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BARRIO UNIVERSITARIO S/N
CONCEPCION 4070386, REPUBLIC OF CHILE

Testing Laboratory TL-812

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Expiry Date January 1, 2026

Effective Date October 16, 2023



International Accreditation Service
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Accredited to ISO/IEC 17025:2017

Effective Date October 16, 2023

| FIELDS OF TESTING | MATERIAL/ MATRIX | DETERMINANT(S)/ ANALYTE(S) | METHOD REFERENCE |
|-------------------|---|---|---|
| Biology | Surface water, Underground water and Wastewater | Determination of long-term toxicity of substances to Daphnia magna Straus (Cladocera, Crustacea) | ISO 10706: 2000 |
| | | Acute toxicity bioassay by determination of the inhibition of the mobility of Daphnia magna or Daphnia pulex (Crustacea, Cladocera) | NCh 2083:1999 |
| | | Daphnia Chronic Toxicity test. | EPA 712-C-96-120 "Ecological effects test guidelines" OPPTS 850.1300 Daphnid Chronic Toxicity Test. |
| | Surface water, Wastewater, Marine water | Sampling Phytoplankton | APHA, 2017. 10200 B. Standard Methods 24th Edition. |
| | | Zooplankton – Sample collection | APHA, 2017. 10200 B. Standard Methods 24th Edition. |
| | | Zooplankton – Counting techniques | APHA, 2017 10200 G. Standard Methods 24th Edition. |
| | | Chlorophyll | APHA, 2017. 10200 H. Standard Methods 24th Edition. |
| | | Periphyton Analysis | APHA, 2017. 10300 C. Standard Methods 24th Edition. |
| | | Sampling Periphyton | APHA, 2017. 10300 C. Standard Methods 24th Edition. |
| | | Macrophytes | APHA, 2017. 10400. Standard Methods 24th Edition. |
| | | Benthic macroinvertebrates – Sample collection | APHA, 2017 10500 B. Standard Methods 24th Edition. |
| | | Benthic macroinvertebrates – Sample processing and analysis | APHA, 2017 10500 C. Standard Methods 24th Edition. |
| | | Chlorophyll | EPA Method 445.0 (1997) |

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| FIELDS OF TESTING | MATERIAL/ MATRIX | DETERMINANT(S)/ ANALYTE(S) | METHOD REFERENCE |
|-----------------------------|--|--|---|
| Biology (cont'd.) | Surface water, Wastewater, Marine water (continued) | Benthic Macrofauna – Sampling and analysis | Resolución exenta N°3612 de 2009, numeral 28, de la Subsecretaría de Pesca |
| | | Phytoplankton Analysis Guide for counting phytoplankton by inverted microscopy (Utermöhl technique and Sedgewick-Rafter camera) | UNE-EN-15204:2007 APHA, 2017. 10200 F. Standard Methods 24th Edition. |
| | Wastewater | Determination of Fecal coliforms | NCh 2313/22 Of. 95 |
| | | Determination of Fecal coliforms | NCh 2313/23 Of. 95 |
| | | Growth inhibition bioassay of algae in fresh water with <i>Selenastrum capricornutum</i> (<i>Raphidocelis subcapitata</i>) | NCh 2706 of 2002. |
| | Surface water, Marine water, Underground water | Determination of Fecal coliforms | 9221 E Standard Methods 24th Edition |
| | Surface water, Wastewater, Marine water, Underground water | Determination of Total coliforms | 9221 B Standard Methods 24th Edition |
| | Surface water – Field sampling and analysis | Data acquisition and analysis. Fish Sampling | Standard Methods 24th Edition 10600 B |
| | | Identification | Standard Methods 24th Edition 10600 C, D. |
| | | Analysis of collections - Diet | Standard Methods 24th Edition 10600 D. |
| | | Analysis of collections. Structure of population and assemblage | Standard Methods 24th Edition 10600 D |
| | Surface Water | Growth inhibition bioassay of algae in fresh water with <i>Selenastrum capricornutum</i> (<i>Raphidocelis subcapitata</i>) | NCh 2706 of 2002 |
| | Underground water | Growth inhibition bioassay of algae in fresh water with <i>Selenastrum capricornutum</i> (<i>Raphidocelis subcapitata</i>) | NCh 2706 of 2002 |
| Chemistry | Surface water, Underground water | Organic nitrogen (Kjeldahl) | Standard Methods for the examination of water and wastewater 24th Edition 4500-Norg-B |

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| FIELDS OF TESTING | MATERIAL/MATRIX | DETERMINANT(S)/ANALYTE(S) | METHOD REFERENCE |
|------------------------|--|---|---|
| Chemistry (cont'd.) | Surface water, Underground water (cont'd.) | Total cadmium, Total calcium, Total copper, Total chromium, Total iron, Total magnesium, Total manganese, Total nickel, Total lead, Total potassium, Total sodium, Total zinc. | Standard Methods for the examination of water and wastewater 24th Edition 3111 B |
| | | Dissolved cadmium, Dissolved calcium, Dissolved copper, Dissolved chromium, Dissolved iron, Dissolved magnesium, Dissolved manganese, Dissolved nickel, Dissolved lead, Dissolved potassium, Dissolved sodium, Dissolved zinc | Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3111 B.(quantification) |
| | Surface water, Marine water, Underground water | Oil and Grease - Soxhlet Extraction Method | Standard Methods for the examination of water and wastewater 24th Edition 5520-D |
| | | Boron | Standard Methods for the examination of water and wastewater 24th Edition 4500 B - B |
| | | Cyanide total | Standard Methods for the examination of water and wastewater 24th Edition 4500 CN - C (Distillation) 4500 CN – E (Quantification) |
| | | Nitrate | Standard Methods for the examination of water and wastewater 24th Edition 4500-NO3 E |
| | | Nitrite | Standard Methods for the examination of water and wastewater 24th Edition 4500-NO2-B |
| | | DBO ₅ | Standard Methods for the examination of water and wastewater 24th Edition 5210 B |
| | | DQO | Standard Methods for the examination of water and wastewater 24th Edition 5220 D |

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|------------------------|---|---|--|
| Chemistry (cont'd.) | Surface water, Marine water, Underground water (cont'd.) | Total Phosphorus | Standard Methods for the examination of water and wastewater 24th Edition 4500 P-B (Digestion) 4500-P-E (Quantification) |
| | | Fixed Hydrocarbons | Standard Methods for the examination of water and wastewater 24th Edition 5520-F |
| | | Phenol index | Standard Methods for the examination of water and wastewater 24th Edition 5530 C |
| | | Ammonia nitrogen | Standard Methods for the examination of water and wastewater 24th Edition 4500 – NH3 F |
| | | Determination of pH | Standard Methods for the examination of water and wastewater 24th Edition 4500-H B |
| | | Settleable Solids | Standard Methods for the examination of water and wastewater 24th Edition 2540 F |
| | | Total Suspended Solids Dried at 103 °C - 105 °C | Standard Methods for the examination of water and wastewater 24th Edition 2540 D |
| | | Sulfide | Standard Methods for the examination of water and wastewater 24th Edition 4500 S2- G |
| | | Total aluminum, Total antimony, Total barium, Total beryllium, Total boron, Total cadmium, Total calcium, Total cobalt, Total copper, Total chromium, Total strontium, Total iron, Total lithium, Total magnesium, Total manganese, Total molybdenum, Total nickel, Total silver, Total lead, Total potassium, Total sodium, Total vanadium, Total zinc | Standard Methods for the examination of water and wastewater 24th Edition 3120 B |

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| FIELDS OF TESTING | MATERIAL/ MATRIX | DETERMINANT(S)/ ANALYTE(S) | METHOD REFERENCE |
|------------------------|---|--|---|
| Chemistry (cont'd.) | Surface water, Marine water, Underground water (cont'd.) | Sodium adsorption ratio (RAS) Sodium Percentage | NCh1333:1978 modified in 1987 |
| | | Total aluminum, Total molybdenum, Total vanadium | Standard Methods for the examination of water and wastewater 24th Edition 3111 D |
| | | Dissolved aluminum, Dissolved molybdenum, Dissolved vanadium | Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3111D(Quantification) |
| | | Total Arsenic, Total Selenium | Standard Methods for the examination of water and wastewater 24th Edition 3114 B. |
| | | Dissolved Arsenic, Dissolved Selenium | Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3114 B (Quantification). |
| | | Total Mercury | Standard Methods for the examination of water and wastewater 24th Edition 3112 B |
| | | Total Bismuth, Total tin, Total phosphorus, Silica | LEE-MET-504-VAL-11 v2 Based on: Standard Methods for the examination of water and wastewater 24th Edition 3120 B |
| | Surface water, Underground water and wastewater | Bromide, Fluoride, Phosphate, Nitrate, Nitrite | Standard Methods for the examination of water and wastewater 24th Edition 4110 B |
| | | Chlorate, Chlorite | Standard Methods for the examination of water and wastewater 24th Edition 4110 D |
| | Surface water, Marine water, Underground water and Wastewater | Mercury Dissolved | Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3112 B(quantification) |

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|-------------------------------|---|---|--|
| Chemistry (cont'd.) | Surface water, Marine water, Underground water and Wastewater (cont'd.) | Chloride, Sulfate | Standard Methods for the examination of water and wastewater 24th Edition 4110 B |
| | | Chlorophenols: 2-3-6 Trichlorophenol 2-4-6 Trichlorophenol 2-3-5-6 Tetrachlorophenol 2-3-4-6 Tetrachlorophenol Pentachlorophenol | LEE-MET-504-VAL-03 v3.0 Based on Diserens, JM and Savoy, M.C Research note N° QSRN950008: Determination of pentachlorophenol in fruit and baby foods and Diserens, J.M. A Screening methods for the detection of chlorophenols in wood, Laboratory news N°70, topic 5 |
| | | Determination of True and apparent color. | LEE-MET-504-VAL-13 v1 Based on: Standard Methods for the examination of water and wastewater 24th Edition 2120 C |
| | | Conductivity Laboratory Method | Standard Methods for the examination of water and wastewater 24th Edition 2510 B |
| | | Phosphate | LEE-MET-504-VAL-14 v1 Based on: Standard Methods for the examination of water and wastewater 24th Edition 4500 - P E |
| | | Dissolved Phosphorus | Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 4500 P-B (Digestion) 4500-P-E (Quantification) |
| | | Polycyclic Aromatic Hydrocarbons: Acenaphthylene Acenaphthene Anthracene Benzo (a) Anthracene Benzo (b) Fluoranthene Benzo (k) Fluoranthene Benzo (g, h, i) Perylene Criseno Dibenzo (a, h) Anthracene Phenanthrene | LEE-MET-504-VAL-07 v3.0 Based on: Standard Methods for the examination of water and wastewater 24th Edition 6440 B |

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| FIELDS OF TESTING | MATERIAL/MATRIX | DETERMINANT(S)/ANALYTE(S) | METHOD REFERENCE |
|-------------------------------|---|---|---|
| Chemistry (cont'd.) | Surface water, Marine water, Underground water and Wastewater (cont'd.) | Fluoranthene Fluorene Indene (1, 2, 3 cd) Pyrene Naphthalene Pyrene | |
| | | Total nitrogen | Standard Methods for the examination of water and wastewater 24th Edition 4500-N C 4500-NO3-E 4500-NO2-B |
| | | Polychlorinated Biphenyls (PCBs) PCB-28 PCB-52 PCB-101 PCB-118 PCB-153 PCB-138 PCB-180 | LEE-MET-504-VAL-08 v3 Based on: Standard Methods for the examination of water and wastewater 24th Edition 6431-B |
| | | Organochlorine pesticides: Aldrin Alpha-BHC, Beta-BHC Delta-BHC Dieldrin Endosulfan I Endosulfan II Endrin Gama-BHC Heptachlor Heptachlor Epoxide Hexachlorobenzene Lindane Methoxychlor Parathion o, p-DDT pp-DDD pp-DDE pp-DDT Trifluralin | LEE-MET-504-VAL-08 v3 Based on: Standard Methods for the examination of water and wastewater 24th Edition 6630-B |
| | | Pesticides: Aldicarb Atrazine Carbaryl Chloridazon Chlorpyrifos Cyanazine | LEE-MET-504-VAL-04 v3 Based on: Extraction procedures and determination of pesticides in environmental samples Course 2011/12 Sciences and technology |

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|------------------------|---|---|--|
| Chemistry (cont'd.) | Surface water, Marine water, Underground water and Wastewater (cont'd.) | Dimethoate Lenacil Methyl Chlorpyrifos Propazine Simazine Tebuconazole | 29 I.S.B.N: 978-84-15910-29-9 |
| | | Silica | Standard Methods for the examination of water and wastewater 24th Edition 4500–SiO ₂ D |
| | | Total Solids Dried at 103 °C - 105 °C | Standard Methods for the examination of water and wastewater 24th Edition 2540 B |
| | | Total Dissolved Solids Dried at 180 °C | Standard Methods for the examination of water and wastewater 24th Edition 2540 C |
| | | Fixed and Volatile Solids ignited at 550 °C | Standard Methods for the examination of water and wastewater 24th Edition 2540 E |
| | | Turbidity | Standard Methods for the examination of water and wastewater 24th Edition 2130 B |
| | | Aluminum Dissolved, antimony Dissolved, barium Dissolved, beryllium Dissolved, Bismuth Dissolved, boron Dissolved, cadmium Dissolved, calcium Dissolved, cobalt Dissolved, copper Dissolved, chromium Dissolved, strontium Dissolved, iron Dissolved, lithium Dissolved, magnesium Dissolved, manganese Dissolved, molybdenum Dissolved, nickel Dissolved, silver Dissolved, lead Dissolved, potassium Dissolved, sodium Dissolved, vanadium Dissolved, zinc Dissolved | Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3120 B(Quantification) |

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| FIELDS OF TESTING | MATERIAL/MATRIX | DETERMINANT(S)/ANALYTE(S) | METHOD REFERENCE |
|------------------------|---|---|--|
| Chemistry (cont'd.) | Surface water, Marine water, Underground water and Wastewater (cont'd.) | Hardness Total | Standard Methods for the examination of water and wastewater 24th Edition 2340 B |
| | | Bismuth Dissolved, tin Dissolved, phosphorus Dissolved, Silica Dissolved. | LEE-MET-504-VAL-11 v2 Based on: Standard Methods for the examination of water and wastewater 24th Edition, 3030 B (Filtration) 3120 B (quantification) |
| | Soil, lake sediments, aquatic sediments, marine sediments | Kjeldahl Nitrogen | LEE-MET-504-VAL-05 v1 Based on: Molecular absorption spectroscopy Cobertera E. "Edaphology Applied. Editions Catedral, Spain (1993) Pp, 237-239 (Digestion) Standard Methods for examination of water and wastewater 24th Edition 4500 NH3-D (Quantification) |
| | | pH | LEE-MET-504-VAL-18 v1 Based on: "Recommended analysis methods in the Chilean soils" Method 3.1 Suspension and potentiometric determination |
| | | Available Phosphor | LEE-MET-504-VAL-16 v1 Based on: Methods of analysis recommended in the soils of Chile Revision 2006. Government of Chile Ministry of Agriculture, INIA and Chilean Society of Soil Sciences. Method 1.1, Sample Preparation. Method 6.i. Analysis of phosphorus in solution baking soda (Olsen Method) |
| | | Total Phosphorus | LEE-MET-504-VAL-06 v3 Based on: ML molecular absorption spectroscopy Jackson, "analysis Soil Chemist." Omega Editions |

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|-------------------------------|---|--|---|
| Chemistry (cont'd.) | Soil, lake sediments, aquatic sediments, marine sediments (cont'd.) | Total Phosphorus (cont'd.) | Spain (i976) Pp, 190-253.Edition. (Digestion) Standard Methods for examination of water and wastewater 24th Edition 4500 P-E (Quantification) |
| | | Organic Matter | LEE-MET-504-VAL-15 v1 Based on: "Recommended Analysis Methods for Chilean soils " Method 1.1 Preparation of samples Method 7.2 Loss to calcination |
| | | Aluminum removable, cadmium removable, copper removable, chromium removable, iron removable, magnesium removable, manganese removable, Molybdenum removable, nickel removable, lead removable, potassium removable, sodium removable, zinc removable. in Soils, sediments lacustrine | LEE-M ET-504-VAL-17 v1 Based on: EPA 3050-B (Digestion) Standard Methods for examination of water and wastewater 24th Edition 3120B (Quantification) |
| | | Arsenic removable | LEE-MET-504-VAL-17 v1 Based on: EPA 3050-B (Digestion) Standard Methods for examination of water and wastewater 24th Edition 3114B (Quantification) |
| | | Mercury removable | LEE-MET-504-VAL-19 v1 Based on: EPA-245.5 (Digestion) Standard Methods for examination of water and wastewater 24th Edition 3112 B (Quantification) |
| | Wastewater | Determination of oil and grease | NCh2313/6:2015 - Part 6 |

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|------------------------|-------------------------|--|-------------------|
| Chemistry (cont'd.) | Wastewater (cont'd.) | Cyanide total | NCh2313/14:1997 |
| | | Chloride | NCh2313/32: 1999 |
| | | DBO ₅ | NCh2313/5:2005 |
| | | DQO | NCh2313/24:1997 |
| | | Total phosphorus | NCh2313/15:2009 |
| | | Fixed Hydrocarbons | NCh2313/7:2021 |
| | | Total Hydrocarbons | NCh2313/7:2021 |
| | | Volatile Hydrocarbons | NCh2313/7:2021 |
| | | Phenol index | NCh2313/19:2001 |
| | | Ammonia nitrogen | NCh2313/16:2010 |
| | | Kjeldahl Nitrogen | NCh2313/28:2009 |
| | | Determination of pH In Situ | NCh2313/1:2021 |
| | | Foaming Power | NCh2313/21:2010 |
| | | Settleable Solids | NCh2313/4:1995 |
| | | Determination of anionic surfactants-Methods for methylene blue active substances (MBAS) | NCh 2313/27:1998 |
| | | Total Suspended Solids Dried at 103-105 °C | NCh2313/3:1995 |
| | | Sulfide | NCh2313/17:1997 |
| | | Fluoride | NCh 2313/33: 1999 |
| | | Temperature | NCh2313/2:1995 |
| | | Total Aluminum, Total Antimony, Total Barium, Total Beryllium, Total Bismuth, Total boron, Total Cadmium, Total calcium, Total Cobalt, Total Copper, Total Chromium, Total Tin, Total Strontium, Total Phosphorus, Total Iron, Total Dissolved Iron, Total Lithium, Total Magnesium, Total Manganese, Total Molybdenum, Total Nickel, Total Silver, Total Lead, Total Potassium, Total | NCh2313/25:1997 |

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| FIELDS OF TESTING | MATERIAL/ MATRIX | DETERMINANT(S)/ ANALYTE(S) | METHOD REFERENCE |
|------------------------|-------------------------|---|---|
| Chemistry (cont'd.) | Wastewater (cont'd.) | Silicon, Total Sodium, Total Vanadium, Total zinc | |
| | | Determination of Arsenic | NCh2313/9:1996 |
| | | Determination of heavy metals: Total cadmium, Total copper, Total chromium, Total iron, iron Dissolved, Total manganese, Total nickel, Total lead, Total zinc | NCh2313/10:2020 |
| | | Hexavalent Chromium | NCh2313/11:1996 |
| | | Determination of Mercury | NCh2313/12:1996 |
| | | Determination of Molybdenum | NCh2313/13:1998 |
| | | Determination of selenium | NCh2313/30:1999 |
| | | Phenols (phenolic compounds, phenol index). | LEE-MET-504-VAL-37 V2 based on: Standard Methods for the examination of water and wastewater 24th Edition 5530 C. 5530 B Cleanup Procedure |
| | | Determination of Tetracloroetano (Tetracloroetileno), Triclorometano, Bromodiclorometano (Diclorobromometano), Dibromoclorometano, Tribromometano (Bromoformo), Bromodiclorometano (Diclorobromometano) | NCh2313/20.Of98. Parte 20. Determination of trihalomethanes (THM) by gas chromatography with electron capture detector (ECD). 1998 INN. |
| | | Determination of Tetracloroetano (Tetracloroetileno) Triclorometano Bromodiclorometano (Diclorobromometano), Dibromoclorometano Tribromometano (Bromoformo), Bromodiclorometano (Diclorobromometano) | LEE-MET-504-VAL 38 V2 Liquid-Liquid Extraction Gas Chromatographic Method. Trihalomethanes and Chlorinated Organic Solvents. Based on Standard Methods for the examination of water and wastewater 24th Edition 6232. B |

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|------------------------|--|---|---|
| Chemistry (cont'd.) | Wastewater (cont'd.) | Dissolved sulfates | NCh2313/18.Of97. Parte 18. Determinación de sulfato disuelto por calcinación de residuo 1997 INN |
| | | AOX | LEE-MET-504-VAL-39 V2 Based on: ISO 9562:2004. Water quality - Determination of adsorbable organically bound halogens (AOX) 2004 ISO. |
| | | Nitrite Nitrogen | LEE -MET-504-VAL 41 v2 Colorimetric Method NO ₂ ⁻ Nitrogen (Nitrite). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO ₂ - B. |
| | | Nitrate Nitrogen | LEE -MET-504-VAL 42 v2 Cadmium Reduction Method NO ₃ ⁻ Nitrogen (Nitrate). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO ₃ - E |
| | | Ammonium | LEE -MET-504-VAL 43 v2 Phenate Method NH ₃ Nitrogen (Ammonia). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NH ₃ F. |
| | | Total Hydrocarbons | LEE-MET-504-VAL-48 v2 based on: NCh 2313/7:2021 |
| | Lake sediments, Aquatic sediments, Marine Sediments and Soils | Particle size analysis- Laser diffraction (granulometry) | ISO 13320:2009 Res. Ex. N°3612/2009, mod Res. Ex 1508 /2014 numeral 26 Subsecretaría de Pesca |
| | | Removable Selenium, Removable Barium, Removable Beryllium, Removable Lithium, Removable Cobalt, Removable Vanadium, Removable Strontium, Removable Silicon, Removable Silica. | LEE-MET-504-VAL-17 version 1 |
| | | Conductivity | LEE-MET-504-VAL-21 version 1 |

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|------------------------|---|---|---|
| Chemistry (cont'd.) | Lacustrine, Aquatic sediments, Marine Sediments and Soils (cont'd.) | Moisture | LEE-MET-504-VAL-22 version 2 |
| | | Total nitrogen | LEE-MET-504-VAL-23 version 1 |
| | Surface water, Wastewater, Marine water and Underground water | Volatile hydrocarbons (C5-C12) | LEE-MET-504-VAL-20 version 3 |
| | | Colorimetric Method Chrome VI | LEE-MET-504-VAL-26 version 1, based on Standard Methods for examination of water and wastewater 24th Edition 3500-Cr B, Chromium |
| | | Anionic Surfactants as MBAS. | Standard Methods for examination of water and wastewater 24th Edition 5540. C. Anionic Surfactants as MBAS. |
| | | Fatty and Oleic Acid, Linoleic Acid, Linolenic Acid, Stearic Acid, Resin acids, 9,10-Dichlorostearic Acid, Isopimaric Acid, Abietic Acid, Deshydroabietic Acid, Pimaric Acid, Palustric Acid, Neoabietic Acid, Sandaracopimaric Acid, Levopimaric Acid, 12-Chlorodehydroabietic Acid, 14-Chlorodehydroabietic Acid, 12,14-Dichlorodihydroabietic Acid | LEE-MET-504-VAL-24 version 1 |
| | Underground water | Phenols (phenolic compounds, phenol index). | LEE-MET-504-VAL-37 V2 based on: Standard Methods for the examination of water and wastewater 24th Edition 5530 C. 5530 B Cleanup Procedure |
| | | Determination of Tetrachloroethene (Tetrachloroethylene) Trichloromethane Bromodichloromethane (Dichlorobromomethane), Dibromochloromethane Tribromomethane (Bromoform), | LEE-MET-504-VAL 38 V2 Based Liquid-Liquid Extraction Gas Chromatographic Method. Trihalomethanes and Chlorinated Organic Solvents. Based on Standard Methods for the examination of water and wastewater 24th Edition 6232. B |

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| FIELDS OF TESTING | MATERIAL/ MATRIX | DETERMINANT(S)/ ANALYTE(S) | METHOD REFERENCE |
|------------------------|--------------------------------|--|---|
| Chemistry (cont'd.) | Underground water (cont'd.) | Bromodichlorometano (Diclorobromometano) | |
| | | AOX | LEE-MET-504-VAL-39 V2 Based on: ISO 9562:2004. Water quality - Determination of adsorbable organically bound halogens (AOX) 2004 ISO. |
| | | Nitrite Nitrogen | LEE -MET-504-VAL 41 v2 Colorimetric Method NO ₂ ⁻ Nitrogen (Nitrite). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500- NO ₂ - B. |
| | | Nitrate Nitrogen | LEE -MET-504-VAL 42 v2 Cadmium Reduction Method NO ₃ ⁻ Nitrogen (Nitrate). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500- NO ₃ - E |
| | | Ammonium | LEE -MET-504-VAL 43 v2 Phenate Method NH ₃ Nitrogen (Ammonia). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NH ₃ F. |
| | | Total Hydrocarbons | LEE-MET-504-VAL-48 v2 based on: NCh 2313/7:2021 |
| | | Determination of oil and grease | LEE-MET-504-VAL-44 v2 based on: NCh 2313/6:2015 |
| | Marine water | Phenols (phenolic compounds, phenol index). | LEE-MET-504-VAL-37 V2 based on: Standard Methods for the examination of water and wastewater 24th Edition 5530 C. 5530 B Cleanup Procedure |
| | | Determination of Tetracloroetano (Tetracloroetileno) Triclorometano Bromodichlorometano (Diclorobromometano), Dibromoclorometano Tribromometano | LEE-MET-504-VAL 38 V2 Based Liquid-Liquid Extraction Gas Chromatographic Method. Trihalomethanes and Chlorinated Organic Solvents. Based on Standard Methods for the examination of water and |

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|------------------------|---------------------------|--|---|
| Chemistry (cont'd.) | Marine water (cont'd.) | (Bromoformo), Bromodiclorometano (Diclorobromometano) | wastewater 24th Edition 6232. B |
| | | Nitrite Nitrogen | LEE -MET-504-VAL 41 v2 Colorimetric Method NO ₂ ⁻ Nitrogen (Nitrite). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500- NO ₂ - B. |
| | | Nitrate Nitrogen | LEE -MET-504-VAL 42 v2 Cadmium Reduction Method NO ₃ ⁻ Nitrogen (Nitrate). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500- NO ₃ - E |
| | | Ammonium | LEE -MET-504-VAL 43 v2 Phenate Method NH ₃ Nitrogen (Ammonia). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NH ₃ F. |
| | | Total Hydrocarbons | LEE-MET-504-VAL-48 v2 based on: NCh 2313/7:2021 |
| | | Determination of oil and grease | LEE-MET-504-VAL-44 v2 based on: NCh 2313/6:2015 |
| | Drinking water | Determination of trihalomethanes THM (dibromoclorometano, bromodiclorometano, tribromometano, triclorometano) y de Tetracloroeteno por Gas chromatography method with electron capture detector (ECD) | Manual SISS ME-22-2024. |
| | Surface Water | Determination of Tetracloroeteno (Tetracloroetileno) Triclorometano Bromodiclorometano (Diclorobromometano), Dibromoclorometano Tribromometano (Bromoformo), | LEE-MET-504-VAL 38 V2 Liquid-Liquid Extraction Gas Chromatographic Method. Trihalomethanes and Chlorinated Organic Solvents. Standard Methods for the examination of water and |

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|------------------------|----------------------------|---|---|
| Chemistry (cont'd.) | Surface Water (cont'd.) | Bromodichlorometano (Diclorobromometano) | wastewater 24th Edition 6232. B |
| | | AOX | LEE-MET-504-VAL-39 V2 Based on: ISO 9562:2004. Water quality - Determination of adsorbable organically bound halogens (AOX) 2004 ISO. |
| | | Nitrite Nitrogen | LEE -MET-504-VAL 41 v2 Colorimetric Method NO ₂ ⁻ Nitrogen (Nitrite). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO ₂ - B. |
| | | Nitrate Nitrogen | LEE -MET-504-VAL 42 v2 Cadmium Reduction Method NO ₃ ⁻ Nitrogen (Nitrate). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO ₃ - E |
| | | Ammonium | LEE -MET-504-VAL 43 v2 Phenate Method NH ₃ Nitrogen (Ammonia). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NH ₃ F. |
| | | Total Hydrocarbons | LEE-MET-504-VAL-48 v2 based on: NCh 2313/7:2021 |
| | | Determination of oil and grease | LEE-MET-504-VAL-44 v2 based on: NCh 2313/6:2015 |
| | Soil | AOX | LEE-MET-504-VAL-39 v2 Based on: ISO 9562:2004. Water quality - Determination of adsorbable organically bound halogens (AOX) 2004 ISO |
| | | Organic and inorganic phosphorus. | LEE-MET-504-VAL-06 V3 Based on Molecular absorption spectroscopy ML Jackson, "Chemical analysis of soils" Edn., Omega Spain 1976 pages 190-253 Edition (Digestion) and Standard Methods for examination of |

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|------------------------|-------------------|--|---|
| Chemistry (cont'd.) | Soil (cont'd.) | | water and waste water 24th Edition 4500 P-E Quantification |
| | | Nitrate, Nitrite, Sulfate, Chlorate, Chloride, chlorite, bromide phosphate and fluoride. | LEE-MET-504-VAL-25 V2 Based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 4110-B. |
| | Lake sediments | Organic and inorganic phosphorus. | LEE-MET-504-VAL-06 V3 Based on Molecular absorption spectroscopy ML Jackson, "Chemical analysis of soils" Edn., Omega Spain 1976 pages 190-253 Edition (Digestion) and Standard Methods for examination of water and waste water 24th Edition 4500 P-E Quantification |
| | | Nitrate, Nitrite, Sulfate and Chlorate, Chloride, chlorite, bromide phosphate and fluoride | LEE-MET-504-VAL-25 V2 Based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 4110-B. Sample preparation, air drying, Recommended methods for Chilean soils, 2006 revision. |
| | Aquatic sediments | Organic and inorganic phosphorus. | LEE-MET-504-VAL-06 V3 Based on Molecular absorption spectroscopy ML Jackson, "Chemical analysis of soils" Edn., Omega Spain 1976 pages 190-253 Edition (Digestion) and Standard Methods for examination of water and waste water 24th Edition 4500 P-E Quantification |
| | | Nitrate, Nitrite, Sulfate and Chlorate, Chloride, chlorite, bromide phosphate and fluoride | LEE-MET-504-VAL-25 V2 Based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 4110-B. Sample preparation, air drying, Recommended methods for Chilean soils, 2006 revision. |



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| FIELDS OF TESTING | MATERIAL/MATRIX | DETERMINANT(S)/ANALYTE(S) | METHOD REFERENCE |
|--|--|--|--|
| Chemistry (cont'd.) | Marine sediments | Organic and inorganic phosphorus. | LEE-MET-504-VAL-06 V3 Based on Molecular absorption spectroscopy ML Jackson, "Chemical analysis of soils" Edn., Omega Spain 1976 pages 190-253 Edition (Digestion) and Standard Methods for examination of water and waste water 24th Edition 4500 P-E Quantification |
| | | Nitrate, Nitrite, Sulfate and Chlorate, Chloride, chlorite, bromide phosphate and fluoride | LEE-MET-504-VAL-25 V2 Based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 4110-B. Sample preparation, air drying, Recommended methods for Chilean soils, 2006 revision. |
| Chemistry – Field sampling and analysis | Surface water, Marine water | Transparency | LEE-MET-504-VAL-100 rev.1 based in EPA 440/4-91-002 |
| | Surface water, Marine water, Underground water | pH in situ | Standard Methods for the examination of water and wastewater 24th Edition 4500-H B |
| | | Temperature in situ | Standard Methods for the examination of water and wastewater 24th Edition 2550 B |
| | | Manual sampling | LEE MDT-507-01 v10 LEE PRO-507-01 v18 Based on: NCh-ISO 5667/2:2017 NCh411/3.Of2014 NCh-ISO5667/4:2016 NCh-ISO 5667/6: 2015 NCh411/11:2022 |
| | Underground water | Determining Subsurface Liquid Levels in a Borehole or Monitoring Well (Observation Well) | ASTM-D4750-87 (Reapproved 2001) |
| | Surface water, Marine water, Underground water, and wastewater | Alkalinity in situ, Bicarbonate in situ, Carbonate in situ | LEE-MET-504-VAL-33 v1 Based on: Standard Methods for the examination of water and wastewater 24th Edition 2320 B |

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| FIELDS OF TESTING | MATERIAL/ MATRIX | DETERMINANT(S)/ ANALYTE(S) | METHOD REFERENCE |
|---|--|---|--|
| Chemistry – Field sampling and analysis (cont'd.) | Surface water, Marine water, Underground water, and wastewater (cont'd.) | Residual chlorine in situ | Standard Methods for the examination of water and wastewater 24th Edition 4500 Cl-G |
| | | Conductivity in situ | Standard Methods for the examination of water and wastewater 24th Edition 2510 B |
| | | Determination of Oxygen (Dissolved) in situ | Standard Methods for the examination of water and wastewater 24th Edition 4500 O –B- C |
| | | Determination of Oxygen (Dissolved) in situ | Standard Methods for the examination of water and wastewater 24th Edition 4500 O - G |
| | Wastewater | Flow measurement | LEE-INS-505-01 v1 Based on: Manufacturer's manual ISCO auto samplers 6172 and Sigma 900 MAX and HACH AS950 |
| | | Manual and automatic sampling | LEE MDT-507-01 v10 LEE PRO-507-01 v18 Based on: NCh411/10.Of2005 |
| | Surface Water | Phenols (phenolic compounds, phenol index). | LEE-MET-504-VAL-37 V2 based on: Standard Methods for the examination of water and wastewater 24th Edition 5530 C. 5530 B Cleanup Procedure |