

ABOUT DFM

DFM is Denmark's National Metrology Institute (NMI). DFM is a signatory to the CIPM-MRA arrangement that ensures mutual recognition of measurements worldwide

TRACEABILITY

All measurements are traceable to recognised national and international standard.

ISO CERTIFICATION

All services are covered by DFM's ISO 9001 certification

CONTACT DFM

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Certified primary pH buffers



Why pH buffers at the highest level of metrology?

The primary pH buffers manufactured and delivered by DFM are Certified Reference Materials (CRM) which target the ultimate needs within metrology. Our primary pH buffers feature very low expanded uncertainties, and are subject of international comparisons with other National Metrology Institutes, thereby providing the best possible starting point in the chain of traceability. With the primary pH buffers from DFM you get a competitive edge in your production of secondary pH buffers.

An accredited service

The pH buffers are one of the different Certified Reference Materials (CRM) we produce. DFM's production capacity of pH buffer CRMs is registered with EURAMET and through the CCQM, and accredited through DANAK activity 255. DFM also regularly participates in Key Comparison studies on all buffer CRMs produced.



CONSULTANCY SERVICES

Do you need new measurement capabilities, does a method call for a bit of scrutiny, or are you perhaps seeking to acquire new equipment? Take advantage of the consultancy services we provide in addition to our calibration services.

As an independent institute deeply rooted within research and metrology, DFM has gained the reputation of being an agile, solid, and valuable partner. Contact us and find out why.

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The pH buffers in details

Certified Reference Materials (CRM)

The buffers are sold in 400 mL bottles, with calibration certificates detailing the precise pH values measured using the Harned cell measurement technique between 15 and 37 °C. For the production DFM uses only the highest purity salts available, and adds no preservatives or dyes in order to maintain the purity.

Ordering the CRMs

DFM offers the following certified primary pH reference solutions:

R03.101	Primary pH buffer 'Phthalate' (pH = 4.005)	U(CMC) = ±0.0016 pH
R03.102	Primary pH buffer '1:1 phosphate' (pH = 6.865)	U(CMC) = ±0.0016 pH
R03.103	Primary pH buffer '1:3.5 phosphate' (pH = 7.413)	U(CMC) = ±0.0016 pH
R03.104	Primary pH buffer 'Borate' (pH = 9.180)	U(CMC) = ±0.0016 pH
R03.105	Primary pH buffer 'Carbonate' (pH = 10.012)	U(CMC) = +0.003 pH / -0.0016 pH

In addition, DFM delivers the following certified secondary pH reference solution:

R03.106	Secondary pH buffer '1:4 phosphate' (pH = 7.38)	U(CMC) = ±0.0016 pH
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Contact DFM at crm@dfm.dk for availability or for a quotation.

Background on pH

The definition of the pH is: $\text{pH} = -\log a_{\text{H}^+}$, where a_{H^+} is the activity of hydrogen ions. However, the activity of the hydrogen ions cannot be uniquely defined nor measured. For this reason the pH-scale has to be based on a convention. This convention is chosen in such a way, that if the hydrogen ion activity found from the pH value through the equation above is inserted into other chemical equilibrium data, the result will be consistent with the result obtained by rigorous thermodynamic methods.

The conventional pH-scale uses seven buffer compositions as primary standards. Of these DFM manufactures and delivers the five primary buffers that target the important range between pH = 4 through 10.

Examples of related services

- R03.00x Reference conductivity solutions, 0.5 litre KCl in H₂O, 0.01 S/m, 0.1 S/m, 1 S/m or 10 S/m **)
- K03.001 Characterisation of solution at 24°C-26°C **)

**) Under DANAK accreditation