

Declaration of Quality

Hamilton DuraCal Buffer pH 10.01 (Certified Reference Material)

Product number: 238223
Production lot number: 111003017
Nominal pH value at 25°C: 10.01 +/- 0.02 EXP. 2023-01-21

Actual pH value at 25°C¹: 10.01 (Calibration Cert. 10-0208/D-K-15186-01-00/2018-02)
Secondary Reference Materials: NIST SRM 187f
MERCK 1.01962.0001 CHARGE 171962A

Buffer lot number: 1783744

Standardization:

This DuraCal pH buffer is certified traceable to Primary Reference Material from NIST² and PTB³.

The National Metrology Institutes compare their measurement capabilities periodically in key comparisons within the "Mutual Recognition Arrangement of National Measurement Standards and of Calibration Certificates issued by National Metrology Institutes (CIPM-MRA)". The international comparability, harmonization and the equivalence of their measurement capabilities is therefore ensured.

The lot number of the Reference Material used for this buffer is stated above. In order to obtain highest accuracy and reliability, the pH value is determined independently at Hamilton using secondary reference materials and at calibration laboratory D-K-15186-01-00 of ZMK⁴ which is accredited for pH measurements and reference materials. The agreement between the two independent measurements is imperatively within the stated uncertainty. The actual value stated above is the value obtained at DAkkS. The DAkkS calibration certificate documents the traceability to national standards. The DAkkS is signatory to the multilateral agreements of the European co-operation for Accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC) for the mutual recognition of calibration certificates.

A copy of the calibration certificate of D-K-15186-01-00 for this specific production lot can be obtained on request. The actual accreditation certificate of D-K-15186-01-00 is shown backside. The annexes stating the detailed scope of accreditation are part of the accreditation certificate and can be obtained from the DAkkS homepage www.dakks.de or the ZMK homepage www.zmk-wolfen.de.

The pH buffer formulation follows the recommendations of DIN 19267 with minor changes to increase stability. The stated uncertainty of the pH value of the buffer solution is shown on the label (95% confidence interval). This uncertainty references to the "actual pH value" and is valid until the expiry date when stored according to the label on the bottle. The temperature / pH table on the bottle is valid for the "actual value" accordingly.

¹) Determined on a representative amount of sample (1 l out of 1000 l) at D-K-15186-01-00. The expanded uncertainty of the measurement is 0.02 pH.

²) National Institute of Standards and Technology, Gaithersburg, USA

³) Physikalisch Technische Bundesanstalt, Braunschweig, Germany

⁴) D-K-15186-01-00 – calibration laboratory accredited according to DIN EN ISO/IEC 17025 by Deutsche Akkreditierungsstelle (DAkkS)

Passed by Quality Control:



Monica Zanolari

2018-04-16



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Bedienungsanleitung für die Kalibrierung mit pH- und Redox Puffer Lösungen

Für eine 1-Punkt Kalibrierung, den Puffer wählen, der dem pH-Wert des Prozesses am nächsten liegt. Eine 2-Punkt Kalibrierung (empfohlen) sollte den Bereich des zu messenden Wertes abdecken.

- 1 Sensor gut mit deionisiertem Wasser reinigen
- 2 Flasche öffnen
- 3 Benötigte Menge an Puffer in die Kammer pressen
- 4 Den Sensor direkt in der Kammer kalibrieren
- 5 Puffer aus der Kammer entsorgen und Flasche schliessen

Temperatureinfluss

pH- und ORP Werte sind temperaturabhängig. Es ist deshalb wichtig, die Kalibrierung immer bei der gleichen Temperatur durchzuführen, bei der später gemessen wird.



Instructions d'étalonnage avec des solutions tampons pH et Rédox

Un étalonnage en un point doit être effectué dans la solution tampon de pH le plus proche possible du pH du procédé. Un étalonnage en 2 points (recommandé) doit couvrir la plage de valeur de pH mesurée.

- 1 Nettoyer soigneusement le capteur avec de l'eau déminéralisée
- 2 Ouvrir le flacon
- 3 Appuyer sur le flacon pour remplir le compartiment supérieur avec du tampon
- 4 Calibrer le capteur directement dans le compartiment supérieur
- 5 Jeter la solution tampon utilisée et fermer le flacon

Influence de la température

Les valeurs de pH/Rédox dépendent de la température. Il est important d'effectuer l'étalonnage à la température à laquelle les mesures seront effectuées.



Instructions for Calibration with pH and ORP Buffer Solutions

A one-point calibration should be performed at a pH as close as possible to the pH of the process. A 2-point calibration (recommended) should cover the range of pH values.

- 1 Clean the sensor thoroughly with deionized water
- 2 Open the bottle
- 3 Squeeze the bottle to fill the upper compartment with buffer
- 4 Calibrate the sensor directly in the upper compartment
- 5 Dispose of the used buffer and close the bottle

Temperature influences

pH/ORP values are temperature dependent. It is important to calibrate at the same temperature at which the measurements will be performed.



pH和ORP缓冲液的选择指南

单点校准应选择尽可能接近工艺过程pH值的缓冲液
2点校准 (推荐) 应覆盖工艺过程的pH值

- 1 用去离子水彻底清洁传感器
- 2 打开瓶子
- 3 挤压瓶子, 使缓冲液填充校验杯
- 4 直接在校验杯中校准传感器
- 5 倒空校验杯并关闭瓶子

温度影响

pH/ORP值都受温度影响。建议记录测量温度并在与该测量相同的温度下进行校准操作。



Zentrum für Messen und Kalibrieren & ANALYTIK GmbH

akkreditiert durch die / accredited by the

Deutsche Akkreditierungsstelle GmbH

als Kalibrierlaboratorium im / as calibration laboratory in the

Deutschen Kalibrierdienst

Kalibrierschein
Calibration certificate



10-0208
D-K
15186 01.00
2018-02

Kalibrierzeichen
Calibration mark

Gegenstand
Object
Duracal Pufferlösung pH 10,01
REF 238269
Buffer solution pH 10,01
REF 238269

Hersteller
Manufacturer
HAMILTON Bonaduz AG
7402 Bonaduz, Schweiz

Typ
Type
pH-Wert = 10,01 pH (25°C)

Fabrikat/Serien Nr.
Serial number
Charge: LOT 1783744
Lot No.: LOT 1783744

Auftraggeber
Customer
HAMILTON Bonaduz AG
Via Crusch 8
7402 Bonaduz, Schweiz

Auftragsnummer
Order No.
1783744030

Anzahl der Seiten des Kalibrierscheines
Number of pages of the certificate
2

Datum der Kalibrierung
Date of calibration
16.02.2018

Stellen
Density of the calibration laboratory
Frau Dr. Jehner

Kalibrierlaboratorium für Länge, elektrische, mechanische, thermodynamische und analytische Messgrößen
Calibration laboratory for length, electrical, mechanical, thermodynamical and analytical measuring quantities
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1008-Kalibrier nach DIN EN ISO 9001
Reg. Nr. 064774 011

