

**Environmental**

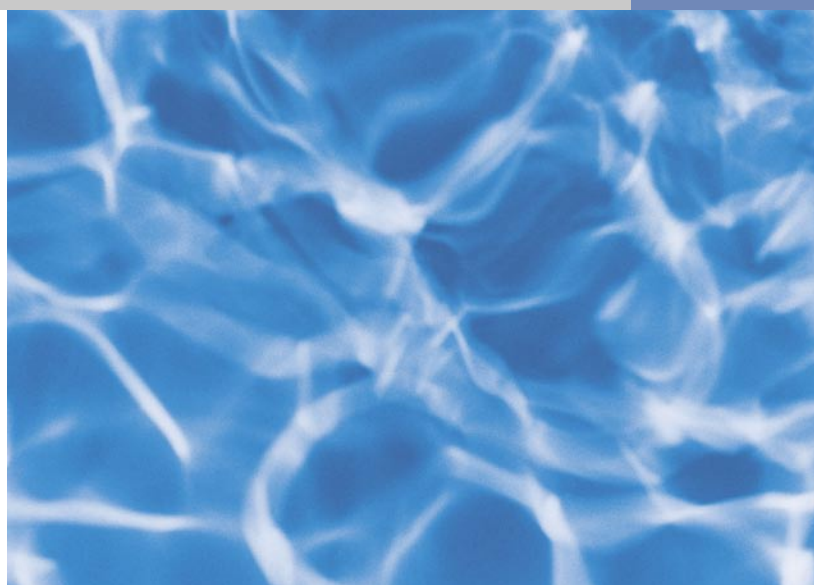
**Total alkalinity is used to measure the amount of minerals which are dissolved in water. Thermo Electron Corporation offers a total alkalinity test method to support the increasing regulations mandated by the U.S. EPA.**

# Total Alkalinity of Surface Fresh Water

Orion 3-Star pH Portable Meter



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



## Total Alkalinity in Surface Fresh Water

Total alkalinity is the measure of the resistance of water to pH change. The higher the total alkalinity, the more acid is needed to change or maintain the pH. The lower the total alkalinity, the less acid is needed. In water, when correcting the total alkalinity levels below 50ppm, it will be easy to overshoot the pH level with a small amount of acid, thus creating the opposite pH problem. Low total alkalinity can cause severe eye burn in pools where other chemicals are used. Ideally, the total alkalinity range should be 100 to 125 ppm, however, in practice 80 to 150 ppm is adequate. Total alkalinity above 150 ppm can contribute to the possibility of

scale damage in fish, but does not present an immediate danger. Levels below 80ppm can contribute to the possibility of corrosion damage and deserves immediate attention. Total alkalinity levels can be quickly and easily determined using the Orion 3-Star pH meter (Cat. No. 1212000) and the Orion ROSS Ultra® pH probe (Cat. No. 8156BNUWP). The Orion 3-Star pH meter meets IP67 regulations, features a 200 point datalogging capability and can download software updates via the internet. The Orion meters and electrodes are packaged to provide a basic, simple to operate user interface that is ideal for non-technical users.

# Orion 3-Star pH

Thermo Electron's advanced technology offers you superior quality with the Orion 3-Star pH meter (Cat. No. 1212000) and simpler, faster measurements with the Orion ROSS Ultra® pH probe (Cat. No. 8156BNUWP) than with any other analytical techniques.

## Orion 3-Star pH 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>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
<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 measurement using the Orion 3-Star pH meter:

Description	Orion Cat. No.
Total Alkalinity Application Package (includes all items listed below)	1010125
Star Series Method Note: Total Alkalinity in Surface Fresh Water	M-1024-E
3-Star Portable pH meter	1212000
ROSS Ultra® Combination pH electrode	8156BNUWP
Total Alkalinity test kit	700010
Soft Pack Field Case	1210005
Electrode storage sleeve	1210003
pH 4.01 buffer, 10 pack	910410
pH 7.00 buffer, 10 pack	910710
pH 10.01 buffer, 10 pack	911010

ROSS and the COIL tradedress are trademarks of Thermo Electron Corporation. US Patent 6,793,787