

Residual Chlorine in Wastewater

Orion 4-Star pH/ISE
Benchtop Meter

Environmental

The most common method of wastewater disinfection of pathogens is chlorination. Thermo Electron Corporation offers a range of quality instruments, electrodes and consumables to correct residual chlorine levels in a variety of wastewater samples.



For instructions on chlorine measurements using Orion products, download our Star Series meter information at www.thermo.com/water.



Orion 4-Star pH/ ISE for Residual Chlorine in Wastewater

Chlorine has a long history of being used as an effective disinfectant, but it has certain health and safety limitations. Chlorine is used as a disinfectant because it destroys target organisms by oxidizing cellular material. Disinfection of municipal wastewater is necessary to preserve watershed quality.

One disadvantage of using chlorine even at low concentrations is the toxicity to aquatic life as oxidation of certain types of organic matter in wastewater creates more hazardous compounds. Therefore, proper measurement of residual chlorine levels requires precise, accurate products – such as the Orion 4-Star pH/ ISE meter

(Cat. No. 1115000) and Orion Solid-State Chlorine electrode (Cat. No. 9770BNWP). Some of the unique features available on the Orion 4-Star meter are downloadable internet updates, five point calibrations for direct ion measurement, and a special storage mode that allows you to store and password-protect up to 10 methods. On site measurements with Orion meters allow faster readings with an easy to read LCD display. Since treated wastewater can be for drinking and recreational purposes, the proper treatment and measurement of residual levels must comply with state regulations.

Orion 4-Star pH/ISE

Thermo Electron's advanced technology offers you superior quality with the Orion 4-Star pH/ISE meter (Cat. No. 1115000) and simpler, faster

Orion 4-Star pH/ISE Specifications:

Specifications		Benefit
pH		
Readout Range / Resolution	-2.000 to 19.999 or 0 to 14 in aqueous solutions / 0.1,0.01,0.001	Calibration point flexibility
Relative Accuracy	± 0.002	For exceptional accuracy
SMART STABILITY™ and SMART AVERAGING™	Resolution dependent / automatic	Optimized accuracy, precision & response time
AUTO-CAL™ and/or Manual Calibration	1 to 5 points; US/NIST, DIN, and custom buffers recognized	Protocol compliance
ISE		
Range / Resolution	0 to 19900 / 1,2, or 3 significant digits	Wide operating range/Increased accuracy
Relative Accuracy	± 0.2 mV or 0.05%, of a mV reading whichever is greater	
SMART STABILITY™ and SMART AVERAGING™	Resolution dependent / automatic	Optimized accuracy, precision, & response time
Units	M, mg/L, %, ppb, or no units	Choice of reporting units
# ISE Cal points	1 to 5	
Special ISE Calibration Features	Linear point to point, selectable auto-blank non-linear, low concentration range	
Temperature		
Range / Resolution	-5 to 105 °C / 0.1 up to 99.9 °C, 1.0 over 99.9 °C	Allows for temperature variations
Relative Accuracy	± 0.1 °C	
Temperature Compensation	Auto/Manual	
Display	Custom backlit LCD, for easy viewing	Easy to read
Special GLP Software Features		
# Of Data Logging Points	200 points by time, stability or manual read with time/date stamp	Expanded data storage available
Calibration Log	Last 10 Calibrations	Establish audit trail
User Method Storage	10 Saved	For easy retrieval of routine tests
Power	Universal power adapter and battery power 4 x AA batteries	Data is secure
Regulatory and Safety	CE, CSA, UL, TÜV, FCC Class A limits	Meets all necessary regulations
Environmental Operating Conditions		
Ambient Operating Temperature	5 to 45 °C	
Relative Humidity	5 to 85% Non-Condensing	
IP Rating	IP54, splashproof and dustproof	
Warranty	36 months (from date of purchase)	Reduces service cost

Above data generated under optimal/controlled circumstances.

Equipment needed for pH/ISE measurement using the Orion 4-Star pH/ISE meter:

Description	Orion Cat. No.
Chlorine Application Package (includes all items listed below)	1010111
Star Series Method Note: Residual Chlorine in Wastewater	M-1010-E
4-Star benchtop pH/ISE meter	1115000
Orion Residual Chlorine Electrode	9770BNWP
Standard solution, 100ppm Cl ₂	977007
Iodide Reagent for Cl ₂ electrode	977010
Acid Reagent for Cl ₂ electrode	977011
Benchtop Electrode stand	1110001

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