Certificate of Analysis – Certified Reference Material

Certipur® Certified secondary standard reference buffer solution pH(S) 6.86_5 (25°C)

Producer: Merck KGaA, Frankfurter Str. 250, 64293 Darmstadt, Germany
Product no.: 1.07202.0105
Lot no.: HC57734302
Description of CRM: Certified secondary standard reference buffer solution pH(S) 6.86_5 (25°C)
Certified Reference Material for pH measurement
Expiry date: 2028/09/30
Storage: +15°C to +25°C tightly closed in the original container
Composition: Potassium dihydrogen phosphate / di-sodium hydrogen phosphate in water
Formulation in compliance with DIN 19266, IUPAC, NIST, Ph. Eur; USP
Molality: 0.025 mol/kg / 0.025 mol/kg

T [°C]	Certified value as pH	Associated uncertainty $U_{CRM}=k \cdot u_{CRM}$ (k=2) as pH
5.0	6.949	± 0.008
10.0	6.921	± 0.008
15.0	6.898	± 0.008
20.0	6.877	± 0.008
25.0	6.863	± 0.008
30.0	6.850	± 0.008
37.0	6.839	± 0.008
40.0	6.836	± 0.009
45.0	6.833	± 0.009
50.0	6.832	± 0.009

Accreditation: Merck KGaA, Darmstadt, Germany is accredited by the German accreditation authority DAkkS as registered reference material producer D-RM-15185-01-00 in accordance with ISO 17034.

Certificate issue date: 2025/10/10

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-RM-15185-01-00

ISO 17034

CRM released by Approving Officer
or delegate of Quality Control

A. Yildirim

Dipl.-Ing. Ayfer Yildirim
Responsible Laboratory Manager

Metrological traceability:	This certified secondary standard reference buffer solution is directly traceable to the primary certified reference material potassium dihydrogen phosphate / di-sodium hydrogen phosphate characterised by PTB and NIST. NIST 186 I +II g PTB-PHOA-623/30401/25 *PTB: Physikalisch Technische Bundesanstalt, Braunschweig, Germany* *NIST: National Institute of Standards and Technology, Gaithersburg, USA.*
Measurement method:	The pH value is directly measured by differential potentiometry with the aid of two platinum hydrogen electrodes "quasi without transference" according to IUPAC[1] recommendations against solutions prepared from primary reference materials characterised by PTB and NIST.
Intended use:	This reference material is intended for use as a calibration standard for pH instruments or pH electrodes.
Instructions for handling and correct use:	The pH value strongly depends on the temperature. Therefore it is necessary to keep the temperature constant during the measurement. Details concerning the nature of any hazard and appropriate precautions are provided in the material safety data sheet.
Health and safety information:	Please refer to the Safety Data Sheet for detailed information about the nature of any hazard and appropriate precautions to be taken.
Preparation:	This reference material is prepared gravimetrically from potassium dihydrogen phosphate, di-sodium hydrogen phosphate and high purity water. The formulation is compliant to DIN 19266, IUPAC[1], NIST[2], Ph. Eur. chapter 2.2.3 and USP chapter <791>.

Associated uncertainty:

The expanded uncertainty U_{CRM} is calculated as $U_{CRM}=k \cdot u_{CRM}$, where $k=2$ is the coverage factor for a 95% coverage probability and u_{CRM} is the combined standard uncertainty in accordance to ISO 17034.

The combined uncertainty u_{CRM} is derived from combination of the squared uncertainty contributions:

$$u_{CRM} = \sqrt{u^2_{Characterisation} + u^2_{Homogeneity} + u^2_{Stability}}$$

$u_{characterisation}$:	is the uncertainty in accordance with DIN EN ISO/IEC 17025 which includes the contributions of the primary reference material and the measuring system. The characterisation measurements have been conducted by our DAkkS accredited calibration laboratory.
$u_{homogeneity}$:	is the between-bottle variation in accordance with ISO 17034. The assessment of homogeneity is performed by analysis of a representative number of systematically chosen sample units.
$u_{stability}$:	is the uncertainty obtained from short-term and long-term stability in accordance with ISO 17034. The stability studies are the basis for the quantification of the expiry date of this reference material for the unopened bottle.

Informative values:

[1] R.P. Buck, S. Rondinini, A. K. Covington, F.G.K. Baucke, C. M. A. Brett, M. F. Camoes, M. J. T. Milton, T. Mussini, R. Naumann, K. W. Pratt, P. Spitzer, G. S. Wilson: **The Measurement of pH – Definition, Standards and Procedures (IUPAC Recommendations 2002)**, Pure Appl. Chem, Vol 74, No. 11, pp. 2169-2200, 2002

[2] Y. Ch. Wu, W. F. Koch, R. A. Durst: **Standardization of pH Measurements**, NBS Special Publication 260-53, 1988

For more detailed information please read the certification report on our website.

Certificate of analysis revision history:

Certificate version	Date	Reason for version
01	2025/10/10	Initial version

The vibrant M, Supelco, Certipur and Sigma-Aldrich are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates.
Detailed information on trademarks is available via publicly accessible resources.
© 2024 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved.

The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.