

Deutsche Akkreditierungsstelle GmbH

Annex to the Accreditation Certificate D-PL-19281-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 19.02.2019

Date of issue: 19.02.2019

Holder of certificate:

**European Commission, Directorate-General Joint Research Centre,
Directorate G Nuclear Safety and Security, Unit G.II.6 Nuclear Safeguards and
Forensics, Analytical Service
Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen**

Tests in the fields:

physical, physico-chemical and chemical analysis in radioactive and not radioactive matrices in solid or liquid states and in swipe samples

Within the given testing field marked with * the testing laboratory is permitted, without being required to inform and obtain prior approval from DAkkS, the following the modification, development and refinement of testing methods.

The listed testing methods are exemplary. The testing laboratory maintains a current list of all testing methods within the flexible scope of accreditation.

Abbreviations used: see last page

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Physical, physico-chemical and chemical analysis in radioactive and not radioactive matrices in solid or liquid states and in swipe samples

1 Preparation of samples and reference solutions for physico-chemical analysis of elements and compounds by dissolution, dilution, separation using ion exchange, vacuum deposition and spiking *

IMS-JRC.G-C1.1-WIN-0007 v6.0 2018-03	Dissolution and dilution of uranium oxides prior to analysis
IMS-JRC.G-C1.1-WIN-0017 2018-09	Preparation of standards and spikes - Ampoules sealing by laser
IMS-JRC.G-C1.1-WIN-0018 v3.0 2017-11	Separation of U and Pu from fission products prior to MS measurement
IMS-JRC.G-C1.1-WIN-0022 v6.0 2019-02	Dissolution and dilution of plutonium oxides prior to Analysis
IMS-JRC.G-C1.1-WIN-0030 v5.1 2018-01	Preparation of SIMS samples using vacuum deposition for Analysis of Environmental U Particles by SIMS
WI0301/S5/R4 2011-07	Preparation of samples for the determination of trace elements by ICP-MS
WI0407/S0/R1 2015-11	IDMS spiking procedure
WI0454/S5/R1 2016-01	REE separation from U solutions for ICP MS analysis

2 Determinations of indices using mass spectrometry *

IMS-JRC.G-C1.1-WIN-0005 v1.0 2017-03	Preparation and Isotopic composition measurement of Boron samples by TIMS
IMS-JRC.G-C1.1-WIN-0011 v2.0 2017-03	Determination of Uranium Isotopic Content by Thermal Ionisation Mass Spectrometry using the Modified Total Evaporation Technique (MTE)
IMS-JRC.G-C1.1-WIN-0023 v3.0 2017-01	Uranium particle analysis by LG-SIMS

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WI0214/S5/R4
2014-10

Determination of Uranium and Plutonium Isotopic Content and Concentration in Nitric Acid Solutions by Thermal Ionization Mass Spectrometry using the Total Evaporation Technique

3 Determinations of indices using ICP-mass spectrometry *

WI0410/S5/R1
2013-11

Single element analysis at high precision by ICP -MS

WI0411/S5/R1
2013-11

Isotopic composition of single elements by ICP-MS

WI0458/S5/R1
2013-11

Elemental analysis at trace levels by ICP-MS

4 Determinations of element assay using [Titration and Direct combustion]

4.1 Determination of element assays by Potentiometric Titration *

IMS-JRC.G-C1.1-WIN-0009 v6.0
2017-03

Uranium Assay by Iron(II) Reduction in Phosphoric Acid followed by Chromium(VI) Automated Potentiometric Titration in the Presence of Vanadium

WI0322/S5/R3
2015-01

Plutonium Assay by Iron(II) Reduction followed by Chromium(VI), Automated Potentiometric Titration

4.2 Determination of element assays by Direct Combustion - Infrared absorption/thermal conductivity *

IMS-JRC.G-C1.1-WIN-0006 v3.0
2017-03

Carbon Content Assay by Fusion Extraction-Infrared Determination

IMS-JRC.G-C1.1-WIN-0043 v2.0
2018-06

Oxygen/Nitrogen Content Assay by Direct Combustion-Infrared Absorption/Thermal Conductivity Detection

5 Density measurement on liquid samples using oscillation-type density meters

IMS-JRC.G-C1.1-WIN-0045 v.7.0
2018-11

Density Measurements of Solutions

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6 Radiometric analyses of indices *

IMS-JRC.G-C1.1-WIN-0010 v2.0 2017-03	Measurement of U isotope abundance by High Resolution Gamma Spectroscopy
IMS-JRC.G-C1.1-WIN-0012 v1.0 2017-03	Measuring Pu Concentration in MOX pellets by the combined neutron-gamma counter
IMS-JRC.G-C1.1-WIN-0015 v2.0 2017-10	Calorimetric measurements for plutonium and/or americium mass content determination
IMS-JRC.G-C1.1-WIN-0016 v2.0 2018-03	Preparation and measurements of samples for the determination of pH, solid matter and Pu (by means of Isotope Dilution Alpha Spectrometry) content in AGS water
IMS-JRC.G-C1.1-WIN-0019 v2.0 2018-07	Measurement of $^{238}\text{Pu}/^{238+240}\text{Pu}$ using alpha spectrometry
IMS-JRC.G-C1.1-WIN-0029 v3.0 2017-12	Identification of radionuclides and activities in waste water samples by HRGS
IMS-JRC.G-C1.1-WIN-0044 v4.0 2019-01	Determination of Uranium concentration and ^{235}U Enrichment using COMPUCEA
WI0315/S5/R3 2016-06	Measurement of Pu Element Concentrations in Pu Solutions and the U and Pu Element Concentrations of Dissolved MOX Samples with the 'Hybrid Product K-Edge Densitometer'
WI0405/S5/R2 2015-12	Measurement of Pu Element Isotope Abundances and Am-241 to Pu weight ratio in Solutions and Solid Samples with High Resolution Gamma Spectroscopy

Abbreviations used:

DIN	German Institute for Standardisation e.V.
EN	European standard
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
IMS-JRC.G-C1.1-WIN-XXXX	Work instruction of European Commission, , Unit G.II.6 Nuclear Safeguards and Forensics, Analytical Service
WI	Work instruction of European Commission, Unit G.II.6 Nuclear Safeguards and Forensics, Analytical Service

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