

EA MLA Signatory
Český institut pro akreditaci, o.p.s.
Hájkova 2747/22, Žižkov, 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. **444/2024**

Centrum dopravního výzkumu, v.v.i.
with registered office Líšeňská 33a, 636 00 Brno,
Company Registration No. 44994575

for the Testing Laboratory No. **1506**
Transport Research Centre Laboratory (LCDV)

Scope of accreditation:

Testing of concrete and bituminous pavement layers including bores, testing of aggregates and soils, measurement of pavement irregularity and properties, measurement and modelling of noise, measurement of ambient air quality, determination of indicators in a solid matrix, testing of traffic signs and markings and determination of helium in hydrogen fuel 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 Conformity Assessment Body is entitled to refer to this Certificate, provided that the accreditation is not suspended and the Accredited 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.: 241/2023 of 12/05/2023, or any administrative acts building upon it.

The Certificate of Accreditation is valid until: **25/09/2025**

Prague: 30/08/2024




Jan Velíšek
Director of the Department
of Testing and Calibration Laboratories
Czech Accreditation Institute

**Appendix is an integral part of
Certificate of Accreditation No. 444/2024 of 30/08/2024**

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

Centrum dopravního výzkumu, v.v.i.
CAB number 1506, Transport Research Centre Laboratory (LCDV)
Líšeňská 33a, 636 00 Brno

The laboratory is qualified to carry out standalone sampling.

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 soil density	ČSN 72 1010, Method A and D-1	Soils, Base courses	-
2	Laboratory determination of soil compactibility - Proctor test	ČSN EN 13286-2	Soils	-
3	Determination of the California Bearing Ration (CBR)	ČSN EN 13286-47	Soils	-
4	Determination of relative density of non-cohesive soils	ČSN 72 1018	Non-cohesive soils	-
5	Determination of water content of a soil	ČSN EN ISO 17892-1	Soils	-
6	Determination of density of fine-grained soil by direct method	ČSN EN ISO 17892-2, part 4.1	Fine-grained soils	-
7	Determination of apparent density of solid particles in soils	ČSN EN ISO 17892-3	Soils	-
8	Determination of particle size distribution of soils	ČSN EN ISO 17892-4, except cl. 4.4, 5.4, 6.3	Soils	-
9	Determination of the water content by drying in a ventilated oven	ČSN EN 1097-5	Aggregates	-
10	Determination of Atterberg limits	ČSN EN ISO 17892-12	Soils	-
11*	Static loading test	ČSN 72 1006, annex A, B, D	Base courses	-
12	Determination of particle size distribution - dry sieving method	ČSN EN 933-1, except cl. 7.1	Aggregates	-
13*	Determination of consistency - Slump test	ČSN EN 12350-2	Fresh concrete	-
14*	Determination of consistency - Flow table test	ČSN EN 12350-5	Fresh concrete	-
15*	Determination of bulk density	ČSN EN 12350-6	Fresh concrete	-
16*	Determination of air content	ČSN EN 12350-7, except chapter 5	Fresh concrete	-
17	Determination of compressive strength	ČSN EN 12390-3	Hardened concrete	-
18	Determination of flexural strength	ČSN EN 12390-5	Hardened concrete	-
19	Determination of the indirect tensile	ČSN EN 12390-6	Hardened concrete	-



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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
20	Determination of bulk density	ČSN EN 12390-7, except cl. 6.4, 6.5 and 6.7	Hardened concrete	-
21	Determination of depth penetration of water under pressure	ČSN EN 12390-8	Hardened concrete	-
22	Determination of cement concrete surface resistance to water and chemical de-icing agents	ČSN 73 1326, method A, C	Hardened concrete	-
23	Determination of concrete frost resistance	ČSN 73 1322	Hardened concrete	-
24	Determination of static modulus of elasticity in compression	ČSN ISO 1920-10	Hardened concrete	-
25*	Testing of concrete strength by rebound tester	ČSN 73 1373, except annex A, B	Hardened concrete	-
26*	Testing of concrete hardness by rebound tester	ČSN EN 12504-2	Hardened concrete	-
27	Determination of air void characteristics	ČSN EN 480-11	Hardened concrete	-
28	Determination of water absorption	ČSN 73 1316:1989	Hardened concrete	-
29*	Determination of layer adhesion and tensile strength of surface layers	ČSN 73 6242, Annex B	Concrete structures and bridges	-
30*	Determination of water-tightness of surface finish	ČSN 73 2578	Building structures	-
31	Determination of compressive strength	ČSN EN 13286-41	Hydraulically bound mixtures	-
32	Determination of the indirect tensile strength using axial pressure including the production of test specimens	ČSN EN 13286-42; ČSN 736147	Hydraulically bound mixtures	-
33*	Measurements and assessment of irregularity of pavement courses	ČSN 73 6175, chapter 8	Roads	-
34*	Impact loading test of pavement and base courses	ČSN 73 6192, except cl. 3.1.1 and 3.1.2	Roads and base courses	-



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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
35*	Measurement and modelling of noise	ČSN ISO 1996-1; ČSN ISO 1996-2; MoE CR Bulletin, 2023, part 14; NMPB Routes 1996; NMPB Routes 2008; RLS 90; Schall 03; ISO 9613-1,2; Common noise Assessment Methods in Europe (CNOSSOS-EU)	Non-working environment – traffic and industrial noise	-
36*	Noise measurement by close proximity method (CPX)	SOP - H 01 (Methodology 104/2014-710-VV/1; Methodology 122/2017-710-VV/1; ISO 11819-2; ISO/TS 11819-3; ISO/TS 13471-1; TKP 7)	Non-working environment – road surface	-
37*	Determination of PM ₁₀ concentration by gravimetric method	SOP - CH 04, part A (ČSN EN 12341)	Ambient air, air quality	-
38*	Determination of PM _{2.5} concentration by gravimetric method	SOP - CH 04, part B (ČSN EN 12341)	Ambient air, air quality	-
39*	Determination of PM ₁₀ and PM _{2.5} concentrations by automatic analyser by nephelometer	SOP - CH 15, part A (Recordum Messtechnik manual)	Ambient air, air quality	-
40*	Determination of sulphur dioxide (SO ₂) concentrations by UV fluorescence	SOP - CH 15, part B (ČSN EN 14212)	Ambient air, air quality	-
41*	Determination of nitrogen oxides (NO, NO ₂ a NO _x) concentrations by chemiluminescence	SOP - CH 15, part C (ČSN EN 14211)	Ambient air, air quality	-
42*	Determination of ozone (O ₃) concentrations by UV photometry	SOP - CH 15, part D (ČSN EN 14625)	Ambient air, air quality	-
43*	Determination of carbon monoxide (CO) by nondispersive infrared spectrometry	SOP - CH 15, part E (ČSN EN 14626)	Ambient air, air quality	-



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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
44	Determination of benzo(a)pyrene concentrations by GC-MS	SOP - CH 14 (ČSN EN 15549)	Ambient air, air quality	-
45	Determination of Pb, Cd, As and Ni in PM ₁₀ aerosol particles fraction by ICP-MS	SOP - CH 18 (ČSN EN 14902)	Ambient air, air quality	-
46*	Measurement of temperature, relative humidity, pressure, wind velocity and direction	SOP - CH 15, part F (Recordum Messtechnik manual)	Ambient air	-
47*	Determination of retroreflection coefficient	SOP – DZ 01 (ČSN EN 12899-1, cl. 4.1.1.4; ČSN EN 12899-3, cl. 7.3.2.1)	Retro-reflective films, vertical traffic signs, transport equipment	-
48*	Determination of trichromatic coordinates x, y and brightness factor β	SOP – DZ 02 (ČSN EN 1436 Annex C; ČSN EN 12899-1, cl. 4.1.1.3; ČSN EN 12899-3, cl. 7.3.2.1; TP 70, chap 7.1)	Retro-reflective films, vertical traffic signs, horizontal traffic signs, transport equipment	-
49*	Determination of the specific intensity coefficient R_L	SOP – DZ 03 (ČSN EN 1436 Annex B; TP 70, chap. 7.1)	Horizontal traffic signs, transport equipment	-
50*	Determination of the brightness coefficient in diffuse lighting Q_d	SOP – DZ 04 (ČSN EN 1436 Annex A; TP 70, chap. 7.1)	Horizontal traffic signs, transport equipment	-
51*	Determination of the position of dowels and tie bars	SOP - G 1 (Methodology TRC-GPR01-2016; ČSN 73 6123-1; TP-233)	Joints of concrete pavements	-
52*	Determination of thicknesses of pavements	SOP - G 2 (Methodology TRC-GPR02-2017; TP-233)	Pavements of roads	-
53	Determination of chlorides by spectrophotometry by Spectroquant® reagent test	SOP - CH 19 (Spectroquant® Prove user manual; ČSN 757422)	Road run-off water, aqueous extract of materials, surface water	-
54	Determination of pH potentiometrically	SOP - CH 20 (ČSN ISO 10523)	Road run-off water, aqueous extract, surface water	-



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Ordinal number ¹	Test procedure / method name	Test procedure / method identification ²	Tested subject	Degrees of freedom ³
55	Determination of polycyclic aromatic hydrocarbons by gas chromatography (GC-MS) and their sum by calculation from measured values	SOP – CH 14 (ČSN EN 17503)	Solid matrix	-
56	Determination of polycyclic aromatic hydrocarbons by gas chromatography (GC-MS) and their sum by calculation from measured values	SOP – CH 14 (ČSN EN 17503)	Asphalt mixtures	-
57	Determination of binder content, water content and particle size distribution, including specimen preparation	ČSN EN 12697-28	Asphalt mixtures	-
58	Determination of dissolved organic carbon (DOC) by optical-thermal analysis with flame ionization detection	SOP – CH 05 (ČSN EN 1484)	Road run-off water, aqueous extract, water	-
59	Determination of fluoride spectrophotometrically with the Spectroquant® reagent test	SOP – CH 06 (ČSN ISO 17381)	Road run-off water, aqueous extract, water	-
60	Determination of sulphate spectrophotometrically by the Spectroquant® reagent test	SOP – CH 07 (ČSN ISO 17381)	Road run-off water, aqueous extract, water	-
61	Determination of elements by ICP-MS method	SOP – CH 18 (ČSN EN 14902)	Road run-off water, aqueous extract, water	-
62	Determination of dried dissolved solids by gravimetry	SOP – CH 08 (ČSN 757346)	Road run-off water, aqueous extract, water	-
63	Determination of sulphate by ICP-MS method	SOP – CH 18 (ČSN EN 14902)	Concretes, concrete structures	-
64	Determination of He in hydrogen by gas chromatography (GC-TCD)	SOP- CH 26 (ČSN ISO 14687; ČSN ISO 21087; NPL REPORT AS 64)	Hydrogen fuel, gases	-
65	Determination of elements by ICP-MS method	SOP – CH 18 (ČSN EN 14902)	Solid matrix	-

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 (determined analytes)
53	Chloride ions
55	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[ghi]perylene
56	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[ghi]perylene
61, 65	Al, As, Ba, Be, Ca, Cd, Co, Cr _{total} , Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Se, Si, Sr, V, Zn

Specification of the scope of accreditation:

Ordinal test number	Detailed information on activities within the scope of accreditation (tested subject)
58, 59, 60, 61, 62	Water – drinking, surface, waste

Sampling:

Ordinal number	Sampling procedure name	Sampling procedure identification ¹	Subject of sampling
1	Taking of cored specimens	ČSN EN 12504-1	Hardened concrete
2	Sampling for determination of PM ₁₀ mass concentration of suspended particulate matter	SOP - CH 01, part A (ČSN EN 12341)	Ambient air, air quality
3	Sampling for determination of PM _{2.5} mass concentration of suspended particulate matter	SOP - CH 01, part B (ČSN EN 12341)	Ambient air, air quality
4	Sampling for determination of benzo(a)pyrene concentrations by GC-MS	SOP - CH 01 (ČSN EN 15549)	Ambient air, air quality
5	Sampling for determination of Pb, Cd, As and Ni in PM ₁₀ aerosol particles fraction by CP-MS	SOP - CH 01 (ČSN EN 14902)	Ambient air, air quality
6	Asphalt mixture sampling	ČSN EN 12697-27, cl. 4.7	Asphalt mixtures

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)



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Explanations and abbreviations:

- MoH CR Journal, Vol. 2023, No. 14 - Guideline for the measurement and assessment of noise in non-workplace environment
- Methodology 104/2014-710-VV/1 - Methodology for the measurements and assessment of roads on the noise emission basis, certified by MoT, Space Activities Department on 15.12.2014, under the ref. no. 104/2014-710-VV/1
- Methodology TRC-GPR01-2016 - Measurement and evaluation methodology of position of dowels and tie bars in joints of concrete pavements by two-channel georadar
- Methodology TRC-GPR02-2017 - Methodology of measurement and determination of pavement layers thicknesses by two-channel georadar

Standards for noise modelling using SoundPLAN software:

- Road noise: NMPB Routes 1996
NMPB Routes 2008
RLS 90
 - Railway noise: Schall 03
 - Industrial noise: ISO 9613-1, ISO 9613-2
- CBR - California Bearing Ratio
Common noise Assessment Methods in Europe (CNOSSOS-EU)
- CIE - International Committee on Illumination
- CPX - Close Proximity Method
- DOC - Dissolved organic carbon
- GC-MS - Gas Chromatography Mass Spectrometry
- GC-TCD - Gas Chromatography with Thermal Conductivity Detector
- ICP-MS - Inductively coupled plasma mass spectrometry
- PM - Particulate matter
- MoT - Ministry of transport of the Czech Republic
- Mo CR - Ministry of health of the Czech Republic
- UV - Detection in the ultraviolet spectrum
- SOP - DZ - Standard Operating Procedure - Traffic signs (Internal test procedure) based on valid legislative documents, technical literature or firm manuals
- SOP - G - Standard operation procedure - Georadar (Internal test procedure) based on valid legislative documents, technical literature or firm manuals
- SOP - CH - Standard operation procedure - Chemistry (Internal test procedure/sampling procedure prepared by LCDV) based on valid legislative documents, technical literature or firm manuals
- SOP - H - Standard operation procedure - Noise (Internal test procedure prepared by LCDV)
- TKP - Road Construction Quality Specifications
- TKP 7 - Compacted bituminous layers
- TP - Technical specification
- TP 70 - Specifications for the execution and testing of road marking on roads
- TP 233 - Georadar methods for construction of roads

"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."