

certificate of quality

The characteristic data of the procedure of the following test kit were determined during the production control process. For more details on how the data are determined please consult the respective reference in the literature.

Spectroquant® COD Cell Test, Cat. No. 1.14555

Measuring Range	500 - 10 000 mg/l COD
Photometer	Reference
Cell	16-mm* round cell
Wavelength	605 nm

* outer diameter

Specified data for procedure

Lot-specific data

Slope	see lot-specific Certificate of Analysis (CoA)
Ordinate segment	
Reagent Blank	

Data for procedure according to ISO 8466-1^[1] and DIN 38402 A51^[2]

Residual Standard Deviation	0.0063 A
Sensitivity 0.010 A (absorbance)	46 mg/l COD
Confidence Interval (P=95%)	± 68 mg/l COD
Number of Lots	65
Standard Deviation of the Method	28.9 mg/l COD
Variation Coefficient of the Method	0.53%

Limit of Detection/Quantification

according to APHA 1030 C^[3]

Lower Level of Detection (LLD)	67.9 mg/l COD
Method Detection Level (MDL)	135.7 mg/l COD

according to ISO TS 13530^[4] - based on standard deviation of blank samples

Limit of Detection (LOD)	159.4 mg/l COD
Limit of Quantification (LOQ)	478.2 mg/l COD

according to DIN 32645^[5] - based on standard deviation of blank samples

Detection Limit	35.1 mg/l COD
Determination Limit	129.9 mg/l COD

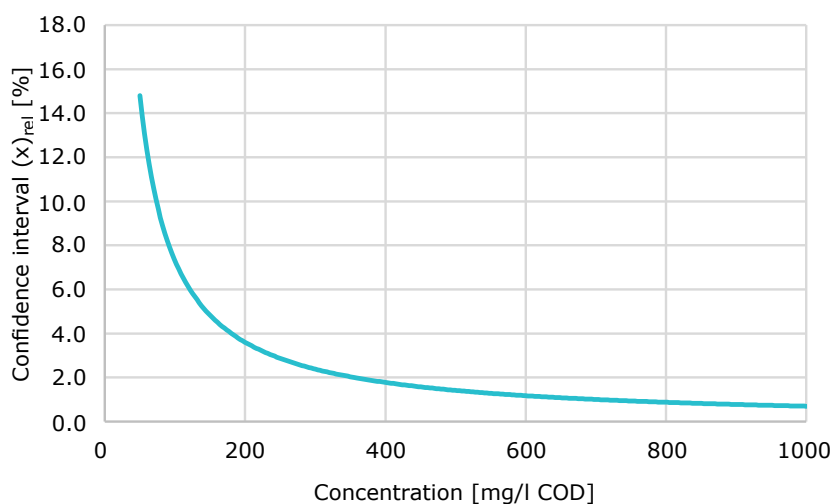
Accuracy/Trueness/Precision according to DIN ISO 5725-1^[6] (in the middle of the measuring range)

Accuracy	± 89.7 mg/l COD
Trueness	± 42.5 mg/l COD
Precision	± 47.2 mg/l COD

Measurement Uncertainty according to DIN ISO 11352 2013-03 (Bias according to chapter 8.3.2) ^[7] (in the middle of the measuring range)

Expanded Measurement Uncertainty (k = 2)	± 87 mg/l COD
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Relative Analytical Precision



Literature

- [1] ISO 8466-1:2021(E), Water quality – Calibration and evaluation of analytical methods, Part 1: Linear Calibration function”
- [2] DIN 38402-51:2017: German standard methods for the examination of water, waste water and sludge - general information (group A) - Part 51: Calibration of analytical methods - linear calibration (A51)
- [3] American Public Health Association, American Water Works Association, Water Environment Federation. Lipps WC, Braun-Howland EB, Baxter TE, eds. Standard Methods for the Examination of Water and Wastewater - DATA QUALITY - Method Detection Level. 24th ed. Washington DC: APHA Press; 2023.
- [4] ISO/TS 13530:2009: Water quality — Guidance on analytical quality control for chemical and physicochemical water analysis
- [5] DIN ISO 5725-1:1997-11: Accuracy (trueness and precision) of measurement methods and results - Part 1: General principles and definitions
- [6] DIN 32645:2008: German standard methods for the examination of water, waste water and sludge - general information (group A) - Part 51: Calibration of analytical methods - linear calibration (A51)
- [7] DIN ISO 11352:2013-03, Water quality – Estimation of measurement uncertainty based on validation and quality control data

Merck KGaA, Darmstadt, Germany 20.06.2024

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certificado de calidad

Los datos característicos del procedimiento para el equipo de ensayo abajo citado se determinaron durante el control final de producción.

Para obtener más detalles sobre cómo se determinan los datos, consulte la referencia correspondiente en la bibliografía.

Spectroquant® Test en cubetas DQO, art. 1.14555

Intervalo de medida	500 - 10 000 mg/l de DQO
Fotómetro	Referencia
Cubeta	16-mm* cubeta redonda
Longitud de onda	605 nm

* diámetro exterior

Datos especificados para el procedimiento

Datos especificados del lote

Pendiente	consulte el Certificado de Análisis (CoA) específico del lote
Intersecto en ordenadas	
Blanco de reactivo	

Datos para el procedimiento según ISO 8466-1^[1] y DIN 38402 A51^[2]

Desviación estándar residual	0,0063 A
Sensibilidad: 0,010 A (absorbancia)	46 mg/l de DQO
Intervalo de confianza (95 % de probabilidad)	± 68 mg/l de DQO
Número de lotes de producción	65
Desviación estándar del procedimiento	28,9 mg/l de DQO
Coefficiente de variación del procedimiento	0,53 %

Límite de detección/cuantificación

según APHA 1030 C^[3]

Límite inferior de detección (LLD)	67,9 mg/l de DQO
Límite de detección del procedimiento (MDL)	135,7 mg/l de DQO

según ISO TS 13530^[4] - basado en la desviación estándar de muestras en blanco

Límite de detección (LOD)	159,4 mg/l de DQO
Límite de cuantificación (LOQ)	478,2 mg/l de DQO

según DIN 32645^[5] - basado en la desviación estándar de muestras en blanco

Límite de detección	35,1 mg/l de DQO
Límite de determinación	129,9 mg/l de DQO

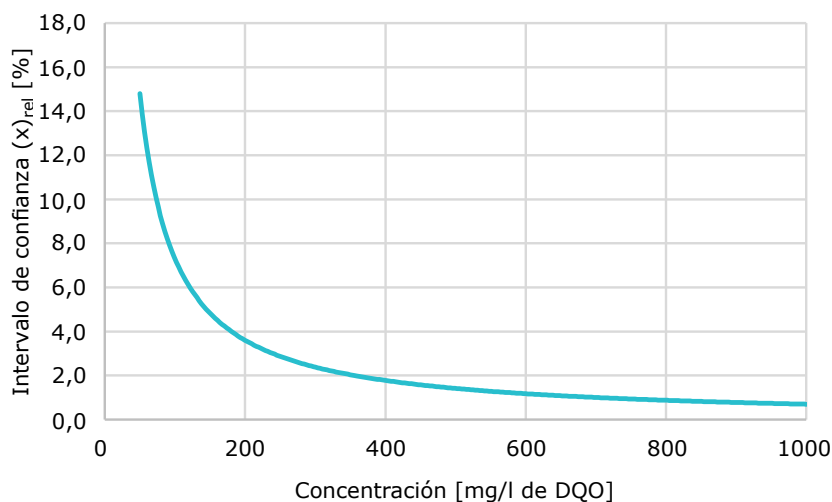
Exactitud/Veracidad/Precisión según DIN ISO 5725-1^[6] (en el medio del intervalo de medida)

Exactitud	± 89,7 mg/l de DQO
Veracidad	± 42,5 mg/l de DQO
Precisión	± 47,2 mg/l de DQO

Incertidumbre de medición según DIN ISO 11352 2013-03 (Sesgo según capítulo 8.3.2)^[7] (en el medio del intervalo de medida)

Incertidumbre de medida ampliada ($k = 2$)	± 87 mg/l de DQO
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Precisión analítica relativa



Bibliografía

- [1] ISO 8466-1:2021(E), Water quality – Calibration and evaluation of analytical methods, Part 1: Linear Calibration function”
- [2] DIN 38402-51:2017: German standard methods for the examination of water, waste water and sludge - general information (group A) - Part 51: Calibration of analytical methods - linear calibration (A51)
- [3] American Public Health Association, American Water Works Association, Water Environment Federation. Lipps WC, Braun-Howland EB, Baxter TE, eds. Standard Methods for the Examination of Water and Wastewater - DATA QUALITY - Method Detection Level. 24th ed. Washington DC: APHA Press; 2023.
- [4] ISO/TS 13530:2009: Water quality — Guidance on analytical quality control for chemical and physicochemical water analysis
- [5] DIN ISO 5725-1:1997-11: Accuracy (trueness and precision) of measurement methods and results - Part 1: General principles and definitions
- [6] DIN 32645:2008: German standard methods for the examination of water, waste water and sludge - general information (group A) - Part 51: Calibration of analytical methods - linear calibration (A51)
- [7] DIN ISO 11352:2013-03, Water quality – Estimation of measurement uncertainty based on validation and quality control data

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