



Water Quality Control, Redefined.



**Next-Generation Photometry and Data Management
for Unrivalled Water Testing Compliance.**

Total Water Management for the Modern Fleet

The LiquiLab package is the definitive solution for water quality testing on board vessels, eliminating the guesswork and human error inherent in traditional test kits. Developed to meet the strict demands of international maritime regulations, LiquiLab replaces multiple cumbersome testing products with a single, streamlined digital ecosystem.

The system is built around a multi-wavelength digital photometer, which provides instant, irrefutable, and traceable results for critical regulatory areas across your vessel, from potable water and Legionella screening to sewage discharge and ballast water compliance testing.



Unrivalled Optical Precision

Unlike traditional photometers that operate on a single selected wavelength, the LiquiLab photometer simultaneously captures data across 18 parallel wavelengths in every measurement. This advanced optical system spans the entire Visible (VIS) spectrum, as well as key portions of the Ultra-Violet (UV) and Infra-Red (IR) ranges, delivering results with a level of accuracy comparable to a full spectrophotometer.

The device incorporates three parallel sensors, each utilising six wavelengths in a 90°/180° configuration. This specialist optical design ensures exceptional precision when measuring critical parameters such as Turbidity (NTU), PTSA, and Fluorescein which are essential for both environmental analysis and water treatment system monitoring.

Connectivity and Usability

The photometer is equipped with a 5.5" colour HD touchscreen display, providing an intuitive interface for guided, step-by-step testing. Integrated Bluetooth, USB, Wi-Fi and 4G connectivity options ensure complete data traceability and fleet-wide synchronisation.

All measurement data is automatically managed through LabCOM® Software and app which synchronise securely via the cloud. The system provides a flexible setup with over 140 different parameter methods, covering the needs of many different industries. Every result is instantly accessible, fully traceable, and audit-ready.

TECHNICAL INFORMATION

Dimensions	10 x 25.5 x 5.9 cm
Weight	715g
Spectral Range	390nm - 950nm (parallel reading) 18 wavelength, peaks at 410/435/460/485/510/535/560/585/610/645/680/705/730/760/ 810/860/900/940nm 180° and 90° Setup for direct and indirect measurement
Electrodes	USB type C connector for ProbeBOX 1.0
Connectivity (technical)	Bluetooth® 4.2, Wi-Fi, USB (type C), 4G
Connectivity (software)	LabCOM® software (Windows / Mac), LabCOM® App (Android / iOS), LabCOM® Cloud (web-browser)
Display	5.5" Colour HD Touchscreen
Camera	In-built QR-code scanner
Calibration	Auto-calibration function with certificate (software)
One-Time-Zero	Intelligent OTZ (One-Time-Zero) function with recognition of ZERO types
Internal Memory	>150 000 measurements
Clock/Date	RTC (Real-Time Clock)
Auto Off	Factory default setting = 30 minutes. Individual adjustment possible
Auto Standby	Factory default setting = 10 minutes. Individual adjustment possible. Display dimming factory default setting = on
Languages	>15
Environment	5°C – 45°C 30 – 90% rel. humidity
IP rating	IP 54 (splash-proof)
WiFi Frequency	2.4GHz and 5GHz
Transmit Power	Max. 16 dBm.
Reagents	The calibration curves are adjusted to the reagents offered by Martek Marine. Using reagents from other suppliers may lead to incorrect readings.

LiquiLab Probe

Included in both the potable and boiler/cooling test kit modules is a probe. The probe connects directly with the photometer to provide onscreen instructions and accurately log your results on the cloud. It is specifically used for measuring conductivity and total dissolved solids.

Probe Connection Box Information	
Dimensions	104 mm x 60 mm x 29.2 mm
Weight	167 g
Operating temperature	1 - 45°C
Input and output voltage	5 V
IP protection class	IPX5 (Protected against water jets)
Electrode Information	
Measuring Ranges	K = 1.0 0-200 mS/cm 0-100g/l (0-100ppt if the TDS conversion factor in the photometer is set to the default value of 0.5)
Temperature Range	0-50 °C



Potable Water Testing

Providing safe drinking and washing water is a core requirement under the Maritime Labour Convention (MLC 2006). Regardless of whether water is bunkered, produced onboard, or treated through a vessel’s own system, it’s quality can fluctuate due to source and storage conditions. Regular verification testing is therefore essential to ensure crew safety and continued compliance.

LiquiLab delivers precise, repeatable analysis for all potable water parameters referenced under MLC 2006, enabling consistent monitoring and documentation of onboard water quality. Integrated LabCOM® software automatically logs and stores results, supporting full traceability, digital recordkeeping, and audit readiness.

LiquiLab facilitates rapid, compliant potable water monitoring, with results covering the following essential parameters:

Dimensions	Guidance Requirement According to MLC 2006
Bacteria (Total Count)	<100 CFU/mL
pH	6.5 – 8.5
Total Suspended Solids	-
Total/Free/Combined Chlorine	> 0.2mg/l ideal 0.5mg/l <5mg/l
E. coli/Coliforms	Absent
Enterococci	Absent
Colour	< 15 HU
Conductivity	< 1500 µS/cm
Copper	< 2mg/l
Hardness	-
High Range Chlorine	> 10mg/l
Iron	< 0.3 mg/l
Legionella	Absent
Manganese	< 50 µg/l
Nickel	< 70 µg/L
Nitrate	< 50 mg/l
Nitrite	< 3mg/l
Turbidity	ideal <1NTU Must not exceed 5NTU

Legionella Testing

Our LegionellaMAX kit is included as standard with the potable water module of the LiquiLab kit, enabling rapid, accurate detection of Legionella bacteria in water samples and biofilms from any onboard system, including showers, industrial water systems and cooling circuits.

Designed for ease of use, the LegionellaMAX kit provides pre-filled vials and syringes, requires no complex preparation, and delivers results in 25-35 minutes, supporting routine monitoring and minimising operational downtime.

The following technical specifications apply to the LegionellaMAX test kit, designed for rapid on-board detection of Legionella pneumophila to support compliance with MLC 2006 water safety requirements.

Bacteria Detected	Legionella pneumophila serogroup 1
Detection Method	Lateral flow immunochromatographic assay
Lower Limit of Detection	100 CFU/L for water samples and 200 CFU/L for biofilms
Specificity	Tested against a wide range of waterborne bacteria, including Acinetobacter calcoaceticus, Aeromonas hydrophila subsp. hydrophila, Bacillus subtilis, Burkholderia cepacia, Citrobacter freundii, Citrobacter koseri, Escherichia coli, Enterobacter cloacae, Klebsiella oxytoca, Pseudomonas aeruginosa, Pseudomonas fluorescens, Pseudomonas putida, Pseudomonas stutzeri, Ralstonia pickettii, Raoultella terrigena, Streptococcus pyogenes, Yersinia ruckeri. No cross reactions have been observed at concentrations ≤ 109 CFU/L. Staphylococcus aureus has been observed to cross react with the test at concentrations > 108 CFU/L, which is higher than found in most water samples. Legionella pneumophila serogroups 4 & 7 cross react with the Test at concentrations > 6x109 CFU/L. The test does not react with any other L. pneumophila serogroups or L. species tested.
Test Volume	100 µL
Suggest Sample Volume/Area	250 mL (water samples)/ 10 cm2 (biofilms)
Parameter	Samples should filter in less than 10 minutes (water samples). Resuspension of the bacteria should be done in 2 ml of recovery solution. Shake the tube for at least 20 seconds (biofilms).
Compatibility with Common Biocides and Bio Dispersants	The product has been tested with a range of common biocides and biodispersants used in Legionella control, at their normal maximum operating concentration. Active ingredients tested include: glutaraldehyde, didecyl-dimethylammonium chloride, Iso thiazoles, dibromo nitrilopropionamide (DBNPA), ionic and non-ionic surfactants. The test gives a false positive if used with polymeric biguanide or THPS.
Operator Time	5 – 10 minutes
Test Time	25 minutes
Shelf Life	At least 6 months from date supplied, when stored at room temperature (<30°C) in original packaging. All test strips are hermetically foil-wrapped with a printed expiry date.

Sewage Effluent Testing

Effective sewage discharge control is mandatory for environmental protection and adherence to MARPOL Annex IV (MEPC.115(51)). Failing to properly treat and monitor discharge risks crew health, drives oxygen depletion in coastal waters, and creates visible pollution.

The Martek Sewage Effluent Test Kit provides rapid, on-board testing of effluent quality. This streamlined testing process enables vessels to verify system performance, confidently maintain MARPOL compliance, and prevent costly operational delays due to port state control issues.

The kit supports key effluent quality checks against the required standards, up to and including MEPC.227(64):

Parameter	Guidance Requirement According to MARPOL ANNEX IV
Bacteria (total count)	Monitor the baseline and investigate any sudden spikes in TPC measurement
pH	6.0 – 8.5
Total Suspended Solids	≤ 35 mg/l
Total/Free/Combined Chlorine	< 0.5mg/l
Biological Oxygen Demand (BOD)	≤ 25 mg/l
Chemical Oxygen Demand (COD)	≤ 125 mg/l
Faecal/Thermotolerant Coliforms	≤ 100 CFU/100ml

For an alternative, non-digital version of our sewage testing solution, please refer to the SewageMAX kit available on our website.

Ballast Water Testing

Ballast water is essential for a vessel’s stability, but due to its collection methods it can carry non-native organisms that pose a severe environmental threat. Global compliance with the IMO’s Ballast Water Management (BWM) Convention is now mandatory, requiring all vessels to meet the strict D-2 discharge standard for treated water. Failure to comply leads to significant fines and detention by Port State Control.

On-board verification of treated water is the only way to ensure D-2 compliance. The following table details the critical parameters and testing required to confirm your system’s performance against the mandatory discharge limits:

Parameter	Guidance Requirement According to IMO BWM Convention
Bacteria (total count)	Total Heterotrophic Bacteria: less than 1000 CFU/100ml
E. coli/Coliforms	< 250 CFU/100ml
Enterococci	< 100 CFU/100ml
Organisms ≥ 50 µm (e.g., zooplankton)	less than 10 living organisms per cubic metre (1000 litres)
Organisms ≥ 10 µm and <50 µm (e.g., phytoplankton)	less than 10 living organisms per millilitre
Vibrio Cholerae	< 1 CFU/100ml

Boiler & Cooling Water Testing

Water is fundamental to the function of a vessel’s power and climate systems. Given the extreme heat, pressure, and biological risks involved, water quality is paramount. Impurities in boiler water can lead to corrosion, scale, and carryover that damages turbines. Similarly, issues in cooling water (both open and closed loop) can cause corrosion, fouling, and scale, which drastically reduce heat transfer efficiency.

Testing in both systems focuses on the same underlying threats: corrosion and scale/fouling. Because of this shared objective, the chemical parameters used for monitoring are consistent whether you are testing for boiler systems or cooling circuits. Regular on-board analysis is the most effective way to protect these critical assets, maintain operational efficiency and prevent catastrophic equipment failure.

The following table details the essential test parameters used to monitor chemical balance and inhibit scale and corrosion in both boiler and cooling water circuits:

Parameter	Typical Levels
pH	9.0 - 11.0
Conductivity	< 5,000 µS/cm
Hardness	< 1ppm
Nitrite	500 and 1,000 ppm
Alkalinity (Total as CaCO3)	100 to 400 ppm
Chlorides	< 200 ppm
DEHA	0.1 - 0.5 ppm
Dissolved Oxygen	< 0.007 ppm
Hydrazine	0.05 - 0.10 ppm
Phosphates	20 to 40 ppm
Silica	< 10 ppm
Sulphites	30 to 60 ppm
Total Dissolved Solids (TDS)	700 and 3,000 ppm
Molybdate	100 - 300 mg/L

*Always follow the chemical manufacturer’s recommended levels for the specific system.

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Martek Sustainability Statement

We are dedicated to building a sustainable and profitable business while continuing to operate responsibly with honesty, integrity and fairness.

At Martek Marine, we are committed to establishing high ethical standards of behaviour and effective corporate governance. This defines our strategic and financial objectives. Corporate responsibility remains central to delivering our strategy and achieving our success.

We are committed to conducting business in an environmentally responsible manner. We are putting in place processes to understand and address our responsibilities in respect of our operational impacts on the environment.

We aim to reduce the use of replacement parts and calibration to help overcome waste and excessive carbon emission.

Pioneering sustainable and innovative solutions for ship safety, performance and crew welfare.

www.martek-marine.com