CERTIFICATE OF ACCREDITATION

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ALS LIFE SCIENCES CHILE S.A - ANTOFAGASTA

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ANTOFAGASTA, 1240000, CHILE

Testing Laboratory TL-990

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 July 1, 2026
Effective Date September 11, 2025

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Accredited to ISO/IEC 17025:2017 *Effective Date September 11, 2025*

Test Method	Title	Determinant(s)/Analyte(s)
PHYSICAL CHEMISTRY FOR WATERS		
Drinking Water and Sources of Uptake		
ME-01-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. EC-MUG, as a complement to the determination of total coliforms by the Multiple Tube Method (MPN)	Escherichia coli
ME-02-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. EC-MUG, as a complement to the determination of total coliforms by Membrane Filtration Method (FM)	Escherichia coli
ME-03-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Nephelometric method	Turbidity
ME-04-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with direct aspiration	Copper
ME-05-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with direct aspiration	Chrome
ME-06-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Ion selective electrode method	Fluoride
ME-07-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometric method with direct aspiration	Iron
ME-08-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with direct aspiration	Manganese
ME-09-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with direct aspiration	Magnesium

Test Method	Title	Determinant(s)/Analyte(s)
ME-10-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with hydride generation	Selenium
ME-11-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with direct aspiration	Zinc
ME-12-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with hydride generation	Arsenic
ME-13-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with direct aspiration	Cadmium
ME-15-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with mercury atomic vapor generation	Mercury
ME-17-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Nitrite Determination by UV-VIS Molecular Absorption Spectrophotometry Method	Nitrogen-Nitrite
ME-18-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Atomic absorption spectrophotometry method with direct aspiration	Lead
ME-23-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Determination of Monochloramine by DPD Titrimetric Method with FAS	Monochloramine
ME-24-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Platinum-Cobalt Method	True Colour
ME-25-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Organoleptic method	Odor
ME-26-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Organoleptic method	Flavor
ME-27-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Determination of Ammonia by Specific Electrode Method	Ammonia, Ammonia Nitrogen

Test Method	Title	Determinant(s)/Analyte(s)
ME-28-2024	Superintendency of Sanitary Services. Manual of Test Methods for Drinking Water. Argentometric method	Chloride
ME-29-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Electrometric method	pH
ME-30-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Gravimetric Waste Drying Method	Sulfate
ME-31-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Gravimetric method	Total Dissolved Solids
ME-32-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. UV-Visible Molecular Absorption Spectrophotometry	Phenolic compounds
ME-33-2024	Superintendency of Sanitary Services. Manual of test methods for drinking water. Ferrous Titrimetric DPD Method (FAS)	Residual free chlorine
QWI-IO-N-NO3-01 (Issue A Modification 3)	Method based on Standard Methods for the Examination Water and Water, 24th Edition, 2023, 4500-NO3 B	Nitrate
Drinking Water, Sources of Uptake, Surface Water (Rivers, Streams and Lakes) Ground Water, Sea Water, Industrial Purposes Water, Wastewater		
2320 A and B Alkalinity	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023.	Alkalinity (Bicarbonate, Carbonate, Hydroxide, Total)
4500-B C Carmine method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Boron
QWI-IO-CE-01 (Issue B Modification 7)	Method based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023, 2510-B Electrometric Method	Conductivity
5210 B 5 Day BOD Test	Standards Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Biochemical Oxygen Demand
5220-D Closed Reflux, Colorimetric Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Chemical Oxygen Demand
QWI-IO-Density-02 (Issue A Modification 2)	Method based on Standard Test Methods for Specific Gravity of water and brine ASTM D1429-08 Pycnometer	Density
4500 SiO2 C Colorimetric method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Silica (Reactive)
QWI-IO-SULFURO-01 (Issue C Modification 1)	Method based on Standard Methods for the Examination of Water and Wastewater 24th Edition, 2023, 4500-S-2-D Spectrophotometry of Absorption Molecular	Sulfide

Test Method	Title	Determinant(s)/Analyte(s)
3114 C Arsenic and Selenium by AAS Continuous Hydride Generation; 3030 B (Filtration)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Arsenic Dissolved Selenium
3114 C Arsenic and Selenium by AAS - Continuous Hydride Generation.	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Arsenic Total Selenium
3114 B Arsenic and Selenium by AAS -Manual Hydride Generation; 3030 B (Filtration)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Arsenic Dissolved Selenium
3114 B Arsenic and Selenium by AAS - Continuous Hydride Generation	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Arsenic Total Selenium
3111 B Metals by AAS-Direct Air-acetylene Flame Generation; 3030 B (Filtration)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Metals by AAS - Direct Air-acetylene Flame, Atomic Absorption Spectrophotometry (dissolved Metals): Antimony, Bismuth, Cesium, Gold, Iridum, Palladium, Rhodium, Thalium, Cadmium, Calcium, Zinc, Cobalt, Copper, Iron, Lithium, Magnesium, Manganese, Silver, Lead, Nickel, chromium, potassium, sodium, strontium, tin
3111 B Metals by AAS - Direct Air- acetylene Flame. 3030 D (Digestion)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Metals by AAS - Direct Air-acetylene Flame, Atomic Absorption Spectrophotometry (Total Metals): Antimony, Bismuth, Cesium, Gold, Iridum, Palladium, Rhodium, Thalium, Cadmium, Calcium, Zinc, Cobalt, Copper, Iron, Lithium, Magnesium, Manganese, Silver, Lead, Nickel, Chromium, Potassium, Sodium, Strontium, Tin
3111 D Metals by AAS - Direct Nitrous Oxide-acetylene Flame; 3030 B (Filtration)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Metals by AAS - Direct Nitrous Oxide-acetylene Flame, Atomic Absorption Spectrophotometry (dissolved Metals): Barium, Beryllium, Molybdenum, Vanadium, Calcium, Silica, Aluminum

Test Method	Title	Determinant(s)/Analyte(s)
3111 D Metals by AAS - Direct Nitrous Oxide-acetylene Flame; 3030 D (Digestion)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Metals by AAS- Direct Nitrous Oxide-acetylene Flame, Atomic Absorption Spectrophotometry (Total Metals): Barium, Beryllium, Molybdenum, Vanadium, Calcium, Silica, Aluminum
QWI-IO-Metales 02 (Issue A Emission 1)	Method based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023, 3030 B and D and 3111 D	Atomic Absorption Spectrophotometry Total and dissolved Metals: Tin, Strontium, Magnesium
4500 -Cl- F DPD Ferrous Titrimetric Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Residual chlorine
4500 Cl^- B. Argentometric Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Chloride
2120 B Visual Comparison Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Colour
3500 Cr B Colorimetric Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Hexavalent chromium
3030 B and 3111 D Dissolved Metals by AAS - Direct nitrous Oxide-Acetylene Flame	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Chromium
3030 D and 3111 D Total Metals by AAS-Direct Air- acetylene Flame	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Chromium
3030 B and 3111 D Dissolved Metals by AAS - Direct Nitrous Oxide-Acetylene Flame	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Silicon.
3030 D and 3111 D Atomic Absorption Spectrophotometry - Direct Nitrous Oxide-Acetylene Flame	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Silicon.
4500 F^- C Ion Selective Electrode Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Fluoride - Ion selective electrode
4500 P- C. Vanadomolybdophosphoric Acid Colorimetric Method; 4500 P-B (Sample preparation)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Phosphorus
5520 F Hydrocarbons	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Fixed Hydrocarbons

Test Method	Title	Determinant(s)/Analyte(s)
3112 B Mercury by AAS - Cold-vapor atomic; 3030 B (Filtration)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Mercury
3112 B. Mercury by AAS - Cold-vapor atomic;	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Mercury
4500 NH3 D Ammonia-Selective Electrode Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Ammonia Nitrogen
4500 NO3 B Ultraviolet Spectrophotometric Screening Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Nitrogen (Nitrate)
4500 NO2 B Colorimetric Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Nitrogen (Nitrite)
4500 H+ B Electrometric Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	pH
3500 K B Potassium by AAS Flame Emission; 3030 B (Filtration)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Potassium
3500 K B Potassium by AAS Flame Emission; 3030 D (Digestion)	Standard Methods for the Examination of Water and Wastewater 24th Edition, 2023	Total Potassium
3500 Na B Sodium by AAS Flame Emission; 3030 B (Filtration)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Sodium
3500 Na B Sodium by AAS Flame Emission; 3030 D (Digestion)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Sodium
3500 Li B Lithium by AAS Flame Emission; 3030 B (Filtration)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Dissolved Lithium
3500 Li B Lithium by AAS Flame Emission; 3030 D (Digestion)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total Lithium
2540 C Total Dissolved Solids Dried at 180 °C	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total dissolved solids
2540 F Settleable Solids	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Settling solids
2540 D Total Suspended Solids Dried From 103 °C to 105 °C	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total suspended solids
2540 B Total Solids Dried from 103 °C a 105 °C	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Total solids

Test Method	Title	Determinant(s)/Analyte(s)
4500-SO4 2− D. Gravimetric Method with Drying of Residue	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Sulfate
5540 C Anionic Surfactants as MBAS; 5540 B (Surfactant Separation by Sublation)	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Anionic Surfactants
2550 B Laboratory and Field Methods	Standard Methods for the Examination of Water and Wastewater, 24th Edition	Temperature
2130 B Nephelometric Method	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Turbidity
QWI-ORG-AyG-01 (Issue B Modification 5)	Method based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023, 5520-B	Oils and fats
QWI-ORG-AyG-01 (Issue B Modification 5)	Method based on: Standard Methods for Examination of Water and Wastewater 5520 B, D, 24th Edition, 2023	Oils and Fats Partition Method
QWI-IO-PE-01 (Issue B Modification 2)	Based on ISO 696:1975 Surface active agents Measurement of foaming power – Modified Ross – Miles method	Foam Power
5530 C Chloroform Extraction Method; 5530 B Cleanup Procedure (Destilation).	Standard Methods for the Examination of Water and Wastewater, 24th Edition, 2023	Phenols
Wastewater		
NCh2313/15 Of.2009	Determination of total phosphorus	Total Phosphorus
NCh2313/16 Of.2010	Determination of ammoniacal nitrogen – Potentiometric method	Ammonia Nitrogen
NCh2313/19 Of.2001	Determination of phenol number – Spectrometric method of 4-aminoantipyrine after distillation	Phenol Index
NCh2313/21 Of.2010	Determination of foaming power	Foam Power
NCh2313/24.Of.1997	Determination of chemical oxygen demand (COD)	Chemical Oxygen Demand
NCh2313/27 Of.1998	Determination of anionic surfactants - Method for active substances of methylene blue (SAAM)	Anionic Surfactants
NCh2313/1:2021	Determination of pH	pH
NCh2313/02 Of.1995	Determination of temperature	Temperature
NCh2313/03 Of.1995	Determination of total suspended solids dried at 103-105 °C	Total Suspended Solids
NCh2313/04 Of.1995	Determination of Settling Solids - Volumetric Method	Settling Solids

Test Method	Title	Determinant(s)/Analyte(s)
NCh2313/05 Of.2005	Determination of Biochemical Oxygen Demand (BOD5	Biochemical Oxygen Demand
NCh2313/07:2021	Part A Determination of Fixed Hydrocarbons	Fixed Hydrocarbons
NCh2313/09 Of.1996	Determination of Arsenic - Atomic absorption spectrophotometry method with continuous generation of hydrides	Atomic Absorption Spectrophotometry: Arsenic
NCh2313/10 Of.2020	Flame Atomic Absorption Spectrophotometry Method	Atomic Absorption Spectrophotometry (Total Heavy Metals): Cadmium (Cd), Copper (Cu), Chromium (Cr), Iron (Fe), Manganese (Mn), Nickel (Ni), Lead (Pb), Zinc (Zn)
NCh2313/11 Of.1996	Hexavalent Chromium Determination - Atomic Absorption Spectrophotometry Method	Hexavalent chromium
NCh2313/12 Of.1996	Atomic absorption spectrophotometry method with cold vapor generation	Atomic Absorption Spectrophotometry: Mercury
NCh2313/13 Of.1998	Determination of Molybdenum by atomic absorption spectrophotometry with flame	Atomic Absorption Spectrophotometry: Molybdenum
NCh2313/18 Of.1997	Determination of dissolved sulfate by residue calcination	Dissolved Sulfate
NCh2313/30 Of.1999	Determination of selenium - Atomic absorption spectrophotometry method by continuous generation of hydrides	Atomic Absorption Spectrophotometry (Total and dissolved Metals): Selenium
NCh2313/32 Of.1999	Determination of chloride – Method argentometric of Mohr	Chloride
NCh2313/33 Of.1999	Determination of fluoride – Potentiometric method after distillation	Fluoride
CHEMISTRY FOR AIR, GASES AND PARTICULATE MATTER		
Filters Impacted with Particulate Matter (Personal Filters, PM10, PM2.5)		
Method CH-5, 2020	Determination of particulate matter emissions from stationary sources	Particulate Matter
EPA Method 5, 2020	Determination of particulate matter emissions from stationary sources	Particulate Matter
EPA Method 8, 2019	Determination of sulfuric acid and sulfur dioxide emissions from stationary sources	Sulfuric Acid, Sulfur Dioxide
EPA Method 201A, 2020	Determination of PM10 and PM2.5 emissions from stationary sources (constant sampling rate procedure)	Particulate Matter PM 10 Particulate Matter PM 2,5
EPA 40 CFR, Part 50, Appendix J, 2024	Appendix J to Part 50—Reference Method for the Determination of Particulate Matter as PM10 in the Atmosphere	Particulate Matter

Test Method	Title	Determinant(s)/Analyte(s)
ASTM D1739-98(2017)	Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter)	Settleable particulate matter (SPM)
Method CH-29, 2010	Determination of metal emission from stationary sources.	Aluminum, Barium, Beryllium, Cadmium, Chromium, Iron, Lead, Copper, Manganese, Mercury, Nickel, Phosphorous, Selenium, Silver, Thallium, Tellurium, Vanadium, Zinc, Zirconium
EPA Method 29	Determination of metal emission from stationary sources.	Aluminum, Barium, Beryllium, Cadmium, Chromium, Iron, Lead, Copper, Manganese, Mercury, Nickel, Phosphorous, Selenium, Silver, Thallium, Tellurium, Vanadium, Zinc, Zirconium
NIOSH 7602 4th Edition. 2003	SILICA, Respirable Crystalline, by IR (KBr pellet)	Silica, Crystalline
QWI-IO-SiO_2 -01 (Issue C Modification 0)	Method based on NIOSH Manual of Analytical Methods 2nd (Method No. 7602). Fourier Transform Infrared Spectrometry (FTIR)	Crystallized silica
QWI-IO-WEIGH-01 (Issue B Modification 4)	Method based on NIOSH Manual of Analytical Methods 4th Edition 2003 (Method No. 0500 y 600) Gravimetric method	Particulates Not Otherwise Regulated, Respirable
QWI-IO-WEIGH-01 (Issue B Modification 4)	Method based on NIOSH Manual of Analytical Methods 4th Edition 2003 (Method No. 0500 y 600) Gravimetric method	Particulates Not Otherwise Regulated, Total
QWI-IO-Metales-01 (Issue C Modification 3)	Determination of metals by AAS on filters Based on EPA Method 3050 B 1996 / SM Part 3000 Ed.24, 2023	Aluminum, Arsenic, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Magnesium, Mercury, Molybdenum, Nickel, Potassium, Silver, Silicon, Selenium, Sodium, Tin, Vanadium, Zinc
MICROBIOLOGY		
Drinking Water and Sources of Uptake		
NCh1620 / 1: 2020	Water - Determination of Total Coliform Bacteria and Escherichia coli - Part 1: Multiple Tube Method (MPN)	Total Coliforms
NCh1620 / 2: 2020	Water - Determination of Total Coliform Bacteria and Escherichia coli - Part 2: Membrane Filtration Method	Total Coliforms
NCh2043 Of.1998	Determination of Total coliforms by Chromogenic substrate method	Total coliforms

Test Method	Title	Determinant(s)/Analyte(s)
Drinking Water, Sources of Uptake, Surface Water (Rivers, Streams, Lakes), Sea Water, Ground Water, Industrial Purposes Water and Wastewater		
9221 E Multiple-Tube Fermentation Technique for Members of The Coliform Group	Standard Methods for Examination of the Water and Wastewater, 24th Edition, 2023	Fecal coliforms (Determination)
9221 F Multiple-Tube Fermentation Technique for Members of The Coliform Group	Standard Methods for Examination of the Water and Wastewater, 24th Edition, 2023	*Escherichia coli* (Determination)
9221 B Multiple-Tube Fermentation Technique for Members of The Coliform Group	Standard Methods for Examination of the Water and Wastewater, 24th Edition, 2023	Total coliforms (Determination)
9215 B Pour Plate Procedure	Standard Methods for Examination of the Water and Wastewater, 24th Edition, 2023	Heterotrophs (Determination)
Wastewater		
NCh2313/22 Of.1995	Determination of fecal coliforms in EC medium (Thermotolerant)	Fecal coliforms (Thermotolerant)
NCh2313/23 Of.1995	Determination of fecal coliforms in A-1 medium (Thermotolerant)	Fecal coliforms (Thermotolerant)
Sludge and Soils		
QWI-MB Ct / F / E. Coli-LODO-NMP (Issue A, Modification 6)	Method Based on: - Test Methods for the Examination of Composting and Compost, edition 2001, chapter 7.01.A - NCh1620/1:2020	Total coliforms
QWI-MB CT / F / E. Coli-LODO-NMP (Issue A, Modification 6)	Method Based on: Test Methods for the Examination of Composting and Compost, edition 2001, chapter 7.01. 3 - NCh1620/1:2020	Fecal coliforms
QWI-MB CT / F / E. Coli-LODO-NMP (Issue A, Modification 6)	Method Based on: Test Methods for the Examination of Composting and Compost, edition 2001, chapter 7.01. 3 - NCh1620/1:2020	*Escherichia coli*