

Buffer Quality Control Certificate

Nominal Specifications

pH Buffer Solution	Buffer pH 4.01
Order Number(s)	51350004, 51350018

Buffer Properties

Measured pH Value	4.01 ± 0.02* (25°C)
Lot Number	1K186I
Production Date	4 July 2024
Expiry Date	4 July 2027
Buffer Substances	Potassium Hydrogen Phthalate

*The value following the ± symbol is the numerical value of the expanded uncertainty $U = k \cdot u_c$. U is determined from a combined uncertainty $u_c = 0.01$ pH and a coverage factor $k = 2$. The measurand is normally distributed, therefore the probability that the value of the measurand will lie within the stated range is approximately 95%.

Traceability

The measured pH value stated on this certificate was determined by measurement using a glass electrode. The calibration of the measurement system was performed using certified reference buffer solutions prepared by a calibration laboratory accredited by DAkkS** according to ISO/IEC 17025 and ISO 17034. The pH measurements performed by this laboratory are validated by regular participation in national and international comparisons and so are traceable to international agreed and stated references according to IUPAC recommendations 2002.

**DAkkS (Deutsche Akkreditierungsstelle) are the national accreditation body for the Federal Republic of Germany. As such they are a signatory to the multilateral agreements of the European cooperation for accreditation (EA) and of the International Laboratory Accreditation Cooperation (ILAC). DAkkS laboratories regularly participate in international key comparisons that validate their measurements. This ensures international comparability, harmonization and equivalence of measurement capabilities.

The pH values of the reference buffers used and the lot numbers of these buffers are shown below.

Calibration Procedure	Two point calibration of a glass electrode using the buffer solutions below.	
Unit of Measurement	pH	
Reference Material	CRM Buffer Solution pH 4.005	CRM Buffer Solution pH 6.865
Reference Material Lot Number(s)	10-4008 / D-RM-15186-01-00 / 2024-02	10-4021 / D-RM-15186-01-00 / 2024-04
Reference Material Specification	4.008 ± 0.003 (25°C)	6.866 ± 0.003 (25°C)

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Quality Manager
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