calibrations (certified analyses). The samples usually cover high, medium and low concentration ranges of the specified alloy.

(Calibration samples are often also used for type re-calibration.)

Sample size: approx. Ø 60 mm x 25 mm

Identification :

**6 0 6 3 / M 1** = Type 6063 M, Cast 1

|| || || ||    ||    ℒ Cast number  
 || || || ||    ℒ High-(H),Medium-(M),Low-(L) sample  
 ℒ ℒ ℒ ℒ Alloy type (AA- Designation)

### **Re-calibration samples**

For global re-calibration or "setting up" of existing line calibrations (certificate contains approximate values only)

Sample size: approx. Ø 60 mm x 35 mm

Identification :

**R C 1 0 / 0 1** = Type 6063 M, Cast 01

|| || || ||    ℒ ℒ Cast number  
 || || ℒ ℒ Sample number within the set  
 ℒ ℒ Sample type re-calibration

### **S-Samples**

Some elements tend to evaporate during casting. This makes it impossible to achieve an exactly constant content of these elements over the whole length of some casts. The elements of the casts concerned are identified with an \* symbol and reported in the catalogue - and, unless specifically required otherwise in the certificates - in µg/g as the range of concentration observed over the whole cast. When requested and applicable to the type/cast concerned, the values of the individual sample(s) delivered are reported with an additional S-sample certificate. This requires the addition of an "S" following the type/cast designation (charged extra according to price list).

Example: **134/11** :

Sample 134/11 certified with **concentration range** of sample delivered for elements Ca, Li, Na

**134/11 S** :

Sample 134/11 certified with **individual concentrations** of sample delivered for elements Ca, Li, Na

## **QS-Status of our Reference Material**

For the production and sale of our Aluminium reference materials we apply the quality system ISO 9001.

In terms of the relevant national and international standard papers, in particular ISO-guideline 30 (2.4), spectrometric standard samples produced by Suisse Technology Partners Ltd are to be called Reference Material (RM). STP RM as well as RM issued by other manufacturers in the Aluminium industry are presently regarded as defacto industry standards as a complement to the Certified Reference Materials CRM issued in limited variety by official certifying bodies. STP RM are well accepted in the Aluminium industry world-wide and, based on all current experience, are also accepted by authorities certifying companies for compliance to the International Standard ISO 900x as well as to the International standard ISO 17025. Based on established practice for the manufacture of Reference Material and as a result of the acquired accreditation - i.e. equivalence to the national recognition, which was only previously available from state laboratories - STP Reference Material can, in terms of quality assurance, be applied as Certified Reference Material (CRM) available from a national institute