

# Cyanide in Drinking Water

Orion 4-Star pH/ISE  
Benchtop Meter

## Environmental

Thermo Electron Corporation offers a cyanide test method to support the increasingly stringent regulations mandated by the U.S. EPA. A wide range of quality instruments, electrodes and consumables are available to properly measure cyanide content in a variety of samples.



For instructions on cyanide measurement using Orion products, download our Star Series meter information at [www.thermo.com/water](http://www.thermo.com/water).



## Orion 4-Star pH/ ISE for Cyanide in Drinking Water

Cyanide levels in drinking water are regulated by the U.S. EPA for a multitude of reasons. Being a carcinogen cyanide can cause rapid breathing, tremors, weight loss, thyroid effects, nerve damage and other neurological effects in animals and humans. The safe level as listed in the Safe Drinking Water Act is set at 0.2 ppm since the EPA believes this level of protection would not result in any of these potential health problems. The EPA has determined an enforceable standard, or Maximum Contaminant Level (MCL), which is set as close to the minimum level as detection methods allow. The MCL level is also based on the ability of public

water systems to remove contaminants using suitable treatment technologies. Increased levels of cyanide can come from steel/metal factories or from plastic and fertilizer factories discharge.

The Orion 4-Star pH/ISE (Cat. No. 1115000) meter and Orion ionplus® Cyanide electrode (Cat. No. 9606BNWP) provide fast, accurate results with proven technology and superior quality. Extra features not available on competitive products include five point calibration for direct ion-measurement, downloadable internet software to keep the meter functioning at the most up to date revisions and a USB interface.

# 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 measurements with the Orion ionplus® Cyanide electrode (Cat. No. 9606BNWP) than with any other analytical techniques.

## Orion 4-Star pH/ISE Specifications:

Specifications		Benefit
<b>pH</b>		
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
<b>ISE</b>		
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 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	
<b>Special ISE Calibration Features</b>	Linear point to point, selectable auto-blank non-linear, low concentration range	
<b>Temperature</b>		
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	
<b>Display</b>	Custom backlit LCD, for easy viewing	Easy to read display
<b>Special GLP Software Features</b>		
# 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
<b>Power</b>	Universal power adapter and battery power 4 x AA batteries	Data is secure
<b>Regulatory and Safety</b>	CE, CSA, UL, TÜV, FCC Class A limits	Meets all necessary regulations
<b>Environmental Operating Conditions</b>		
Ambient Operating Temperature	5 to 45 °C	
Relative Humidity	5 to 85% Non-Condensing	
IP Rating	IP54, splashproof and dustproof	
<b>Warranty</b>	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.
Cyanide Application Package (includes all items listed below)	1010106
Star Series Method Note: Cyanide in Drinking Water	M-1005-E
4-Star benchtop pH/ISE meter	1115000
Orion ionplus® cyanide electrode	9606BNWP
Alkaline reagent	951011
Optimum Results B, Reference Fill Solution, 5x60 mL	900062
Benchtop Electrode Stand	1110001
Benchtop Stirrer	96019

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