

Bundesanstalt für Materialforschung und -prüfung  
(BAM)

## Certified Reference Material

### BAM-U024

Adsorbed organically bound halogens (AOX) in soil

#### Certified Value

Measurand	Mass fraction <sup>1)</sup> in mg/kg	Uncertainty <sup>2)</sup> in mg/kg
AOX	42	2

<sup>1)</sup> Unweighted mean value of 8 laboratory means.  
<sup>2)</sup> Estimated expanded uncertainty  $U$  with a coverage factor of  $k = 2$ , corresponding to a level of confidence of approx. 95 %, as defined in the Guide to the expression of uncertainty in measurement, (GUM, ISO/IEC Guide 98-3:2008) [1].

This certificate is valid for a period of 24 months starting with the dispatch of the reference material from BAM.

Date of dispatch:

Sample No.:

The minimum sample size for one determination is 50 mg. The AOX mass fraction is related to sample intake (not to dry mass). The water content is  $(4.3 \pm 0.2)$  % and remains stable if the material is handled as indicated below.

#### Instructions for use

BAM-U024 is explicitly meant only to be used in analytical laboratories. The intended purpose of the reference material is the verification of the analytical procedure laid down in [2] for the determination of the AOX content in solid environmental samples.

It is strongly recommended to handle and dispose of the reference material in accordance with the guidelines for environmental samples legally in force at the site of end use and disposal.

#### Material description

Reference material BAM-U024 was obtained from a contaminated site with industrial history. The collected soil was air dried and classified by sieving. The fraction  $< 63 \mu\text{m}$  was homogenised and units of  $(5.7 \pm 0.1)$  g were filled in amber glass bottles with screw caps equipped with PTFE-inserts and sealed with shrinking foil. The material is stored at BAM at  $-20 \text{ }^\circ\text{C}$  until dispatch. Details on the preparation and characterisation procedures are specified in the certification report.

## Transport and Storage

BAM-U024 can be shipped at ambient temperature. Upon receipt the material must be stored at -20 °C in its original bottle. Before taking a subsample, the bottle must have reached ambient temperature. Thereafter, the bottle must be closed tightly and stored at -20°C. The stability of the reference material is not affected by short periods of handling at ambient temperature during transport and use.

## Metrological Traceability

The AOX content is defined by the method employed for its determination as laid down in DIN 38414-18:2019 [2]. The certified value of BAM-U024 constitutes the summary mass fraction of halogenides as determined according to DIN 38414-18:2019.

## Participating Laboratories (homogeneity and certification study)

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M & S Umweltprojekt GmbH	Bad Muskau, Germany
Bundesanstalt für Materialforschung und -prüfung (BAM)	Berlin, Germany
BIOLAB Umweltanalysen GmbH	Braunschweig, Germany
Berghof Analytik + Umweltengineering GmbH	Chemnitz, Germany
GEO-data GmbH	Garbsen, Germany
PETROLAB GmbH	Glaubitz, Germany
ICA - Institut für Chemische Analytik GmbH	Leipzig, Germany
CLG Chemisches Labor Dr. Graser KG	Schonungen, Germany
GBA Analytical Services GmbH	Vaterstetten, Germany

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## Certification Report

A detailed technical report describing the analytical procedures and the treatment of the analytical data used to certify BAM-U024 is available on request or can be downloaded from the BAM website ([www.bam.de](http://www.bam.de)).

## Literature

- [1] ISO/IEC Guide 98-3:2008. Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM:1995) ISO, Geneva, Switzerland.
- [2] DIN 38414-18:2019, German standard methods for the examination of water, wastewater and sludge – Sludge and sediments (group S) - Part 18: Determination of adsorbed organically bound halogens in sludge and sediments (AOX) (S18).

**Accepted as BAM-CRM on 24.08.2022**

**Bundesanstalt für Materialforschung und -prüfung (BAM)**

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BAM holds an accreditation as a reference material producer according to ISO 17034. This accreditation is valid only for the scope as specified in the certificate D-RM-11075-01-00.

DAkKS is a signatory of the multilateral agreement (MLA) between EA, ILAC and IAF for mutual acceptance.

