

Complete Water and Product Quality Analysis

Beverage Industry

HACH®

Be Right™

Your Partner for Water Analysis in the Beverage Industry

At Hach®, we understand your water needs when it comes to ensuring the highest levels of consistent product quality, sustainability, and profitability. Our aim is to support improvements to your processes, removing costly errors, improving products, whilst minimising product losses. Today's producers aspire to minimise waste and water reuse.

With these goals in mind, it is critical to use the correct instrumentation and chemistries that are designed to withstand the challenges in the beverage industry. Since 1947, Hach beverage professionals design, manufacture, and distribute world class instrumentation, test kits, and chemistries across many beverage industry applications from start to finish across influent, production control, quality lab, and effluent treatment.

Beverage includes products such as beer, bottled water, carbonated and non-carbonated juices/soft drinks & wines. Of these, water is key. Water purification ensures beverage manufacturers are producing a consistently high-quality product while maximising up time. Beverage plants need highly accurate analytical instruments with minimal maintenance requirements to keep the plant up and running.

We invite you to take a look at our comprehensive line of product and service solutions. As your plant is unique, there may be additional products that will work for your application. Please reach out to one of our local experts for a customised solution.

Hach offers:

- On-line process instrumentation and reagents
- Laboratory equipment, reagents, and supplies
- Portable test kits and field instruments
- Automatic samplers and flow meters
- Local sales and service teams
- Service partnership programs and customised training

Whether your goal is to maintain permit compliance, prevent product loss, or optimise water treatment, Hach has expert answers and complete solutions to help you succeed.







Challenges for Incoming and Raw Water

- Process control to ensure consistency and purity of influent or raw water, as this greatly affects the taste and quality of your final product
- Meeting FDA drinking water regulations
- Removing additional minerals and chemicals which could impact taste and production processes
- Optimising boiler feed water and cooling tower feed minimises chemical usage, prevents corrosion, and protects plant equipment

Challenges for Product Quality Control

- Process control to ensure consistent and safe production processes
- Meeting high product quality standards
- Protecting product quality, flavour stability and shelf life
- For breweries it is especially critical to provide proper nutrients for yeast cells
- Optimisation of production processes

Challenges for Clean-In-Place Processes

- Ensuring the cleanliness of production surfaces
- Ensuring no microbial growth will contaminate products

Challenges for Effluent and Wastewater Treatment

- Complying with environmental regulations
- Optimisation of water conservation
- Support environmental friendly process improvements

Photometric & Colorimetric



DR6000 Spectrophotometer

Top-of-the-line benchtop for advanced analysis, including UV. LCK cuvette tests work with the DR6000 Spectrophotometer.

- Accessories for high volume and high accuracy testing needs
- Advanced quality assurance
- Guided procedures and elimination of false readings
- Automatically avoids errors

Brewery Methods

The Brewery Analysis Package software upgrade contains 12 specific brewery assays that conveniently upload via USB to a DR6000. Includes procedures according to the ASBC and MEBAK approved methods for:

Beer Colour, Bitterness Units, Iso-Alpha-Acids, Vicinal Diketones, Free Amino Acids, Anthocyanogens, Iron, Steam Volatile Phenols, Total Polyphenols, Photometric Iodine, Thiobarbituric Acid Number (TAN), and Reductones.



DR3900 Spectrophotometer

The DR3900 spectrophotometer provides the simplest way to perform tests for water analysis. Used together with LCK cuvette tests, testing steps are reduced. For use in lab verification to monitor incoming water and process efficient of inline instruments.

- Simple preparation
- Fast execution
- Comprehensive documentation

Claros Enabled

LCK Bar-Coded Chemistries

LCK cuvette tests use Dosicaps (freeze-dried reagents integrated into a sealed cap) that are easier to use than Powder Pillows or Liquid Reagents, without any risk of contamination.

- Error free and fast – instrument automatically detects and runs the correct method
- Easy, accurate recognition – colour-coded parameters and ranges
- Best results – 10 measurements in one rotation, eliminating outliers; optically superior glassware



DR900 Colorimeter

Multi-parameter handheld water testing with over 90 colorimetric parameters for use in the most demanding field environments. For use in lab verification to monitor incoming water and process efficient of inline instruments.

- Fastest and simplest testing for the most demanding field environments
- Your important testing methods are available at your fingertips
- Field ready in every way possible
- Intuitive user interface
- Simple data communication





Claros Enabled

DR300 Pocket Colorimeter

- Robust and waterproof design withstanding extreme conditions
- Accurate and reliable measurement
- Reducing errors and saving time by eliminating manual data entry with optional Bluetooth connectivity
- Simple and intuitive operation to reduce manual error and allows usage under extreme conditions

TL23 Series Turbidimeters

Trusted measurement for high range turbidity applications, simplified. The TL23 Series laboratory turbidimeters are available in four different models: two models with tungsten lamp at 460 nm, and two models with LED light source at 860 nm. Suggested application includes final lab QA measurement for product quality.

- Improved and intuitive design
- A smart device for more reliable measurements





Hach Test Kits

A variety of test kits are available and can be fully customised. Test for critical parameters to support fermentation and monitoring source water contaminants that affect flavor stability.

- Pre-measured reagents
- Accurate colour matching
- Upright reagent storage



Ozone AccuVacs

Fast, accurate visual method for determining ozone concentrations. Use to perform final lab QA checks for ozone in bottled water. Kit contains 25 tests.

- Simple, low-cost colour disc method is the most accurate visual test kit method
- Indigo trisulfonate method masks interferences from chlorine and other oxidising agents and makes ozone analysis easier

Electrochemical



HQ Meters and IntelliCAL Probes

Handheld HQ meter and interchangeable IntelliCAL probes for quick, simple, and reliable measurements, e.g. lab QA check to verify product quality and process efficiencies.

HQ meters and probes are designed for the accurate measurement of pH, DO, Conductivity, Nitrates, and many more parameters. Available in both hand held and lab configurations, HQ meters can be combined with any combination of probes to provide all your necessary measurements in one instrument.



SL1000 – PPA Portable Parallel Analyzer

The Hach SL1000 Portable Parallel Analyzer (PPA) provides highly accurate results, with less opportunity for errors, in a fraction of the time. The SL1000 is a portable colorimeter that provides 75% faster testing in chloramination applications by using Chemkey reagents instead of powder pillows. All chemicals and processes are entirely contained inside the Chemkey.

- Up to six parameters, tested in parallel.
- Key parameters include pH, conductivity, chlorine and alkalinity
- Less variability
- Less hassle

Chemkeys

Chemkeys are designed for use with the SL1000-PPA Portable Parallel Analyzer. Use for dramatically streamlined water quality testing.



Titrametric

AT1000 Automated Titrator

Acidity has an impact on taste and is an indicator of product quality. The AT1000 determines pH, Total Acidity and SO_2 safely and accurately within a few minutes and offers ready-to-use solutions to perform routine pH, Total Acidity and SO_2 analysis. Total Acidity corresponds to the sum of titratable acids in food and beverages. The main acid in wine is tartaric acid – in juices or soft drink production, it is usually citric or malic acid. These beverages also contain several other acids in different proportions: total acidity corresponds to the sum of titratable acidities. The AT1000 offers pre-programmed and optimised Total Acidity methods delivered on a USB key, which can be downloaded within a few seconds in the titrator.

- Automated titration for accurate and repeatable measurement, with complete traceability
- Minimal reagent contact and eliminate sample preparation
- Use for final QA lab test for total acidity in soft drinks and wine



Oxygen

Orbisphere 3100 Portable Oxygen Analyser

Accurate oxygen analysis allows the brewer to control the production process so the flavour stability of the beer can be ensured. The 3100 can be adapted to a piercer to measure dissolved oxygen in packages.

- Designed to withstand the harshest environments
- Rugged, reliable, and maintenance free
- Most stable sensor with the longest calibration interval



Orbisphere 410 / M1100 Luminescent DO Sensor

This controller offers precise and powerful process monitoring capability.

- Intuitive software on a clear and full colour touch-screen
- Internal diagnostics and reminders for maintenance and calibration
- Multiple channels and communication options, including USB and Profibus

Can be purchased as a high level oxygen sensor, ideal for the measurement of wort.

Low level oxygen sensor is available for the measurement of bright beer.

Carbon Dioxide / Nitrogen

Orbisphere 510 / 31490TC CO_2 or 31xxx TC N_2

Designed to complement Orbisphere high quality sensors, the Orbisphere patented Thermal Conductivity sensor has been developed to give continuous CO_2 or N_2 measurements in gas phase or dissolved in a liquid. The measuring technique is a combination of a gas diffusion membrane and a solid-state gas thermal conductivity detector.

- Accurate and repeatable CO_2 or N_2 measurements
- Selective measurement, result unaffected by the presence of other gases
- Fast response time to improve plant productivity
- Compact design for easy insertion into a process line or a flow chamber

Package Analysis



Orbisphere 6110 Total Package Analyser

The ideal solution for final beverage packages analysis.

- Measures CO_2 by both Pressure/Temperature (P/T) and True-CO_2 methods, and at any temperature
- Easy and automated analysis of oxygen and CO_2 concentrations for both head space and liquid in bottles and cans
- Can perform measurements on all shapes and sizes of cans and bottles
- No need for regular sensor or tubing cleaning due to unique ability to take measurements in the gas phase
- Ergonomic operation and repeatable analysis with intuitive touch screen, single push-button operation and laser package positioning.



Dissolved Oxygen/Calculated TPO Analyzer

Kit consisting of controller, oxygen sensor, piercing device, and accessories.

- Quick and easy measurements in package for non-carbonated and carbonated drinks
- Fast measurement response
- Quantify oxygen levels for product stability
- Low maintenance

Inline Ozone



Orbisphere 410/510 with C1100 Ozone Sensor

The Orbisphere C1100 sensor is designed to measure ozone in ultra pure water loops, or in the sanitising phase of any beverage production line. Use to measure ozone to ensure proper ozone dosing in the manufacturing process of bottled water.

- True Zero – drift-free and accurate measurements
- Fast, easy, traceable, and reliable calibration
- Low-cost maintenance
- Unbeatable reliability

Chlorine

Ultra Low Range CL17sc Colorimetric Chlorine Analyser

- Wide range of controller mounting options available.
- Reliable, direct total chlorine results
- 8 ppb detection limit
- Cumulative Chlorine Counter measurements also available



Claros Enabled



CLF10sc Free Chlorine Sensor

Hach's CLF10sc and CLT10sc provide online amperometric solutions for real-time analysis of free or total chlorine in disinfection applications.

- EPA-approved free or total chlorine analysis
- No reagents to replace, no waste stream
- Chlorine analysis made easy

Turbidity

TU5 Series Process Turbidimeters

The TU5 Series platform employs a patented optical design that sees more of your sample than any other turbidimeter.

- Delivers the best low level precision and sensitivity while minimising variability between measurements
- Ideal for inline quality measurement to ensure efficient manufacturing process

TU5300 and TU5400 process turbidimeters require an sc controller for operation. If you don't have one already, choose either an SC1000 or SC4500 controller.



Claros Enabled

Hardness / Alkalinity

EZ Series Hardness Analysers

The EZ Series Online Analysers offer multiple options to monitor Total Hardness and Calcium Hardness in water.

- Rugged mainframe with compact footprint
- Flexible adaptation of standard measuring range through different calibration ranges or internal dilution options
- Analysis of up to eight sample streams
- Multiple options for determination of Hardness available





EZ Series Alkalinity Analysers

Smart automatic features for validation, priming, and cleaning providing excellent analytical performance and maximised uptime.

- Rugged mainframe with compact footprint
- Flexible adaptation of standard measuring range through different calibration ranges or internal dilution options
- Analysis of up to eight sample streams
- Multiple options for determination of Alkalinity available

Iron

EZ Series Iron Analysers

The EZ1000 and EZ2000 Series Online Analysers use colorimetric analysis to measure Iron. Multiple options are offered to monitor Total Iron, Dissolved Iron Fe(II), Dissolved Iron Fe(III) and/or Total Dissolved Iron in water.

- The standard measuring range can be narrowed by a different calibration range or extended via internal dilution options.
- Analog and digital output options
- Multiple stream analysis for up to 8 sample streams



pH (Incoming or Wastewater)

pHD Digital Differential Online pH/ORP Sensors



The complete digital online solution of Differential pH and ORP sensors feature exceptional performance due to the Differential Electrode Measurement Technique. The sensors connects to Claros, Hach's innovative Water Intelligence System, enabling you to seamlessly connect and manage instruments, data, and process – anywhere, anytime.

- Exceptional performance due to the Differential Electrode Measurement Technique
- Available in a wide variety of body materials, mounting styles, pH electrode types, and cable connections

Conductivity



3700 Digital Inductive Conductivity Sensors

Hach Inductive Conductivity Sensors measure 200 up to 2,000,000 microSiemens/cm. Used for the control of CIP processes. Can also be used for product monitoring and quality assurance.

Total Organic Carbon (TOC)

BioTector B7000



The ideal online TOC analyser to achieve precise results even for your most challenging applications. A unique self-cleaning oxidation technology enables the B7000 analyser to easily handle difficult samples and significantly reduce the maintenance schedule and costs associated with traditional on-line measurement.

- Eliminates build up issues from salts, particulates, fats, oils, and greases that lead to drift and high maintenance
- Product loss alarm notification system
- Protect capital equipment and lower CO_2 footprint
- Flexible field of application

BioTector B3500



Maximum uptime and reliability for TOC analysis in condensate applications. Using patented technology, only requiring scheduled maintenance every 6 months, allowing for dual stream monitoring, and having one of the most compact analyser footprints, the Hach BioTector B3500c delivers 99.8% uptime in condensate applications with the lowest operating cost.



Real-Time Control (RTC)

Hach's Real-Time Control solutions optimise your treatment process, saving you operational and treatment costs while helping you maintain permit compliance. Our technology is designed to optimise your entire treatment plant including nutrient removal, sludge treatment and sampling. We offer complete solutions to give you confidence in your water treatment, including predictive diagnostic software to monitor your water quality instruments and a complete service package so you always have access to expert answers.

Phosphorus Removal

RTC-P

The RTC-P (Phosphate Removal Real Time Controller) optimises load-dependent precipitant dosage for chemical phosphate elimination. It regulates PO4-P concentration based on real-time measurements and wastewater flow.

- Open-loop control minimises precipitant use by considering biological uptake and chemical efficiency.
- Closed-loop control uses advanced PID algorithms for low setpoints without overreaction.

The system adapts to any plant configuration, enabling dynamic setpoints and automated dosing strategies. Robust fallback options ensure operation and support compliance with limits.

Nitrification Control

RTC-N

Designed specifically for continuously-aerated biological wastewater treatment plants, the RTC-N collects influent and effluent ammonia concentration, flow rate, mixed liquor suspended solids and temperature to calculate the optimal DO set-point necessary to control your aeration system based on your desired effluent ammonia set-point.

RTC-N/DN

Designed specifically for oxidation ditches and sequencing batch reactors, the RTC-N/DN optimizes nitrogen elimination by determining optimal times for nitrification and denitrification based on the continuous measurement of ammonia and nitrate concentrations. Depending on your treatment system, the controller operates in one of three modes:

- Nitrification control with an ammonia set point
- Denitrification control with a nitrate set point
- Nitrification and denitrification control with both ammonia and nitrate set points

Prognosys Predictive Diagnostic System

Prognosys allows you to be proactive in your maintenance by alerting you to upcoming instrument issues. Know with confidence whether changes in your measurements are due to changes in your instrument or your water.

- Confidence in your measurements
- Visibility of upcoming maintenance
- Immediate awareness of instrument condition

PROGNOSYS®

Compatible Instruments

A-ISE sc

Amtax sc

AN-ISE sc

CL10sc

CL17sc

LDO sc

N-ISE sc

NT3100sc

Phosphax sc

Solitax sc

TU5300sc

TU5400sc



Key Parameters

Dissolved Oxygen (DO)

In beverage industries, neglect of proper oxygen levels can cause noticeable changes in taste and clarity of the final product. Level of DO is one of the most critical parameters to control for high product quality standards, flavor and colour stability and long shelf life. Care must be taken throughout the process to minimise oxygen pickup from the air. The last, and perhaps the most critical step, is the elimination of oxygen in the packaging operation.

Carbon Dioxide (CO_2)

CO_2 yields the head to beer, bite to soft drinks, fizz to sparkling mineral water and the cork pop and bubbles to champagne and sparkling wine. In beer, CO_2 not only contributes to perceived fullness or body and enhances foaming potential; it also acts as a flavor enhancer. In soft drinks, CO_2 makes the drink more refreshing through its stimulation of the mouth's mucous membranes adding a sensation that the soft drink is colder than it actually is. CO_2 also brings out the aroma since the bubbles drag with them the aromatic components. An improved method for measuring CO_2 in beer, soft drinks and other carbonated beverages is required in order to confirm final product quality. Thermal conductivity is a measurement method that is unaffected by other gases, improving accuracy of CO_2 results and ensuring final product quality and product consistency.

Nitrogen (N_2)

The use of nitrogen in the brewing industry is becoming widespread in many processes: Not only N_2 is dissolved to high levels in very dark “stout” beers, so that a very thick creamy head is achieved (similar to that of cask beer) but N_2 is also widely used instead of carbon dioxide to flush tanks free of oxygen prior to beer filling for cost optimization reasons. Further, N_2 is becoming widely used in gas-stripping style de-aerators to remove oxygen from brewing water. And lastly, N_2 is used as the “jetting” gas in can fillers so that air is blown out of the headspace before putting on the lid.

Ozone

Ozonisation is growing more and more as a disinfection technology to prevent growth of microorganisms and ensuring constant product safety. Ozone is applied in sterilisation processes in beverage production and preventing processes from fouling by removing organic material.

Bitterness / International Bitterness Units (IBU)

With a huge variation in bitterness compounds and perceived differences in bitterness taste, beer bitterness tests have become an essential part of quality control in commercial beer production.

Chlorine

Excessive chlorine harms membrane-based filtration systems and alters taste. Too little chlorine creates an opportunity for microbiological growth. Close monitoring of chlorine levels preserves filtration membranes and prevents the formation of harmful bacteria. Many disinfection programs employ a chlorine, chlorine dioxide or ozone strategy to prevent microbiological growth. Whether raw water, process water, rinse water, or effluent water, constant monitoring of disinfection parameters helps ensure that processes meet product safety, consistency and environmental regulations.

Conductivity

Conductivity, the most widely used control parameter for CIP applications, measures caustic or acidic solution strength. Conductivity also monitors process completion to identify product variation and control chemical additives. Inductive conductivity, sometimes referred to as electrodeless or toroidal, remains the industry’s primary choice due to sanitary 3A design standards. Conductivity also determines filtration media efficiency by gauging the dissolved, ionic constituents before and after the filtration process.

Turbidity

Depending on the water source, turbidity varies dramatically. Often, filtration systems remove excess turbidity and other minerals. On-line turbidity measurement is the preferred method to monitor filtration efficiency, control backwashing cycle frequency and to ensure high product quality.

pH

The continuous monitoring of pH plays an important role in alerting a facility of necessary process adjustments well in advance of a violation. Additionally, pH monitoring at various stages is critical for ensuring high product quality, optimising chemical usage, and preventing corrosion to control costs. Maintaining proper pH also ensures maximum effectiveness and minimises the costs of chemical additives, such as disinfectants.

Iron

Excessive iron promotes undesirable bacterial growth ("iron bacteria") within a waterworks and distribution system, resulting in the deposition of a slimy coating on the piping.

Alkalinity

Alkalinity is monitored in many water treatment processes to ensure that processes adequately buffer pH and are optimised. In other cases, Alkalinity, Hardness, pH, TDS/conductivity and temperature calculations can indicate corrosion or scaling risk in pipes and other plant infrastructure, allowing you to maximise efficiency, ensure compliance, and control costs.

Service






Protect your investment and peace of mind

With Hach Service, you have a global partner who understands your needs and cares about delivering timely, high-quality service you can trust. Our Service Team brings unique expertise to help you maximise instrument uptime, ensure data integrity, maintain operational stability, and reduce compliance risk.

Ask your representative about 3-Point Protection for your investment.

Elevate Performance
- Advanced Maintenance
- Remote Monitoring

Establish Performance
- Commisioning
- Calibration/Certifications



Extend Performance
- Routine Maintenance
- Repair



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To see the complete portfolio for the beverage industry, please visit:

hach.com/industries/beverage
hach.com/industries/beverage/craft-brewing

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