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Český institut pro akreditaci, o.p.s.
Olšanská 54/3, 130 00 Praha 3

issues

according to section 16 of Act No. 22/1997 Coll., on technical requirements for products, as amended

CERTIFICATE OF ACCREDITATION

No. 664/2019

ENVIFORM a.s.
with registered office Závodní 814, Staré Město, 739 61 Třinec, Company Registration
No. 25839047

to the Testing Laboratory No. 1371
LABORATORIES CENTRE

Scope of accreditation:

Sampling of water, waste, solid materials and sludge; measurement of emissions; measurement of physical factors in working and non-working environment; chemical and physical analyses of water, heating gases, benzol, fuels, charge and metallurgical materials, intermediate products, products and waste to the extent as specified in the appendix to this Certificate.

This Certificate of Accreditation is a proof of Accreditation issued on the basis of assessment of fulfillment of the accreditation criteria in accordance with

ČSN EN ISO/IEC 17025:2018

In its activities performed within the scope and for the period of validity of this Certificate, the Body is entitled to refer to this Certificate, provided that the accreditation is not suspended and the Body meets the specified accreditation requirements in accordance with the relevant regulations applicable to the activity of an accredited Conformity Assessment Body.

This Certificate of Accreditation replaces, to the full extent, Certificate No.: 444/2019 of 2. 9. 2019, or any administrative acts building upon it.

The Certificate of Accreditation is valid until: **6. 12. 2024**

Prague: 6. 12. 2019



Jiří Růžička
Director
Czech Accreditation Institute
Public Service Company

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

ENVIFORM a.s.
LABORATORIES CENTRE
Závodní 814, Staré Město, 739 61 Třinec

Testing laboratory locations:

- | | |
|--|---|
| 1. Sampling Laboratory | Závodní 814, Staré Město, 739 61 Třinec |
| 2. Emission Measurement Laboratory | Závodní 814, Staré Město, 739 61 Třinec |
| 3. Working and Living Environment Laboratory | Závodní 814, Staré Město, 739 61 Třinec |
| 4. Quantometric Laboratory | Průmyslová 1041, Staré Město, 739 61 Třinec |
| 5A. Chemical and Physical Analysis Laboratory | Závodní 814, Staré Město, 739 61 Třinec |
| 5B. Chemical and Physical Analysis Laboratory | Průmyslová 1041, Staré Město, 739 61 Třinec |

*The laboratory has a flexible scope of accreditation permitted as detailed in the Annex.
The Laboratory has the updated list of activities provided within the flexible scope of accreditation available at the laboratory from the CL Assistant Manager.
The Laboratory is qualified to carry out independent sampling.*

1 Sampling Laboratory

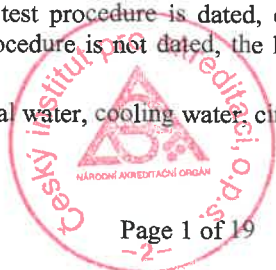
Tests:

Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
1 *	Determination of temperature	SPL – Lv – 01 (ČSN 75 7342)	Drinking, surface, ground, waste ³ and bathing water
2 *	Determination of total and free chlorine (spectrophotometric method) by HACH set and calculation of bound chlorine	SPL – Lv – 02 (HACH manual)	Drinking and bathing water
3 *	Determination of electrical conductivity	SPL – Lv – 03 (ČSN EN 27888)	Drinking, surface, ground and waste ³ water
4 *	Determination of pH by potentiometry	SPL – Lv – 04 (ČSN ISO 10 523)	Drinking, surface, ground, waste ³ and bathing water
5 *	Determination of ozone by spectrophotometry using HACH set	SPL – Lv – 06 (HACH manual)	Drinking, bathing, ground and surface water

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 edition of the specified procedure is used (including any changes).

³ Waste water - waste water, industrial water, cooling water, circuit water



**The Appendix is an integral part of
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Annex:

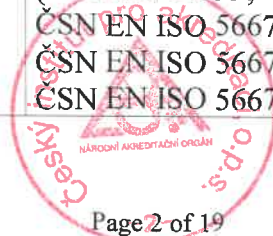
Flexible scope of accreditation

Ordinal numbers of tests
1,3,4

The Laboratory is allowed to modify the test methods listed in the Annex within the specified scope of accreditation provided the measuring principle is observed. The flexible approach to the scope of accreditation cannot be applied to the tests not included in the Annex.

Sampling:

Ordinal number	Sampling procedure name	Sampling procedure identification ¹	Sampled object
1	Surface water sampling (manual sampling)	SPO – Lv – 01 (ČSN EN ISO 5667-1, ČSN EN ISO 5667-3, ČSN ISO 5667-4, ČSN EN ISO 5667-6, ČSN EN ISO 5667-14)	Surface water
2	Waste water sampling (manual sampling, automatic sampler)	SPO – Lv – 02 (ČSN EN ISO 5667-1, ČSN EN ISO 5667-3, ČSN ISO 5667-10, ČSN EN ISO 5667-14)	Waste water
3	Ground water sampling (manual sampling, sampling using a sampling pump)	SPO – Lv – 03 (ČSN EN ISO 5667-1, ČSN EN ISO 5667-3, ČSN ISO 5667-11, ČSN EN ISO 5667-14)	Ground water
4	Drinking water sampling	SPO – Lv – 04 (ČSN EN ISO 5667-1, ČSN EN ISO 5667-3, ČSN ISO 5667-5, ČSN EN ISO 5667-14, ČSN EN ISO 19458)	Drinking water, hot water
5	Collection of waste and solid materials	SPO – Lv – 05 (ČSN EN 14899; MoE Guideline 4/2008)	Waste ³ and solid materials ⁴
6	Sampling of sludge	SPO – Lv – 06 (ČSN EN 14899; ČSN EN ISO 5667-12, ČSN EN ISO 5667-13, ČSN EN ISO 5667-15)	Sludge



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Ordinal number	Sampling procedure name	Sampling procedure identification ¹	Sampled object
7	Sampling of bathing water	SPO – Lv – 07 (ČSN EN ISO 5667-1, ČSN EN ISO 5667-3, ČSN ISO 5667-4, ČSN ISO 5667-6, ČSN EN ISO 5667-14, ČSN EN ISO 19458, ČSN ISO 11731, ČSN 75 7717, MoH Regulation No. 238/2011 Coll.)	Bathing water

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).

² Waste water - waste water, industrial water, cooling water, circuit water

³ Waste - soil, metallurgical waste (fly ash, blast-furnace slag, iron dust, scale)

³ Solid materials - soil, slag, track superstructure and charge material (agglomerate, ore)

Explanations and abbreviations:

Lv Sampling Laboratory
SPL Standard Laboratory Procedure of the LABORATORIES CENTRE
SPO Standard Sampling Procedure of the LABORATORIES CENTRE
MoH Ministry of Health
MoE Ministry of Environment



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2 Emission Measurement Laboratory

Tests:

Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
1	Determination of the mass concentration of TZL (solid pollutants) by gravimetric method	SPL – Le - 01 (ČSN EN 13284-1)	Emission
2 *	Determination of the velocity and volume flow rate of gas streams in ducts	SPL – Le - 02 (ČSN ISO 10780, ČSN EN ISO 16911-1)	Emission
3 *	Determination of water vapour in ducts by condensation method and capacitance detector	SPL – Le - 05 (ČSN EN 14790)	Emission
4 *	Determination of mass concentration of sulphur dioxide, carbon monoxide and nitrogen oxides by automatic analyser – NDIR method	SPL – Le - 06 (ČSN ISO 7935, ČSN EN 15058, ČSN ISO 10849)	Emission
5	Determination of the mass concentration of gases and vapours by calculation from measured values ³ (HCl, HF, SO ₂)	SPL – Le - 07 (ČSN EN 1911, ČSN 83 4752, ČSN EN 14791)	Emission
6 *	Determination of mass concentration of total organic compounds expressed as TOC by automatic analyser - flame ionization detection method	SPL – Le - 09 (ČSN EN 12619)	Emission
7 *	Determination of concentration of oxygen by automatic analyser - paramagnetic method	SPL – Le - 10 (ČSN EN 14789)	Emission
8 *	Determination of concentration of carbon dioxide by automatic analyser - NDIR method	SPL – Le – 10A (ISO 12039)	Emission
9	Determination of the mass concentration of persistent organic compounds by calculation from measured values ³ (PCDD/PCDF, PCB, PAH)	SPL – Le - 11 (ČSN EN 1948-1, ČSN EN 1948-4)	Emission
10	Determination of the mass concentration of heavy metals by calculation from measured values ³ (Sb, As, Be, Sn, Cr, Co, Cd, Mn, Cu, Ni, Pb, Se, Te, Tl, V, Zn, Hg)	SPL – Le - 12 (ČSN EN 14385, ČSN EN 13211, US EPA 29)	Emission
11	Reserved		
12 *	Determination of mass concentration of nitrogen oxides (NO _x) – chemiluminescence method	SPL – Le - 08 (ČSN EN 14792)	Emission

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
13 *	Quality assurance of automated measuring systems	SPL – Le - 14 (ČSN EN 14181, cl. 6 QAL2, cl. 8 AST)	Emission

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 edition of the specified procedure is used (including any changes).

³ Laboratory determination of an analyte in the sample is subcontracted to an accredited laboratory.

Sampling:

Ordinal number	Sampling procedure name	Sampling procedure identification ¹	Sampled object
1	Sampling of persistent organic compounds (PCDD/PCDF, PCB, PAH) by filtration condensation method, automatic or manual isokinetic control	SPO – Le - 11 (ČSN EN 1948-1, ČSN EN 1948-4)	Emission
2	Sampling of heavy metals (Sb, As, Be, Sn, Cd, Cr, Co, Cu, Mn, Ni, Pb, Se, Te, Tl, V, Zn, Hg); automatic or manual isokinetic control	SPO – Le - 12 (ČSN EN 14385, ČSN EN 13211, ČSN EN 13284-1, US EPA 29)	Emission
3	Reserved		
4	Sampling of TZL; automatic or manual isokinetic control	SPO – Le - 01 (ČSN EN 13284-1)	Emission
5	Sampling of gases and vapours by absorption in a liquid (HCl, HF, SO ₂)	SPO – Le - 07 (ČSN EN 1911, ČSN 83 4752, ČSN EN 14791)	Emission

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).

Explanations and abbreviations:

Le Emission Measurement Laboratory
SPL Standard Laboratory Procedure of the LABORATORIES CENTRE
SPO Standard Sampling Procedure of the LABORATORIES CENTRE
TZL Solid Pollutants



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NDIR Non-Dispersive Infrared Spectrometry

TOC Total Organic Carbon

VOC Volatile Organic Compounds

US EPA Standard of the United States Environmental Protection Agency

PCDD Polychlorinated dibenzodioxins

PCDF Polychlorinated dibenzofurans

PCB Polychlorinated biphenyls

PAH Polycyclic Aromatic Hydrocarbons

HCl Inorganic compounds of hydrogen chloride

HF Inorganic compounds of hydrogen fluoride

SO₂ Sulphur Dioxide

Emission Waste gas containing pollutants, which is released in a controlled way or leaks into atmosphere from air pollution sources.

QAL2 Calibration and validation of automated measuring systems

AST Annual surveillance test of an automated measuring system



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3 Working and Living Environment Laboratory

Tests:

Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
1	Determination of total dust concentration	SPL – Lh - 01 (Gov. Reg. 361/2007 Coll., except Annex No. 3, Part D, p. b, ČSN EN 481, ČSN EN 482 + A1, ČSN EN 689) + AC	Working environment
2	Determination of concentration of respirable fraction of airborne dust	SPL – Lh - 02 (Gov. Reg. 361/2007 Coll., except Annex No. 3, Part D, p. a, ČSN EN 481, ČSN EN 482 + A1, ČSN EN 689) + AC	Working environment
3 *	Measurement of noise in a working environment	SPL – Lh - 03 (ČSN EN ISO 9612, MoH CR Bulletin Part 4/2013 ⁴⁾)	Working environment
4 *	Measurement of environmental noise	SPL – Lh - 04 (ČSN ISO 1996 -1, ČSN ISO 1996 -2, MoH CR Bulletin Part 11/2017 ⁵⁾)	Non-working environment
5 *	Measurement of human exposure to hand-transmitted vibration	SPL – Lh - 05 (ČSN EN ISO 5349-1, ČSN EN ISO 5349-2, MoH CR Bulletin Part 4/2013 ⁴⁾)	Working environment
6 *	Measurement of total vibration	SPL – Lh - 06 (ČSN ISO 2631-1, ČSN ISO 2631-2, MoH CR Bulletin Part 4/2013 ⁴⁾)	Working environment
7 *	Measurement of daylight	SPL – Lh - 07 (ČSN 36 0011-1, ČSN 36 0011-2, ČSN 73 0580-1, ČSN 36 0020)	Working and non-working environment



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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
8 *	Measurement of artificial lighting	SPL – Lh - 08 (ČSN 36 0011-1, ČSN 36 0011-3, ČSN 36 0011-4, ČSN EN 12464-1, ČSN EN 12464-2)	Working and non-working environment
9 *	Measurement of microclimatic parameters ³ of working and building interior environment	SPL – Lh - 09 (ČSN EN ISO 7726, ČSN EN ISO 7730, MoH CR Bulletin Part 8/2013 ⁶)	Working and non-working environment
10 *	Measurement of sound power of noise sources by sound pressure measurement	SPL – Lh - 10 (ČSN EN ISO 3744, ČSN EN ISO 3746)	Noise sources – machines and equipment
11 *	Measurement of sound pressure emission at work stations and other specified locations	SPL – Lh - 11 (ČSN EN ISO 11201, ČSN EN ISO 11202, ČSN EN ISO 11203, ČSN EN ISO 11204)	Noise sources – machines and equipment

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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 edition of the specified procedure is used (including any changes).

³ Measured parameters: t_a [°C] – air temperature, t_g [°C] – resulting temperature of spherical thermometer, r_h [%] – relative air humidity, v_a [m.s⁻¹] – air flow velocity, t_d [°C] – dew point temperature, t_s [°C] – surface temperature

⁴ Guideline for the measurement and evaluation of noise and vibrations at workplace and vibrations in protected indoor areas of buildings

⁵ Guideline for the measurement and evaluation of noise in non-working environment

⁶ Guideline for the measurement and evaluation of microclimatic parameters of working environment and indoor areas of buildings



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Sampling:

Ordinal number	Sampling procedure name	Sampling procedure identification ¹	Sampled object
1	Sampling of dust, aerosol and mineral fibres by catching on a filter	SPO – Lh – 01 (Gov. Reg. 361/2007 Coll., ČSN EN 481, ČSN EN 482 + A1, ČSN EN 689 + AC)	Workplace air
2	Sampling of gases and vapours by catching on a solid sorbent	SPO – Lh – 02 (Gov. Reg. 361/2007 Coll., ČSN EN 481, ČSN EN 482 + A1, ČSN EN 689 + AC) ČSN EN ISO 16017-1	Workplace air

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).

Explanations and abbreviations:

Lh Working and Living Environment Laboratory
SPL Standard Laboratory Procedure of the LABORATORIES CENTRE
SPO Standard Sampling Procedure of the LABORATORIES CENTRE
Gov. Reg. Government Regulation



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4. Quantometric Laboratory

Tests:

Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
1	Determination of specific activity of ⁶⁰ Co by gamma ray spectrometry	SPL – Lq - 01 (IAEA-TECDOC- 855, SKF11H 1551822, Issue 4, Regulation No. 307/2002 Coll., Annex No. 1)	Steel, cast iron
2	Determination of oxygen content by method of IR absorption after melting in inert gas	SPL – Lq - 02 (ASTM E 1019, ČSN EN 10276-2, ČSN 42 0540, SKF 11H 1551218, Issue 5, LECO 209-141-003 9/07 REV1 Application report)	Steel, cast iron
3	Determination of the content of nitrogen and hydrogen by thermal conductometric method after melting in inert gas	SPL – Lq - 03 (ASTM E 1019, ČSN EN ISO 15351, ČSN EN ISO 10720, LECO 209-141-003 9/07 REV1 Application report, ČSN 42 0529)	Steel, cast iron
4	Determination of total carbon and sulphur content by method of infrared absorption after combustion in induction furnace	SPL – Lq - 04 (ASTM E 1019, LECO 209-141-001 8/07 REV2 Application report, ČSN EN ISO 15349-2, ČSN EN ISO 15350, ČSN ISO 9556, ČSN ISO 4935, ČSN 42 0541)	Steel, cast iron, iron, ferroalloys*
5	Determination of content of elements (C, Mn, Si, P, S, Cu, Cr, Ni, Al, Al _{metallic} form, Mo, W, V, Ti, Co, As, Sn, B, B _{metallic} form, Ca, Nb, Pb, Sb, Zr, Zn, Bi, Ta, Ce, Mg, N) by optical emission vacuum spectrometry	SPL – Lq - 05 (ASTM E 415, ASTM E 1086, ASTM E 1999, Thermo Fisher Scientific and OBLF User Manuals)	Steel, cast iron, iron



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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
6	Determination of content of elements (C, Mn, Si, P, S, Al, Cu, Cr, Ni, Mo, W, V, Ti, Co, As, Sn, Nb, Pb, Sb, Zr, Zn, Bi, Fe) by X-ray fluorescent spectrometry	SPL – Lq - 06 – 3A (ASTM E 322, ASTM E 572, ČSN EN 15063-1, ČSN EN 15063-2, HŽ 42 0594, Thermo Fisher Scientific User Manual)	Metallic materials**
7	Determination of the content of elements (Fe, Si, Al, Mn, Ca, P, S, Ti, Na, K, Cr, Zn, F) by X-ray fluorescence spectrometry and calculation of their oxides, carbonates and fluorides (Fe ₂ O ₃ , SiO ₂ , Al ₂ O ₃ , MnO, CaO, CaCO ₃ , MgO, MgCO ₃ , P ₂ O ₅ , TiO ₂ , Na ₂ O, K ₂ O, Cr ₂ O ₃ , CaF ₂) from measured values	SPL – Lq - 06 – 3B (ISO 9516-1, HŽ 42 0593, ČSN EN ISO 12677, HŽ 72 2019, ASTM C 1271, Thermo Fisher Scientific User Manual)	Bulk materials ***

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³ Ferroalloys - ferrosilicon, ferromanganese, ferrosilicon manganese, ferro sulphur, ferrochromium, ferroboron, ferrotitanium, ferrotungsten, ferrovanadium, ferromolybdenum, ferrosiliconzirconium, ferrosiliconcalcium

⁴ Metallic materials – materials with iron (e.g. steel, cast iron, iron) or copper matrix (e.g. bronze, copper)

⁵ Bulk materials – Charge materials with iron matrix (containing 5 – 70 % of iron – e.g. agglomerates, iron ores, sinter ores, iron pellets, iron concentrates, ore mixtures, ferroalloys), refractory materials (e.g. bauxite, clay, pelt, fire clay, kaolin, magnesite), flux materials (e.g. limestone, dolomite), slag and materials with non-ferrous matrix similar to slag (e.g. blast-furnace slag, steel furnace slag, slag aggregates)

Explanations and abbreviations:

Lq Quantometric Laboratory

SPL Standard Laboratory Procedure of the LABORATORIES CENTRE

HŽ Iron Metallurgy

SKF Technical instructions for testing of samples of steel for the production of SKF bearings

IAEA International Atomic Energy Agency

ASTM American Society for Testing and Materials



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Annex:

Flexible scope of accreditation

Ordinal numbers of tests
1 - 7

The Laboratory is allowed to modify the test methods listed in the Annex within the specified scope of accreditation provided the measuring principle is observed. The flexible approach to the scope of accreditation cannot be applied to the tests not included in the Annex.

5.A Chemical and Physical Analysis Laboratory

Tests:

Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
1	Determination of the content of water by gravimetry	SPL – Lk – 11 (ČSN 44 1377, ČSN ISO 579, ČSN ISO 687, ČSN EN ISO 18134-1, ČSN EN ISO 18134-2, ČSN EN ISO 18134-3, ČSN P CEN/TS 15414-1, ČSN P CEN/TS 15414-2, ČSN EN 15414-3, ČSN ISO 3087, ČSN ISO 7764:1993, ČSN EN 459-2, ČSN EN 14346:2007, Meth. A)	Solid fuels ³ , Bulk materials ⁴
2	Determination of the content of ash by gravimetry	SPL – Lk - 12 (ČSN ISO 1171, ČSN EN ISO 18122, ČSN EN 15403)	Solid fuels ³
3	Determination of the content of volatile combustible matter by gravimetry	SPL – Lk - 13 (ČSN ISO 562, ČSN ISO 5071, ČSN EN ISO 18123, ČSN EN 15402)	Solid fuels ³



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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
4	Determination of total sulphur and carbon content by IR detection	SPL – Lk - 14 (ČSN ISO 19579, ČSN EN ISO 16948, ČSN EN 15407, ČSN ISO 29541, ČSN 72 2030-10:1992, ČSN 72 2041-19:1992)	Solid fuels ³ Bulk materials ⁴
5	Determination of gross calorific value (Q _s) by calorimetric method, calculation of net calorific value (Q _i) and emission factor from measured values	SPL – Lk - 15 (ČSN ISO 1928, ČSN EN ISO 18125, ČSN EN 15400)	Solid ³ and liquid fuels
6	Determination of basic elements (C, H, N, S) by TCD detection	SPL – Lk - 16 (ČSN ISO 29541, ČSN EN ISO 16948, ČSN EN 15407, ELEMENTAR User Manual)	Solid fuels ³
7	Determination of CRI and CSR index by gravimetry	SPL – Lk - 17 (ISO 18894, ČSN ISO 18894)	Coke
8	Determination of the composition of heating gases (CH ₄ , H ₂ , N ₂ , O ₂ , CO ₂ , CO and hydrocarbons C ₂ -C ₆) by gas chromatography (TCD, FID), calculation of their gross calorific value and net calorific value	SPL – Lk - 18 (ČSN EN ISO 6974; ČSN EN ISO 6976)	Heating gases
9	Determination of chemical composition of benzole ²⁾ by gas chromatography (FID)	SPL – Lk - 19 (ČSN 66 2108:1984)	Raw coke oven benzole ⁷
10	Determination of hydrocarbons C ₁₀ – C ₄₀ by gas chromatography after extraction with a solvent	SPL – Lk – 20 - 3A (ČSN EN ISO 9377-2)	Surface, waste ⁶ and ground water
11	Determination of Hg by single-purpose atomic absorption spectrometer	SPL – Lk – 23 – 3A, 3C (ČSN 75 7440)	Surface, waste ⁶ and ground water, bulk materials ⁴
12	Determination of content of elements (Al, As, Ba, Pb, Ca, Cd, Co, Cr, Cu, Fe, K, Mg, Mn, Mo, Ni, V, Zn) by optical emission spectrometry with inductively coupled plasma	SPL – Lk – 21 - 3A (ČSN EN ISO 11885)	Surface, waste ⁶ and ground water

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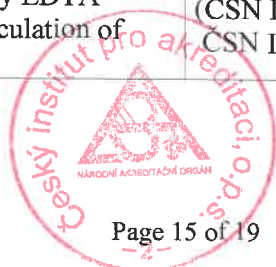
Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
13	Determination of metal content (Na, K) by atomic spectrometry and calculation of their oxides from measured values	SPL – Lk – 22 - 3A (ČSN ISO 9964-1, ČSN ISO 9964-2)	Surface, waste ⁶ and ground water
14	Determination of metal content (Al, Co, Cr, Cu, Mn, Mg, Mo, Ni, V, Zn) by optical emission spectrometry with inductively coupled plasma	SPL – Lk – 21 - 3B (ČSN EN 13656, ČSN EN 13657, ČSN EN 14242)	Steel, cast iron, iron, aluminium and its alloys
15	Determination of metal content (Cd and Pb) by atomic spectrometry with graphite furnace	SPL – Lk – 22 – 3C (ČSN EN ISO 15586)	Bulk materials ⁴
16	Determination of metal content (Al, As, Ba, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, P, Pb, Sb, Se, Sn, Ti, V, Zn) by optical emission spectrometry with inductively coupled plasma and calculation of the content of their oxides from measured values	SPL – Lk – 21 - 3C (ČSN EN 13656, ČSN EN ISO 10058-3, ČSN EN ISO 21587-3, ČSN EN ISO 21079-3, ČSN EN ISO 26845, ČSN EN ISO 20565-3)	Bulk materials ⁴
17	Determination of metal content (Pb, Na, K and Zn) by flame atomic spectrometry and calculation of their oxides from measured values	SPL – Lk – 22 – 3C (ČSN 72 2030-11, ČSN 72 2030-12, ČSN 72 2041-23:1992, ČSN 72 2041-24:1992, ČSN ISO 7969, ČSN EN ISO 10058-3, ČSN 72 0119, ČSN 72 0120, ČSN EN ISO 26845, ČSN EN ISO 20565-3, ČSN EN ISO 21587-3, ČSN EN ISO 21079-3)	Bulk materials ⁴
18	Determination of total phosphorus (P _c) by spectrophotometry and phosphate (PO ₄ ³⁻) by calculation from the measured values of total phosphorus	SPL – Lk – 29 (ČSN EN ISO 6878, chap. 7)	Surface, waste ⁶ and ground water
19	Determination of N-NH ₄ ⁺ by spectrophotometry, ammonium by calculation and total inorganic nitrogen by calculation from measured values	SPL – Lk – 30 (ČSN ISO 7150-1)	Surface, waste ⁶ and ground water
20	Determination of dissolved solids (RL105) and dissolved inorganic salts (RAS) by gravimetry	SPL – Lk – 31 - 3A (ČSN 75 7346, ČSN 75 7347)	Surface, waste ⁶ and ground water

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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
21	Determination of suspended solids by gravimetry	SPL – Lk – 31 – 3B (ČSN EN 872)	Surface, waste ⁶ and ground water
22	Determination of COD _C by spectrophotometry – HACH analytical commercial set	SPL – Lk – 32 (ČSN ISO 15705)	Surface, waste ⁶ and ground water
23	Determination of univalent phenols by spectrophotometry	SPL – Lk – 33 (ČSN ISO 6439, Meth. A)	Surface, waste ⁶ and ground water
24	Determination of N-NO ₂ ⁻ by molecular absorption spectrophotometric method and nitrite by calculation from measured values	SPL – Lk – 34 (ČSN EN 26777)	Surface, waste ⁶ and ground water
25	Determination of nitrate by spectrophotometry and N-NO ₃ ⁻ by calculation from measured values	SPL – Lk – 35 (ČSN ISO 7890-3)	Surface, waste ⁶ and ground water
26	Determination of chlorides by titration	SPL – Lk – 36 (ČSN ISO 9297)	Surface, waste ⁶ and ground water
27	Determination of total and dissolved iron by spectrophotometry	SPL – Lk – 37 (ČSN ISO 6332)	Surface, waste ⁶ and ground water
28	Determination of sulphate by gravimetry	SP – Lk – 38 (TNV 75 7476)	Surface, waste ⁶ and ground water
29	Determination of extractives (E) by infrared spectrometry	SPL – Lk – 39 – 3A (ČSN 75 7506)	Surface, waste ⁶ and ground water
30	Determination of nonpolar extractives (NE) by infrared spectrometry	SPL – Lk – 39 – 3B (ČSN 75 7505:2006)	Surface, waste ⁶ and ground water
31	Determination of electrical conductivity	SPL – Lk – 40 (ČSN EN 27888)	Surface, waste ⁶ and ground water
32	Determination of pH electrochemically	SPL – Lk – 41 (ČSN ISO 10523)	Surface, waste ⁶ and ground water
33	Determination of anionic surfactants using methylene blue	SPL – Lk – 42 (ČSN EN 903)	Surface, waste ⁶ and ground water
34	Determination of biochemical oxygen demand after five days BOD - ₅ by electrochemical method	SPL – Lk – 43 (ČSN EN 1899-1, ČSN EN 1899-2, ČSN EN ISO 5814)	Surface, waste ⁶ and ground water
35	Determination of calcium, sum of calcium and magnesium by EDTA titrimetric method and calculation of magnesium	SPL – Lk – 44 (ČSN ISO 6058, ČSN ISO 6059)	Drinking, surface, waste ⁶ and ground water



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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
36	Determination of fluoride, chloride, nitrite, nitrate, phosphate and sulphate by ion chromatography method	SPL – Lk – 45 (ČSN EN ISO 10304-1)	Drinking, surface, waste ⁶ and ground water
37	Determination of the content of Pb and Zn by flame atomic spectrometry	SPL – Lk – 22 – 3B (ČSN ISO 5194, ČSN ISO 5192)	Aluminium and its alloys

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 edition of the specified procedure is used (including any changes).

³ Solid fuels – Solid fuels (solid carbon substances releasing a lot of heat during combustion - e.g. anthracite, black coal, brown coal, lignite coal, turf, wood), coke, solid biofuels and solid alternate fuels

⁴ Bulk materials for Tests No. 1, 4, 16 and 17 – charge materials with iron matrix (containing 30 – 70 % of iron – e.g. iron ores, agglomerated ores, iron pellets, iron concentrates, iron, ore mixtures, agglomerates, metallurgical waste with iron matrix (e.g. iron dust, blast-furnace dust, sludge, cinder), slag and materials with non-ferrous matrix similar to slag (e.g. blast-furnace slag, steel-furnace slag, slag aggregates), refractory material (e.g. pelt, clay, fire clay, silica material, sand, chrome magnesite, gunite materials), flux materials (e.g. lime, limestone, dolomite, magnesite, casting powders)

⁵ n-hexane, n-heptane, n-octane, n-nonane, benzene, toluene, o-xylenes p-xylenes, m-xylenes, ethylbenzene, propylbenzene, cyclohexane, styrene, thiophene, pyridine, indene, naphthalene, 1-2-methylnaphthalenes, biphenyl, acenaphthene

⁶ Waste water – waste water, industrial water, cooling water, circuit water

⁷ Crude coke oven benzol - a mixture of benzene, toluene, xylenes and other organic compounds

Explanations and abbreviations:

Lk – Chemical and Physical Analysis Laboratory

SPL – Standard Laboratory Procedure of the LABORATORIES CENTRE

CRI index – Coke reactivity index

CSR – Coke strength after reaction

IR detection – Infrared spectrometry

TCD – Thermal conductivity detector

FID – Flame ionization detector

BOD – Biological Oxygen Demand

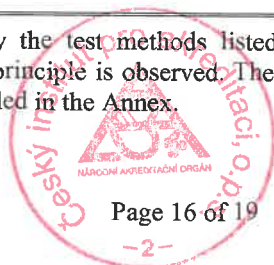
COD – Chemical Oxygen Demand

Annex:

Flexible scope of accreditation

Ordinal numbers of tests
1 – 21, 23 – 37

The Laboratory is allowed to modify the test methods listed in the Annex within the specified scope of accreditation provided the measuring principle is observed. The flexible approach to the scope of accreditation cannot be applied to the tests not included in the Annex.



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5B Chemical and Physical Analysis Laboratory

Tests:

Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
1 - 37	Reserved		
38	Determination of total and metallic iron, Fe ²⁺ and Fe ³⁺ by classical wet procedures and calculation of iron oxides by calculation from measured values	SPL – Lk – 25 (ČSN ISO 2597:1993, ČSN 72 2030-1:1992, ČSN 72 2041-1:1992, ČSN 72 2041-12:1992, ČSN 72 0100, ČSN 72 0101, ČSN 72 0110-3, ČSN 72 0111, ČSN EN 459 -2, ČSN EN ISO 20565-1, ČSN EN ISO 20565-2, ČSN EN ISO 21587-2, ČSN EN ISO 10058-2, ČSN 72 1216, ČSN 72 2030-8:1992)	Bulk materials ³
39	Determination of the content of chloride, fluoride, total S, sulphate by classical wet procedures and calculation of sulphide from measured values	SPL – Lk – 26 (ČSN ISO 4689, ČSN 72 0100, ČSN 72 0101, ČSN 72 0117, ČSN 72 0118, ČSN 72 1216, ČSN 72 2030-1:1992, ČSN 72 2030-10:1992, ČSN 72 2041-1:1992, ČSN 72 2041-13:1992, ČSN ISO 10523, ČSN EN 1744-1, ČSN ISO 9297, TUV 75 7476)	Bulk materials ³



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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
40	Determination of SiO ₂ content and loss by ignition by gravimetry	SPL – Lk – 27 (ČSN 72 2030-1:1992, ČSN 72 2030-2:1992, ČSN 72 2041-1:1992, ČSN 72 0100, ČSN 72 0101, ČSN 72 0105-1, ČSN 72 0105-2, ČSN EN ISO 10058-1, ČSN EN ISO 10058-2, ČSN EN 459-2, ČSN EN ISO 20565-1, ČSN EN ISO 20565-2, ČSN EN ISO 21587-2, ČSN 72 1216, ČSN 72 0103, ČSN 44 1855, ČSN ISO 797)	Bulk materials ³
41	Determination of the content of Al, Ca, Mg, Cr, P by classical wet procedures and calculation of their oxides from measured values	SPL – Lk – 28 (ČSN ISO 6830, ČSN 44 1805, ČSN 72 2041-1:1992, ČSN 72 0100, ČSN 72 0101, ČSN 72 0109-1, ČSN 72 0113-1, ČSN 72 0113-2, ČSN 72 0113-3, ČSN 72 0114-1, ČSN 72 0114-2, ČSN 72 0114-3, ČSN EN ISO 10058-1, ČSN EN ISO 10058-2, ČSN EN 459-2, ČSN EN ISO 20565-1, ČSN EN ISO 20565-2, ČSN EN ISO 21587-2, ČSN 72 1216,	Bulk materials ³



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Ordinal number ¹	Test procedure/ method name	Test procedure/ method identification ²	Tested object
		ČSN 72 2030-1:1992, ČSN 72 2030-3:1992, ČSN 72 2030-5:1992, ČSN 72 2030-6:1992, ČSN 72 2030-9:1992, ČSN 72 2030-13:1992)	

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 edition of the specified procedure is used (including any changes).

³ Bulk materials – charge materials with iron matrix (containing 30 – 70 % of iron – e.g. iron ores, agglomerated ores, iron pellets, iron concentrates, iron, ore mixtures, agglomerates, metallurgical waste with iron matrix (e.g. iron dust, blast-furnace dust, sludge, cinder), slag and materials with non-ferrous matrix similar to slag (e.g. blast-furnace slag, steel-furnace slag, slag aggregates), refractory material (e.g. pelt, clay, fire clay, silica material, sand, chrome magnesite, gunite materials), flux materials (e.g. lime, limestone, dolomite, magnesite, casting powders)

Explanations and abbreviations:

Lk Chemical and Physical Analysis Laboratory

SPL Standard Laboratory Procedure of the LABORATORIES CENTRE

Annex:

Flexible scope of accreditation

Ordinal numbers of tests
38 - 41

The Laboratory is allowed to modify the test methods listed in the Annex within the specified scope of accreditation provided the measuring principle is observed. The flexible approach to the scope of accreditation cannot be applied to the tests not included in the Annex.

