

Certified Reference Material

Certificate of Analysis

Accreditation: Hach Lange GmbH is accredited by the German accreditation authority DAkkS as registered reference material producer D-RM-15184-01-00 according to **DIN EN ISO 17034:2017** and registered calibration laboratory D-K-15184-01-00 according to **DIN EN ISO/IEC 17025:2018**

Manufacturer: **HACH LANGE GmbH**

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Object: Certified secondary pH standard reference buffer solution

Type: pH = 10.012 ± 0.010 (25°C)

Intended use: Standard pH solution for calibration of pH measurement chains

Order number: S11M007

Serial number: C03019

Certified value: pH = 10.013 ± 0.006 (25°C)

Number of pages: 2

Date of release: November 29, 2022

Shelf life unopened bag: November 29, 2024

Shelf life open bag: 2 month

Recommended use: First use: write the opening date on the bottle using an indelible pen. Cap bottle as soon as aliquot is taken for calibration. Tick a box on the bottle after each opening. Never pour the used aliquot back into the bottle. Always follow Good Laboratory Practice and the recommendations regarding shelf life printed on the bottle.

Method of Analysis: The calibration of the standard buffer solution is performed by two - point calibration using glass electrode.

Document version: 1 issued on **November 29, 2022**

Date Deputy head of the calibration laboratory

November 29, 2022 Bernd Seidl

Traceability:	Calibration at 25°C with Certified Reference Material from DFM ¹ Certificate Nr. CRM-P1111 and Certificate Nr. CRM-P1107
Storage:	Before use: store in unopened aluminum bag. After opening: store in capped bottle in normal atmospheric conditions at a temperature between 5 and 30°C. Do not expose to light.
Preparation of standard:	NaHCO ₃ and Na ₂ CO ₃ , pro analysis quality, were dissolved and mixed without loss in pure water. Germicide was added. The solution was protected from evaporation and contamination until bottling. For protection against light, microbiological growth and carbon dioxide, the bottles are placed in airtight aluminum bags.
Uncertainty:	The expanded uncertainty assigned to the measurement results is obtained by multiplying the standard uncertainty by the coverage factor $k = 2$. It has been determined in accordance with EA-4/02M:2013. The value of the measurand lies within the assigned range of values with a probability of 95%.
Homogeneity:	15 bottles were selected for analytical control. Results from different bottles showed no statistically significant differences, nor was there any correlation between values obtained and the bottling sequence.
Stability:	When stored in an unopened aluminum bag, the certified value is guaranteed for 2 years from the date of issue of the certificate.

1) Danish Fundamental Metrology, Hørsholm, Denmark



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