



ATEL-0224-215C

SCOPE OF ACCREDITATION

MACH UNION LABORATORIES, INC.

**Mach Union Bldg., 335 Alabang-Zapote. Road, Talon 3, Las Piñas City
(Main) and ANFRA Bldg., FMC-LTO Compound, 314 Alabang Zapote Road,
Talon 1, Las Piñas City (Annex)**

Chemical Testing

Classification of Scopes	Specific tests or Measurements	Standard Method / Reference Standard
Foods		
Meat and poultry products Fish and Shellfish products Ready to eat savorys Spices, soups, sauces salad & protein products	Sodium	AOAC 985.35 by AAS
	Potassium	
	Calcium	
	Magnesium	
	Ash	Gravimetric Method; AOAC 923.03
	Moisture	Gravimetric Method; AOAC 935.29
	Protein	Kjeldahl Method; AOAC 2001.11
	Fats	Soxhlet Method; AOAC 963.15
Beverages		
Non-alcoholic beverages Frozen juice concentrate Powdered beverages	Total Sugars	AOAC 923.09 (Layne- Eynon Constant Volume)
	pH	Electrometric Method
	Vitamin C	Titrimetric Method; AOAC 967.21
Drugs and Pharmaceuticals		
	Vitamin A, Vitamin B1, B2, B3 and B6 and Benzalkonium Chloride	Laboratory Developed Method
Waters		
Water for potable and domestic purposes Drinking water Saline water Water for irrigation and stock Water for industrial and steam raising purposes Sewage Industrial water Water for aquaculture Other waters – dialysis water	pH	4500-H B. Electrometric; SMEWW, 23rd edition
	Temperature	2550 B. Laboratory and Field Methods SMEWW, 23rd edition
	Calcium, Magnesium, Total Hardness	2340 C. EDTA Titrimetric Method; SMEWW, 23rd edition
	Chromium, hexavalent	3500-Cr B. Colorimetric Method; SMEWW, 23rd edition
	Turbidity	2130 B. Nephelometric Method; SMEWW, 23rd edition
	Total Dissolved Solids (TDS)	2540 C. Gravimetric Method (dried at 180 °C); SMEWW, 23rd edition
	Chemical Oxygen Demand (COD)	5220 B. Open Reflux Method; 5220 D. Closed Reflux (Colorimetric) Method; SMEWW, 23rd edition



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Chemical Testing

Classification of Scopes	Specific tests or Measurements	Standard Method / Reference Standard
	Mercury	3112 B. Cold Vapor Technique/ AAS; SMEWW, 23rd edition
	Alkalinity	2320 B. Titration Method; SMEWW, 23rd edition
	Hydroxide Alkalinity CaCO ₃	
	Carbonate Alkalinity CaCO ₃	
	Bicarbonate Alkalinity CaCO ₃	
	Acidity	2310 B. Titration Method; SMEWW, 23rd edition
	Conductivity	2510 B. Laboratory Method; SMEWW, 23rd edition
	Total Solids	2540 B. Gravimetric Method (dried at 103 to 105 °C); SMEWW, 23rd edition
	Total Suspended Solids	2540 D. Gravimetric Method (dried at 103 to 105 °C); SMEWW, 23rd edition
	Settleable Solids	2540 F. Volumetric (Imhoff Cone) Method; SMEWW, 23rd edition
	Phosphorous	4500-P C. Vanadomolybdophosphoric (Colorimetric) Method; SMEWW, 23rd edition
	Arsenic, Cadmium, Copper, Lead, Chromium, Selenium, Silver	3113 B. Electrothermal Atomic Absorption Method; SMEWW, 23rd edition
	Aluminum, Barium	3113 D. Nitrous Oxide-Acetylene Flame Method; SMEWW, 23rd edition
	Aluminum, Antimony, Arsenic, Barium, Boron, Beryllium, Cadmium,	3120 B. Inductively-Coupled Plasma (ICP) Method; SMEWW, 23rd edition



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Chemical Testing

Classification of Scopes	Specific tests or Measurements	Standard Method / Reference Standard
	Chromium, Cobalt, Copper, Iron, Lead, Manganese, Calcium, Magnesium, Nickel, Potassium, Phosphorous, Selenium, Silver, Sodium, Molybdenum, Silicon, Thallium, Vanadium, Zinc	
	Arsenic, Selenium	3114 B. Hydride Generation Atomic Absorption Spectrometric Method; SMEWW, 23rd edition
	Oil & Grease (O&G)	5520 B. Liq-liq Partition, Gravimetric Method; SMEWW, 23rd edition
	Surfactants (MBAS)	5540 C. Methylene Blue Active Substances; SMEWW, 23rd edition
	Bromide	4110 B. Ion Chromatography with Suppression of Eluent Conductivity; SMEWW, 23rd edition
	Nitrate as N	EPA Method 300.1 Ion Chromatography
	Sulfide	4500-S-2 C. Methylene Blue Method; SMEWW, 23rd edition
	Silica	4500-SiO ₂ C. Molybdosilicate Method; 4500-SiO ₂ D. Heteropoly Blue Method SMEWW, 23rd edition
	Bromate, Bromide, Chlorate, Chlorite	EPA Method 300.1 Ion Chromatography
	Residual Chlorine, Total Chlorine, Chloramines	4500-Cl G. DPD Colorimetric Method; SMEWW, 23rd edition
	Biochemical Oxygen Demand	5210 B. 5-Day BOD Test; SMEWW, 23rd edition
	Dissolved Oxygen	4500-O B. Iodometric Method; 4500-O G. Membrane Electric Method; SMEWW, 23rd edition



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Chemical Testing

Classification of Scopes	Specific tests or Measurements	Standard Method / Reference Standard
Water for potable and domestic purposes Drinking water Water for irrigation and stock Water for industrial and steam raising purposes Other waters – dialysis water	Color	2120 B. Visual Comparison; SMEWW, 23rd edition
	Chloride, Fluoride, Nitrate, Nitrites, Phosphates, Sulfate	4110 B. Ion Chromatography; SMEWW, 23rd edition
	Total hardness	2340 B. Calculation; SMEWW, 23rd edition
	Total Organic Carbon	5310 C. UV-Persulfate; SMEWW, 23rd edition
Water for potable and domestic purposes Drinking water Water for irrigation and stock Water for industrial and steam raising purposes Sewage Industrial wastes Saline waters Bore waters Water for aquaculture Others – dialysis water	Ammonia as N	4500-NH3 F Phenate Method; SMEWW, 23rd edition
	Fluoride	4500-F C. Ion Selective Electrode Method; SMEWW, 23rd edition
	Nitrate as N and Nitrate	4500—NO3 D. Nitrate Electrode Method; SMEWW, 23rd edition
	Phosphate	4500-P D Stannous Chloride Method; SMEWW, 23rd edition
	Chloride	4500-CI B. Argentometric Method; SMEWW, 23rd edition
	Cyanide, free	4500-CN F. Cyanide Selective Electrode Method; SMEWW, 23rd edition
	Chloride, Fluoride, Nitrate, Nitrites, Phosphate, Sulfate	4110 B. Ion Chromatography; SMEWW, 23rd edition
	Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Sodium, Silver, Zinc	3111 B. Flame AAS; SMEWW, 23rd edition
	Ammonia as NH3-N	4500-NH3 D. Ammonia-Selective Electrode Method; SMEWW 23rd edition
	Nitrate as NO3-N	EPA 352.1 Brucine Colorimetric Method; SMEWW 23rd edition
	Total Kjeldahl Nitrogen	4500-N C Titrimetric Method; SMEWW 23rd edition



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Classification of Scopes	Specific tests or Measurements	Standard Method / Reference Standard
Gases and aerosols		
Industrial fumes and emissions	Oxide of Nitrogen as NO ₂	Phenoldisulfonic Acid Method; Method 7, US CFR Part 60
	Particulate Matter	Gravimetric Method; Method 5, US CFR Part 60
	Sulfur Dioxide, Stack Air	Barium Thorin Titrimetric Method; Method 56 US CFR Part 60
Atmospheric pollution	Nitrogen Dioxide, Ambient Air	Griess-Saltzman Colorimetry; WHO
	Total Suspended Particulates (TSP) and PM ₁₀	Gravimetric Method; US CFR Part 50 to 51
	Sulfur Dioxide, Ambient Air	Pararosaniline Method; US CFR Part 50 Appendix A
Constituents of the Environment		
Water other than saline waters	pH	4500-H B. Electrometric; SMEWW, 23rd edition
	Temperature	2550 B. Laboratory and Field Methods SMEWW, 23rd edition
	Color	2120 B. Visual Comparison; SMEWW, 23rd edition
	Aluminum, Barium	3111 D. Flame AAS (Direct Nitrous Oxide - Acetylene Flame) Method;
	Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Sodium, Silver, Zinc	3120 B. Inductively Coupled Plasma (ICP); SMEWW, 23rd edition
	Cadmium, Chromium, Copper, Iron, Lead, Manganese, Nickel, Sodium, Silver, Zinc	3111 B. Flame AAS (Direct Air- Acetylene) Method;
	Calcium, Magnesium	3111 B. Flame AAS (Direct Air- Acetylene) Method; SMEWW, 23rd edition



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Chemical Testing

Classification of Scopes	Specific tests or Measurements	Standard Method / Reference Standard
	Chromium, hexavalent	3500-Cr D. Colorimetric Method; SMEWW, 23rd edition
	Turbidity	2130 B. Nephelometric Method; SMEWW, 23rd edition
	Total Dissolved Solids	2540 C. Gravimetric Method (dried at 180 °C); SMEWW, 23rd edition
	Total Suspended Solids	2540 D. Gravimetric Method (dried at 103 to 105 °C); SMEWW, 23rd edition
	Surfactants	5540 C. Methylene Blue Anionic Substances; SMEWW, 23rd edition
	Biochemical Oxygen Demand	5210 B. 5-Day BOD Test; SMEWW, 23rd edition
	Chemical Oxygen Demand	5220 B. Open Reflux Method; 5220 D. Closed Reflux (Colorimetric) Method; SMEWW, 23rd edition
	Settleable Solids	2540 F. Volumetric (Imhoff Cone) Method; SMEWW, 23rd edition
	Oil & Grease	5520 B. Liquid-liquid Partition, Gravimetric Method; SMEWW, 23rd edition
	Ammonia as N	4500-NH ₃ F Phenate Method; SMEWW, 23rd edition
	Fluoride	4500-F C. Ion Selective Electrode Method; SMEWW, 23rd edition
	Nitrate as N and Nitrate	4500—NO ₃ D. Nitrate Electrode Method; SMEWW, 23rd edition
	Phosphate	4500-P D Stannous Chloride Method; SMEWW, 23rd edition
	Chloride	4500-Cl B. Argentometric Method; SMEWW, 23rd edition
	Cyanide, free	4500-CN F. Cyanide Selective Electrode Method; SMEWW, 23rd edition



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Chemical Testing

Classification of Scopes	Specific tests or Measurements	Standard Method / Reference Standard
	Chloride, Fluoride, Nitrate, Nitrites, Phosphate, Sulfate	4110 B. Ion Chromatography; SMEWW, 23rd edition
	Mercury	3112 B. Cold Vapor Technique/AAS; SMEWW, 23rd edition
	Dissolved Oxygen (DO)	4500-O B. Iodometric Method; 4500-O G. Membrane Electric Method; SMEWW, 23rd edition
	Alkalinity	2320 B. Titration Method; SMEWW, 23rd edition
	Antimony, Arsenic, Boron, Beryllium, Cobalt, Potassium, Phosphorous, Selenium, Molybdenum, Silicon, Thallium, Vanadium	3120 B. Inductively-Coupled Plasma (ICP) Method; SMEWW, 23rd edition
	Arsenic, Selenium	3114 B. Hydride Generation Atomic Absorption Spectrometric Method; SMEWW, 23rd edition
	Total Organic Carbon	5310 B. UV-Persulfate Method; SMEWW, 23rd edition
	Total Kjeldahl Nitrogen	4500-N C. Titrimetric Method; SMEWW, 23rd edition
	Aluminum, Barium, Cadmium, Chromium, Copper, Iron, Manganese, Nickel, Silver, Zinc, Calcium, Lead, Magnesium, Potassium, Sodium	EPA 3030B (Flame AAS)
	Ammonia as NH ₃ -N	4500-NH ₃ D. Ammonia-Selective Electrode Method; SMEWW 23rd edition
	Nitrate as NO ₃ -N	EPA 352.1 Brucine Colorimetric Method; SMEWW 23rd edition
	Phosphorous	4500-P C Vanadomolybdophosphoric Colorimetric Method; SMEWW 23rd edition



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Chemical Testing

Classification of Scopes	Specific tests or Measurements	Standard Method / Reference Standard
Soil, Sediments and Sludge	Aluminum, Antimony, Arsenic, Barium, Boron, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Calcium, Magnesium, Nickel, Potassium, Phosphorous, Selenium, Silver, Sodium, Molybdenum, Silicon, Thallium, Zinc	3120 B. Inductively-Coupled Plasma (ICP) Method; SMEWW, 23rd edition
	Mercury	EPA 7471 B. (Cold Vapor AAS)
Air	Nitrogen Dioxide, Ambient Air	Griess-Saltzman Colorimetry; WHO
	Sulfur Dioxide, Ambient Air	Pararosaniline Method; US CFR Part 50 Appendix A
	Total Suspended Particulates TSP and PM10	Gravimetric Method; US CFR Part 50 to 51
	Oxide of Nitrogen as NO2	Phenoldisulfonic Acid Method; Method 7, US CFR Part 60
	Particulate Matter	Gravimetric Method; Method 5, US CFR Part 60
	Sulfur Dioxide, Stack Air	Barium Thorin Titrimetric Method; Method 56 US CFR Part 60
Leachates	TCLP Extraction EPA Method 1311	
	Arsenic, Selenium, Barium, Cadmium, Chromium, Copper, Lead, Zinc	3120 B. Inductively-Coupled Plasma (ICP) Method; SMEWW, 23rd edition
	Fluoride	4500-F C. Ion Selective Electrode Method; SMEWW, 23rd edition;
	Chromium, hexavalent	3500-Cr D. Colorimetric Method; SMEWW, 23rd edition
	Mercury	3112 B. Cold Vapor Technique/AAS SMEWW, 23rd edition



**Philippine
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	Arsenic, Selenium	3113 B. Electrothermal Atomic Absorption Method; SMEWW, 23rd edition
	Cadmium, Chromium, Copper, Lead, Zinc	3111 B. Flame AAS (Direct Air- Acetylene) Method SMEWW, 23rd edition

Legend to reference standards:

SMEWW - Standard Methods for the Examination of Water and Wastewater



JAMES E. EMPEÑO

Director IV

Philippine Accreditation Bureau



**PAB ACCREDITED
TESTING LABORATORY
PNS ISO/IEC 17025:2017
LA-2012-215C**