

## Deutsche Akkreditierungsstelle

### Annex to the Accreditation Certificate D-K-15185-01-00 according to DIN EN ISO/IEC 17025:2018

**Valid from:** 01.08.2024

**Date of issue:** 01.08.2024

Holder of accreditation certificate:

**Merck KGaA**  
**Kalibrierlaboratorium für chemische Messgrößen**  
**Frankfurter Straße 250, 64293 Darmstadt**

with the location

**Merck KGaA**  
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**Frankfurter Straße 250, 64293 Darmstadt**

The calibration laboratory meets the requirements of DIN EN ISO/IEC 17025:2018 to carry out the conformity assessment activities listed in this annex. The calibration laboratory meets additional legal and normative requirements, if applicable, including those in relevant sectoral schemes, provided that these are explicitly confirmed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of calibration laboratories and they conform to the principles of DIN EN ISO 9001.

*This certificate annex is only valid together with the written accreditation certificate and reflects the status as indicated by the date of issue. The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de>.*

Abbreviations used: see last page

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**Annex to the Accreditation Certificate D-K-15185-01-00**

Calibration in the fields:

**Chemical and medical quantities**

**Chemical analysis and reference materials**

- pH value
- Electrolytic conductivity
- Mass fraction of elements in standard solutions
- Mass concentration of elements in standard solutions
- Mass fraction of elements in multi standard solutions
- Mass concentration of elements in multi standard solutions
- Mass fraction of titrimetric standards
- Mass fraction of water in water standards and titrimetric standards
- Amount-of-substance concentration in volumetric solutions
- Mass fraction in ion chromatography standard solutions
- Mass concentration in ion chromatography standard solutions

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**Annex to the Accreditation Certificate D-K-15185-01-00**

**Permanent Laboratory**

**Calibration and Measurement Capabilities (CMC)**

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Expanded measurement uncertainty	Remarks
<b>pH value</b> Reference substances	1 to 11	differential potentiometry Inhouse procedure according SOP 20120940, Version 3/2020	0.003	Specified are the absolute measurement uncertainties. These depend on the deployed primary reference material.
Reference buffer solutions	1 to 11	differential potentiometry Inhouse procedure according SOP 20120940, Version 3/2020	0.003	
Buffer solutions	0 to < 10	multipoint calibration by means of glass electrode Inhouse procedure according SOP 20404229, Version 2/2020	0.01	
Buffer solutions	10 to 14	multipoint calibration by means of glass electrode Inhouse procedure according SOP 20404229, Version 2/2020	0.02	
<b>Electrolytic conductivity</b> Reference material	0.5 $\mu\text{S cm}^{-1}$ to < 15 $\mu\text{S cm}^{-1}$	conductivity measuring Inhouse procedure according SOP 20120941, Version 5/2020	25 %	Specified are the relative measurement uncertainties. These depend on the deployed primary reference material.
	15 $\mu\text{S cm}^{-1}$ to < 1000 $\mu\text{S cm}^{-1}$		0.4 %	
	0.1 $\text{Sm}^{-1}$ to 12 $\text{Sm}^{-1}$		0.24 %	
<b>Mass fraction of titrimetric standards</b>	$\geq 95.00 \%$	Titrimetry Inhouse procedure according SOP 20404230, Version 2/2020		Specified are the absolute measurement uncertainties. These depend on the deployed primary reference material.
Tris(hydroxymethyl)-aminomethane			0.04 %	
Sodium carbonate			0.05 %	
Potassium hydrogen phthalate			0.02 %	
Benzoic acid			0.05 %	
Sodium chloride			0.02 %	
Zinc			0.02 %	
Calcium carbonate			0.03 %	

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**Calibration and Measurement Capabilities (CMC)**

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Expanded measurement uncertainty	Remarks
Potassium dichromate			0.04 %	
Disodium oxalate			0.05 %	
Iron(II)ethylene diammonium sulfate			0.05 %	
Potassium iodate			0.02 %	
<b>Amount-of-substance concentration in volumetric solutions</b>	0.003 mol/L to 10 mol/L	Titrimetric Inhouse procedure according SOP 20404235, Version 2/2020  Measurement method via metrological traceability to primary standards  Measurement method via metrological traceability to primary solutions  Measurement method via metrological traceability to volumetric solutions	0.1 % to 0.3 %	Specified are the relative measurement uncertainties. These depend on the deployed primary reference material.

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**Permanent Laboratory**
**Calibration and Measurement Capabilities (CMC)**

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Expanded measurement uncertainty	Remarks
Mass fraction of ion chromatography standard solutions	900 mg/kg to 1100 mg/kg	Titrimetric Inhouse procedure according SOP 20689669, Version 1/2022 Measurement method via metrological traceability to volumetric solutions	0.1 % to 0.5 %	Specified are the relative measurement uncertainties. These depend on the deployed primary reference material.
Mass concentration of ion chromatography standard solutions	900 mg/L to 1100 mg/L		0.1 % to 0.5 %	
Mass fraction of water in water standards and titrimetric standards	15 mg/kg to < 0.1 g/kg	KF coulometry direct measurement KF oven technology	0.95 mg/kg to 3.2 mg/kg	Specified are the absolute measurement uncertainties.
	0.1 g/kg to < 1.0 g/kg	Inhouse procedure according SOP 20404233, Version 2/2020	3.2 mg/kg to 6.3 mg/kg	
	1,0 g/kg to < 10 g/kg		6.3 mg/kg to 33 mg/kg	
	10 g/kg to 52 g/kg		33 mg/kg to 0,25 g/kg	
	1.0 g/kg to 160 g/kg	KF volumetry Inhouse procedure according SOP 20404233, Version 2/2020	12 mg/kg to 2.0 g/kg	
	5 % to 16 %	Loss on drying (temperature: 150°C) Inhouse procedure according SOP 20404233, Version 2/2020	0.01 % to 0.05 %	
Mass fraction of elements in standard solutions	9 mg/kg to 10500 mg/kg	inductively coupled plasma optical emission spectrometry ICP-OES  Inhouse procedure according SOP 20120939, Version 3/2020	0.3 % to 0.8 %	Specified are the relative measurement uncertainties These depend on the deployed primary Reference material.
Mass fraction of elements in standard solutions	9 mg/L to 10500 mg/L		0.3 % to 0.8 %	

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**Permanent Laboratory**

**Calibration and Measurement Capabilities (CMC)**

Measured quantity / Calibration item	Range	Measurement conditions / procedure	Expanded measurement uncertainty	Remarks
Mass concentration of elements in multi standard solutions	0.9 µg/kg to 10500 µg/kg	inductively coupled plasma optical emission spectrometry ICP-OES  Inhouse procedure according SOP 20689681, Version 1/2022	0.1 % to 32 %	Specified are the relative measurement uncertainties These depend on the deployed primary Reference material.
Mass concentration of elements in multi standard solutions	0.9 µg/L to 10500 µg/L		0.1 % to 32 %	

**Abbreviations used:**

**CMC** Calibration and measurement capabilities (Kalibrier- und Messmöglichkeiten)  
**SOP** Standard Operating Procedure