

# Certificate of Analysis

**EHRENSTORFER™**

## ISO Guide 34 Reference Material

### Product Identification

**Article Code:** DRE-C10861600**Article Name:** 2-Butanol**Formula:** C<sub>4</sub>H<sub>10</sub>O**Mol. Weight:** 74.12**CAS No.:** 78-92-2**Lot Number:** G174479**Expiry Date:** 22.05.2024**Storage Temperature:** 20°C ± 4°C

Storage and handling: The RM should be stored in the original sealed bottle at the temperature given above. After use the bottle should be tightly closed and protected from moisture

**Purity:** 99.87% (g/g)**Expanded Uncertainty U=** 0.30% (g/g)

The uncertainty of this standard is calculated in accordance with the ISO Guide 34 and EURACHEM/CITAC Guide - Quantifying Uncertainty in Analytical Measurement, Second Edition. The expanded uncertainty is  $U(\text{exp}) = u(\text{RM}) \times k$ , where  $k$  is the coverage factor at the 95% confidence level ( $k=2$ ). Uncertainty  $u(\text{RM})$  is based on the combination of the uncertainties associated with each individual operation involved in the analysis of the product:  $u(\text{RM}) = \sqrt{u(\text{char})^2 + u(\text{bb})^2 + u(\text{Its})^2 + u(\text{sts})^2}$ ;  $u(\text{char})$  is the uncertainty of characterisation;  $u(\text{bb})$  uncertainty of homogeneity test;  $u(\text{Its})$  uncertainty of stability test long-term;  $u(\text{sts})$  uncertainty of stability test short-term.  $u(\text{Its})$  and  $u(\text{sts})$  are not included in the calculation as the stability statement is based on real evidence opposed to simulation.

Minimum sample: 1 mg is recommended as the minimal sample amount. If less material is used, it is recommended to increase the certified uncertainty by a factor of two for half sample and a factor of four for a quarter of sample.

Intended use: Use this RM as calibrant for chromatography or any other analytical technique.

### Analytical Data

Traceability of chromatography: To the International System of Units (SI).

<b>Instrument:</b>	GC/FID	<b>Injector:</b>	100°C
<b>Detection:</b>	FID	<b>Initial Temp:</b>	40°C for 5 min
<b>Column:</b>	Optima-5MS, 0.25 µm, 0.25 mm	<b>End Temp:</b>	100°C for 2 min
<b>Inj.-Vol.:</b>	1 µl	<b>Gradient:</b>	15°C/min
<b>Flow:</b>	1.0 ml/min		
<b>Ret. Time:</b>	3.81 min		

### Comment

Traceability: The balances used are calibrated with weights traceable to the national standards (DKD).

Calibrated class A glassware is used for volumetric measurements.

Water Content: 0.13% (g/g) by Karl-Fischer-Titration ( $U(\text{exp}) = 0.07\%$  (g/g)).

Identity: EA, NMR, RT, IR, MS

No chromatogram available.

Certificate Revision 1 - 22.05.2018 - M. Beck

Certified on: 22.05.2018

Certified by: M. Beck  
RM Release

The LGC Labor GmbH, accredited by DAkkS as indicated by the accreditation number D-RM-19883-01 & D-PL-19883-01, has shown competence based on ISO Guide 34:2009 with relevant parts of DIN EN ISO/IEC 17025:2005 for production of certified reference materials in form of organic pure substances and in form of single and multi-component solutions of organic pure substances.

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The warranty for this product is limited to the purchasing price of this product.