CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Qualabor Serviços da Qualidade Ltda.
Rua Padre Anchieta, 2443 – Bairro Bigorrilho
Curitiba, Parana, 80730-001 Brazil

Fulfills the requirements of

ISO/IEC 17043:2023

In the field of

PROFICIENCY TESTING PROVIDER

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

Jason Stine, Vice President

Expiry Date: 30 January 2027

Certificate Number: AP-2654

This proficiency testing provider is accredited in accordance with the recognized International Standard ISO/IEC 17043:2023. This accreditation demonstrates technical competence for a defined scope and the operation of a proficiency testing provider quality management system.

SCOPE OF ACCREDITATION TO ISO/IEC 17043:2023

Qualabor Serviços da Qualidade Ltda.

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PROFICIENCY TEST PROVIDER

ISO/IEC 17043 Accreditation Granted: **30 January 2025**

Certificate Number: **AP-2654** Certificate Expiry Date: **30 January 2027**

Mechanical Testing

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Insulation and creepage distance on electrical devices (ICD)	Dimensional quota of creepage and insulation	Consensus values from participants / Reference values
Shore, Barcol, Rockwell, Brinell, and Vickers hardness of materials (SHD, BHD, RHD, HBW, HDV)	Hardness	Consensus values from participants / Reference values
Spring mattress (SMT)	Scrolling; Indentation; Spring type; Nº of springs; Perimeter edge width; Quilting thickness; Stew and foam thickness; Foam nominal density; Stew nominal density; Wire gauge; Edge density; Deformation of the edge; Edge resilience; Ash content of the border; Mattress width, Mattress length; Mattress height;	Consensus values from participants / Reference values
Flexible foam (FPF)	Density; Resilience; Permanent deformation due compression; Ash content; Indentation force; Dynamic fatigue – thickness loss; Dynamic fatigue – indentation force loss	Consensus values from participants / Reference values
Torsion, traction, compression, shear, flexion, folding in toys, party supplies and school supplies or other devices specific testing item (TEC, TTY)	Rupture, force, others	Consensus values from participants / Reference values

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Mechanical Testing

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Indelibility of markings marked testing item (IMR)	Verify if marking is still readable	Consensus values from participants / Reference values
Plugs, sockets, outlets and other types of devices (SOD)	Linear measure, radius and angles	Consensus values from participants / Reference values
Pendulum impact specific testing item (PIT)	Failure of the item	Consensus values from participants / Reference values
Hammer impact specific testing item (HIT)	Failure of the item	Consensus values from participants / Reference values
Torque in screws of electrical connection testing item (TSC)	Failure of the item for a predetermined torque or the torque that has failed	Consensus values from participants / Reference values
IP index protection specific electrical device (IPL, IPS)	Index protection rating	Consensus values from participants / Reference values
Dye penetrant liquid, X-Ray, Ultrasonic and Magnetic Particles (DPL)	Welding failures	Consensus values from participants / Reference values
Ultrasonic thickness measurement (UTM)	Thickness	Consensus values from participants / Reference values
Pressure and vacuum valve (PVV)	Opening pressure	Consensus values from participants / Reference values
Headlight test (HDL)	Distance “e”	Consensus values from participants / Reference values
Breaking, suspension and Alignment (BSA)	Maximum force, unbalance index, imbalance of steering wheel.	Consensus values from participants / Reference values
Compressed natural gas (CNG)	Systems and components of road vehicles Components of CNG systems	Consensus values from participants / Reference values
Gas network inspection (GNI)	Internal network distribution Gas device Gas device connections Individual natural exhaust system Verification of combustion hygiene Collective network distribution Collective Individual natural exhaust system	Consensus values from participants / Reference values

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Biological

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Equine infectious anemia blood serum samples (EIA)	Presence or absence of antibodies against equine infectious anemia virus	Consensus values from participants
Glanders blood serum samples (GLD)	Presence or absence of antibodies against glanders bacteria	Consensus values from participants
Detection of salmonella on food or water samples (SAD)	Presence or absence of salmonella	Consensus values from participants
DNA Identification (Animal, Vegetable, Human, Forensic) (DNA)	Allele Identification	Reference values
Bovine brucellosis samples (BBI)	Presence or absence of antibodies against Brucella bacteria	Consensus values from participants

Thermal

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Needle flame on electrical device (NFL)	Flammability conditions	Consensus values from participants / Reference values
Glow-wire on electrical device (GLW)	Flammability conditions	Consensus values from participants / Reference values
Differential scanning calorimeter (DSC) polymer item or other items (DSC)	Glass temperature, Melt temperature, Crystallization temperature, Enthalpy of crystallization, Enthalpy of crystalline fusion	Consensus values from participants / Reference values
Flammability in devices (FTY)	Flammability conditions	Consensus values from participants / Reference values
Ball pressure specific testing item (BAP)	Print diameter	Consensus values from participants / Reference values
Temperature rise in terminals electrical device (TRT)	Temperature rise	Consensus values from participants / Reference values
Temperature rise in surfaces electrical device (TRS)	Temperature rise	Consensus values from participants / Reference values

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Electrical

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Short circuit electrical device (SHC)	Joule's integral, amplitude, current, and time	Consensus values from participants / Reference values
Dielectric strength in toys electrical device (DST)	Rupture of insulation	Consensus values from participants / Reference values
Insulation, grounding and other resistances in electrical devices (GNC, INR)	Resistance	Consensus values from participants / Reference values
Dielectric strength – applied tension electric device (DSA)	Disruptive voltage	Consensus values from participants / Reference values
Energies, powers, current, voltage, power factor, frequency in electrical devices (PCA)	Energies, powers, voltage, power factor, frequency and current	Consensus values from participants / Reference values
Circuit breakers, fuses or other equipment (CBT)	Time and circuit breaker action	Consensus values from participants / Reference values

Chemical

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Atmospheric emissions from stationary sources and other sources (ATE)	Concentration of: CO(g) O2(g) NOx(g) SOx(g) Particulate matter Others	Consensus values from participants / Reference values
Migration of heavy metals (DMS)	Concentration of: Sb As Ba Cd Cr Pb Hg Se Other metals	Consensus values from participants / Reference values

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Chemical

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Chemical-Physical Mineral oil for Electrical Insulation (CPI)	Index of neutralization Water content Density at 20/4°C Power factor at 100°C Dielectric strength Interfacial tension Color determination – colorimeter method Particle content Flash point Kinematic viscosity 40°C	Consensus values from participants / Reference values
PCB in liquids, solids and oils (PCB)	PCB concentration	Consensus values from participants / Reference values
Analysis of gases dissolved in electrical insulation oil by gas chromatography (DGC)	Hydrogen Oxygen Nitrogen Methane Ethane Ethylene Acetylene Carbon monoxide Carbon dioxide Total of gases Total combustible gases	Consensus values from participants / Reference values
Field chemical-physical tests in raw water, treated, residual, water for consumption or effluent (CPW)	Chemical-Physical tests	Consensus values from participants / Reference values

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Chemical

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Samples of Raw water, treated, residual, water for consumption or effluent testing (WTT)	Apparent Color True Color pH Turbidity Iron Fluorine Chlorine Manganese Chromium Copper Lead Magnesium Arsenic Antimony Zinc Sodium Selenium Aluminum Mercury Barium Tin Molybdenum	Consensus values from participants / Reference values
Samples of Raw water, treated, residual, water for consumption or effluent testing (WTT)	Silver Nickel Titanium Vanadium Calcium Cobalt Other metals Hardness Sulfate Sulfide Chloride	Consensus values from participants / Reference values

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Chemical

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Samples of Raw water, treated, residual, water for consumption or effluent testing (WTT)	Alkalinity Cyanide Hexavalent chromium BOD COD Phenol Ammoniac Nitrogen Nitrate Nitrite Total phosphorus Suspended solids Dissolved solids Oils and greases Calcium hardness Pesticides VOC TPH Organic solvents Trihalomethanes Drugs Hormones Pathogens Bacteria others	Consensus values from participants / Reference values
Vehicular emissions (EVE)	Concentration of: Carbon monoxide Hydrocarbons Nitrogen Oxides Sulfur Oxides Particulates matter Aldehydes Ketones Unburned ethanol	Consensus values from participants / Reference values
Mineral coal samples (MCO)	Hygroscopic moisture Volatile material Fixed carbon Superior calorific value Ashes Total sulfur	Consensus values from participants / Reference values

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Chemical

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Automotive batteries (ABT, CAB, DAB)	Water tightness Capacity C20 Vibration resistance Electrolyte retention Dimensional inspection External Visual Inspection Weight Fall Capacity reservation Low temperature electric discharge Durability tests Suitable for flotation Voltage drop in the interconnections Internal resistance Thermal cycling test	Consensus values from participants / Reference values
APH (aromatic polycyclic hydrocarbons) in water, soil and sediments (APH)	Naphthalene Acenaphthalene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo (a) anthracene Criseno Benzo (b) fluoranthene Benzo (k) fluoranthene Benzo (a) pyrene Indene (1,2,3-cd) pyrene Dibenzo (a, h) anthracene Benzo (g, h, i) perylene	Consensus values from participants / Reference values

Acoustics

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Sound pressure level in devices and environment (SPT)	Sound pressure peak	Consensus values from participants / Reference values
Automotive noise (Exhaust system or in another point) (EAN)	Sound pressure peak	Consensus values from participants / Reference values

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General Laboratory (Clinical)

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Hematology external quality control in blood serum samples (HQC)	Biochemistry Hematoscopy: Automated hematology: Coagulation: Urinalysis: Parasitology: GRAM Bacterioscopies Bacteriology: Immunohematology	Consensus values from participants / Reference values

Sample Collection

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Isolated sampling process in raw water, treated, residual, water for consumption or effluent and air, soil, residue for chemical tests (SWC)	Sampling on chemical parameters	Consensus values from participants / Reference values
Isolated sampling process in raw water, treated, residual, water for consumption or effluent and air, soil, residue for physical tests (SWP)	Sampling on physical parameters	Consensus values from participants / Reference values
Isolated sampling process in raw water, treated, residual, water for consumption or effluent and air, soil, residue for biological tests (SWB)	Sampling on biological parameters	Consensus values from participants / Reference values

Classification

Description of Item	Properties Measured	Procedure for Establishing Assigned Value
Representative items or figures, pictures, or other representation (VIS)	Vehicular Classification or other classifications	Consensus values from participants / Reference values/Known Values

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CALIBRATION

Electrical – DC/Low Frequency

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Ohmmeter or others similar equipment	Resistance	0.5 Ω to 500 MΩ	0.003 Ω to 9,2 MΩ	Certified Reference Value / Consensus values from participants
Megohmmeter or others similar equipment	Resistance	500 MΩ to 1 GΩ	4.0 MΩ to 0.009 GΩ	Certified Reference Value / Consensus values from participants
Voltmeter or others similar equipment (AC)	Voltage	50 mV to 1 000 V 20 Hz to 100 kHz	0.01 mV to 1 V	Certified Reference Value / Consensus values from participants
Voltmeter or others similar equipment (DC)	Voltage	50 mV to 1 000 V	0.01 mV to 1 V	Certified Reference Value / Consensus values from participants
Ammeter or others similar equipment (AC)	Current	5 mA to 1 000 A 45 Hz to 500 Hz	0.001 mA to 3 A	Certified Reference Value / Consensus values from participants
Ammeter or others similar equipment (DC)	Current	5 mA to 1 000 A	0.0003 mA to 6.9 A	Certified Reference Value / Consensus values from participants
Capacimeter or others similar equipment	Capacitance	1 nF	0.0069 nF	Certified Reference Value / Consensus values from participants
Wattmeter or others similar equipment	Active Power	15 W to 150 W 50/60Hz	0.059 W to 0.33 W	Certified Reference Value / Consensus values from participants

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Electrical – DC/Low Frequency

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Energy Meter or others similar equipment	Active Energy	60 V to 600 V and 0.02 mA to 200 A 50/60Hz	0.027 % to 0.031 %	Certified Reference Value / Consensus values from participants
Energy Meter or others similar equipment	Reactive Energy	60 V to 600 V and 0.02 mA to 200 A 50/60Hz	0.027 % to 0.031 %	Certified Reference Value / Consensus values from participants
Oscilloscope or others similar equipment	Gain (Vertical)	1 mV/Div to 100 V/Div	0.0062 mV to 0.16 V	Certified Reference Value / Consensus values from participants
Oscilloscope or others similar equipment	Time Base (Horizontal)	2 ns/Div to 1 s/Div	0.0058 ns to 0.00058 s	Certified Reference Value / Consensus values from participants

Length – Dimensional Metrology

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Micrometer or others similar equipment	Dimensional (Linear measure)	1 mm to 500 mm	0.001 mm to 0.0054 mm	Certified Reference Value / Consensus values from participants
Dial Indicator or others similar equipment	Dimensional (Linear measure)	1 mm to 100 mm	0.015 mm to 0.008 mm	Certified Reference Value / Consensus values from participants
Thickness Gauge or others similar equipment	Dimensional (Linear measure)	0.1 mm to 20 mm	0.0013 mm	Certified Reference Value / Consensus values from participants
Caliper or others similar equipment	Dimensional (Linear measure)	1 mm to 1 500 mm	0.01 mm to 0.02 mm	Certified Reference Value / Consensus values from participants

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Length – Dimensional Metrology

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Measuring tape or others similar equipment	Dimensional (Linear measure)	1 mm to 50 m	0.1 mm to 3.4 mm	Certified Reference Value / Consensus values from participants
Height tracer or others similar equipment	Dimensional (Linear measure)	1 mm to 1 000 mm	2 µm to 10 µm	Certified Reference Value / Consensus values from participants
Bore Gage Diameter Measurement or others similar equipment	Dimensional (Linear measure)	18 mm to 400 mm	2 µm to 6 µm	Certified Reference Value / Consensus values from participants
Goniometer or others similar equipment	Angle	1° to 360°	0.1 ˚ to 0.13 ˚	Certified Reference Value / Consensus values from participants

Mass and Mass Related

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Microbalance/Analytical/Precision Balance (Semi Analytical) or others similar equipment	Mass	1 mg to 5.1 kg	0.0015 mg to 20 mg	Certified Reference Value / Consensus values from participants
Balance or others similar equipment	Mass	1 kg to 10 000 kg	2 mg to 2 kg	Certified Reference Value / Consensus values from participants
Standard weight or others similar equipment	Mass	1 mg to 500 kg	0.006 mg to 8 g	Certified Reference Value / Consensus values from participants
Micropipettes/pipettes or others similar equipment from microvolume and volume	Volume	0.1 µL to 200 mL	0.008 µL to 0.8 mL	Certified Reference Value / Consensus values from participants

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Mass and Mass Related

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Volumetric flask or other similar volumetric equipment	Volume	1 mL to 10 000 mL	0.0001 mL to 2 mL	Certified Reference Value / Consensus values from participants

Thermodynamic

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Temperature indicator with thermocouple or others similar equipment	Temperature	-30 °C to 1 100 °C	0.22 ºC to 1.8 ºC	Certified Reference Value / Consensus values from participants
Temperature indicator for thermocouple or others similar equipment	Temperature	-196 °C to 1 200 °C	0.3 °C	Certified Reference Value / Consensus values from participants
Thermocouple or others similar equipment	Temperature	-30 °C to 1 100 °C	0.16 ºC to 1.8 ºC	Certified Reference Value / Consensus values from participants
Temperature indicator with thermoresistance or others similar equipment	Temperature	-30 °C to 800 °C	0.20 ºC to 1.8 ºC	Certified Reference Value / Consensus values from participants
Temperature indicator for thermoresistance or others similar equipment	Temperature	-196 °C to 800 °C	0.2 °C	Certified Reference Value / Consensus values from participants
Thermoresistance or others similar equipment	Temperature	-30 °C to 400 °C	0.20 ºC to 1.8 °C	Certified Reference Value / Consensus values from participants
Infrared thermometer or others similar equipment	Temperature	0 °C to 500 °C	1.3 ºC to 4.9 ºC	Certified Reference Value / Consensus values from participants

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Thermodynamic

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Glass Thermometer or others similar equipment	Temperature	-30 °C to 250 °C	0.2 ºC to 0.3 ºC	Certified Reference Value / Consensus values from participants

Time and Frequency

Description of PT Items/Artifact	Properties Measured	Range of Property	Expanded Uncertainty of PT Item / Artifact	Procedure for Establishing Assigned Value
Frequency meter or others similar equipment	Frequency	0.5 Hz to 20 MHz	0.00003 Hz to 0.0001 MHz	Certified Reference Value / Consensus values from participants

Jason Stine, Vice President

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