



Environmental safety Begins with reliable measurements

Thermo Scientific products for effective wastewater treatment

Wastewater Analysis

Municipal/Industrial

Wastewater commonly refers to the liquid wastes collected and transported to treatment facilities via a system of sewers. It is generally divided into two broad classifications: domestic and industrial. The chemical composition of the wastewater is carefully measured both as it enters treatment and before it is released into public rivers, lakes and the oceans. Therefore, the accuracy of all measurements is critically important. In the U.S. wastewater is regulated by the Environmental Protection Agency, as well as state and municipal authorities, with each providing varying standards that must be strictly followed. Companies that fail to comply may be fined thousands of dollars per day until they meet the regulations. There are five basic processes in wastewater treatment:

Pretreatment

The first step includes the physical separation of solids from the flow by screening, grinding debris and settling out heavy inert grit. Although this results in a very small percentage of solids that must be removed, it is an essential step to avoid problems downstream in the treatment process.

Primary Treatment

In this stage, gravity settling in primary clarifiers removes some of the total suspended solids.

Secondary Treatment

Secondary treatment comprises biological processes that use microorganisms to digest the organic material that remains after primary clarification. It stabilizes the raw organic material that could threaten the receiving water. Additional processes in this stage include trickling filters, lagoons and stabilizing ponds, rotating biological contactors (RBCs) and various kinds of activated sludge processes.

Tertiary Treatment

Tertiary treatment includes numerous options. For instance, polishing ponds for bacteria and BOD removal have been added to secondary trickling filter plants to improve overall removal efficiency plant-wide. If additional treatment is required for a system discharge permit, processes such as nitrification/de-nitrification, ammonia stripping and phosphorous precipitation may be implemented.

Disinfection

Disinfection is needed to destroy harmful organisms in the wastewater effluent. Disinfecting wastewater is commonly achieved through chlorination, polishing ponds, ozonation and UV radiation.

Featured Products



Thermo Scientific Orion Chlorine XP Online Water Quality Analyzer Measures free, total and total combined chlorine with a colorimeter.

- Simple, quick installation and operation
- Auto calibration and auto self-cleaning
- Designed for low maintenance, and continuous on-line operation
- Simple, quick reagent replacement



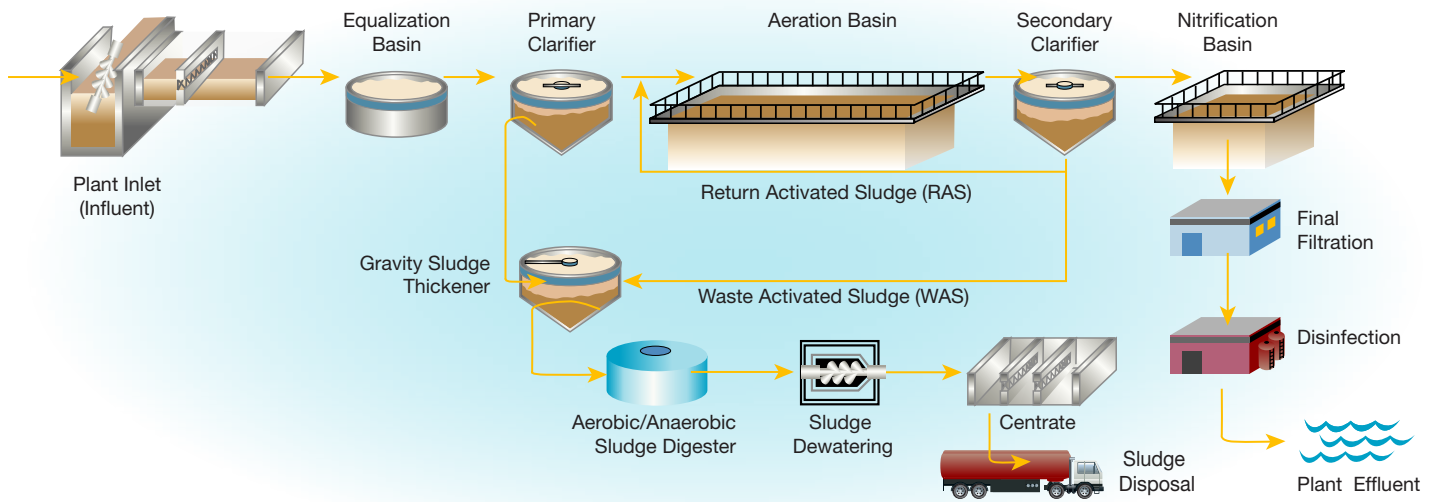
Thermo Scientific AquaSensors RDO Pro-X Optical Dissolved Oxygen Sensor

- Rugged, versatile DO monitoring system with luminescent technology.
- No membranes
 - Designed to deliver high accuracy with fast and stable response
 - Designed for low maintenance
 - Resists photo-bleaching and abrasive media
 - Plug-and-play design with digital network interface



Thermo Scientific AquaSensors AnalogPlus Differential pH Sensors Outstanding performance in continuous, demanding applications.

- 1 inch or 1.5 inch NPT mounting
- CPVC or PEEK body material
- Replaceable salt bridge helps extend sensor life
- NTC300 or PT1000 temperature elements
- Built-in electronics are completely protected from moisture and humidity



Thermo Scientific Products for Wastewater Treatment:

Plant Influent	Aeration Basin	Nitrification Basin	Plant Effluent	Aerobic/Anaerobic Sludge Digester
<ul style="list-style-type: none"> • Thermo Scientific™ AquaSensors™ DataStick™ Suspended Solids Turbidity Measurement System • AquaSensors DataStick pH Measurement System • Thermo Scientific™ AquaSensors™ AnalogPlus™ pH Sensors • Alpha™ pH Sensors • Thermo Scientific™ Orion™ AquaMate™ Spectrophotometer • Thermo Scientific™ Orion™ AQUAfast™ colorimeters and turbidimeters • Thermo Scientific™ Orion Star™ A portable meters 	<ul style="list-style-type: none"> • AquaSensors DataStick pH Measurement System • AquaSensors AnalogPlus pH Sensors • Alpha pH Sensors • AquaSensors DataStick Dissolved Oxygen Measurement System • AquaSensors RDO Pro-X Optical Dissolved Oxygen Sensor • AquaSensors AnalogPlus Dissolved Oxygen Sensor • Alpha Dissolved Oxygen Sensors • Orion Star A portable meters • Orion AquaMate Spectrophotometer • Orion AQUAfast colorimeters and turbidimeters • Orion Star A benchtop meters 	<ul style="list-style-type: none"> • AquaSensors DataStick Dissolved Oxygen Measurement System • AquaSensors RDO Pro-X Optical Dissolved Oxygen Sensor • AquaSensors AnalogPlus Dissolved Oxygen Sensor • Alpha Dissolved Oxygen Sensors • Orion Star A portable meters • Orion AquaMate Spectrophotometer • Orion AQUAfast colorimeters and turbidimeters • Orion Star A benchtop meters 	<ul style="list-style-type: none"> • AquaSensors DataStick Dissolved Oxygen Measurement System • AquaSensors RDO Pro-X Optical Dissolved Oxygen Sensor • AquaSensors AnalogPlus Dissolved Oxygen Sensor • Alpha Dissolved Oxygen Sensors • AquaSensors DataStick Suspended Solids Turbidity Measurement System • Orion Star A portable meters 	<ul style="list-style-type: none"> • AquaSensors DataStick Dissolved Oxygen Measurement System • AquaSensors RDO Pro Optical Dissolved Oxygen Sensor • AquaSensors AnalogPlus Dissolved Oxygen Sensor • Alpha Dissolved Oxygen Sensors • AquaSensors DataStick Suspended Solids Turbidity Measurement System • Orion Star A portable meters
<p>Equalization Basin</p> <ul style="list-style-type: none"> • AquaSensors RDO Pro-X Optical Dissolved Oxygen Sensor • Orion Star A portable meters 	<p>Secondary Clarifier</p> <ul style="list-style-type: none"> • AquaSensors DataStick Suspended Solids Turbidity Measurement System 	<p>Disinfection</p> <ul style="list-style-type: none"> • AquaSensors DataStick Dissolved Ozone Measurement System • AquaSensors AnalogPlus Dissolved Ozone Sensor • Orion Chlorine XP Water Quality Analyzer 	<p>Sludge Disposal</p> <ul style="list-style-type: none"> • AquaSensors DataStick pH Measurement System • AquaSensors AnalogPlus pH Sensors • Alpha pH Sensors 	<p>Waste Activated Sludge</p> <ul style="list-style-type: none"> • AquaSensors DataStick Suspended Solids Turbidity Measurement System



Orion 3106 COD analyzer for Chemical Oxygen Demand
On-line COD optimized for wastewater measurements.

- 20 to 2000 mg/L COD measurement range
- Automated ranging
- Designed for low operating costs - reduced maintenance and reagent consumption
- Temperature compensation
- Intuitive menu
- Robust construction



AquaSensors DataStick Suspended Solids Turbidity System

- Versatile system to monitor all solids concentrations - integrates with control systems.
- Fouling correction optics
 - Rugged construction
 - Local and remote configuration and diagnostics
 - Temperature measurement included



Orion AquaMate Spectrophotometer
Ideal laboratory instrument for extensive, full wavelength measurement of wastewater.

- High resolution, 1.8 nm spectral bandwidth
- Advanced optics designed for virtually maintenance-free performance
- High-speed wavelength scanning



Leaders in Sensing Technology

From supplying safe drinking water or reliably controlling wastewater treatment processing, to delivering significant value to industrial water treatment providers – our water experts can help you meet your application challenges. Thermo Scientific process water analysis measurement products are designed

for flexibility, ease of use, and low cost of operation in water treatment, delivering accuracy you can trust with confidence year after year. Select from our digital plug-and-play systems, advanced optical DO sensors, and a broad portfolio of differential and analog measurement capabilities to build your water quality solution.

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