

Accreditation

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

Eckert & Ziegler Isotope Products, Inc.
24937 Avenue Tibbitts
VALENCIA, CALIFORNIA 91355, 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 testing 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 confirm generally with 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-19029-01 is valid to 22.06.2028. It consists of this cover sheet, the reverse side of the cover sheet and the following annex with a total of 3 pages.

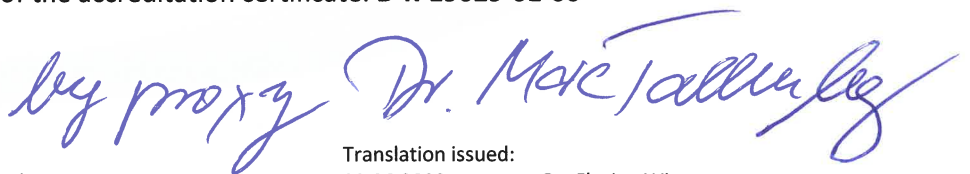
Registration number of the accreditation certificate: **D-K-19029-01-00**

Berlin, 23.06.2023

Dr. Florian Witt
Head of Technical Unit

Translation issued:
23.06.2023

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

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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-19029-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 23.06.2023 **Valid to:** 22.06.2028
Date of issue: 23.06.2023

Holder of accreditation certificate:

Eckert & Ziegler Isotope Products, Inc.
24937 Avenue Tibbitts
VALENCIA, CALIFORNIA 91355, 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 confirm generally with the principles of DIN EN ISO 9001.

Calibration 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-19029-01-00

Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

| Measurement quantity / Calibration item | Range | Measurement conditions / procedure | Expanded uncertainty of measurement | Remarks |
|--|---|---|-------------------------------------|---|
| Activity Photon emitting nuclides E < 250 keV | 185 Bq to 37 MBq | High-Purity Germanium | 2.3% | Activity and Specific Activity values listed are for direct measurement results. Gravimetric dilution utilizing analytical balances calibrated by approved ISO17025 accredited calibration laboratory allows for sources to be certified up to 1000x less than direct measurement result (e.g., 5 µL aliquot used to make source from a 5 mL solution directly calibrated). |
| | 370 kBq to 3.7 GBq | Reentrant Pressurized Ionization Chamber | 2.3% | |
| Photon emitting nuclides E > 250 keV | 185 Bq to 37 MBq | High-Purity Germanium | 2.3% | |
| | 370 kBq to 3.7 GBq | Reentrant Pressurized Ionization Chamber | 2.3% | |
| Beta emitting nuclides E _{avg} < 100 keV | 3.7 Bq to 74 kBq | Gas Flow Proportional Counter, Tc-99 only | 2.3% | |
| | 185 Bq to 18.5 kBq | Liquid Scintillation Counter | 2.3% | |
| Beta emitting nuclides E _{avg} > 100 keV | 92.5 Bq to 18.5 kBq | Liquid Scintillation Counter | 2.3% | |
| Alpha emitting nuclides | 1.85 Bq to 74 kBq | Gas Flow Proportional Counter | 2.3% | |
| | 185 Bq to 18.5 kBq | Liquid Scintillation Counter | 2.3% | |
| | 37 Bq to 740 kBq | Surface Barrier Detector | 2.3 % | |
| Specific Activity Photon emitting nuclides E < 250 keV | 37 Bq/g to 7.4 MBq/g | High-Purity Germanium | 2.3% | |
| | 74 kBq/g to 740 MBq/g | Reentrant Pressurized Ionization Chamber | 2.3% | |
| Photon emitting nuclides E > 250 keV | 37 Bq/g to 7.4 MBq/g | High-Purity Germanium | 2.3% | |
| | 74 kBq/g to 740 MBq/g | Reentrant Pressurized Ionization Chamber | 2.3% | |
| Specific Activity Beta emitting nuclides E _{avg} < 100 keV | 1.85 kBq/g to 1.85 MBq/g | Liquid Scintillation Counter | 2.3% | |
| Beta emitting nuclides E _{avg} > 100 keV | 925 Bq/g to 1.85 MBq/g | Liquid Scintillation Counter | 2.3% | |
| Alpha emitting nuclides | 1.85 kBq/g to 1.85 MBq/g | Liquid Scintillation Counter | 2.3% | |
| Photon Flux Photon emitting nuclides E < 250 keV | 1.85 · 10 ² s ⁻¹ to 3.7 · 10 ⁶ s ⁻¹ | High-Purity Germanium | 2.3% | |
| Photon emitting nuclides E > 250 keV | 1.85 · 10 ² s ⁻¹ to 7.4 · 10 ⁶ s ⁻¹ | High-Purity Germanium | 2.3% | |

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Permanent Laboratory

Calibration and Measurement Capabilities (CMC)

| Measurement quantity / Calibration item | Range | Measurement conditions / procedure | Expanded uncertainty of measurement | Remarks |
|---|--|------------------------------------|-------------------------------------|---------|
| Particle Flux | | | | |
| Beta emitting nuclides $E_{avg} < 100 \text{ keV}$ | $1.85 \cdot 10^0 \text{ s}^{-1}$ to $4.0 \cdot 10^4 \text{ s}^{-1}$ | Gas Flow Proportional Counter | 2.3% | |
| Beta emitting nuclides $E_{avg} > 100 \text{ keV}$ | $1.85 \cdot 10^0 \text{ s}^{-1}$ to $4.0 \cdot 10^4 \text{ s}^{-1}$ | Gas Flow Proportional Counter | 2.3% | |
| Alpha emitting nuclides | $9.25 \cdot 10^{-1} \text{ s}^{-1}$ to $4.0 \cdot 10^4 \text{ s}^{-1}$ | Gas Flow Proportional Counter | 2.3% | |
| | $1.85 \cdot 10^1 \text{ s}^{-1}$ to $3.7 \cdot 10^5 \text{ s}^{-1}$ | Surface Barrier Detector | 2.3 % | |

Abbreviations used:

CMC Calibration and measurement capabilities