

# IDENTIFICATION SHEET

## Aqueous calibration solution ASTASOL®

### ASTASOL® TUNE12

This Identification sheet is designed in accordance with ISO Guide 31

**Category:** Traced reference materials  
**Analytes:** Al, Ba, Ca, Cu, K, Mg, Mn, Ni, P, Zn  
**Product code:** TUNE12

#### Starting primary compounds and theirs purities (%):

NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub> 99.999; KNO<sub>3</sub> 99.995; Ni 99.995; Al 99.999; Cu 99.999; Mn 99.98; BaCO<sub>3</sub> 99.999; CaCO<sub>3</sub> 99.999; Mg 99.98; Zn 99.998

#### Matrix:

0.2% HNO<sub>3</sub> (v/v), prepared from sub boil distilled HNO<sub>3</sub> (ANALPURE®) and ultrapure demineralized water (resistivity ≥ 18 MΩ.cm, 0.22μm filtered).

#### Assigned concentration value and expanded uncertainty (k = 2) at 20 °C

<b>P</b>	<b>10.0 ± 0.05 mg/l</b>
<b>K, Ni</b>	<b>5.00 ± 0.05 mg/l (each analyte)</b>
<b>Al, Cu, Mn</b>	<b>1.00 ± 0.01 mg/l (each analyte)</b>
<b>Ba, Ca, Mg, Zn</b>	<b>0.200 ± 0.002 mg/l (each analyte)</b>

#### Specification:

**Batch No.:** 1002

**The date of production:** 09.12.2020

**Expiry date:** 09.12.2021

#### Intended use:

As a calibrator of analytical methods analysing aqueous solutions such as atomic spectrometry (AAS, AES, ICP-OES, ICP-MS), molecular absorption spectrometry and selected electroanalytical methods.

**Characterization and traceability:**

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This RM has an assigned value of concentration and uncertainty on the basis of gravimetric preparation. Traceability is realized with CRM AN 9002(1N), AN 9006(1N), AN 9009(1N), AN 9015(1N), AN 9028(1N), AN 9032(1N), AN 9033(1N), AN 9038(1N), AN 9040(1S), and AN 9069(1N), through a short unbroken chain of calibrations (AAS, AES, ICP-OES) or comparisons (primary analytical methods). All mentioned CRM AN are traceable to the corresponding SRMs NIST.

**Trace impurities in bottled solution (in mg/l):**

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Max. 0.002 mg/l (total)

**Homogeneity and stability:**

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It has been demonstrated that this RM is homogeneous and its stability is guaranteed during the whole shelf life provided the solution is kept under conditions presented below.

**Storing and instruction for use:**

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This RM has to be stored in the original closed bottle between 5 – 30 °C. The producer guarantees a declared expiration time provided the RM is properly stored and professionally handled. The temperature of the solution must be  $20 \pm 0.5$  °C before every use. It is important to cover the screw cap and the neck of the bottle with a parafilm layer after each opening to prevent vapour phase losses. It is not recommended to use the standard solution when the bottle contains less than 10 % of the solution. Therefore, in case of nontransparent bottle, it is important to indicate the amount of the solution used, e.g. on the label. Do not pipette from the bottle. Do not return removed aliquots to bottle.

**Producer:**

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**Quality management systems:**

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The Producer has a certified quality management system ČSN EN ISO 9001: 2016.

The Producer meets the requirements of ČSN EN ISO 17034:2017: General requirements for the competence of reference material producers.

**Head of production department:**

Mgr. Mirka Petránková

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