

## **CERTIFICATE**

### **Aqueous calibration solution**

### **ASTASOL® ANS051**

This Certificate is designed in accordance with ISO Guide 31

**Category:** **Certified reference material**

**Analyte:** **Selenium (Se)**

**Product code:** **ANS051**

**Starting primary compound and its purity:** **Se, 99.995%**

**Matrix:**

2% HNO<sub>3</sub> (v/v), prepared from sub boil distilled HNO<sub>3</sub> (ANALPURE®) and ultrapure demineralized water (resistivity ≥ 18MΩ.cm, 0.22µm filtered).

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

**1 000 ± 5 mg/l**

**Specification:**

**Batch No.:** 1017

**The date of production:** 08.03.2021

**Shelf life:** 5 years from the date of production

**Expiration time:** 18 months from the first opening of the bottle (within shelf life period)

**Date of the first opening of the bottle:** ..... (also identify on the label of the bottle)

**Intended use:**

For calibration and validation of analytical methods analysing aqueous solutions such as atomic spectrometry (AAS, AES), molecular absorption spectrometry and selected electroanalytical methods

**Characterization and traceability:**

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This CRM is certified on the basis of gravimetric preparation. This procedure also ensures a direct traceability to SI unit – kg. Certified concentration, its uncertainty and traceability were verified by iodometric titration or by instrumental analytical methods (AAS, AES, ICP-OES) with CRM AN90511N through a short unbroken chain of calibrations.

**Trace impurities in bottled solution:**

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Max. 0.5 mg/l (total)

**Homogeneity and stability:**

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It has been demonstrated that this CRM 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 CRM must be stored in the original closed bottle between 5 – 30 °C. The producer guarantees a declared shelf life and expiration time provided the CRM is properly stored and professionally handled. The temperature of the solution must be  $20 \pm 0.5$  °C before every use. It is necessary to indicate the expiration time on this certificate and on the label, which depends on the date of the first time the bottle was opened. After use, the bottle must be immediately tightly capped and sealing the screw cap with parafilm is recommended. It is not recommended to use the standard solution when the bottle contains less than 10 % of the solution. Therefore, in case of non-transparent 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.

**Note:**

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Detailed information about the production, homogeneity, stability, coding, characterization and storing of this CRM are described in the document “Detailed information about the production of aqueous calibration solutions ASTASOL®” which is available for download on the website [www.analytika.net](http://www.analytika.net).

**Producer:**

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ANALYTIKA®, spol. s r.o.  
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**Quality management systems of company ANALYTIKA®, spol. s r.o.:**

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ČSN EN ISO 9001:2016  
 ČSN EN ISO/IEC 17025:2018  
 ČSN EN ISO 17034:2017

**Manager of Department of RM:**



Ing. Daniela Weissnerová

**Head of production department:**



Mgr. Mirka Petránková

Date of the first issue of certificate: 15.01.2022

Revision of certificate:

Certificate revision date:

Version of certificate: 01