

Accreditation

The Deutsche Akkreditierungsstelle attests with this **Accreditation Certificate** that the calibration laboratory

Eckert & Ziegler Analytics, Inc.

1380 Seaboard Industrial Blvd., ATLANTA, GA 30318, USA

meets the requirements according to DIN EN ISO/IEC 17025:2018 for the conformity assessment activities listed in the annex to this certificate. This includes additional existing legal and normative requirements for the calibration laboratory, including those in relevant sectoral schemes, provided they are explicitly confirmed in the annex to this certificate.

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 accreditation was issued after an accreditation procedure was carried out in compliance with the minimum requirements of DIN EN ISO/IEC 17011 and on the basis of a review and decision of the appointed accreditation committees.

This accreditation certificate with accreditation number D-K-19023-01 is valid to 21.04.2029. It consists of this cover sheet, the reverse side of the cover sheet and the following annex with a total of 4 pages.

Registration number of the accreditation certificate: **D-K-19023-01-00**



Berlin, 22.04.2024

Dr. Florian Witt
Head of Technical Unit

The certificate together with the annex 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 (www.dakks.de).

Deutsche Akkreditierungsstelle GmbH

Office Berlin
Spittelmarkt 10
10117 Berlin

Office Frankfurt am Main
Europa-Allee 52
60327 Frankfurt am Main

Office Braunschweig
Bundesallee 100
38116 Braunschweig

The Deutsche Akkreditierungsstelle GmbH (DAkKS) is the entrusted national accreditation body of the Federal Republic of Germany according to § 8 section 1 AkkStelleG in conjunction with § 1 section 1 AkkStelleGBV. DAkKS is designated as the national accreditation authority by Germany according to Art. 4 Para. 4 of Regulation (EC) 765/2008 and clause 4.7 of DIN EN ISO/IEC 17000.

The accreditation certificate shall be recognised as equivalent by the WTO member states that have committed themselves in bilateral or multilateral mutual agreements to recognise the certificates of accreditation bodies that are members of ILAC or IAF as equivalent.

DAkKS is a signatory to the multilateral agreements for mutual recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Co-operation (ILAC).

The up-to-date state of membership can be retrieved from the following websites:

EA: www.european-accreditation.org

ILAC: www.ilac.org

IAF: www.iaf.nu

Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D- K-19023-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 22.04.2024

Valid to: 21.04.2029

Date of issue: 22.04.2024

Holder of accreditation certificate:

**Eckert & Ziegler Analytics, Inc.
1380 Seaboard Industrial Blvd., ATLANTA, GA 30318, USA**

with the location

**Eckert & Ziegler Analytics, Inc.
1380 Seaboard Industrial Blvd., ATLANTA, GA 30318, USA**

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.

Calibrations in the fields:

High Frequency and radiation quantities
Ionising radiation and radioactivity
– **Radioactivity**

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>.

Annex to the Accreditation Certificate D- K-19023-01-00

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range ²⁾	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾³⁾	Remarks
Activity	370 Bq to 370 kBq	Gamma-ray emitting mixtures with photon energies from 30 keV to 2,000 keV Gamma-ray Spectrometry	1.6 %	
	370 Bq to 370 kBq	Single gamma-ray emitting nuclides with photon energies from 30 keV to 2,000 keV Gamma-ray Spectrometry	2.0 %	
	370 kBq to 3.7 GBq	Single gamma-ray emitting nuclides with photon energies from 30 keV to 250 keV Reentrant Pressurized Ionization Chamber	1.8 %	
	100 kBq to 3.7 GBq	Single gamma-ray emitting nuclides with photon energies from 250 keV to 2,000 keV Reentrant Pressurized Ionization Chamber	1.3 %	
	3.7 kBq to 6 MBq	Single or mixed gases Gamma-ray Spectrometry	4.0 %	
	370 kBq to 3.7 GBq	Single isotope gases Reentrant Pressurized Ionization Chamber	3.0 %	
	200 Bq to 3.7 kBq	Beta emitters, maximum beta energy < 500 keV Liquid Scintillation Quench Curve, CIEMAT-NIST efficiency tracing, Packard efficiency tracing	2.5 %	
	100 Bq to 3.7 kBq	Beta emitters, maximum beta energy > 500 keV Liquid Scintillation 4π	2.0 %	
	20 Bq to 1 kBq	Alpha emitters Liquid Scintillation 4π	2.0 %	

- 1) The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.
- 2) Ranges are listed for direct measurement results. Gravimetric dilution utilizing analytical balances calibrated by approved ISO/IEC 17025 accredited calibration laboratory allows for sources to be certified up to 100x less/more than direct measurement result. Gravimetric transfer does not apply for gases, electrodeposited sources, and alpha emitting sources certified by elemental specific activity and mass.

Annex to the Accreditation Certificate D- K-19023-01-00

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range ²⁾	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾³⁾	Remarks
Activity	5 Bq to 37 kBq	Alpha emitters – electrodeposited and evaporated on PET 2π ZnS /Gas flow proportional counting and alpha spectroscopy	2.2 %	
	20 Bq to 200 kBq	Alpha emitters Elemental Specific Activity and Mass	2.0 %	Natural, enriched, and depleted Uranium; Natural Thorium; Np-237
	5 Bq to 10 kBq	Beta emitters – anodized aluminum foil / Gas flow proportional counting	3.5 %	
	5 Bq to 10 kBq	Alpha emitters – anodized aluminum foil / Gas flow proportional counting	3.5 %	
Specific Activity	100 Bq/g to 100 kBq/g	Gamma-ray emitting mixtures with photon energies from 30 keV to 2,000 keV Gamma-ray Spectrometry	1.6 %	
	100 Bq/g to 100 kBq/g	Single gamma-ray emitting nuclides with photon energies from 30 keV to 2,000 keV Gamma-ray Spectrometry	2.0 %	
	150 kBq/g to 1 GBq/g	Single gamma-ray emitting nuclides with photon energies from 30 keV to 250 keV Reentrant Pressurized Ionization Chamber	1.8 %	
	40 kBq/g to 1 GBq/g	Single gamma-ray emitting nuclides with photon energies from 250 keV to 2,000 keV Reentrant Pressurized Ionization Chamber	1.3 %	
	30 Bq/g to 500 kBq/g	Beta emitters, maximum beta energy < 500 keV Liquid Scintillation Quench Curve, CIEMAT-NIST efficiency tracing, Packard efficiency tracing	2.5 %	

- 1) The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.
- 2) Ranges are listed for direct measurement results. Gravimetric dilution utilizing analytical balances calibrated by approved ISO/IEC 17025 accredited calibration laboratory allows for sources to be certified up to 100x less/more than direct measurement result. Gravimetric transfer does not apply for gases, electrodeposited sources, and alpha emitting sources certified by elemental specific activity and mass.

Annex to the Accreditation Certificate D- K-19023-01-00

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

Measurement quantity / Calibration item	Range ²⁾	Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾³⁾	Remarks
Specific Activity	20 Bq/g to 500 kBq/g	Beta emitters, maximum beta energy > 500 keV Liquid Scintillation 4π	2.0 %	
	3 Bq/g to 150 kBq/g	Alpha emitters Liquid Scintillation 4π	2.0 %	
	3.7 Bq/g to 37 kBq/g	Alpha emitters Elemental Specific Activity and Mass	2.0 %	Natural, enriched, and depleted Uranium; Natural Thorium; Np-237
Photon Flux	$1 \cdot 10^2 \text{ s}^{-1}$ to $1 \cdot 10^5 \text{ s}^{-1}$	Gamma-ray emitting mixtures with photon energies from 30 keV to 2,000 keV Gamma-ray Spectrometry	1.6 %	
Particle Flux	$3 \cdot 10^0 \text{ s}^{-1}$ to $2.7 \cdot 10^4 \text{ s}^{-1}$	Beta emitters – electrodeposited/ evaporated on PET 2π plastic scintillation counting/ Gas flow proportional counting	2.8 %	
	$3 \cdot 10^0 \text{ s}^{-1}$ to $1.8 \cdot 10^4 \text{ s}^{-1}$	Alpha emitters – electrodeposited/ evaporated on PET 2π ZnS/ Gas flow proportional counting and alpha spectrometry	2.2 %	
	$3 \cdot 10^0 \text{ s}^{-1}$ to $1 \cdot 10^4 \text{ s}^{-1}$	Beta emitters – anodized aluminum foil / Gas flow proportional counting	3.0 %	
	$3 \cdot 10^0 \text{ s}^{-1}$ to $1 \cdot 10^4 \text{ s}^{-1}$	Alpha emitters – anodized aluminum foil / Gas flow proportional counting	3.0 %	

Abbreviations used:

CMC Calibration and measurement capabilities

- 1) The expanded uncertainties according to EA-4/02 M:2013 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of $k = 2$ unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.
- 2) Ranges are listed for direct measurement results. Gravimetric dilution utilizing analytical balances calibrated by approved ISO/IEC 17025 accredited calibration laboratory allows for sources to be certified up to 100x less/more than direct measurement result. Gravimetric transfer does not apply for gases, electrodeposited sources, and alpha emitting sources certified by elemental specific activity and mass.

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