

**The Appendix is an integral part of
Certificate of Accreditation No: 131/2024 of 11/03/2024**

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

Czech Geological Survey
CAB number 1049.1, Central Laboratory
Geologická 6, 152 00 Praha 5

Testing laboratory locations:

- | | |
|------------------|------------------------------|
| 1. Prague | Geologická 6, 152 00 Praha 5 |
| 2. Brno | Leitnerova 22, 658 69 Brno |

The laboratory is qualified to carry out standalone sampling.

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

1. Central Laboratory Prague

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1	Decomposition of silicate sample and determination of SiO ₂ by titrimetry	A1 (MŽP methodology – parts 1.1.2, 1.1.3)	Rock, soil, mineral, mineral raw material	-
2	Determination of Al ₂ O ₃ by titrimetry	A3 (MŽP methodology – part 1.1.4.1; ČSN 72 0109-1)	Rock, soil, mineral, mineral raw material	-
3	Determination of CaO by titrimetry	A4 (MŽP methodology – part 1.1.9.2; ČSN 72 0113-1)	Rock, soil, mineral, mineral raw material	-
4	Determination of MgO by titrimetry	A5 (MŽP methodology – part 1.1.9.3; ČSN 72 0114-1)	Rock, soil, mineral, mineral raw material	-
5	Determination of Fe ₂ O ₃ by spectrophotometry	A6 (MŽP methodology – part 1.1.7.3; ČSN 72 0110-1)	Rock, soil, mineral, mineral raw material	-
6	Determination of Fe ₂ O ₃ , MnO by FAAS method	A7 (MŽP methodology – parts 1.1.7.5; 1.1.8.1)	Rock, soil, mineral, mineral raw material	-
7	Determination of CaO, MgO by FAAS method	A8 (MŽP methodology – part 1.1.9.1)	Rock, soil, mineral, mineral raw material	-
8	Determination of Na ₂ O, K ₂ O by FAAS method	A9 (MŽP methodology – part 1.1.12.1)	Rock, soil, mineral, mineral raw material	-
9	Determination of Al ₂ O ₃ by FAAS method	A10 (MŽP methodology – part 1.1.4.2)	Rock, soil, mineral, mineral raw material	-

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
10	Determination of TiO ₂ by FAAS method	A11 (MŽP methodology – part 1.1.5.1)	Rock, soil, mineral, mineral raw material	-
11	Determination of Li ₂ O by FAAS method	A12 (MŽP methodology – part 1.1.13.1)	Rock, soil, mineral, mineral raw material	-
12	Determination of P ₂ O ₅ by spectrophotometry	A13 (MŽP methodology – part 1.1.36.2; ČSN 72 0116-2)	Rock, soil, mineral, mineral raw material	-
13	Determination of FeO by titrimetry	A14 (MŽP methodology – part 1.1.7.6; ČSN 72 0111)	Rock, soil, mineral, mineral raw material	-
14	Determination of CO ₂ by CS analyzer equipped with IR detector	A15 (Eltra analyzer manual; ČSN EN 15936, method A)	Rock, soil, mineral, mineral raw material	-
15	Determination of total sulfur and total carbon by combustion method using CS analyzer equipped with IR detectors	A16 (Eltra analyzer manual; ISO 15178; ČSN EN 15936, method A)	Rock, soil, mineral, mineral raw material	-
16	Reserved	-	-	-
17	Reserved	-	-	-
18	Determination of fluorides by ISE method	A19 (MŽP methodology – part 1.1.41.1)	Rock, soil, mineral, mineral raw material	-
19	Determination of loss by drying by gravimetry	A20 (MŽP methodology – part 1.1.1.1; ČSN 72 0102)	Rock, soil, mineral, mineral raw material	-
20	Determination of loss on ignition by weighing and check of completeness of silicate analysis by calculation from measured values	A22, A21 (MŽP methodology – part 1.1.1.3; ČSN 72 0103)	Rock, soil, mineral, mineral raw material	-
21	Determination of SiO ₂ by gravimetry	A24 (MŽP methodology – part 1.1.3.1; ČSN 72 0105-1)	Rock, soil, mineral, mineral raw material	-
22	Determination of Sr by FAAS method	A31 (MŽP methodology – part 1.1.10.1)	Rock, soil, mineral, mineral raw material	-

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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
23	Determination of Hg using AMA 254 analyzer	A61 (ČSN 75 7440; AMA manual)	Rock, soil, mineral, mineral raw material Natural water	-
24	Determination of rare soil elements and Y by ICP-MS method	A62 (ICP-MS manual; ČSN EN ISO 17294-2)	Rock, soil, mineral, mineral raw material	-
25	Reserved	-	-	-
26	Determination of conductivity at 25°C	B2 (ČSN EN 27888; MŽP methodology – part 1.5)	Natural water (surface, underground and precipitation)	-
27	Determination of total and evident acid neutralizing capacity (ANC) by titrimetry	B3 (ČSN EN ISO 9963-1; MŽP methodology – part 1.7)	Natural water (surface, underground and precipitation)	-
28	Determination of anions by IC method equipped with conductivity detector	B4 (ČSN EN ISO 10304-1)	Natural water (surface, underground and precipitation)	-
29	Reserved	-	-	-
30	Determination of major and trace elements by FAAS method	B11 (ČSN ISO 9964-1,2; ČSN ISO 7980; ČSN 75 7385; ČSN EN ISO 12020; ČSN ISO 8288; MŽP methodology – part 2.7.2, part 3.12.1, part 2.9.1, part 3.13.1, part 3.25.1; Standard Methods – part 3111 A)	Natural water (surface, underground and precipitation)	-
31	Determination of trace elements by GFAAS method	B19 (ČSN EN ISO 15586; MŽP methodology – 3.26.2, 3.1.2, 3.8.1, 3.24.1; GF AAS manual)	Natural water (surface, underground and precipitation)	-

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 the laboratory does not apply a flexible approach to the scope of accreditation

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Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (source literature)
1 - 13, 18 - 22	MŽP methodology: Dalibor Weiss et al.: Methods for the Chemical Examination of Mineral Raw Materials. Part 1-3, ÚÚG, Prague 1983.
26, 27, 30, 31	MŽP methodology: Milena Kobrová et al.: Methods for the Chemical Examination of Natural Water. ÚÚG, Prague 1983.
30	Standard Methods for the Examination of Water and Wastewater. APHA, 1998.

Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (determined analytes)
24	Elements: La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu
28	Anions: F ⁻ , Cl ⁻ , NO ₃ ⁻ , SO ₄ ²⁻
30	Elements: Na, K, Mg, Ca, Li, Fe, Al, SiO ₂ , Mn, Zn
31	Elements: Al, As, Be, Cd, Co, Cr, Cu, Mo, Ni, Pb, V

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2. Brno

Tests:

Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
1	Determination of gases by gas chromatography method GC/TCD/FID and calculation of derived parameters from the measured values	SOP PL1 (ČSN EN ISO 6974-6; ČSN EN ISO 6975; ČSN EN ISO 6976)	Natural, mining, waste dump and soil gas	-
2	Determination of polycyclic aromatic hydrocarbons (PAHs) by GC/MS method and total PAHs calculated from the measured values	SOP Z-PAH (ISO 18287; ČSN ISO 28540)	Earth, sediment and sludge	-
3	Determination of total organic carbon, total inorganic carbon, and total carbon (TOC, TIC, TC) and total sulfur (TS) by analyzer equipped with IR detectors	SOP H-CS (ČSN EN 15936, method A,B; ČSN ISO 10694; ČSN EN 13639; ISO 15178)	Rock, earth, sediment and sludge	-

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Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (determined analytes)
1	TCD: He, H ₂ , CO ₂ , Ar, O ₂ , N ₂ , CH ₄ , CO FID: methane, ethene, ethane, propene, propane, iso-butane, n-butane, 2,2-dimethylpropane, 2-methylbutane, n-pentane, cyclopentane, sum i-C ₆ , n-hexane Derived parameters: gross calorific value, net calorific value, density, relative density, gross and net Wobbe index
2	PAHs: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, dibenzo[a,h]anthracene, benzo[g,h,i]perylene

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Sampling:

Ordinal number	Sampling procedure name	Sampling procedure identification ¹	Subject of sampling
1	Sampling of natural, mining, waste dump and soil gas to sampling containers	SOP PLV (ČSN 01 5113; ČSN EN ISO 10715)	Natural, mining, waste dump and soil gas

¹ if the document identifying the sampling procedure is dated, only these specific procedures are used. If the document identifying the sampling procedure is not dated, the latest edition of the specified procedure is used (including any changes)

Abbreviations:

AMA:	advanced mercury analyzer
FAAS:	flame atomic absorption spectrometry
FID:	flame ionization detector
GFAAS:	graphite furnace atomic absorption spectrometry/spectrometer
GC:	gas chromatography
GC/MS:	gas chromatography/mass spectrometry
IC:	ion chromatography
ICP-MS:	inductively coupled plasma-mass spectrometry/spectrometer
IR:	infrared
ISE:	ion selective electrode
PAHs:	polycyclic aromatic hydrocarbons
SOP:	standard operating procedure
TC:	total carbon
TCD:	thermal conductivity detector
TIC:	total inorganic carbon
TOC:	total organic carbon
TS:	total sulfur
A, B:	method specification