



**Innovative Solutions in Chemistry, S.L. (ISC Science)**

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# REFERENCE MATERIAL

## Preliminary report

The information provided pertains only to the material  
reference and the batch number specified

This information is only valid for the issue date: 16/02/2024. It may change due to manufacturer reasons.

### Material name:

**119Sn-enriched Butyltin Mix (1.7 ug/g  
TBT, 1.0 ug/g DBT, 0.1 ug/g MBT)**

**Reference Material code:** 119MDT001001

**Enriched isotope:** 119MDT

**Matrix:** Acetic Acid/Methanol

**Batch number:** 20220615

### Value calculation:

Isotopic abundance values are reported as percentage [amount fraction (\*100), %] and concentration values as micrograms of cation per gram of solution ( $\mu\text{g/g}$ ). According to ISO 17034 and ISO/IEC 17025, the concentration value was determined by Gas Chromatography with Mass Spectrometry (GC-MS) using a reference method in a single laboratory [Isotope Dilution Mass Spectrometry (IDMS)] and isotopic abundances were determined by measuring the isotope-amount ratios for all isotopes of the element by GC-MS using the enriched isotope as reference. The expanded uncertainty for each value was calculated as  $U = 2 \cdot u$ , where  $k = 2$  is the coverage factor for a 95% confidence interval and  $u$  is the combined standard uncertainty calculated according to ISO Guide 35. The value of  $u$  is intended to represent the combined effect of uncertainty components associated with the IDMS determination, homogeneity and stability for concentration values and the GC-MS determination for abundance values.

Stability of this material is based upon rigorous long-term (storage conditions) and short-term (transport conditions) testing of the solution for the values according to ISO 17034 and ISO Guide 35. This testing includes, but is not limited to, the effect of temperature.

### Abundance values:

NOTICE: Abundances below 0.1% are reported as <0.1% and have not uncertainty stated.

Isotope	Abundance (%)	Uncertainty (%)
112Sn	< 0.1	
114Sn	< 0.1	
115Sn	< 0.1	
116Sn	< 0.1	
117Sn	0.37	0.12
118Sn	14.03	0.27
119Sn	82.67	0.39
120Sn	2.81	0.33
122Sn	< 0.1	
124Sn	< 0.1	



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### Concentration values:

Compound	Concentration (ug/g)	Uncertainty (ug/g)
Monobutyltin	0.10	0.01
Dibutyltin	1.00	0.04
Tributyltin	1.77	0.11

### Intended use:

This material is designed for quantitative analysis by Isotope Dilution Mass Spectrometry (ID-MS). According to ISO Guide 33, it can be used for assessment of a measurement procedure and/or quality control, except bias control. Check ISO Guide 33 as a guidance for the good practice in using reference materials.

### Expiration:

The expiration date is guaranteed to be valid for 12 months from the document issue date provided. For this reason, standards from the same batch may have different expiration dates.

Document issue date (dd/mm/yyyy): (xx/xx/xxxx)

Expiration date: (xx/xx/xxxx)

### Preparation information:

The standard solution was prepared gravimetrically using balances calibrated with SI-traceable weights. All balances are yearly calibrated by ISO/IEC 17025 accredited entities and are verified prior to each use using an internal-calibrated weight. High-purity solvents have been used to place the material in solution and to stabilize the standard.

### Packing and storage conditions:

To maintain the integrity of this material, the solution should be kept tightly closed and stored under refrigeration at -18°C in its original packaging.

### Instructions for use and safety conditions

Refer to Safety Data Sheet.



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