

**The Appendix is an integral part of
Certificate of Accreditation No: 298/2024 of 25/06/2024**

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

ÚJV Řež, a. s.

CAB number 1093.4, Central Analytical Laboratory – Testing Laboratory
Hlavní 130, Řež, 250 68 Husinec

The laboratory applies a flexible approach to the scope of accreditation.

The current list of activities carried out within the flexible scope is available on the laboratory's website www.ujv.cz/cs/produkty-a-sluzby/jaderna-energetika/akreditovane-laboratore in the form of the „List of activities within the flexible scope of accreditation“.

The laboratory provides opinions and interpretations of the test results.

Detailed information on activities within the scope of accreditation (determined analytes / tested subject) is given in the section „Specification of the scope of accreditation“.

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1	Determination of activity of radionuclides by high resolution gamma spectrometry method	R-01 (ČSN EN ISO 10703)	Gaseous, liquid and solid samples	A, B, D
2	Determination of gross alpha activity by proportional detector	R-02 (ČSN 75 7611)	Liquid, solid samples, extracts of solid samples and aerosol filters	A, D
3	Determination of gross beta activity by proportional detector	R-03 (ČSN 75 7612)	Liquid, solid samples, extracts of solid samples and aerosol filters	A, D
4	Determination of tritium by liquid scintillation spectrometry	R-04 (ČSN EN ISO 9698)	Liquid, gaseous and solid samples	A, D
5	Determination of activity of ¹⁴ C by liquid scintillation spectrometry	R-05 (ČSN EN ISO 13162)	Liquid, gaseous and solid samples	A, D
6	Determination of ⁹⁹ Tc concentration by ICP-MS method with subsequent calculation of activity from measured values	R-08 (ČSN EN ISO 22125-2)	Liquid and solid samples, natural materials	A, D

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
7	Determination of ¹²⁹ I concentration by ICP-MS method with subsequent calculation of activity from measured values	R-09 (Radiochemistry of iodine,1977)	Gaseous, liquid, solid, biological, vegetable, animal samples and natural materials	A, D
8	Determination of activity of ⁹⁴ Nb and ^{93m} Nb by high resolution gamma spectrometry method	R-10 (US DOE RP330 method)	Liquid and solid samples, natural materials	A, D
9	Determination of biomass carbon – technique of ¹⁴ C activity measurement by liquid scintillation spectrometry	R-15 (ČSN EN 16640; ČSN EN ISO 13833; ČSN EN ISO 21644)	Mixed biomass fuel, biomass fuel components, biomass	D
10	Measurement of ventilation filters efficiency - iodine filters, by high resolution gamma spectrometry method	R-17 (ČSN EN ISO 10703)	Iodine filters and iodine filter media	-
11	Determination of activity of ³⁶ Cl by liquid scintillation spectrometry	R-18 (Eichrom method)	Liquid and solid samples, natural materials	A, D
12	Determination of plutonium, americium and curium by alpha spectrometry method	R-19 (Eichrom method)	Liquid, solid, biological, vegetable, animal samples and natural materials	A, D
13	Determination of ²⁴¹ Pu by liquid scintillation spectrometry	R-19.1 (Eichrom method)	Liquid, solid, biological, vegetable, animal samples and natural materials	A, D
14	Determination of activity of strontium by liquid scintillation spectrometry	R-20 (Eichrom method)	Liquid, solid, biological, vegetable, animal samples and natural materials	A, D
15	Determination of activity of ⁶³ Ni by liquid scintillation spectrometry method	R-21 (Eichrom method)	Liquid and solid samples, natural materials	A, D

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
16	Determination of activity of ⁵⁹ Ni by high resolution gamma spectrometry method	R-22 (Eichrom method)	Liquid and solid samples, natural materials	A, D
17	Determination ²³⁷ Np by alpha spectrometry	R-24 (Eichrom method)	Liquid, solid, biological, vegetable, animal samples and natural materials	A, D
18	Determination of ²¹⁰ Po activity by alpha spectrometry method	R-25 (ČSN EN ISO 13161)	Water – drinking, ground, surface, wastewater, liquid waste, soil, metals, sediments, sludge, concrete and natural materials	A, D
19	Determination of activity of ⁷⁹ Se by liquid scintillation spectrometry	R-26 (US DOE RP 530 method)	Liquid and solid samples	A, D
20	Determination of activity of ⁹³ Zr by liquid scintillation spectrometry	R-27 (US DOE RP 530 method)	Liquid and solid samples	A, D
21	Determination of activity of ⁵⁵ Fe by liquid scintillation spectrometry	R-28 (ČSN EN ISO 22515)	Liquid and solid samples	A, D
22	Determination of ¹²⁶ Sn concentration by ICP-MS method with subsequent calculation of activity from measured values	R-30 (Radiochemistry of Tin, National Research Council, 1960)	Liquid and solid samples	A, D
23	Determination of activity of ⁴¹ Ca by liquid scintillation spectrometry	R-31 (Radiochimica Acta 93, 611- 617 (2005))	Liquid and solid samples	A, D
24	Determination of ²²⁶ Ra activity by liquid scintillation spectrometry technique	R-32 (ČSN EN ISO 13165-1)	Drinking, ground, surface water	A, D
25	Determination of ⁹³ Mo activity by high-resolution gamma spectrometry method	R-33 (The radiochemistry of molybdenum, 1960)	Liquid and solid samples	A, D

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
26	Determination of ¹⁰⁷ Pd activity by liquid scintillation spectrometry technique	R-34 (The Radiochemistry of Palladium, University of Michigan, 1961)	Liquid and solid samples	A, D
27	Determination of gross alpha and beta activity by liquid scintillation spectrometry	R-35 (ČSN EN ISO 11704)	Water – drinking, ground, surface, wastewater, liquid samples	-
28	Determination of uranium concentration by modified Davies & Gray titration method	C-U-01 (J. Radioanal. Nucl. Chem (2009) 282:939–944)	Liquid and solid samples	-
29	Determination of low concentrations of elements and isotopes by ICP-MS method	C-ICP-MS-01 (ČSN EN ISO 17294-1; ČSN EN 16171; ČSN EN ISO 17294-2)	Liquid and solid samples	A, B, D
30	Determination of total organic carbon (TOC) by spectrophotometry	C-01 (ČSN EN 1484; ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
31	Determination of chloride by spectrophotometry	C-04 (ČSN 75 7422; ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
32	Determination of sulphate by spectrophotometry	C-05 (ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
33	Determination of phosphate and total phosphorus by spectrophotometry	C-06 (ČSN EN ISO 6878; ČSN ISO 17381; HACH manual)	Water – drinking, hot, ground, surface, wastewater, liquid samples	-

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
34	Determination of chemical oxygen demand using potassium dichromate (COD-Cr) by spectrophotometry	C-07 (ČSN ISO 15705; ČSN ISO 17381; HACH manual)	Water – ground, surface, wastewater, liquid samples	-
35	Determination of total nitrogen by spectrophotometry and organic nitrogen by calculation from measured values	C-08 (ČSN EN ISO 11905; ČSN ISO 17381; HACH manual)	Water – ground, surface, wastewater, liquid samples	-
36	Determination of nitrite and N-NO ₂ by spectrophotometry	C-09 (ČSN EN 26777; ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
37	Determination of nitrate and N-NO ₃ by spectrophotometry	C-10 (ČSN 75 7455; ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
38	Determination of ammonium and N-NH ₄ by spectrophotometry	C-11 (ČSN ISO 7150-1; ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
39	Determination of dissolved inorganic salts (DIS) by gravimetry	C-12 (ČSN ISO 757347)	Wastewater	-
40	Determination of suspended solids (dried at 105 °C) by gravimetry	C-13 (ČSN EN 872)	Water – ground, surface, wastewater, liquid samples	-
41	Determination of biochemical oxygen demand (BOD ₅) by spectrophotometry	C-14 (ČSN EN ISO 5815-1; ČSN ISO 17381; Hach manual)	Water – ground, surface, wastewater, liquid samples	-

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
42	Determination of chemical oxygen demand using permanganate (COD-Mn) by spectrophotometry	C-15 (ČSN EN ISO 8467; ČSN ISO 17381; HACH manual)	Water – drinking, hot, ground, surface	-
43	Determination of electrical conductivity	C-16 (ČSN ISO 27888)	Water – drinking, ground, surface, wastewater, liquid samples	
44	Determination of pH by potentiometry	C-17 (ČSN ISO 10523)	Water – drinking, hot, ground, surface, wastewater, liquid samples	-
45	Determination of total hardness, calcium and magnesium by spectrophotometry	C-18 (ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
46	Determination of manganese by spectrophotometry	C-19 (ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
47	Determination of iron by spectrophotometry	C-20 (ČSN ISO 6332; ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-
48	Determination of potassium by spectrophotometry	C-23 (ČSN ISO 17381; HACH manual)	Water – drinking, ground, surface, wastewater, liquid samples	-

¹ asterisk at the ordinal number identifies the tests, which the laboratory is qualified to carry out outside the permanent laboratory premises

² if the document identifying the test procedure is dated, only these specific procedures are used. If the document identifying the test procedure is not dated, the latest valid edition of the specified procedure is used (including any changes)

³ degrees of freedom: A – Flexibility concerning materials/products (subject of the test), B – Flexibility concerning components/parameters/characteristics, C – Flexibility concerning the performance of the method, D – Flexibility concerning the method

The laboratory can modify the test procedures with the specified degree(s) of freedom in the scope of accreditation while maintaining the principle of measurement. If no degree of freedom is specified, the laboratory cannot apply a flexible approach to the scope of accreditation for the test.

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Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (determined analytes)
29	Li, Be, B, Na, Mg, Si, S, Al, K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Rb, Sr, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Sb, Te, Cs, Ba, La, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Th, Pa, U, Np, Pu, Am, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu

Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (tested subject)
1, 4, 5, 7	Gaseous samples – samples of gases released as a rule from a nuclear facility through a ventilation stack or released in its part, which can be subsequently led through a ventilation system into the ventilation stack and into the environment
1-8, 11-48	Liquid samples – samples in form of solutions in inorganic solvents (water, acids, bases) or organic solvents, liquid radioactive waste, water, acid, base or organic solvent extracts of solid radioactive samples, samples from the MAAE system of safeguards samples of water from an operated nuclear facility, nuclear facilities water discharge, process water, samples of water from the nuclear facility neighbourhood, samples of drinking, surface and waste water.
1-8, 11-23, 25, 26, 28, 29	Solid samples – solid samples from an operated nuclear facility, samples of radioactive waste from the processing and storage process, nuclear facility outputs, samples with absorbed substance, filters.
6-8, 11-18	Samples of animal and plant origin, samples of natural materials – milk, cereals, fodder, vegetables, soil, sediments in order to determine the concentration (activity) of elements (isotopes).
7	Biological samples – urine, stool at suspect personnel contamination; analyses of tissues to determine the concentration (activity) of elements (isotopes).
9	Mixed biomass fuel – a mixture of combustible organic substances (components) obtained as a rule from waste products or products made of current or fossil materials with minimum content of toxic or harmful pollutants. The components may include: - current natural materials or waste or products made of them (straw, wood, paper, rags, leather, products, biomass or similar), - fossil materials or waste or products made of them (plastics, rubber, or similar)

"This document is an appendix to the certificate of accreditation. In case of any discrepancies between the English and Czech versions, the Czech version shall prevail, both for the certificate appendix and the certificate itself."