



CTL

**Central testing
laboratory**



CATALOGUE OF SERVICES

CTL - a place of knowledge and excellence



Central Testing Laboratory (CTL) aims to be a center of knowledge and competence in the field of research and development of the oil industry as well as technologies focused on environmental protection and sustainable development.

CTL participates in research and development of new products and improvement of existing ones. Provides sampling and laboratory services, testing, analysis and expertise of crude oil and oil derivatives, commercial fuels, biofuels, biomass, water, soil and waste. With professional staff and top-quality equipment, all types of services are performed with quality, reliability and in the shortest possible time.

Professional staff, some of whom have the highest academic title, provide expert services, prepare development and research studies and they carry out professional and specially designed educations, mentoring programs for professional internships, final, graduate and doctoral programs in cooperation with the academic community throughout Croatia.



CONTACTS:

Phone: +385 1 2381 448

F2M: +385 1 6452 950

e-mail: cil@ina.hr



ADDRESS

Lovinčićeva 4

HR 10002 Zagreb



HISTORY OF CENTRAL TESTING LABORATORY

The beginning of the Central Testing Laboratory's work dates back to the late sixties with the establishment of the Institute for Research and Development INA d.d., i.e. its part of laboratory research in 1967. Application of contemporary instrumental analytical and physico-chemical techniques was a strong support for oil and petrochemical research initiated at that time. Since then the laboratory applies classical and instrumental analytical techniques in research, production and processing of oil, gas and condensate, organic and inorganic petrochemicals, geochemistry and environmental protection. All this time, with the support of the aforementioned research, the goal of CTL was to improve the introduced standards, as well as application of new methods for instrumental techniques by constant technological improvements and employee education.

BUSINESS POLICY

The policy and objectives of the Central Testing Laboratory are the sequential part of the policy of the INA company d.d. Based on the requirements of the HRN EN ISO 9001 and HRN EN ISO/IEC 17025 standards they ensure high quality criteria related to:

- fulfilling the requirements of users of our services with the reliability of test results
- compliance with legal acts, national regulations and company rules
- concern for preserving the quality of the living and working environment
- continuous training and improvement of employees
- continuous maintenance of the quality system.

ACTIVITY SCOPE

- Sampling and analysis of oil and oil products.
- Expertise in oil characterization and evaluation, i.e. preparation of oil assays (Crude Oil Assay, COA).
- Testing of biocomponents, biomass and biofuels with the development of test methods.
- Ecological tests in the service of sustainable development and environmental protection.
- Identification of samples of unknown composition.
- Professional and expert solutions and education in the field of oil and oil products, sustainable development and environmental protection.

QUALITY – THE FOUNDATION OF CTL'S BUSINESS



ACCREDITATION

Since 2002, CTL has been accredited according to the requirements of HRN EN ISO/IEC 17025 standard (Accreditation Certificate No. 1020) for testing of liquid petroleum products and biofuels and sampling at gas stations, as well as for testing of water, waste, sludge and soil and waste water sampling. CTL was also assigned with a flexible area of accreditation which is defined by the words: "The application of new editions of standards for test methods for which the year of publication is not marked is allowed."

CERTIFICATION

As an integrated part of INA d.d., CTL implements and maintains the quality of operations according to the requirements of HRN EN ISO 9001 standard. The standard is applied through unique company system, on the fundamentals and processes in the function of management and support activities of the company INA d.d. That way the business quality is continuously improved, meeting the demands and expectations of customers, owners, suppliers, business partners, social community and other interested parties.

AUTHORIZATIONS

Authorization of the Ministry of Agriculture to perform wastewater sampling and testing of water (ground, surface and waste water). Decision on fulfillment of special conditions (May 11, 2015, Class: UP/I-325-01/14-01/04), valid until May 11, 2025.

LIST OF TESTING METHODS

The test methods are divided according to the types of samples into:

1. Oil, oil products and biofuels
2. Water, soil and waste
3. Other jobs and services

1. OIL, OIL PRODUCTS AND BIOFUELS

Central testing laboratory is empowered for physico-chemical and microbiological analyzes of crude oil and commercial oil products, biofuels and other hydrocarbon samples. Fulfilling the client's needs, the laboratory carries out sampling in the field with available resources - trained staff, appropriate vehicles and equipment. Also, as an expert body, the laboratory participates in arbitration proceedings.

In addition to the above, Central Testing Laboratory manufactures „oil baskets“ (Crude Oil Assay, COA) according to the client's requirements.

INA, d.d. also has a commercially available COA database with about sixty tested raw materials.

Table 1.

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
1.	Additives - compatibility	petroleum products / biofuels	In-house
2.	ARAL test	petroleum products	In-house
3.	Aromatics in heating oil	petroleum products	UOP 495
4.	Aromaticity (1H/13C NMR)	petroleum products	IP 392
5.	Aromatic hydrocarbons (NP-HPLC)	petroleum products	HRN EN 12916 ASTM D 6591 ASTM D 6379
6.	Aromatic hydrocarbons in products with a distillation end point above 315 oC	petroleum products	In-house
7.	Asphaltenes - content	crude oil / petroleum products	ASTM D 6560 IP 143
8.	Benzene content in unleaded motor gasoline	petroleum products	HRN EN 12177
9.	Benzene in motor gasoline (FTIR)	petroleum products	HRN EN 238/A1
10.	Benzene, aromatics, olefins in motor gasoline (1H NMR)	petroleum products	In-house
11.	Color and appearance	petroleum products	Visual
12.	Concentration of adenosine triphosphate (cATP)	petroleum products	ASTM D 7687
13.	Cellulose	solid biofuels	In-house
14.	Cetane index, calculated	petroleum products	HRN EN ISO 4264
15.	Sample of known composition purity (1H NMR)	petroleum products	In-house
16.	Distillation at atmospheric pressure	crude oil / petroleum products	HRN EN ISO 3405 ASTM D 86
17.	Vacuum distillation, MPS	petroleum products	ASTM D 1160
18.	Vacuum distillation, Potstill	petroleum products	ASTM D 5236
19.	Atmospheric distillation, TBP	crude oil / petroleum products	ASTM D 2892
20.	Smoke point	petroleum products	ASTM D 1322
21.	Doctor test	petroleum products	HRN ISO 5275 ASTM D 4952
22.	Nitrogen - Kjeldahl (Method after mineralization with selenium)	petroleum products	In-house

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
23.	Nitrogen	petroleum products / biofuels	ASTM D 4629 ASTM D 5762
24.	Extractives	biomass	NREL
25.	Elementary analysis - CHN	petroleum products	ASTM D 5291 Modification (procedure A)
26.	Ethanol - purity	biofuels	HRN EN 15721
27.	Euro marker SY 124 (HPLC)	petroleum products	EU Reference method for the determination of the SY124 in gas oil and kerosene
28.	FIA	petroleum products	ASTM D 1319 HRN EN 15553
29.	Cold Filter Plugging Point	petroleum products / biofuels	HRN EN 116
30.	Physic-chemical characteristics of fuel - Petrospec method	petroleum products	In-house
31.	Phosphorus content in ethanol	biofuels	HRN EN 15487
32.	Glycerol - free and total, mono-, di- i tri- glyceride	biofuels	HRN EN 14105
33.	Group composition in secondary fractions, diesel fuel and light cyclic oil (GCxGC)	crude oil / petroleum products	In-house
34.	Density – oscillating U-tube	crude oil / petroleum products	HRN EN ISO 12185 ASTM D 4052
35.	Vapor lock index (VLI)	petroleum products	HRN EN 228
36.	Refractive index	Petroleum products	In-house
37.	Drivability index (%mas, %vol)	petroleum products	ASTM D 4814
38.	Iodine number in FAME	petroleum products	HRN EN 16300
39.	Total acidity	petroleum products / biofuels	ASTM D 974 ASTM D 1613 ASTM D 3242 HRN EN 14104 HRN EN 15491
40.	Total acidity by potentiometric titration	petroleum products / biofuels	ASTM D 664
41.	Chlorine (WDXRF)	crude oil / petroleum products	ISO 15597
42.	Chloride content in ethanol (blending component for petrol, IC)	biofuels	ASTM D 7319 ASTM D 7328 EN 15492
43.	Coking gasoline - structural characterization (1H NMR)	petroleum products	In-house
44.	Carbon residue, Micro method	crude oli / petroleum products	ASTM D 4530 HRN EN ISO 10370
45.	Corrosiveness to copper by strip test (Cu 50oC, 3h i 100°C, 2h)	petroleum products	HRN EN ISO 2160 ASTM D 130
46.	Corrosiveness to steel by strip test	Petroleum products	ASTM D 665 ASTM D 7548
47.	Lignin	Biomass	NREL
48.	Lubricity (wsd 1,4) at 60°C	petroleum products	HRN EN ISO 12156-1 ASTM D 6079
49.	Thiol mercaptan sulfur	petroleum products	ASTM D 3227
50.	Metal content (WDXRF)	petroleum products / biofuels	In-house (semi-quantitative)

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
51.	Fatty acid methyl esters (FAME)	biofuels	HRN EN 14103
52.	Methanol content in FAME	biofuels	DIN EN 14110
53.	Fatty acid methyl esters (FAME) in middle distillates (FTIR)	petroleum products	HRN EN 14078
54.	Fatty acid methyl esters (FAME) in jet fuel (GC/MS)	petroleum products	IP 585
55.	Number of viable bacteria and fungi	petroleum products	ASTM D 6974
56.	Particulate matter (Millipore lab.)	petroleum products	ASTM D 5452
57.	Particulate contaminant (Line sampling)	petroleum products	ASTM D 2276
58.	Microseparator (MSEP), rating Fuel with Static Dissipator Additive OR Fuel without Static Dissipator Additive	petroleum products	ASTM D 3948 ASTM D7224
59.	Microwave digestion	Crude oil / petroleum products	In-house
60.	Motor gasoline – structural composition (1H NMR)	petroleum products	In-house
61.	MTBE purity	petroleum products	In-house
62.	Crude dewatering with demulsifier	crude oil	In-house
63.	Heat of combustion by bomb calorimeter	petroleum products	ASTM D 240
64.	Heat of combustion	petroleum products (JET A-1)	ASTM D 3338
65.	Heat of combustion	petroleum products (fuel oil,DF,MG)	ISO 8217
66.	Heat of combustion	petroleum products (fuel oil, DF)	ASTM D 4868
67.	Oxidation stability, Rancimat test	petroleum products / biofuels	HRN EN 15751
68.	Oxidation stability, Rancimat test	petroleum products / biofuels	ASTMD7545 ASTM D7525
69.	Research octane number of catalytic reforming gasoline (1H NMR)	petroleum products	In-house
70.	Research octane number of FCC gasoline (1H NMR)	petroleum products	In-house
71.	Research octane number of coking gasoline (1H NMR)	petroleum products	In-house
72.	Research octane number of FCC gasoline (GC)	petroleum products	In-house
73.	Research octane number of coking gasoline (GC)	petroleum products	In-house
74.	Olefins in petroleum products (HPLC)	petroleum products	In-house
75.	Low lead contents in gasoline (XRF)	petroleum products	HRN EN 13723
76.	The organic oxygen compounds and total organically bound oxygen (GC)	petroleum products	HRN EN 13132
77.	Organic Chloride Content	Crude oil	ASTM D 4929
78.	Ash content, oxide	crude oil / petroleum products / biofuels	HRN EN ISO 6245
79.	Ash, sulphate	petroleum products	HRN EN ISO 3987
80.	pHe	biofuels	ASTM D 6423 HRN EN 15490
81.	Foaming tendency	petroleum products	NF M07-075
82.	Flash point (PM)	petroleum products	HRN EN ISO 2719(Procedure A,Procedure B, Procedure C)
83.	Flash point (TAG)	petroleum products	ASTM D 56

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
84.	Flash and fire points (COC)	petroleum products	HRN EN ISO 2592 ASTM D 92
85.	Blue dye in Euro diesel Blue – qualitative (UV/VIS)	petroleum products	In-house
86.	Gas condensate – structural composition (1H NMR)	Petroleum products	In-house
87.	Individual and group composition of gasoline and fractions (GC)	petroleum products	In-house ASTM D 6729
88.	Polycyclic aromatic hydrocarbons in diesel fuel (UV)	petroleum products	In-house
89.	PCB (Polychlorinated biphenyls) in fuel, waste and transformer oils (GC)	petroleum products	HRN EN 12766-1 HRN EN 15308
90.	Straight run gasoline - composition (paraffin, naphthenic, aromatics) (1H NMR)	petroleum products	In-house
91.	Degradation products in used engine oils (FTIR)	petroleum products	ASTM E2412
92.	Water reaction	Petroleum products	ASTM D 1094
93.	Sediments in middle distillates	petroleum products / biofuels	HRN EN 12662
94.	Sediments in pyrolytic oil	petroleum products / biofuels	ASTM D 7579
95.	Separation and isolation of a group of aromatic compounds (semi-preparative NP-HPLC)	petroleum products	In-house
96.	Separation and isolation of the saturated, aromatic and polar hydrocarbons (semi-preparative NP-HPLC)	petroleum products	In-house
97.	Simulated distillation	crude oil / petroleum products	ASTM D 6352 ASTM D 2887 (extended)
98.	Simulated distillation (MAT test)	crude oil / petroleum products	ASTM D 2887
99.	Existent gum content	petroleum products	HRN EN ISO 6246
100.	Gas chromatography – chromatogram (GCxGC)	crude oil / petroleum products	In-house
101.	Gas chromatography – chromatogram and interpretation (GCxGC)	crude oil / petroleum products	In-house
102.	Stability of crudes and petroleum products	crude oil / petroleum products	ASTM D 7157
103.	Gasoline – structural composition (1H NMR)	petroleum products	In-house
104.	Middle distillates – structural composition (1H NMR)	petroleum products	In-house
105.	Dry residue in ethanol, gravimetric	biofuels	HRN EN 15691
106.	Sulphate content in ethanol, blending component for petrol (IC)	biofuels	ASTM D 7319 ASTM D 7328 EN 15492
107.	Total sulphur content (UVF)	MG, DF, FAME	HRN EN ISO 20846
108.	Total sulphur content (WDXRF)	Crude oil / petroleum products / biofuels	HRN EN ISO 20884 ASTM D 2622 HRN EN ISO14596
109.	Sulphur compounds - individual in light cyclic oil (GC/PFPD)	petroleum products	In-house
110.	Sulphur compounds in petroleum fractions (GC/PFPD)	petroleum products	In-house
111.	Pour point	crude oil / petroleum products	ASTM D 5950
112.	Compatibility test of crude and heavy crude products by microscopy	crude oil / petroleum products	In-house

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
113.	Vapor pressure (Reid method)	petroleum products	HRN ISO 3007 ASTM D 323
114.	Vapor pressure of petroleum products (Mini method)	petroleum products	HRN EN 13016-1 ASTM D 5191
115.	Moisture	biomass	NREL
116.	Sampling	petroleum products	HRN EN 14275 HRN EN ISO 3170
117.	Sampling of liquid fuels for microbiological testing	petroleum products	ASTM D 7464
118.	Particle size cumulative count	petroleum products / biofuels	IP 565 ASTM D 7619 ASTM D 7647 ISO 4406 NAS1638
119.	Viscosity dynamic and density of liquids by Stabinger viscometer, calculation of kinematic viscosity	petroleum products	ASTM D7042
120.	Polyunsaturated (≥ 4) double bonds (GC)	biofuels	HRN EN 15779
121.	Moisture in solid biofuels	biofuels	SIS-CEN/TS 14774-2 SIS-CEN/TS 14774-3
122.	Water content in fuel oil	petroleum products	HRN ISO 3734 ASTM D 1796
123.	Water and sediments, visual	petroleum products	Visual
124.	Water content	Crude oil / petroleum products / biofuels	HRN ISO 3733 ASTM D 95 HRN EN ISO 12937
125.	Electrical conductivity	biofuels	HRN EN 15938
126.	Electrical conductivity of aviation and distillate fuels	petroleum products	HRN ISO 6297 ASTM D 2624
127.	Freezing point of aviation fuels	petroleum products	ASTM D 7153
128.	Cloud point	petroleum products	HRN EN ISO 23015





2. WATER, SOIL AND WASTE

Central testing laboratory offers the services of physico-chemical and microbiological testing of ground water, wastewater, surface water, technological water, formation and well water, geothermal and other waters. Wastewater tests are carried out according to regulatory water permits of the client. In addition, efficiency tests of scale inhibitors and biocides are carried out, as well as determination of the origin of water in fuel tanks. The laboratory analyzes waste for permanent disposal, thermal and physicochemical treatment. The waste testing service is carried out for the needs of waste owners (industry, municipal companies, private companies) that are obliged to dispose the waste through authorized waste disposal companies. At the client's request, it is possible to perform additional waste testing. The laboratory analyzes soil samples and determines hydrocarbon pollution in soils and waters.

Educated laboratory employees carry out sampling of all types of water, waste, sludge and soil at the customer's request, and according to valid EU standards.

Table 2.

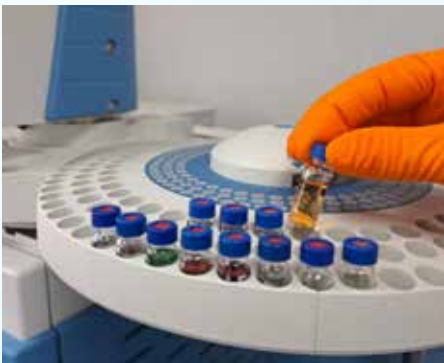
No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
1.	Acute toxicity with luminescent bacteria (<i>Vibrio fischeri</i> NRRL-B-11177)	water	ISO 11348-1 In-house
2.	Alkalinity (p-, m-)	water	In-house
3.	Aluminum (ICP)	water	HRN EN ISO 11885
4.	Ammonium (NH ₄ ⁺)	water	HRN ISO 5664 In-house
5.	Ammonium (IC)	water / elute	HRN EN ISO 14911
6.	Anion-active detergent (HACH)	water	In-house
7.	Antimony (ICP)	water / elute	In-house
8.	Aromatic hydrocarbon (BTEX) in water	water	ISO 11423-2
9.	Arsenic (ICP)	water / elute	In-house
10.	Copper (ICP)	water / elute	HRN EN ISO 11885
11.	Barium (ICP)	water / elute	HRN EN ISO 11885
12.	Biochemical oxygen demand	water	HRN EN 1899-1 HRN EN 1899-2
13.	Boron (ICP)	water	HRN EN ISO 11885
14.	Enumeration of aerobic bacteria (22°C, 37°C)	water	ISO 6222
15.	Enumeration of <i>Escherichia coli</i>	water	HRN EN ISO 9308-1
16.	Enumeration of fecal coliforms	water	HRN EN ISO 9308-1
17.	Enumeration of total coliforms	water	HRN EN ISO 9308-1
18.	Bromide (IC)	water / elute	HRN EN ISO 10304-1
19.	Zinc (ICP)	water / elute	HRN EN ISO 11885
20.	<i>Clostridium perfringens</i>	water	ISO 6461/1
21.	Heat of combustion (bomb calorimeter)	waste	ASTM D 240
22.	Nitrogen - total	water	HRN EN 12260
23.	Nitrogen - total	water	HRN ISO 5663+(NO ₂ -N+NO ₃ -N)
24.	Nitrogen - Kjeldahl - Method after mineralization with selenium	water	HRN ISO 25663
25.	Elementary analysis - CHN	waste	Modified ASTM D 5291 (procedure A)
26.	Phenol (HACH)	water	In-house
27.	Phenol index - 4-Aminoantipyrine spectrometric methods after distillation	water	HRN ISO 6439 A

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
28.	Filtration characteristics of water (Membrane filter test)	water	In-house
29.	Fluoride (IC)	water / elute	HRN EN ISO 10304-1
30.	Phosphate (IC)	water / elute	HRN EN ISO 10304-1
31.	Phosphorus - total in water (UV-VIS)	water	HRN EN ISO 6878
32.	Phosphorus (ICP)	water	HRN EN ISO 11885
33.	Loss of ignition (550 °C)	waste / sludge / sediment	HRN EN 12879 HRN EN 15169
34.	Density	water	In-house
35.	Bicarbonate	water	In-house
36.	Corrosively index	water	Calculation
37.	Stability index (Ryznar 20 °C)	water	In-house
38.	Saturation index (Langelier, Stiff)	water	In-house
39.	Intestinal enterococci	water	ISO 7899-2
40.	Biocide efficiency testing	water	In-house
41.	Scale-inhibitor efficiency testing	water	In-house NACE Standard TM0374
42.	Appearance	waste	Visual
43.	Appearance, color, odor	water	Visual
44.	Cadmium (ICP)	water / elute	HRN EN ISO 11885
45.	Calcium (ICP)	water	HRN EN ISO 11885
46.	Calcium (IC)	water / elute	HRN EN ISO 14911
47.	Calcium hardness	water	HRN EN ISO 11885
48.	Potassium (ICP)	water	HRN EN ISO 11885
49.	Potassium (IC)	water / elute	HRN EN ISO 14911
50.	Carbonate	water	In-house
51.	Carbonate in the soil, gravimetric	soil	In-house
52.	Carbonate in the soil, volumetric	soil	HRN EN ISO 10693
53.	Cation-active detergent (HACH)	water	In-house
54.	Chemical oxygen demand	water	HRN ISO 15705
55.	Oxygen dissolved - Iodometric method	water	HRN EN 25813
56.	Oxygen (Oximeter)	water	In-house
57.	Classification of formation waters (Palmer, Stiff, Tickel)	water	Calculation
58.	Chlorine - wave dispersive X-Ray	waste	ISO 15597
59.	Chlorides – Mohr	water	HRN ISO 9297
60.	Chloride (IC)	water / elute	HRN EN ISO 10304-1
61.	Cobalt (ICP)	water	HRN EN ISO 11885
62.	Tin (ICP)	water	HRN EN ISO 11885
63.	Chromium, total (ICP)	water / elute	HRN EN ISO 11885
64.	Lithium (ICP)	water	HRN EN ISO 11885
65.	Lithium (IC)	water / elute	HRN EN ISO 14911
66.	Magnesium (ICP)	water	HRN EN ISO 11885
67.	Magnesium (IC)	water / elute	HRN EN ISO 14911
68.	Magnesium hardness	water	HRN EN ISO 11885
69.	Manganese (ICP)	water	HRN EN ISO 11885

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
70.	Metals review (WDXRF)	waste	In-house
71.	Odor	water / waste / sludge / soil	Organoleptic
72.	Mineral oil (Oil index), extraction + GC	water / elute	In-house
73.	Molybdenum (ICP)	water / elute	HRN EN ISO 11885
74.	Sodium (ICP)	water	HRN EN ISO 11885
75.	Sodium (IC)	water / elute	HRN EN ISO 14911
76.	Non-ionic detergents (HACH)	water	In-house
77.	Total and composite alkalinity of water	water	HRN EN ISO 9963-1 ASTM D 1067
78.	Nickel (ICP)	water / elute	HRN EN ISO 11885
79.	Nitrate (IC)	water / elute	HRN EN ISO 10304-1
80.	Nitrite (IC)	water / elute	HRN EN ISO 10304-1
81.	Plant available phosphorus	soil	In-house HRN EN ISO 11885 AL-method (Egner i sur., 1960.)
82.	Plant available potassium	soil	HRN EN ISO 11885 AL-method (Egner i sur., 1960.)
83.	Lead (WDXRF)	waste / soil	HRN EN 13723
84.	Lead (ICP)	water / elute	HRN EN ISO 11885
85.	Organic carbon (humus content) in the soil	soil	Tjurin method (Škorić, 1982.)
86.	Total organic carbon (TOC) and Dissolved organic carbon (DOC)	water / elute	HRN EN 1484
87.	Total dissolved solids, dried (180 °C)	water / elute	Std. Methods for Examination of Water and Wastewater, 22nd, 2540C
88.	Total dissolved mineral content - total mineralization	water	In-house
89.	Ash content (oxidized)	waste	HRN EN ISO 6245
90.	Permanganate index	water	In-house
91.	pH value	water / elute	HRN ISO 10523
92.	pH value	sludge	HRN EN 12176
93.	pH value	soil	HRN ISO 10390
94.	Flash point (TAG)	waste	ASTM D 56
95.	Flash and fire points (COC)	waste	HRN EN ISO 2592 ASTM D 92
96.	Polychlorinated biphenyls (PCB) in used oil and waste (GC)	waste	HRN EN 12766-1 HRN EN 15308
97.	Origin of the pollution (GC)	water	In-house
98.	Waste elute preparation	waste / contaminated soil	HRN EN 12457-4:2005 HRN EN 12457-2:2005
99.	Sample preparation for heavy-metal determination (solid material)	waste / petroleum products / catalyst / residue / soil / biofuels / biomass	In-house

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
100.	Organic sample preparation for trace metal determination	petroleum products / biofuels	UOP Method 389-86
101.	Pseudomonas aeruginosa	water	ISO 16266
102.	Reaction with water	waste	-
103.	Salinity	water	HRN ISO 9297 HRN EN ISO 11885
104.	Selenium (ICP)	water / elute	In-house
105.	Silica (ICP)	water	HRN EN ISO 11885
106.	Silver (ICP)	water	HRN EN ISO 11885
107.	Strontium (ICP)	water	HRN EN ISO 11885
108.	Dry residue (105 °C)	water	Std. Methods for Examination of Water and Wastewater, 22nd, 2540B
109.	Dry residue and water content (105 °C)	sludge / waste / soil	HRN EN 12880 HRN EN 14346 HRN EN 11465
110.	Sulphate	water	HRN ISO 9280
111.	Sulphate (IC)	water / elute	HRN EN ISO 10304-1
112.	Sulphate-reducing bacteria	water	Std. Methods for Examination of Water and Wastewater, 22nd, Parts 500, 501
113.	Sulfide (Hach)	water	In-house
114.	Sulphite - reducing bacteria (Clostridia)	water	ISO 6461/1
115.	Sulphur (ICP)	water	HRN EN ISO 11885
116.	Suspended solids	water	HRN EN 872, modif.
117.	Settleable matter	water	Std. Methods for Examination of Water and Wastewater, 22nd, 2540F
118.	Temperature	water	Std. Methods for Examination of Water and Wastewater, 21st, 2005, 2550B
119.	Temperature	waste	Std. Methods for Examination of Water and Wastewater, 21st, 2005, 2550B
120.	Titanium (ICP)	water	HRN EN ISO 11885
121.	Total hardness (Ca + Mg) (IC)	water	In-house
122.	Total hardness (Ca + Mg) (ICP)	water	HRN EN ISO 11885
123.	Total hardness	water	Calculation
124.	Carbon dioxide (dissolved)	water	In-house
125.	Oil and grease, total (TOG)	water / elute	Standard Methods for the Examination of Water and Wastewater, HEM, 23rd Ed, 5520B

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
126.	Oil and grease, total (TOG)	soil / waste	SOXTEC - Standard Methods for the Examination of Water and Wastewater, HEM, 22nd, 5520D
127.	Sampling	waste water	HRN ISO 5667-10
128.	Sampling	waste / sludge	HRI CEN/TR 15310-2:2008
129.	Sampling	soil	HRN ISO 10381
130.	Sampling	water	HRN ISO 5667-11 HRN ISO 5667-6
131.	Vanadium (ICP)	water	HRN EN ISO 11885
132.	Water and sediments	waste	Visual
133.	Hydrogen sulphide (dissolved) (HACH)	water	In-house
134.	Electrical conductivity	water / elute	HRN EN 27888
135.	Iron bacteria	water	Std. Methods for Examination of Water and Wastewater, 22nd, Parts 500, 501
136.	Iron (bivalent)	water	HRN ISO 6332
137.	Iron (trivalent)	water	HRN EN ISO 11885 + HRN ISO 6332 / calcul.
138.	Iron, total (ICP)	water	HRN EN ISO 11885
139.	Mercury (total) (LECO)	water / elute	In-house
140.	Mercury (total) (LECO)	waste	In-house





3. OTHER JOBS AND SERVICES

Central testing laboratory also conducts specific analyzes of various products, identification of unknown analytes and samples. The laboratory offers expertise, development and research studies related to solving the client's problems („problem solving“ issues), analytical reports according to valid state administration authorizations and other.

Table 3.

No.	PROPERTY	MATRIX / PRODUCT	TEST METHOD
1.	Mono-, di- and tri-ethylene glycol (GC)	chemicals	In-house
2.	Functional group distribution of hydrocarbon mixtures by ¹ H NMR	organic samples	In-house
3.	Glycols - preparation for ICP analysis	chemicals	In-house
4.	Identification and analysis of unknown samples (FTIR)	organic and inorganic samples	In-house
5.	¹ H / ¹³ C NMR spectrum (with and without interpretation)	petroleum products / crude oil / waste / soil / chemicals / polymer / biofuels	In-house
6.	Xylene purity (GC)	chemicals	In-house
7.	Solvent purity (GC)	chemicals	In-house
8.	Screening of unknown sample on metal presence (WDXRF)	organic samples / waste	In-house
9.	FTIR spectrum	organic samples / waste	In-house
10.	UV/VIS spectrum	organic samples / waste	In-house
11.	Normal paraffin distribution (GC)	organic samples	In-house
12.	Gas chromatography - chromatogram	organic samples	In-house
13.	Solid state NMR spectrum (with or without interpretation)	petroleum products / crude oil / waste / soil / chemicals / polymer / biofuels	In-house
14.	2D NMR spectrum (with or without interpretation)	petroleum products / crude oil / waste / soil / chemicals / polymer / biofuels	In-house
15.	Specific surface area, volume and pore size	inorganic and organic porous samples / catalysts / polymers / adsorbents	mod ASTM D 3663 mod. ISO 9277



***We invite you to contact us with confidence.
Your satisfaction is our goal!***



CONTACTS:

Central
Phone: +385 1 2381 448
Fax: +385 1 2381 398
e-mail: cil@ina.hr

Address
Lovinčićeva 4
HR 10002 Zagreb

CTL - a place of knowledge and excellence



**Central testing
laboratory**

cil@ina.hr