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**Consumer Products**

**Fluoride is a proven agent to reduce cavities in both children and adults. It also helps repair the early stages of tooth decay even before the decay becomes visible.**

# Fluoride in Toothpaste

Orion 4-Star pH/ISE  
Benchtop Meter



## Fluoride in Toothpaste

Fluoride is needed throughout the lifespan to prevent and control tooth decay. Better directed use of fluoride can lead to substantial savings in public and private resources without compromising the tremendous advances we've made in improving dental health. Fluoride is the only non-prescription toothpaste additive proven to prevent dental decay by the Center for Disease Control and Prevention. When used on a regular basis, fluoride in toothpaste is taken up directly by dental plaque and tooth enamel. Brushing with fluoride toothpaste also increases the fluoride concentration in saliva 100- to 1,000-fold. Toothpaste formulations containing sodium fluoride

or stannous fluoride are easily analyzed because the fluoride is ionized in aqueous solution. 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 in comparison to other more tedious methods. Orion products include quality features such as internet updates, data logging software for up to 200 points and USB interface which are not available in competitive products. The Orion 4-Star pH/ISE meter provides you with the precision needed to meet national regulations for levels of fluoride in toothpaste, mouthwash and dental floss.

# 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	Bracket your sample pH
Relative Accuracy	± 0.002	Better for calibration points
SMART STABILITY™ and SMART AVERAGING™	Resolution dependent / automatic	More precise measurement
AUTO-CAL™ and/or Manual Calibration	1 to 5 points; US/NIST, DIN, and custom buffers recognized	Reduces set up time
<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	Removes the guesswork
Units	M, mg/L, %, ppb, or no units	Numerous unit options
# 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	
Relative Accuracy	± 0.1 °C	
Temperature Compensation	Auto/Manual	
<b>Display</b>	Custom backlit LCD, for easy viewing	
<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	Flexibility to meet your needs
User Method Storage	10 Saved	
<b>Power</b>	Universal power adapter and battery power 4 x AA batteries	Data is never lost
<b>Regulatory and Safety</b>	CE, CSA, UL, TÜV, FCC Class A limits	Meets all necessary regulations
<b>Environmental Operating Conditions</b>		Meets normal sample conditions
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 costs

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.
Fluoride Application Package (includes all items below)	1010157
Star Series Method Note: Fluoride in Toothpaste	M-1800-E
4-Star benchtop pH/ISE meter	1115000
Orion ionplus® fluoride electrode	9609BNWP
Fluoride Standard, 100 ppm	940907
TISAB II, 1 gallon	940909
Optimum results A, Reference Filling Solution, 5x60 mL	900061
Benchtop electrode stand	1110001
Benchtop stirrer	096019

**Environmental Instruments**  
Water Analysis Instruments