COD

TUR

NOS-N

Nitrate
NO_3

BOD

TSS

NO_3-N
(High range)

Color

NO_2-N

REAL-TIME WATER QUALITY ANALYSIS.

UNIPHOS
Water Monitoring **Solutions**

An Overview of COD, BOD and TSS

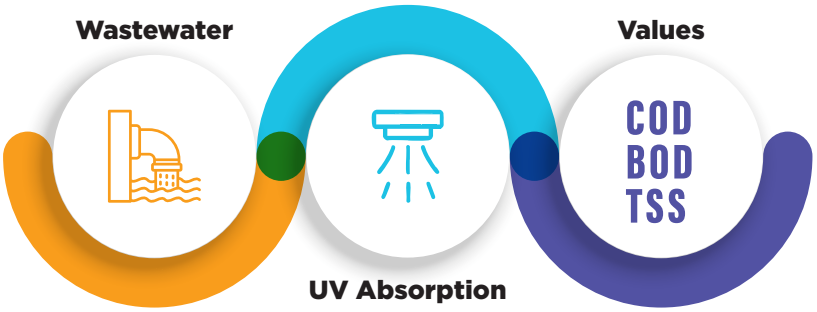
ENVIRONMENTAL SIGNIFICANCE

Chemical Oxygen Demand (COD) is a key parameter used to assess water quality. It represents the amount of oxygen (in mg/L) required to chemically oxidize both biodegradable and non-biodegradable organic and inorganic substances present in a water sample. Measurement of COD is essential for evaluating the efficiency of wastewater treatment plants, ensuring regulatory compliance, and protecting aquatic ecosystems from oxygen depletion caused by excessive pollutant levels.

COD is closely related to Biochemical Oxygen Demand (BOD), another standard parameter used to determine the oxygen-demanding strength of wastewater. However, BOD specifically represents the amount of oxygen required by aerobic microorganisms to biochemically decompose the biodegradable organic matter present in a water sample. While both parameters indicate the level of organic pollution, COD values are always higher than BOD values, as COD measures the total oxygen demand for both biodegradable and non-biodegradable substances.

COD measurement is critical because organic pollutants increase the oxygen demand in water. Elevated oxygen demand reduces the amount of dissolved oxygen available for aquatic life, leading to hypoxic conditions and potential harm to aquatic ecosystems.

Total Suspended Solids (TSS) particles that remain suspended, but not dissolved, in water or other liquid samples. These particles may consist of organic matter, industrial residues, etc. TSS is measured in milligrams per liter (mg/L) and serves as a key indicator of water quality. Elevated TSS levels can reduce light penetration, hinder photosynthesis, disrupt aquatic ecosystems, and indicate pollution or inadequate wastewater treatment.



Salient

FEATURES

- **No reagents are required for measurement**
- **Low operational cost**
- **No secondary pollution or waste generation**
- **Fast response ideal for real time monitoring**
- **Unaffected by chloride ion interference**
- **Automatic cleaning / purging facility**

Applications Across

INDUSTRIES

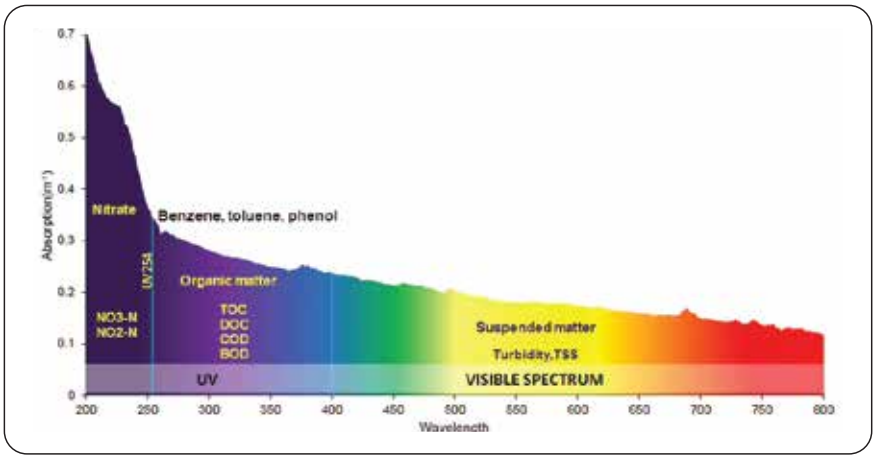
- Wastewater Treatment Plant
- Environmental Monitoring
- Aquaculture
- Cooling Tower
- Drinking Water Monitoring
- Municipal Sewage Effluent

Uniphos Online

UV-VISIBLE COD/BOD/TSS ANALYSER

The Uniphos Online UV-Visible COD/BOD/TSS Analyser is a multi-parameter system based on full-spectrum UV-Vis absorption spectroscopy, enabling real-time, online monitoring of light absorption patterns across the 200–800 nm wavelength range. Organic compounds typically exhibit strong absorption around 254 nm, and this characteristic is utilized to correlate the Chemical Oxygen Demand (COD) present in wastewater.

To ensure high measurement accuracy, interferences at 254 nm caused by other substances such as nitrate, nitrite, suspended solids (TSS), and colour are automatically compensated by analysing absorbance at additional reference wavelengths. The system is designed for continuous monitoring of industrial wastewater and optimization of process parameters, helping to reduce operational costs and improve the overall efficiency of wastewater treatment processes.



Communication Interface

Hardware interface	RS-485
Protocol	Modbus RTU

Technical Specifications

Measuring principle	Ultraviolet-visible spectrum (200 nm~800 nm)
Power requirements	230 V AC, 50 Hz
Light source	Xenon lamp
Operating temperature	5 to 50 °C
Power consumption	< 8 W

Parameter Information

Parameter	Range
COD	0-1000 mg/L | 0-500 mg/L | 0-150 mg/L
TUR	0-1000 NTU | 0-500 NTU | 0-150 NTU | 0-50 mg/L
NO3-N (Low range)	0-20 mg/L | 0-8 mg/L
TOC	0-300 mg/L | 0-100 mg/L | 0-30 mg/L
Nitrate (NO3-)	0-200 mg/L | 0-100 mg/L | 0-30 mg/L
BOD	0-1000 mg/L | 0-500 mg/L | 0-150 mg/L
TSS	0-1000 mg/L | 0-500 mg/L | 0-150 mg/L
NO3-N (High range)	30-2000 mg/L | 15-1000 mg/L | 10-300 mg/L
Color	0-500 PCU | 0-500 PCU | 0-100 PCU
NO2-N	0-50 mg/L | 0-25 mg/L | 0-8 mg/L

Online UV–COD, BOD & TSS Analyzer

HOW IT WORKS

Uniphos Online UV – COD TSS Analyser measures COD, BOD & TSS of surface water, ground water, municipal water, industrial wastewater etc. The system uses a UV source and detector to measure COD in water. It also has an IR source and detector to measure Total Suspended Solids (TSS). The TSS reading is used to correct any error in the COD measurement caused by suspended particles, making the COD value more representative.

It provides fast response and requires no chemicals for measurements. Its reliable electronics and sensor assembly ensures low cost of ownership for users.

The UV-COD and TSS probe is supplied with a controller equipped with a touchscreen HMI for parameter configuration and real-time display. The system features an automatic sensor purging function to minimize fouling and maintenance. Additionally, the analyzer is programmed to estimate and display BOD values based on the predefined BOD correlation factor.

Technical

SPECIFICATIONS

Method	UV absorption for COD and IR absorption for TSS
Power	230 V AC, 50 Hz
Linearity	2% F.S.
Zero Drift	< 1% F.S.
Range	COD : 0 to 400 mg/L BOD : 0 to 400 mg/L TSS : 0 to 100 mg/L
Measurement interval	User settable (minimum 1 minute)
Cable Length	10 meters (Probe to Controller)
Optical Path	10 mm
Working Temp	5 to 45 °C
Interface	4-20mA output

Digital pH

SENSOR

The digital pH sensor features a robust industrial-grade glass electrode and is built on a durable, rugged design for reliable performance in industrial applications.

Salient Features

- Utilizes high-performance industrial-grade electrodes for long-term stable operation
- RS-485 signal output ensures strong anti-interference capability and supports long-distance transmission

Technical

SPECIFICATIONS

Parameters	pH
Measurement Mode	Immersion measurement
Range	pH:0~14
Response Time	≤10s
Communication Mode	RS-485
Supply Voltage	24 V DC
Power Dissipation	< 0.5 W

Controller

SPECIFICATIONS

8 Channel Modbus Controller Specifications:

Display	7"/4.5" TFT, Touchscreen HMI
No. of Parameters	8/3
Screen	2/4 parameters per screen
Screen Scrolling	Auto/Manual (multiple screen)
Input signal	RS-485 (2Wire) MODBUS RTU Slave
Output signal	RS-485 (2Wire) MODBUS RTU Slave
Alarms	4 Common Relays (Resistive Load), Alarm1, Alarm2, Alarm3, Fault (Resistive Loads Only) (Relay Acknowledgement features allow silencing of external Audible devices during existing Alarm conditions)
Data logging	Inbuilt datalogging with export to USB (.csv format)
Input Power	230 V/110 V AC, 50/60 Hz
Temperature	0 to 55 °C
Pressure	Ambient ± 10%
Enclosure	Polycarbonate

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