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COD Analysis

Reagents, Instrument & Standards



The Role of COD in Water Analysis

Chemical Oxygen Demand (COD) is a common water quality parameter for industrial wastewater and municipal wastewater applications. It is used to quantify the amount of organics in a water sample and indicates the amount of oxygen that is available to be consumed by reactions with that solution.

Wastewater treatment is unique in that it relies on maintaining ideal conditions for bacteria and microbiological organisms to thrive. In turn, these organisms consume and break down organic matter.

At the end of the wastewater treatment process, the effluent, or treated water, is released from the treatment plant. If effluent is being released into a natural body of water, it is important that it does not have a negative impact on the aquatic plants and animals in that body of water. The goal of the treatment process is to reduce the organic content from the effluent before releasing it. A COD test can be used to quantify the effect an effluent will have on the body of water it is being released into.

Because the results of a COD test are easy to reproduce, and results are available in two hours, it is widely used as a process control parameter. COD values give a good indication of what is currently happening in a system and over time it can be used to make predictions to further optimize the treatment process.

Many industries, including breweries, pulp and paper mills, and dairy processing plants, use water as part of their manufacturing process and produce wastewaters. Many facilities have on-site treatment of the wastewater to prepare it to be released either into the environment or into the municipal sewage network. The EPA sets discharge limits and conditions based on the type of facility generating the wastewater. This sometimes includes a requirement for COD.

While COD is most commonly performed as a test on effluent, some municipalities may choose to measure it on their influent. This practice is more common in areas where municipalities are receiving large amounts of incoming water from industrial applications. It can be used to estimate how much, if any, additional treatment the incoming water will need during the treatment process. It also ensures the incoming water will not be detrimental to the treatment process by killing or disturbing the bacteria and microbiological organisms present in the treatment process.

COD is often mentioned in conjunction with BOD and Total Organic Carbon (TOC). While all of these measurements are used to determine if a solution meets the requirements of, or for, a process, their values indicate different conditions. COD, BOD or TOC values should not be considered as a substitute for one another.



COD Analysis Simplified with Lovibond®

Details Matter. We look out for the little things that make a big difference in simplifying water analysis. From making reagents safer to handle, to designing instruments that prevent common errors from occurring, our goal is to save you time and reduce the chance of measurement errors.

We've Got You Covered. With over 50 years of experience in manufacturing water quality instrumentation and reagents, Lovibond® is proud to offer solutions that simplify water analysis. From easy to use visual test kits, to complex spectrophotometers, we are confident that you can find a testing solution that fits your accuracy requirements and budget needs.

Our Mission. From the water we drink, the food we eat, to the everyday products we use, consumers deserve transparency. Lovibond® analytical products deliver accurate results so our customers can produce a safe product for their consumers.

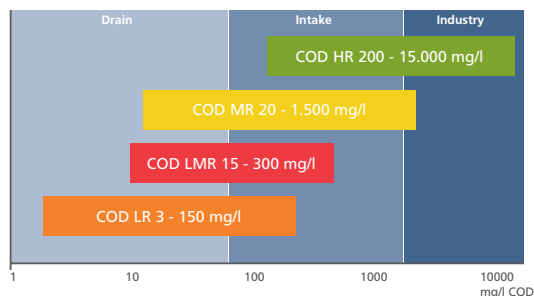
COD Reagents

COD Reagents are at the core of Lovibond® products that can report COD measurement values.

Lovibond® COD reagents meet US EPA / ISO15705:2002 testing requirements! Mercury-free versions are also available for non-reporting purposes.



The right COD tube test for every application



Ordering Information

Item	Part Number
Very-Low Range COD Reagent (2-60 mg/l)	
25 Count	2 42 31 00
VARIO Low Range COD Reagent (3 - 150 mg/l)	
25 Count	2 42 07 20
150 Count	2 42 07 25
Low-Mid Range COD Reagent (15 - 300 mg/l)	
25 Count	2 42 31 20
VARIO Mid Range COD Reagent (20 - 1,500 mg/l)	
25 Count	2 42 07 21
150 Count	2 42 07 26
VARIO High Range COD Reagent (200 - 15,000 mg/l)	
25 Count	2 42 07 22
150 Count	2 42 07 27
VARIO Low Range COD Reagent (3 - 150 mg/l)- Mercury Free	
25 Count	2 42 07 10
VARIO Mid Range COD Reagent (20 - 1,500 mg/l) - Mercury Free	
25 Count	2 42 07 11
150 Count	2 42 07 16
VARIO High Range COD Reagent (200 - 15,000 mg/l) - Mercury Free	
25 Count	2 42 07 12

COD Standards

Ordering Information

Item	Part Number
ValidCheck Standard: COD, 120 mg/l	
250 ml	48 37 14 25
ValidCheck Standard: COD, 500 mg/l	
250 ml	48 37 16 25
ValidCheck Standard: COD, 5000 mg/l	
250 ml	48 37 18 25

Standard solutions have a defined concentration value and provide a way to validate the test procedure, reagent quality and instrument performance.

What is VARIO?

Anytime VARIO is used in a product description, it signals that it is part of a reagent line what was formulated for use in Lovibond® test kits and instruments but can also be used in some instruments and test kits from HACH® and other manufacturers.

Lovibond manufactures a complete line of water quality reagents. With over 50 years of reagent manufacturing experience, we understand that high quality reagents are a critical element to achieving correct measurement results.

MD50 COD Colorimeter

Single Parameter Colorimeter

The MD50 colorimeter is a single parameter colorimeter for water quality analysis. This line of rugged, waterproof instruments are lightweight and ideal for field testing.

While COD is always performed in the laboratory, the MD50 COD offers an additional level of flexibility when establishing a COD testing protocol. Consider this solution for:

- Setting up a dedicated COD testing station or to utilize in small laboratories
- Short term testing requirements or pilot studies
- Great back-up instrument to have on-hand in case your primary testing solution is unavailable

COD is one of the most popular water quality testing parameters in wastewater applications. The instrument is pre-programmed with four testing ranges and utilizes our COD reagent vials.

The instrument features a large backlit display with data logging capabilities, a digital clock.



Instrument Ordering Information

Item	P/N
MD50 COD Colorimeter Kit	28 02 30
Instrument, 1 ml syringe, 2 ml syringe, 16 mm tube adapter, batteries, manual, USB-C to USB-A Cable, Certificate of Conformity in a carrying case.	
Please order reagents separately.	

Accessory Ordering Information

Item	P/N
Vial stand for 24 round vials Ø 16 mm, heat-resistant plastic	41 89 52
Cleaning cloth for vials	19 76 35
16 mm Tube adapter	19 80 21 90
Syringe, 1 ml	36 61 10
Syringe, 2 ml	36 90 80

Specifications

Testing Ranges	2 - 60 mg/l 3 - 150 mg/l 15 - 300 mg/l 20 - 1,500 mg/l 0.2 - 15 g/l	Display	Backlit LCD (on keypress)
Optics	LED, spectrometer sensor.	Storage	Internal ring memory for 100 data sets
Photometric Accuracy	3% FS (T = 20°C – 25°C)	Interfaces	USB-C for firmware updates; NFC for test data transfer
Photometric Range	0 - 3 ABS	Updates	Firmware and methods update
Power Supply	2 x AA batteries capacity approx. 5000 tests	Dimensions	6.1 x 2.99 x 1.77" (L x W x H)
		Conformity	CE

Multi-parameter Testing Solutions

Simplified COD Analysis - and More!

Testing for more than COD? Our multi-parameter colorimeters and spectrophotometers make it easy to expand your testing capabilities with a single instrument.

Model	Description
MD600 / 610	The ideal instrument for measuring multiple parameters outside of a laboratory setting. The MD 610 Multiparameter Colorimeter has all of the analytical power of the MD 600 Multiparameter Colorimeter, but makes it easy even easier to transfer data by combining Bluetooth® communication and the Lovibond® AquaLX App.
MD640	This multiparameter colorimeter & fluorometer combination is the ideal instrument for industrial water treaters as it combines the conventional colorimetric tests with the ability to measure levels of PTSA and Fluorescein in a water system.
XD7000	Over 150 pre-programmed water quality parameters in one device! The XD Series of Spectrophotometers is designed for testing in the laboratory.
XD7500	Featuring a UV/VIS testing spectrum, this instrument offers the broadest range of testing capabilities.

MD600, MD610 and MD640 Multiparameter Colorimeters

- Pre-programmed with over 100 methods for water analysis
- Access new and updated analytical methods as they become available
- Display only the tests you need by setting up a User's Favorite list
- 8 Language options including French, Spanish and Brazilian Portuguese

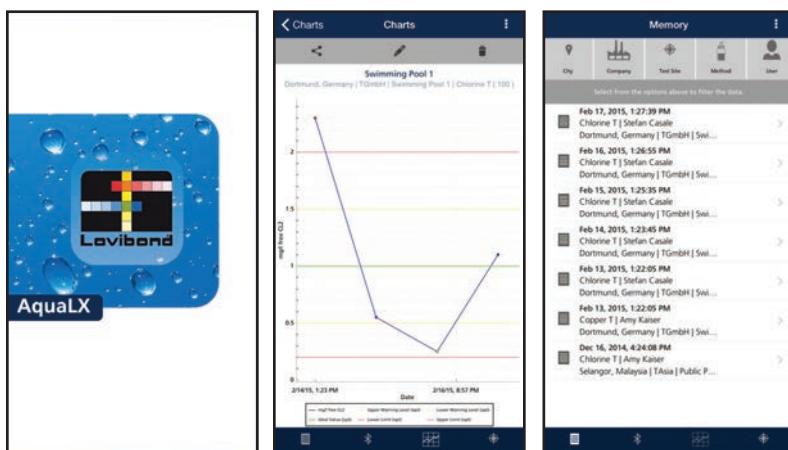
The MD600 Series is an ideal choice for measuring multiple parameters outside of a laboratory setting. Featuring a variety of options, such as Bluetooth® communication and the ability to measure unique parameters such as PTSA and Fluorescein, these instruments provide an "all-in-one" solution for a wide variety of applications and industries.

Ordering Information

Item	P/N
MD 600 Colorimeter	21 40 20
MD 610 Colorimeter w/ Bluetooth®	21 40 25
MD 640 Colorimeter & Fluorometer	21 41 40



AquaLX® Mobile App



The AquaLX® app uses a Bluetooth® interface to quickly and easily pull testing data stored on the MD50, MD610 or MD640 Colorimeters to a smart phone or tablet device.

Easily view measurement details, interpret results and email the data as a CSV file. The app can also display measurements in a graph with minimum and maximum thresholds specific to the location the sample was collected from.

The app is available free of charge and can be used with for Android™ and iOS® devices. Download it from the app store today!



XD Spectrophotometers

Simplified COD Analysis - and More!

XD7000 and XD7500 Spectrophotometers



- Automatic Test Recognition saves time and eliminates errors
- Method support and assistance
- Automatic cuvette type detection prevents errors related to using the incorrect sample cell
- Easy-to-read, full-color display with softkeys and integrated keyboard

The new XD7000 (VIS) and XD7500 (UV-VIS) Water Quality Spectrophotometers from Lovibond® combine a state-of-the-art optical system with ease of use and flexibility for a wide range of testing applications.

These instruments will provide users with the full range of functions that is required from a spectrophotometer in a water quality laboratory.

COD testing has never been easier. The advanced features of the XD Spectrophotometers combined with the ergonomic design of our COD Reagent vials save users time and prevent measurement errors.

Preprogrammed methods for over 150 water quality parameters and ranges

- Ideal for tube tests such as COD, Total Phosphate and Total Nitrate
- Supports liquid, tablet and powder pack reagent platforms
- Automatic test recognition ensures the reagent matches the measurement method

Intuitive Interface

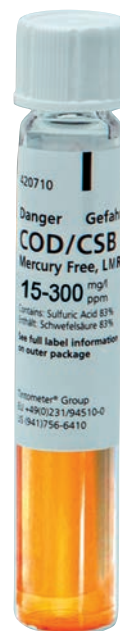
- Output to PCL-3 compatible printer, USB or Ethernet connection
- Software and new method upload via USB or PC connection
- Flexibility to add up to 100 user defined methods

User Security for Data Protection

- Create up to 3 different user levels with password protection
- Create user accounts and assign a level of access to ensure users only have access to what they need
- Support of analytical quality assurance procedures include the ability to set tolerances and reminders for calibration protocols

Barcoded vials enable automatic test method detection.

Self-contained, ready to use reagent system. Just add required sample volume and test!



Meet US EPA / ISO15705:2002 testing requirements! Mercury-free versions are also available for non-reporting purposes.

Ordering Information

Item	P/N
XD 7000 Spectrophotometer (VIS)	71 30 70 00
XD 7500 Spectrophotometer (UV/VIS)	71 30 75 00

Popular Testing Methods

Lovibond® has over 100 water quality testing methods and parameters. For a complete list of parameters, visit our website!

Parameter	Range	Colorimeters			Spectrophotometers	
		MD 100	MD 600 / MD 610	MD 640	XD 7000	XD 7500
Ammonia	0.01 - 0.8 mg/l	X	X	X	X	X
	0.02 - 2.5 mg/l		X	X	X	X
	1 - 50 mg/l		X	X	X	X
Bromine	0.1 - 3.0 mg/l				X	X
	0.05 - 13 mg/l	X	X	X	X	X
Cadmium	0.025 - 0.75 mg/l				X	X
Chloride	0.5 - 25 mg/l	X	X	X	X	X
	5 - 250 mg/l	X	X	X	X	X
Chlorine	0.02 - 2.0 mg/l	X	X	X	X	X
	0.1 - 8.0 mg/l	X	X	X		
	0.1 - 10 mg/l	X	X	X	X	X
	5 - 200 mg/l	X	X	X	X	X
Chlorine Dioxide	0.04 - 3.8 mg/l	X	X	X	X	X
Color	10 - 500 Pt-Co units	X	X	X	X	X
Copper	0.05 - 5.0 mg/l	X	X	X	X	X
Fluorescein	10 - 400 ppb			X		
Iron	0.02 - 1.8 mg/l	X	X	X	X	X
	0.02 - 3.0 mg/l	X	X	X	X	X
Lead	0.1 - 5.0 mg/l				X	X
Manganese	0.01 - 0.7 mg/l	X	X	X	X	X
	0.1 - 18 mg/l	X	X	X	X	X
Nitrate	1 - 30 mg/l		X	X	X	X
	0.5 - 25 mg/l		X	X	X	X
	5 - 150 mg/l		X	X	X	X
Nitrite	0.01 - 0.3 mg/l		X	X	X	X
	0.03 - 1.0 mg/l		X	X	X	X
	0.03 - 3.0 mg/l				X	X
	1 - 10 mg/l				X	X
Phosphate, Ortho	0.02 - 0.82 mg/l	X	X	X	X	X
	0.06 - 2.5 mg/l	X	X	X	X	X
Phosphate, Acid Hydrolyzable	0.02 - 1.6 mg/l		X	X	X	X
	0.06 - 5.0 mg/l		X	X	X	X
Phosphate, Total	0.02 - 1.1 mg/l		X	X	X	X
	0.06 - 3.5 mg/l		X	X	X	X
Phosphonates	0.02 - 125 mg/l		X	X	X	X
PTSA	10 - 1000 ppb			X		
Sulfides	0.04 - 0.5 mg/l		X	X	X	X
TOC	5 - 80 mg/l				X	X
	50 - 800 mg/l				X	X
UV254						X

RD125 Reactor



Reactor used for the chemical digestion of water samples for tests such as COD, Total Phosphate and Total Nitrogen.

The RD125 has a 24 x 16mm vial capacity. Select the temperature of the digestion as well as pre-select the digestion time (30, 60 or 120 minutes). When the reaction is complete, the RD125 will automatically turn off and sound an alarm.

Part Number: 2 41 89 40

Specifications

Power supply	230 V / 50-60 Hz or 115 V / 50-60 Hz (switchable)
Power	550 W
Dimensions	10.83 x 6.10 x 3.74 inches
Weight	7.9 lbs.
Materials:	
Housing	ABS
Protection grid	PPS
Lid	PC
Block insert	PBT
Heating block	Aluminum
Capacity	24 x 16 mm vials, 16.2 mm ± 0.2 mm
Selectable temp.	100 / 120 / 150 °C
Temperature stability	± 1 °C using Pt100 probe
Selected time	30 / 60 / 120 / min. and continuous operation (∞)
Prep Time	from 20°C to 150°C in 12 min.
Alarm Volume	max. 88 dB (piezo buzzer)
Environmental conditions	10 – 40 °C max. 85 % rel. humidity
Conformity	CE

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Lovibond® Water Testing

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