

Complete Water Analysis for the

Chemical & Refining Industry



Be Right™



Your Partner for Water Analysis in the Chemical & Refining Industry

At Hach, we understand your needs when it comes to maximizing the efficiency and effectiveness of your boiler/cooling and wastewater processes. Since 1947, Hach Company has designed, manufactured, and distributed world-class instrumentation, test kits, and reagents for testing water quality in the chemical and refining industry. We invite you to take a look at our comprehensive line of product solutions and services. They're the most accurate and dependable products you can buy.

Hach offers:

- On-line process instrumentation and reagents
- Laboratory equipment, reagents, and supplies
- The most EPA-approved water analysis methods
- Portable test kits and field instruments
- Automatic samplers and flow meters
- Prepared media for microbiological testing
- Local sales and service teams
- Service partnership programs and customized training

The following water quality parameters are a sample of those most critical to maintaining your boiler/cooling and wastewater processes efficiently and effectively. The remainder of this guide provides detailed information on the specific products Hach offers.



Key Parameters for Boiler/Cooling Process

pH

The pH of cooling and steam processes should be tightly monitored and controlled to optimize the use of critical inputs like chemical addition for corrosion and scale protection, as well as microbial protection in cooling towers. The pH of pre-treatment water should also be monitored and controlled to prevent corrosion of feedwater piping and optimize efficiency of pre-treatment equipment.

Dissolved Oxygen

At the elevated temperatures of the steam cycle, minute quantities (ppb) of oxygen can cause severe corrosion problems in boiler and feedwater piping. Monitoring at the ppb level is critical to maintaining the equipment since several variables can cause changes in DO. These include fluctuations in condensate return; fluctuating steam pressures; plugged, broken or missing nozzles or trays; varying feedwater flows; and air in-leakage from process.

Silica

Controlling volatile silica contaminants is critical to avoid fouling and other adverse effects in superheaters, turbines, heat exchangers, condensers and dryers, where heat transfer efficiency could ultimately impair production efficiency. Plus, monitoring silica detects demin breakthrough faster than resistivity, resulting in improved make-up water quality control.

Sodium

Sodium levels are an important index of water quality throughout the steam cycle. Monitoring sodium concentration is necessary for applications involving on-site power generation and/or high concentrations of caustic soda and other corrosive chemicals. Changes in sodium levels indicate leaks in heat exchangers and carry-over of sodium phosphate-based chemistries, both of which can have catastrophic effects on turbine blades or on the boiler's heat exchange surfaces.

Key Parameters for Wastewater

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 within the wastewater treatment process is critical for maintaining bugs' health, optimizing chemical usage, and preventing corrosion to control costs.

Dissolved Oxygen

The activated sludge process for wastewater treatment requires a steady supply of oxygen to function effectively. Insufficient oxygen slows down organisms, makes facultative organisms less efficient, and favors production of foul-smelling intermediate products. Since this process constitutes roughly 70% of the wastewater plant's energy costs, precise monitoring and control of oxygen enables effective and efficient processes.

Turbidity/Total Suspended Solids

Total Suspended Solids measurements are commonly used for monitoring and controlling dissolved air flotation systems, dewatering equipment, clarifier influent, effluent, Return Activated Sludge (RAS) and Waste Activated Sludge (WAS). When applied to polymer feed systems, the resulting additional control often results in significant polymer savings.

Organics

In wastewater with high organic loads, a facility uses chemical treatment and physical processing to reduce load levels to those acceptable for either re-use or discharge into the environment. Efficient management of organics typically involves Biological Oxygen Demand (BOD) for reporting purposes. However, since the test takes 5 days, surrogates such as Chemical Oxygen Demand (COD), Total Organic Carbons (TOC), and Spectral Absorption Coefficient (SAC) may be used. These offer quicker test results and early detection of upsets or spills for reduced operational and maintenance costs. COD, a relatively simple lab procedure, reduces testing time to 2 hours. On-line TOC monitoring provides results every 7 minutes and on-line UV254 (SAC) monitors continuously for real-time control.

Comparison of Methods for Measuring Organics

| Parameter | Measured Variable | Method | Substance Groups Measured |
|---------------------------------------|---|---------------------------------|---------------------------|
| Biochemical Oxygen Demand (BOD) | Oxygen Consumption | Microbial Oxidation | |
| Chemical Oxygen Demand (COD) | Oxygen Consumption | Wet Chemical Oxidation | |
| Total Organic Carbon (TOC) | Carbon Concentration | Thermal, Wet Chemical Oxidation | |
| Spectral Absorption Coefficient (SAC) | UV Absorption at $\lambda = 254 \text{ nm}$ | UV Absorption Measurement | |

Hach Water Analysis Tools for The

From Arsenic to Zinc, Hach offers portable, laboratory and process instruments, and reagents for more than 100 test parameters—the broadest range for water analysis in the chemical & refining industry.

| ANALYSIS PARAMETER | PROCESS INSTRUMENTS AND ANALYZERS | LAB & FIELD ANALYSIS | | | | | | | | | | | | | | |
|--|---|------------------------------|-------------------|------------------------|--------------------|--------------------------------|------------------|---------------------------------------|----------------------------|-----------------------|-------------------------|-------------------|-------------|------------------------|---------------------|---------------------|
| | | Photometric and Colorimetric | | | | | Electro-chemical | Titrametric | | Microbiology | | | Other Tools | | | |
| | | Hach Spectrophotometers | Hach Colorimeters | Hach Prepared Reagents | Hach Turbidimeters | Hach Test Kits & Portable Labs | Hach Test Strips | Hach HQD and Sension+ Meters & Probes | AT1000 Automatic Titrators | Hach Digital Titrator | Hach Microbiology Media | MEL Portable Labs | LuminUltra | Hach HSA-1000 Analyzer | Hach Sigma Samplers | Laboratory Supplies |
| Alkalinity | • EZ Series | | | ■ | | ■ | ■ | | ■ | | | | | | | ■ |
| Ammonia | • Amtax sc Analyzer • EZ Series | ■ | ■ | ■ | | ■ | ■ | | | | | | | | | |
| ATP | • EZ Series & LuminUltra | | | ■ | | | | | | | | ■ | | | | ■ |
| Biochemical Oxygen Demand (BOD) | • UVAS sc Sensor* • BioTector TOC Analyzer* | | | ■ | | | ■ | | | | | | | | | ■ |
| Chlorine | • EZ Series • CL17sc Analyzer • CL10sc Analyzer • 9184sc Analyzer | ■ | ■ | ■ | | ■ | ■ | | ■ | ■ | | | | | | ■ |
| Chemical Oxygen Demand (COD) | • EZ Series • UVAS sc Sensor* • BioTector TOC Analyzer* | ■ | ■ | ■ | | | | | | | | | | | | ■ |
| Chlorine Dioxide | • 9187 sc Analyzer | ■ | ■ | ■ | | ■ | | | ■ | | | | | | | ■ |
| Conductivity | • Hach Contacting Conductivity Sensors • Hach Inductive Sensors (Electrodeless) Conductivity Sensors | | | ■ | | ■ | ■ | | | | | | | | | ■ |
| Copper | • EZ Series | ■ | ■ | ■ | | ■ | ■ | | | | | | | ■ | | ■ |
| Dissolved Oxygen | • LDO Model 2 Probe (ppm) • K1100 LDO Analyzer (ppb) • 3100 Portable | ■ | ■ | | | ■ | ■ | | ■ | | | | | ■ | | ■ |
| Flow | • FH950 • FL1500 • FL900 • FL900AV | | | | | | | | | | | | | | | |
| Hardness | • EZ Series • SP510 Analyzer | ■ | ■ | ■ | | ■ | ■ | | ■ | | | | | | | ■ |
| Hydrazine, Oxygen Scavengers, Reducing Agents | • EZ Series • 9186 Oxygen Scavenger/ Hydrazine Analyzer | ■ | ■ | ■ | | ■ | | | | | | | | | | |
| Iron | • EZ Series | ■ | ■ | ■ | | ■ | ■ | | | | | | | | | ■ |
| Lead | • EZ Series | ■ | ■ | ■ | | ■ | | | | | | | | ■ | | ■ |
| Microbiology | | | | ■ | | | | | | ■ | ■ | | | | | ■ |

*By correlation.

Chemical & Refining Industry

For more information,
call 1-800-227-4224
or go to:
hach.com/chemicalguide

| | | LAB & FIELD ANALYSIS | | | | | | | | | | | | | |
|-----------------------------------|--|------------------------------|-------------------|------------------------|--------------------|--------------------------------|------------------|---------------------------------------|----------------------------|-----------------------|-------------------------|-------------------|------------------------|---------------------|---------------------|
| | | Photometric and Colorimetric | | | | | | Electro-chemical | Titrametric | | Microbiology | | Other Tools | | |
| ANALYSIS PARAMETER | PROCESS INSTRUMENTS AND ANALYZERS | Hach Spectrophotometers | Hach Colorimeters | Hach Prepared Reagents | Hach Turbidimeters | Hach Test Kits & Portable Labs | Hach Test Strips | Hach HQD and Sension+ Meters & Probes | AT1000 Automatic Titrators | Hach Digital Titrator | Hach Microbiology Media | MEL Portable Labs | Hach HSA-1000 Analyzer | Hach Sigma Samplers | Laboratory Supplies |
| Moisture, KF | • KF1000 | | | | | | | | ■ | | | | | | |
| Molybdate | | ■ | ■ | ■ | | ■ | | | | | | | | | ■ |
| Monochloramine | • 5500sc Analyzer | ■ | ■ | | | ■ | | | | | | | | | |
| Nitrate | • EZ Series • N-ISE sc • Nitratx plus sc Sensor | ■ | ■ | ■ | | ■ | ■ | ■ | | | | | | | ■ |
| Oil & Grease | • FP360sc Oil-in-Water Sensor | | | ■ | | | | | | | | | | | ■ |
| Organics | • BioTector TOC Analyzer • UVAS sc Sensor | ■ | | | | | | | | | | | | | |
| Ozone | • Orbisphere C1100 Ozone Sensor | ■ | ■ | ■ | | ■ | | | | | | | | | ■ |
| pH/ORP | • Hach Differential pH Sensors • pHD Differential Sensors • 8362sc High Purity pH or ORP Panel | | ■ | ■ | | ■ | ■ | ■ | ■ | | | | | ■ | ■ |
| Phosphate | • EZ Series • Phosphax sc Analyzer • 5500sc Phosphate Analyzer | ■ | ■ | ■ | | ■ | ■ | | | | | | | | ■ |
| Sample Conditioning | • Filtrax Sample Filtration System | | | | | | | | | | | | | | ■ |
| Silica | • EZ Series • 5500sc Silica Analyzer | ■ | ■ | ■ | | ■ | | | | | | | | | ■ |
| Sludge | • Sonatx sc Sludge Blanket Level Probe | | | | | | | | | | | | | | ■ |
| Sodium | • NA5600sc | | | | | | | ■ | | | | | | | |
| Sulfate | • EZ Series | ■ | ■ | ■ | | ■ | | | | | | | | | ■ |
| Sulfite | | | | ■ | | ■ | | | ■ | ■ | | | | | |
| Total Organic Carbon (TOC) | • EZ Series • BioTector TOC Analyzer | ■ | ■ | ■ | | | | | | | | | | | ■ |
| Total Suspended Solids | • TSS sc • Solitax sc | | | | | | | | | | | | | | |
| Turbidity | • TU53/54 • TSS sc • Surface Scatter 7 | | | ■ | ■ | | | | | | | ■ | | | |
| Zinc | • EZ Series | ■ | ■ | ■ | | ■ | | | | | | | | | ■ |

Hach lab instruments are designed to help you confidently meet compliance objectives in boiler/cooling and wastewater applications, as well as in your quality control lab.

PHOTOMETRIC AND COLORIMETRIC



DR1900 Spectrophotometer

- The lightest and most compact portable spectrophotometer
- Even in dusty or wet conditions, testing is easy
- With the highest number of preprogrammed methods and an easy-to-use interface



DR3900 Spectrophotometer

- Easy step-by-step testing procedure
- Elimination of false readings
- Accurate results every time



DR6000 Spectrophotometer

- Accessories for High Volume and High Accuracy Testing Needs
- Guided Procedures and Elimination of False Readings
- Automatically Avoids Errors

TNTplus® Bar-Coded Chemistries

TNTplus vials work exclusively with the DR6000, DR3900, and DR900* Spectrophotometers.

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

**Barcode reading, vial spinning, and outlier rejection features not available on DR1900.*



DR900 Colorimeter

- Fastest and simplest water testing for the most demanding field environments
- Field ready in every way possible
- Intuitive user interface
- Simple data communication

Hach Test Kits

From beakers to colorimeters, everything you need is supplied in Hach Single- and Multi-parameter Test Kits.

- Pre-measured reagents
- Accurate color matching
- Step-by-step instructions
- Upright reagent storage
- Rugged, chemical-resistant cases



2100Q Portable Turbidimeter

The primary standards for versatility, accuracy, and value in turbidity measurement.

- Pre-programmed calibration procedure
- Smart self diagnostics
- Meets or exceeds EPA criteria



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



ez COD® Recycling for Hach COD Vials

Reduce COD reagent recycling costs and simplify the task of recycling.

- One low price—includes container, pickup, and recycling fees
- Hassle free—place entire vial into receptacle
- Environmentally friendly—Silver and Mercury are reclaimed
- Convenient—order reagents and recycling from one source
- Right sized—pick from three programs based on your annual COD waste output (5, 20, and 55 gallons)

ELECTROCHEMICAL



HQD® Meters and Intellical® Probes

Use a single handheld HQD meter and interchangeable Intellical probes for quick, simple, and reliable measurements.

- Designed for your water applications, the Hach HQD smart probes automatically recognize the testing parameter, calibration history, and method settings to minimize errors and set-up time.
- Hach gives measurement flexibility and ease of operation with its HQD portable and benchtop meter and full suite of interchangeable Intellical laboratory and field probes for testing Conductivity, DO, ORP, pH, Ammonia, and many more!



Sension®+ Meters & Probes

Hach Sension+, an all-in-one system with guided menu navigation makes general testing fast and simple. Each system is designed to be used in a wide variety of applications and comes complete with everything you need to start testing.

Measurements for temperature, pH, conductivity, salinity, TDS, ORP, ammonia, nitrate, fluoride, sodium, chloride, and ammonium are available.

TITRAMETRIC AND TOTAL OXIDANTS



Titralab® AT1000 and KF1000 Series

The Titralab AT1000 Series laboratory analysis systems are one touch, automatic analyzers, covering both Potentiometric Titration (AT1000 Series) and Karl Fischer volumetric Titration (KF1000 Series) with pre-set methods that can quickly deliver accurate and reliable results straight from the box, allowing anyone in the laboratory to immediately perform accurate and reproducible titrations.

Hach Digital Titrator

Get accurate ($\pm 1\%$), convenient titrations without the bulk, fragility, or waste of a conventional burette. Test for eighteen parameters including chlorine, hardness, and iron. Uses interchangeable titrant cartridges.



FLOW AND SAMPLING

AS950 Peristaltic Samplers

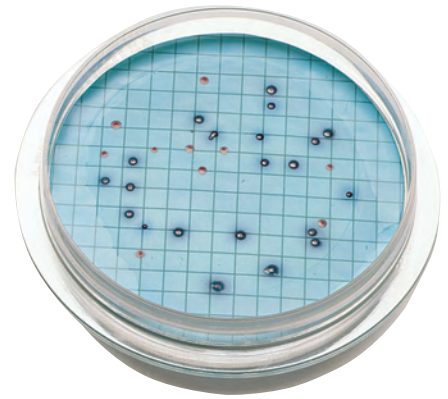
Hach AS950 Automatic Samplers collect and store unbiased representative water samples for laboratory analysis. The AS950 is configurable to meet all sampling needs by combining a controller, a base, a bottle set, accessories and sampling program features. Every AS950 is equipped with a peristaltic pump with spring-mounted rollers that provide long tubing life and a standard liquid detect sensor for best-in-class sample volume accuracy. Additionally, the USB connection and an auxiliary port for pulse or 4-20 inputs are standard.



MICROBIOLOGY

Microbiology Media

Hach's ready-to-use Microbiology Media eliminates measuring, mixing, and autoclaving necessary to prepare media. Glass and plastic ampules, bottled media, agar plates, powder pillows, and containers afford maximum shelf life and ease of use. Available for testing/ measuring total coliforms, *E. coli*, yeast and mold, Heterotrophic bacteria, PRY, and more.



BART™: Easy Bacterial Detection

A simple and effective way to detect specific bacterial groups and algae in water. The Biological Activity Reaction Test (BART*) provides an excellent method for determining which specific type of bacteria is the source of an existing problem.

**BART is a trademark and patented product of Droycon Bioconcepts, Inc., U.S. Patent 4,906,566*



LuminUltra Total Living Biomass Assessment (ATP)

Microbiological testing solutions provide feedback on contamination sooner for proactive control!

- Detect total active microorganisms in any type of sample
- Results in minutes - not hours or days - for real-time results
- Lab or field operable for maximum flexibility



Hach process instruments help you save money by controlling energy and chemical costs and optimizing staff efficiencies throughout the chemical facility.

CONTROLLERS



Hach Digital Controllers

Use any of the digital family sensors with the sc200 Digital Controller that accepts up to two sensors or the sc1000™ Universal Controller that accepts up to eight sensors in any combination.

- Plug-and-play operation without special ordering or software configuration
- Many communication options including MODBUS® and wireless modes

Hach's Digital Sensor family includes ammonia, chlorine, chlorine dioxide, conductivity, DO, Nitrate, ORP, ozone, pH, phosphate, sludge blanket level, suspended solids, turbidity, and UV absorption.

FREE / TOTAL CHLORINE

CL17sc Colorimetric Chlorine Analyzer

Built on a legacy of reliability in online chlorine analysis, the advanced design of the CL17sc reduces routine maintenance touch time and provides powerful diagnostic features and enhanced connectivity. The result is less hassle, minimized risk of data loss, and even more reliable information to empower your decision making. By pairing the CL17sc with Hach's SC controller platform, your options increase significantly: internal data logging; external analogue and digital communication alternatives; and multi-parameter instrument flexibility. The CL17sc is compliant with US EPA regulation 40 CFR 141.74. Both Method 4500-CL G and Method 334.0 can be used for measuring residual chlorine in drinking water.



**EPA
COMPLIANT**



CLF10 sc and CLT10 sc Free and Total Reagentless Chlorine Analyzers

Hach's answer to reagentless amperometric chlorine measurement.

- Compatible with Hach's "Plug-and-Play" Digital Controllers
- Real time process control
- EPA compliant according to Method 334.0

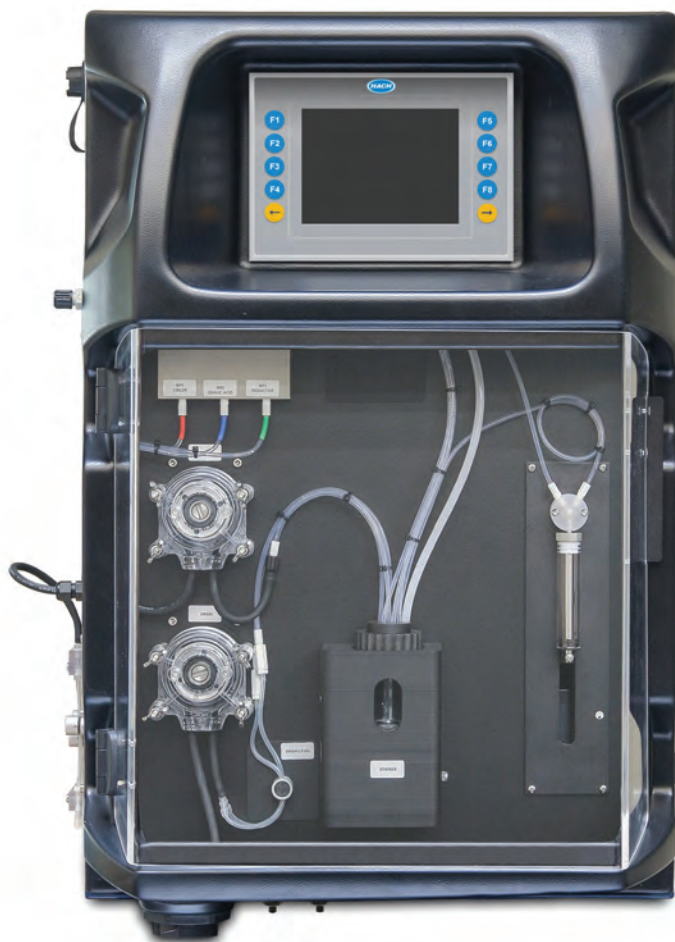
**EPA
COMPLIANT**

EZ1000 Series Online Colorimetric Chlorine Analyzer

EZ1000 Chlorine Analyzers achieve excellent precision and accuracy. At the heart of the colorimeter there is a compact photometer assembly developed especially for the EZ Series. Consumption of reagents is reduced by low volume analysis, yet high sensitivity is assured by a long optical path length. The limit of detection is in the low $\mu\text{g/L}$ range.

- 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

Options for the determination of Chlorine include:
Free Chlorine, Total Chlorine, Free & Total Chlorine



CONDUCTIVITY

3700 sc Digital Inductive (Electrodeless) On-Line Sensors

200 to 2,000,000 $\mu\text{S}/\text{cm}$

Blowdown, chemical concentration, leak detection, and dilution concentrations can be effectively monitored and controlled. There is no direct contact between the measuring element and the sample so they are contamination and corrosion resistant.

- Ideal for demineralizer regeneration
- Rugged, non-fouling design
- Sensor requires a Hach sc200™ or sc1000™ Digital Controller



Contacting Conductivity/Resistivity Sensors

0.057 to 200,000 $\mu\text{S}/\text{cm}$

Monitor membrane health and demineralizer beds with any of these Contacting Conductivity/Resistivity Sensors. Offered in a variety of materials and mounting styles to exacting tolerances to accommodate most configurations.

- High accuracy using Hach's DRY-CAL™ method
- Accurate temperature measurement



Hach LDO® Model 2, Optical Process Dissolved Oxygen Probe

Hach's next generation LDO (Luminescent Dissolved Oxygen) Probe requires no calibration for the entire 2 year life of the sensor cap, which means it is ready to start measuring your DO (Dissolved Oxygen) right out of the box. With an added cutting-edge 3D calibration procedure that is conducted prior to shipping, the probe will not drift and is more accurate than ever before.



DISSOLVED OXYGEN



ORBISPHERE K1100 Optical Dissolved Oxygen Sensor

The first maintenance-free optical oxygen sensor for power plants.

- Only 1 calibration per year
- No membranes = 2 minutes of annual maintenance
- Compatible with Orbisphere 28 mm flow chamber for a low cost retrofit

HARDNESS



SP 510 Hardness Monitor

The Hach SP 510 Hardness Monitor continuously monitors water systems to provide an alarm when total hardness exceeds a pre-set limit. By performing an analysis every two minutes, the SP 510 monitor can establish an automatic or semi-automatic system for water softener regeneration.

- Low maintenance—operates unattended for two months
- Low reagent consumption
- Rugged, lightweight, and self-contained

EZ1000 Series Online Colorimetric Hardness Analyzer

EZ1000 Hardness Analyzers achieve excellent precision and accuracy. At the heart of the colorimeter there is a compact photometer assembly developed especially for the EZ Series. Consumption of reagents is reduced by low volume analysis, yet high sensitivity is assured by a long optical path length. The limit of detection is in the low $\mu\text{g/L}$ range.

- 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

Options for the determination of Hardness include:
Total Hardness; Calcium Hardness; Total Hardness & Calcium; Total Hardness & Calcium & Magnesium



UVAS sc Sensor, 1 mm, 2 mm or 5 mm, with sc200 Controller

Continuous UV 254 Absorbance/Transmittance measurements with the UVAS sc Sensor can be used to protect plant treatment processes from high organic loads or for surrogate BOD, COD, and TOC measurements, with repeatable, accurate measurement.

- On-line analysis allows treatment plants to operate more efficiently
- Flow through design with no sample chamber and self-cleaning wipers



pH / ORP

pHD™ Digital Differential On-Line pH/ORP Sensors

For moderate- or high-conductive applications (>10 $\mu\text{S}/\text{cm}$) such as monitoring cooling water blowdown, drum boiler water, or raw water treatment.

- Field-proven differential electrode measurement technique offers better accuracy
- Replaceable salt-bridge/protector simplifies maintenance and extends sensor life
- Sensor requires a Hach sc200 or sc1000 Digital Controller



SILICA

Series 5500 sc Silica Analyzer

Lower Maintenance. Less Downtime.

- Only two liters of reagent are required for the analyzer to perform unattended for up to 90 days.
- The industry's only pressurized reagent delivery system eliminates the frequent maintenance associated with pumps.
- Predictive diagnostic tools, including Hach's proprietary Prognosys technology, warning LEDs, and high-visibility notification screens let you avoid unplanned downtime.
- No more dripping reagents on the instrument, the floor, or your clothing while fumbling with tubes and straws. Match the color-coded cap to the sealed reagent bottle and twist.
- Grab Sample In and Grab Sample Out features allow quick analysis of a grab sample poured into the analyzer, and facilitate taking a sample out of the analyzer to verify in a lab test.



SLUDGE LEVEL



Sonatax sc Sludge Blanket Level Probe

Ideal tool to optimize sludge extraction, manage recirculation, and warn of potential solid wash outs, or process upsets by continuously measuring the depth from the surface or height from the tank floor. Maintenance is reduced with the probe's innovative wiper design. Automatic frequency adjustment provides superior accuracy.

SODIUM

NA5600sc Sodium Analyzer

Ensure uptime with accurate, low-level sodium measurements and predictive diagnostics. Be confident in your steam cycle water with proprietary predictive diagnostic tools, automatic electrode reactivation to avoid downtime, less maintenance with 90-day reagent replacement, and a convenient small footprint for easy integration.



TOTAL ORGANIC CARBON



Hach BioTector B7000 TOC Analyzer

In dairy applications, monitoring and managing product loss is a cost saving initiative. The BioTector B7000 can help pinpoint the source of leaks so you can take corrective action and minimize lost product. Determining the source of production leaks will also help reduce organic load spikes in the wastewater treatment plant, saving the plant on added treatment costs and preventing compliance issues.

- Superior Reliability—Typically 99.7% uptime
- High Dependability—Patented two-stage advanced oxidation (TSAO) technology handles even the most challenging applications
- Smart Design—Self-cleaning technology and oversized tubing eliminates filtration and prevents clogging and sample contamination

Hach BioTector B3500c Analyzer

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 analyzer footprints, the Hach BioTector B3500c delivers 99.8% uptime in condensate applications with the lowest operating cost.

- Worry-free TOC
- Lowest Cost of Ownership
- Small footprint = Critical Wall Space Savings
- Reagent Costs that Don't Kill the Bottom Line
- One Instrument for Multiple Streams



TURBIDITY AND SUSPENDED SOLIDS

TSS sc Turbidity & Suspended Solids Sensor

TSS sc probes can measure both online suspended solids and turbidity in one instrument. They cover the total measurement range from the finest turbidity to solids over a wide range. TSS sc probes have been specially developed for industrial applications in production processes in the chemical sector and for the requirements of industrial wastewater plants.



TU5 Series Turbidimeters

The next standard in the evolution of turbidity. Only the new TU5 Series Lab & Process Turbidimeters with 360° x 90° Detection™ deliver unprecedented confidence that a change in your reading is a change in your water.

Surface Scatter 7 sc High Range Turbidimeter

The Surface Scatter 7 sc High Range Turbidimeter offers superior performance across a measurement range of 0 to 9999 NTU. The Hach Surface Scatter 7 sc Turbidimeter (SS7) is the original non-contact turbidimeter. This design minimizes sensitivity loss due to high turbidity samples; in fluids with high loads of suspended solids the design makes sample cell cleaning and replacement unnecessary. All wetted parts of the instrument are made with corrosion-resistant materials for extended life. The photo detector and light source assemblies are protected from the effects of corrosive vapors and heated samples.





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 maximize 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

- Commissioning
- Calibration/Certification



Extend Performance

- Routine Maintenance
- Repair

Your Partner for Water Analysis in the Chemical & Refining Industry

We invite you to take a look at our comprehensive line of product solutions and services. They're the most accurate, dependable, and cost-effective products you can buy.

Hach offers:

- On-line process instrumentation and reagents
- Laboratory equipment, reagents, and supplies
- More EPA-approved methods than any other company
- Portable test kits and field instruments
- Automatic samplers and flow meters
- Local sales and service teams
- Service partnership programs and customized training

**For more information, visit hach.com/chemicalguide
or call toll-free 800-227-4224.**

HACH World Headquarters

P.O. Box 389

Loveland, Colorado 80539-0389 U.S.A.

Telephone: 970-669-3050

Fax: 970-669-2932

E-mail: orders@hach.com



Be Right™