

# Fluoride in Drinking Water

Orion 4-Star pH/ISE  
Benchtop Meter

## Environmental

Too much or too little fluoride can be harmful to humans and the environment. Precise measurement of fluoride by municipalities, potable water plants and bottle water manufacturers promotes quality water for consumption and prevents damage to the environment around us.

Thermo Electron Corporation offers a wide variety of instruments, electrodes and consumables to accurately measure fluoride content in a variety of samples.



For instructions on fluoride measurements 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 Fluoride in Drinking Water

Fluoridated drinking water contains a fluoride concentration effective for preventing dental cavities; this concentration can occur naturally or be reached through water fluoridation, which is the controlled addition of fluoride to a public water supply. The concentration of fluoride in drinking water should be maintained at optimal levels, both to achieve effective cavity prevention and because changes in fluoride concentration as low as 0.2 ppm can result in a measurable change in the potential for enamel erosion. With the Orion 4-Star pH/ ISE meter (Cat. No. 1115000) and Orion ionplus® Fluoride electrode (Cat. No. 9609BNWP), fluoride

measurements are typically under one minute, far faster than to other tedious methods and the cost per test is only a few cents. Orion products include quality rich features such as internet updates, data logging software for up to 200 points and USB interface which are not available in competitive products. The quality of the Orion Fluoride electrode is backed by years of advanced technological research by the leader in electrochemistry products. The Orion 4-Star pH/ISE meter and ionplus electrode provide you with the precision needed to meet national regulations for levels of fluoride in any community, school or home.

# Orion 4-Star pH/ISE

Thermo Electron's advanced technology offers you superior quality with the Orion ionplus® Fluoride electrode (Cat. No. 9609BNWP). Get simpler, faster measurements with the Orion 4-Star pH/ISE (Cat. No. 1115000) meter than with any other analytical instruments.

## 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%, 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

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

Above data generated under optimal/controlled circumstances.

Description	Orion Cat. No.
Fluoride Application Package (includes all items below)	1010103
Star Series Method Note: Fluoride in Drinking Water	M-1002-E
4-Star benchtop pH/ISE meter	1115000
Orion ionplus® fluoride electrode	9609BNWP
Fluoride Standard, 1ppm	040906
Fluoride Standard, 2ppm w/ TISAB	040907
Fluoride Standard, 10ppm w/ TISAB	040908
TISAB II, 1 gallon	940909
Optimum results A, Reference Fill Solution, 5x60 mL	900061
Benchtop Electrode Stand	1110001
Benchtop Stirrer	096019

**Thermo**  
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