



## REFERENCE MATERIAL CERTIFICATE

## Reference Material

This certificate is designed in accordance with ISO Guide 31. This reference material (RM) was designed, produced and verified in accordance with a registered quality management system ISO 9001. All measurements were performed according to ISO/IEC 17025 by a DAkkS accredited laboratory (D-PL-19883-01-00).

## Product Name

Betaine hydrochloride

Product Code  
DRE-C10574920

Lot Number  
1039992

CAS No.  
590-46-5

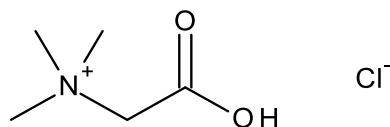
Format  
Neat

Mol. Weight  
153.61

Expiry Date  
18 Nov 2023

Mol. Formula  
 $C_5H_{12}NO_2 \cdot Cl$

Storage Temp  
 $20^{\circ}C \pm 4^{\circ}C$



CERTIFIED

Purity  
99.9% (g/g)

CERTIFIED

Expanded Uncertainty (U)  
1.0% (g/g)

## Uncertainty

The certified value(s) and uncertainty(ies) are determined in accordance with EURACHEM/CITAC Guide for "Quantifying Uncertainty in Analytical Measurement, 3rd edition", with an 95% confidence level ( $k=2$ ). Uncertainty is based on the Total Combined Uncertainty, including uncertainties of characterisation and stability testing. Stability values are based on real evidence opposed to simulation.

The producer certifies that this reference material meets the specification stated in this certificate until the expiry date, provided it is stored unopened at the recommended temperature herein. Product warranties for this reference material are set out in the terms and conditions of purchase.

CERTIFIED BY		CERTIFIED ON	
N. Müller		18 Nov 2019	
		RM Release	



## REFERENCE MATERIAL CERTIFICATE

CHROMATOGRAM

No chromatogram available.

### Instrument

HPLC/DAD

### Detection

DAD

### Column

Nucleodur 100 HILIC, 5 µm, 250 x 3 mm

### Method Details

see Batch Information

### Inj.-Vol.

10 µL

### Flow

1 mL/min

### Method of Characterisation

Purity was determined by quantitative <sup>1</sup>H-NMR

### Method of Identification

EA, NMR, RT, UV, IR, MS

### Batch Information

Water Content: <0.1% (g/g) by Karl-Fischer-Titration (U(exp) = 0.1% (g/g)).

### Method Details

Eluent A: Acetonitrile

Eluent B: Water + H<sub>3</sub>PO<sub>4</sub>

Time [min]	Eluent A [%]	Eluent B [%]
0	90	10
1	90	10
23.5	60	40
25	60	40

### Intended Use

This RM is intended for use in a laboratory as a calibration and quality control standard or in method development for analytical techniques.

### Safety

Proper precautions should be observed while handling. See Safety Data Sheet.

### Traceability

The balances used for gravimetric measurements are calibrated with weights traceable to the national

standards (DKD). The calibration of the balances is verified daily internally and annually by an external accredited calibration service. Chromatographic methods are traceable to the International System of Units (SI).

### Storage

The RM should be stored in the original sealed container at the indicated temperature.

### Instructions for use

It is recommended to use 1 mg as the minimum sample size and if less material is used, to increase the certified uncertainty by a factor of two for half sample and four for a quarter of sample. If storage after opening is necessary, the RM should be tightly closed and kept from light and moisture. If the RM was in a sealed ampoule, it should be transferred to a vial with minimum head space. Visit the support section of our website [lgcstandards.com](http://lgcstandards.com) for a series of Dr. Ehrenstorfer Tech Tip videos and frequently asked questions.

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