

Certificate of Analysis

ISO 17034 Reference Material

**EHRENSTORFER™**

Product Identification

Article Code: DRE-C14995000**Article Name:** Methanol**Formula:** CH₄O**Mol. Weight:** 32.04**CAS No.:** 67-56-1**Lot Number:** G991544**Expiry Date:** 19.11.2024**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: 99.77% (g/g)**Expanded Uncertainty U=** 0.30% (g/g)

The uncertainty of this standard is calculated in accordance with the ISO 17034 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).

Instrument: GC/FID**Detection:** FID**Column:** Optima-5MS, 0.25 µm, 0.25 mm**Inj.-Vol.:** 1 µl**Flow:** 1.0 ml/min**Ret.Time:** 2.38 min**Injector:** 100°C**Initial Temp:** 40°C for 5 min**End Temp:** 100°C for 2 min**Gradient:** 15°C/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: 0.19% (g/g) by Karl-Fischer-Titration ($U(\text{exp}) = 0.08\%$ (g/g)).

Purity was determined by chromatographic assay, corrected by water content and/or residue solvents.

Identity: NMR, RT, IR, MS

Attachment: Exemplary chromatogram of given method

Certificate Revision 1 - 19.11.2018 - M. Beck

Certified on: 19.11.2018

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 17034:2017 with relevant parts of DIN EN ISO/IEC 17025:2018 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.

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Data file: 14995000-07-r001.dx

Instrument: FID 3

Inj. volume [μ l]: 1.0

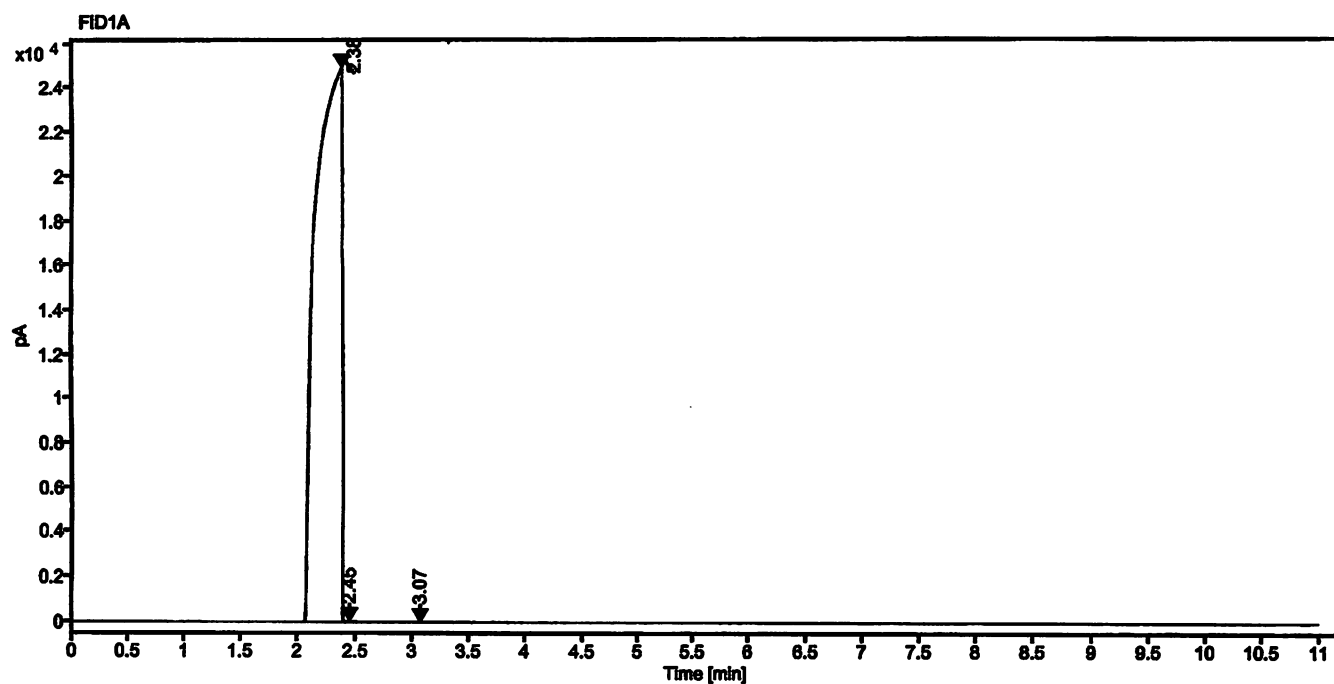
Sequence Name: 2018KW41-1008b

Acq. method: 100.amx

Injection date: 10/8/2018 6:14:50 PM

Location: 105

Sample Description Methanol



Signal: FID1A

| Nr. | RT [min] | Area [pA*s] | Height [pA] | Area% | Width [min] |
|-----|-------------|--------------|-------------|-------|----------------|
| 1 | 2.38 | 389610.08315 | 24929.42 | 99.96 | 0.398 |
| 2 | 2.45 | 154.85616 | 40.09 | 0.04 | 0.372 |
| 3 | 3.07 | 3.69676 | 0.47 | 0.00 | 0.267 |
| Sum | | 389768.64 | | | |

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