



QuickCOD_{ultra}

COD-ANALYSIS

Online COD for every kind of water.
Especially for the tough stuff.

Fast. Precise. Reliable.

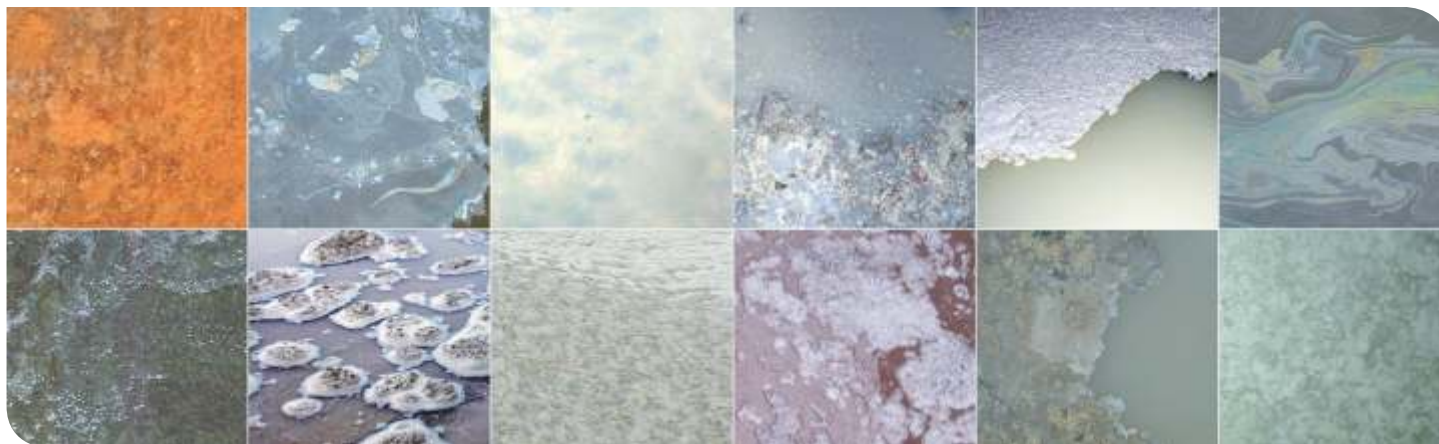


RAPID, PRECISE & CATALYST-FREE COD

Ultra-high temperatures and industrial-grade automation combine to provide quick and catalyst-free COD analysis for tough industrial waste streams.

THE MEASURING SYSTEM FOR THE TOUGH STUFF.

With the right method, organic waste can be measured quickly, even in difficult waters with course material content.



Whether you measure emulsified water from a flavorings plant, industrial wastewater in an aeration tank or the wastewater from dairies, paper or paint factories, the QuickCOD^{Ultra} is very versatile and able to handle the most diverse applications and types of water.

For environmental and financial reasons, industrial and municipal waters should be continuously monitored, and online monitoring enables many industries to detect product loss.

Online monitors must tolerate clumps, algae and slime.

Process water and industrial wastewater may contain materials that need to be detected and analyzed. An acceptable analyzer should be able to work continuously and reliably so that early detection can result in quick action. The analyzer should also be able to cope with high salt concentrations without increased maintenance.

COD defined and how it's measured.

Millions of organic compounds can be present in water, so monitoring each individually isn't practical. Instead, the sum parameter COD (Chemical Oxygen Demand) is used. COD quantifies the amount of oxygen needed to oxidize a sample's total organic load and is thus an important indicator for water analysis.

COD is used to plan, control and rate efficiency of water treatment, and to

determine charges to upstream clients.

Measurement methods vary in duration and consumables used. The QuickCOD^{Ultra} oxidizes the sample at 1200°C for complete, reagent-free combustion of all compounds, including particulates, in under three minutes. Following combustion, the amount of oxygen consumed is quantified by an O₂ detector.

By comparison, common laboratory methods take hours and require hazardous reagents. The standard method uses hazardous dichromate sulfuric acid, detects only some components, and not all organics. Silver is used as a catalyst to ensure stronger oxidation. Due to the chemical reaction, disturbances with chloride need to be masked with mercury, which is used as a complexing agent. LAR's reagent-free method offers a clean, safe alternative.

The real COD.

Even with changing sample matrices.

The QuickCOD^{Ultra} handles samples through a unique direct injection method that, combined with a lock-valve, prevent

the loss of volatile and purgable organic carbons (VOC/POC), so the QuickCOD^{Ultra} determines the COD of all components, even in applications with changing sample compositions.

No chloride disturbances.

The advantage of our ULTRA high temperature method is complete, chemical-free oxidation, combined with the system's unique, fast operation. Both ensure a clean COD determination which is free of any disturbances with chloride.

AT A GLANCE

- COD is the amount of oxygen needed to oxidize organics in a water sample.
- Combustion at 1200°C is a fast, environment-friendly COD measurement method.
- A reliable measurement system must be free of chloride disturbances.
- At 1200°C complete oxidation is guaranteed without chemicals.
- Complete oxidation without filtration provides the real COD.

Fig. 1

THE ANALYZER.

Temperature makes the difference.

Warm, warmer, hot.

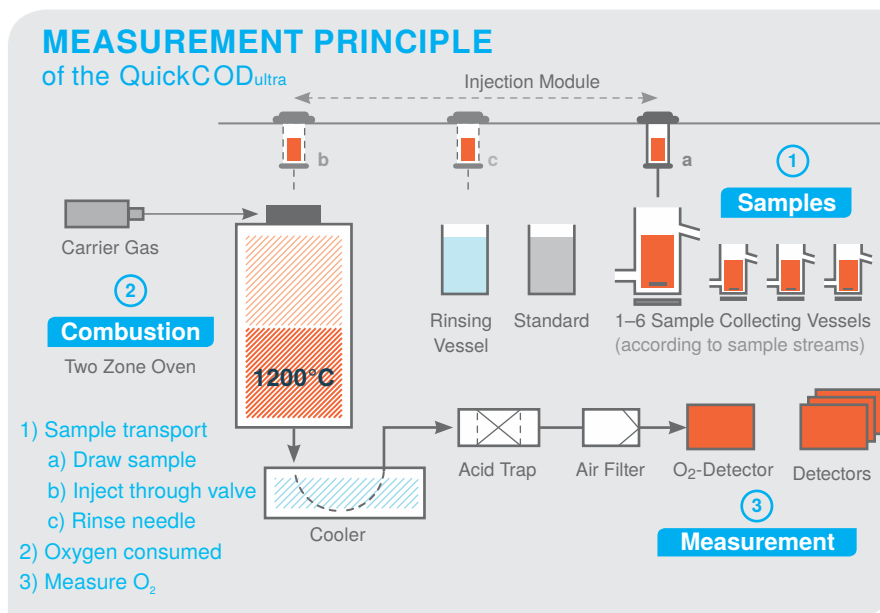
The catalyst-free ceramic oven is the centerpiece of the QuickCOD^{ultra}. At 1200°C, it breaks all carbon bonds for a complete analysis. The QuickCOD^{ultra} is available in a number of different housings to guarantee absolute safety in all settings, including highly corrosive environments and Ex-Zones.

Modular, tailor-made instruments.

Our modular design can be configured for up to six sample streams with a single analyzer, or add detectors to measure the TNb and TOC alongside COD.

The QuickCOD^{ultra}. Ultra-quick measurements and maintenance.

The COD measurement takes place in less than 2 minutes, so short duration events don't escape notice. Maintenance is fast, too: Less than 30 minutes per week, and the analyzer's availability is over 98%. The QuickCOD^{ultra} has been designed for accessibility and easy



maintenance, from filterless sampling with the patented FlowSampler[®], to the design of the oven, with a removable oven foot for quick residue removal.

High salts? No problem.

In contrast to many other COD analyzers, the QuickCOD^{ultra} can handle salt concentrations up to 10 g/L. There is also a high salt option available to handle up to 300 g/L sodium chloride (NaCl), so the sample does not need to be diluted, which improves measurement accuracy.

Who does what? You decide.

Access rights are assigned with simple drag-and-drop icons, and the 10.4-inch touchscreen makes the QuickCOD^{ultra} easy to operate. Remote access is also possible using a networked PC.

THE PRINCIPLE.

Clean results, even in dirty water!

Sample extraction as if taken by hand.

When water flows through the patented FlowSampler[®] solid particles are carried past the intake due to velocity. However, all particles relevant to the measurement are captured, and the sample corresponds 98% with that of a grabbed

sample. Best of all, the FlowSampler is maintenance free. These results cannot be reached with any kind of filter, filter sieve or rotating sieve.

Robotic injection for the perfect dose.

The QuickCOD^{ultra} uses a robotic X/Y arm to draw an exact sample from continuously stirred vessels. A precision needle draws an exact dose and injects it into the oven through a stop-valve. This patent pending valve seals the oven from the ambient air. After every injection, the needle is cleaned.

A carrier gas to transport and oxidize.

Low measuring ranges require nitrogen as a carrier gas. The oxygen needed for oxidation is added based on the measuring range.

O₂ detection. Reliable and simple.

In the furnace the sample is completely oxidized. The reduced oxygen level in the carrier gas is observed by an O₂ gas detector to determine the true COD value, even with changing samples.

The clean solution.

The QuickCOD^{ultra} is the ideal solution to hazardous waste disposal problems since it simply uses no chemicals and produces no waste.



With the QuickCOD^{ultra} the analytical area is isolated from the electronics, so not even a leak can cause damage. All areas are easily accessible.



QuickCOD_{ultra} AN OVERVIEW

Online COD for every kind of water – especially for the tough stuff.

QuickCOD_{ultra} continually checks the COD content of wastewater. Optionally, other sum parameters may be detected. At 1200°C, samples are completely oxidized and within 1 to 2 minutes the COD result is determined.

TECHNICAL DATA

Measurement Technique and Sample Preparation

Method	Thermal oxidation, ASTM D6238 - 98
Ranges	10–150 mg/L, 100–2,000 mg/L 500-5000 mg/L, 1000 - 8000 mg/L 20,000 - 250,000 mg/L COD others available
Response Time	1-2 minutes

Dimensions and Weight

Housing	Steel IP 54, powder coated
Options	Stainless steel, IP 65, Exp Zone 1 and 2 for T3, T4 classes (ATEX, IECex)
Dimensions	700 x 1020 x 520 mm (W x H x D)
Weight	115 kg (Standard)

Electric and Hydraulic Specifications

Inflow & Outflow	Tube 4.8mm ID Tube 8 mm ID. Tube 12 mm ID
Power Supply	230 /115 V, ~50 / 60 Hz
Analog Output	0/4– 20 mA
Serial Interface	RS 232
Safety	2/6 A internal, 16 A external
Remote Control	Through TCP/IP Protocol (Internet)

Equipment Devices and Data Output

High resolution, backlit TFT Touchscreen Graphic Display,
Autostart function
Self explanatory software
Standard data interfaces to office PC: (USB)



Fast, precise and safe – the QuickCOD_{ultra} is reliable even in hazardous areas!

FEATURES & BENEFITS

- ✓ exact determination of the true COD
- ✓ proven thermal oxidation principle
- ✓ highest temperature available (1200°C)
- ✓ catalyst-free
- ✓ clean measurement without reagents
- ✓ measures up to six streams (optional)
- ✓ high salt concentrations to 100 g/L
- ✓ individually programmable user levels
- ✓ analyzer availability greater than 98%
- ✓ weekly service & maintenance <30 min.
- ✓ low operation and maintenance costs

TOC-ANALYSIS

From complex industry wastewater to pharmaceutical pure water, our TOC analyzers determine parameters quickly and precisely.

COD-ANALYSIS

With our analyzers the chemical oxygen demand is cleanly and safely determined online, without using chemicals.

BOD/TOXICITY

We measure BOD with the plant's own biomass and determine the toxicity with highly sensitive bacteria. Fast and reliably.

TN_b/TP-ANALYSIS

Total Bonded Nitrogen and Total Phosphorus are important parameters for wastewater treatment. Only LAR offers a combination of TOC and COD in one system.

OTHER PRODUCTS

LAR offers a specific solution for nearly all applications. With our protective housings, you are always on the safe side. To find out more: www.larllc.com



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