



CERTIFICATE OF ANALYSIS

Work Order	: PR2192392	Issue Date	: 05-Oct-2021
Customer	: VISA - Consultores de Geologia Aplicada e Engenharia	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: Mr. Joao Meira	Contact	: Client Service
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Project	: ----	Page	: 1 of 3
Order number	: 3253	Date Samples	: 28-Sep-2021
		Received	
		Quote number	: PR2015VISAC-PT0242 (PT-300-15-0407)
Site	: ----	Date of test	: 28-Sep-2021 - 05-Oct-2021
Sampled by	: client	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory.

The laboratory declares that the test results relate only to the listed samples. If the section "Sampled by" of the Certificate of analysis states: "Sampled by Customer" then the results relate to the sample as received.

Sample for the method S-TOC1-IR is dried at 105 °C and pulverized prior to analysis.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatures
Zdeněk Jirák

Position
Environmental Business Unit
Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001
(Occupational health and safety management systems)

Analytical Results

Client sample ID				SOLO		---		---	
Laboratory sample ID				PR2192392-001		---		---	
Client sampling date / time				23-Sep-2021 12:00		---		---	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Physical Parameters									
pH (H ₂ O)	S-PHH2O-ELE	1.0	-	6.8	± 2.2%	---	---	---	---
Dry matter @ 105°C	S-DRY-GRCI	0.10	%	85.7	± 6.0%	---	---	---	---
Nonmetallic Inorganic Parameters									
Total Organic Carbon	S-TOC1-IR	0.10	% DW	<0.10	---	---	---	---	---
Extractable Metals / Major Cations									
Antimony	S-METAXHB1	0.50	mg/kg DW	<0.50	---	---	---	---	---
Arsenic	S-METAXHB1	0.50	mg/kg DW	10.3	± 20.0%	---	---	---	---
Barium	S-METAXHB1	0.20	mg/kg DW	1.53	± 20.0%	---	---	---	---
Beryllium	S-METAXHB1	0.010	mg/kg DW	13.1	± 20.0%	---	---	---	---
Cadmium	S-METAXHB1	0.40	mg/kg DW	<0.40	---	---	---	---	---
Chromium	S-METAXHB1	0.50	mg/kg DW	26.7	± 20.0%	---	---	---	---
Cobalt	S-METAXHB1	0.20	mg/kg DW	0.36	± 20.0%	---	---	---	---
Copper	S-METAXHB1	1.0	mg/kg DW	5.7	± 20.0%	---	---	---	---
Iron	S-METAXHB1	10	mg/kg DW	2110	± 20.0%	---	---	---	---
Lead	S-METAXHB1	1.0	mg/kg DW	14.4	± 20.0%	---	---	---	---
Lithium	S-METAXHB1	1.0	mg/kg DW	40.7	± 20.0%	---	---	---	---
Manganese	S-METAXHB1	0.50	mg/kg DW	205	± 20.0%	---	---	---	---
Mercury	S-METAXHB1	0.20	mg/kg DW	<0.20	---	---	---	---	---
Molybdenum	S-METAXHB1	0.40	mg/kg DW	0.62	± 20.0%	---	---	---	---
Nickel	S-METAXHB1	1.0	mg/kg DW	<1.0	---	---	---	---	---
Phosphorus	S-METAXHB1	5.0	mg/kg DW	936	± 20.0%	---	---	---	---
Silver	S-METAXHB1	0.50	mg/kg DW	<0.50	---	---	---	---	---
Strontium	S-METAXHB1	0.10	mg/kg DW	4.23	± 20.0%	---	---	---	---
Thallium	S-METAXHB1	0.50	mg/kg DW	<0.50	---	---	---	---	---
Tin	S-METAXHB1	1.0	mg/kg DW	1.6	± 20.0%	---	---	---	---
Vanadium	S-METAXHB1	0.10	mg/kg DW	0.24	± 20.0%	---	---	---	---
Zinc	S-METAXHB1	3.0	mg/kg DW	24.6	± 20.0%	---	---	---	---
Polycyclic Aromatics Hydrocarbons (PAHs)									
Naphthalene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Acenaphthylene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Acenaphthene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Fluorene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Phenanthrene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Anthracene	S-PAHGMS05	0.0100	mg/kg DW	<0.0100	---	---	---	---	---
Fluoranthene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Pyrene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Benz(a)anthracene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Chrysene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Benzo(b)fluoranthene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Benzo(k)fluoranthene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Benzo(a)pyrene	S-PAHGMS05	0.0100	mg/kg DW	<0.0100	---	---	---	---	---
Indeno(1,2,3,cd)pyrene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Dibenz(a,h)anthracene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Benzo(g,h,i)perylene	S-PAHGMS05	0.010	mg/kg DW	<0.010	---	---	---	---	---
Sum of 16 PAH	S-PAHGMS05	0.160	mg/kg DW	<0.160	---	---	---	---	---
Petroleum Hydrocarbons									
C10 - C16 Fraction	S-TPHFID07	15	mg/kg DW	<15	---	---	---	---	---
C16 - C35 Fraction	S-TPHFID07	30	mg/kg DW	<30	---	---	---	---	---
C35 - C40 Fraction	S-TPHFID07	5.0	mg/kg DW	<5.0	---	---	---	---	---
C6 - C10 Fraction	S-TPHFID07	5.0	mg/kg DW	<5.0	---	---	---	---	---

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

The end of result part of the certificate of analysis

Brief Method Summaries

Analytical Methods	Method Descriptions
<i>Location of test performance: Bendlova 1687/7 Ceska Lipa Czech Republic 470 01</i>	
S-PHH2O-ELE	CZ_SOP_D06_07_113 (CSN ISO 10390, CSN EN 12176:1999, CSN EN 13037, CSN EN 15933, CSN 46 5735, ÖNORM L 1086-1, US EPA 9045D; US EPA 9040C) Determination of pH electrochemically in the suspension in water, KCl, CaCl2, BaCl2. Determined pH value is relative to temperature 25 °C.
S-TOC1-IR	CZ_SOP_D06_07_117 (methodology of Elementar Company, CSN ISO 10694, CSN EN 13137:2002, CSN EN 15936) Determination of total carbon (TC), total organic carbon (TOC) by combustion method with IR detection and calculation of total inorganic carbon (TIC) and carbonates from measured values.
<i>Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00</i>	
S-DRY-GRCI	CZ_SOP_D06_01_045 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007), CZ_SOP_D06_07_046 (CSN ISO 11465, CSN EN 12880, CSN EN 14346:2007, CSN 46 5735) Determination of dry matter by gravimetry and determination of moisture by calculation from measured values.
S-METAXHB1	CZ_SOP_D06_02_001 (US EPA 200.7, CSN EN ISO 11885, US EPA 6010, SM 3120, samples prepared as per CZ_SOP_D06_02_J02 (US EPA 3050, CSN EN 13657, ISO 11466) chap. 10.3 to 10.16, 10.17.5, 10.17.6, 10.17.9 to 10.17.14) - Determination of elements by atomic emission spectrometry with inductively coupled plasma and stoichiometric calculations of compounds concentration from measured values. Sample was homogenized and mineralized by aqua regia prior to analysis.
S-PAHGMS05	CZ_SOP_D06_03_161 (US EPA 8270D, US EPA 8082A, CSN EN 15527, ISO 18287, ISO 10382, CSN EN 15308, samples preparation as per CZ_SOP_D06_03_P01, chap. 9.2, 9.3, 9.4.2, US EPA 3546). Determination of semi volatile organic compounds by gas chromatography method with MS or MS/MS detection and calculation of semi volatile organic compounds sums from measured values
S-TPHFID07	CZ_SOP_D06_03_152 except chap. 9.2 (TNRCC Method 1005, TNRCC Method 1006) Determination of extractable compounds in the range of hydrocarbons C5 - C40, their fractions calculated from the measured values by gas chromatography method with FID detection
Preparation Methods	Method Descriptions
<i>Location of test performance: Bendlova 1687/7 Ceska Lipa Czech Republic 470 01</i>	
*S-PPHOM.07	CZ_SOP_D06_07_P01 Preparation of solid samples for analysis (crushing, milling and pulverizing).
*S-PPHOM0.3	CZ_SOP_D06_07_P01 Preparation of solid samples for analysis (crushing, milling and pulverizing).
<i>Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00</i>	
*S-PPHOM2	Drying and sieving of sample on the grain size < 2 mm

A “**” symbol preceding any method indicates laboratory or subcontractor non-accredited test. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. In the case when a procedure specified in an accredited method was used for non-accredited matrix, the reported results are non-accredited; please refer to information in General Comment section on the front page. If the report contains subcontracted analyses, those are made in a subcontracted laboratory outside the laboratories ALS Czech Republic, s.r.o.

The calculation methods of summation parameters are available on request in the client service.