

NOW WITH HIGH RANGE CHLORINE (HR8 MENU)

Revision 08/01/11  
486691-K Standard Kit  
486691-KP Pool/Spa Kit  
486691-WD Well Driller Kit

# eXact<sup>®</sup> Micro 7+

## Advanced Photometer System Instruction Manual

**IDEAL FOR DRINKING WATER, POOLS AND SPAS,  
ENVIRONMENTAL, & EDUCATIONAL TESTING**

**USEPA, DIN, & ISO Compliant for Free & Total Chlorine Testing  
(4500-CL G, DIN Standard 38 408 G4, ISO 7393/2)**

U.S. Patent No. 7,333,194, U.S. Patent No. 7,491,546, South African Patent No. 2007/0628 and international patent applications including International Patent Appln. No. PCT/US2005/033985; and Eur. Pat. App. 1,725,864



**Micro 7+ is  
Manufactured  
and tested in  
an ISO 9001  
Facility**

**The eXact<sup>®</sup> Micro 7+ Advanced  
Photometer System has been  
designed for use with the eXact<sup>®</sup> Strip  
Micro reagent delivery system.**

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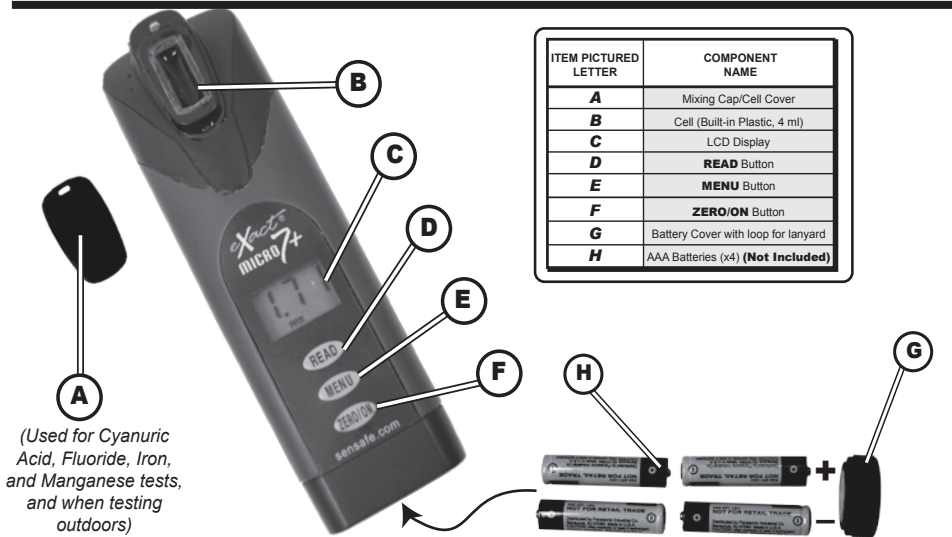
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Visit us online at [sensafe.com/micro7+](http://sensafe.com/micro7+) for up-to-date product information & NEW tests available.

# eXact® Micro 7+ Photometer



ITEM PICTURED LETTER	COMPONENT NAME
<b>A</b>	Mixing Cap/Cell Cover
<b>B</b>	Cell (Built-in Plastic, 4 ml)
<b>C</b>	LCD Display
<b>D</b>	<b>READ</b> Button
<b>E</b>	<b>MENU</b> Button
<b>F</b>	<b>ZERO/ON</b> Button
<b>G</b>	Battery Cover with loop for lanyard
<b>H</b>	AAA Batteries (x4) <b>(Not Included)</b>

(Used for Cyanuric Acid, Fluoride, Iron, and Manganese tests, and when testing outdoors)

## eXact® Micro 7+ Meter Specifications

<b>Measurement Method:</b>	Photometric	<b>Cell Chamber:</b>	Custom-molded, proprietary, PET plastic fused into chamber, non-removable
<b>Light Source:</b>	Light Emitting Diode (LED)	<b>Sample Required:</b>	4 ml (0.13 oz)
<b>Wavelength:</b>	525 nm	<b>Operating Temperature Range:</b>	0 - 50°C (32° - 122°F)
<b>Transmission Range:</b>	100 - 0.00 %T	<b>Power Supply:</b>	(4) AAA alkaline batteries (Not Included)
<b>Photometric Precision:</b>	+/- 0.1/0.01 %T	<b>Battery Life:</b>	>2000 tests with alkaline batteries
<b>Automatic Range Selection:</b>	See Specifications below	<b>Electromagnetic Compliance: (EMC)</b>	Immunity to Interference - EN 61326
<b>Display:</b>	3-digit customized liquid crystal display with annunciators	<b>Waterproof Rating:</b>	Exceeds IP67
<b>CELL Pathlength:</b>	20mm	<b>Weight:</b>	Instrument: 140 g (5 oz)
		<b>Dimensions:</b>	Instrument: 5 (W) x 3.5 (D) x 16.5 (H) cm; (2 x 1.4 x 6.375 in)

## We offer a "Green" Alternative

eXact® Strip Micro 7+ has been designed to offer the user a more "Green" and cost-effective alternative to testing. Instead of using a 10ml water sample, eXact® Strip Micro 7+ uses a 4ml water sample, which uses up to 60% less chemical per test. The accuracy of the meter is maintained by designing the photo cell with a 20mm pathlength.

## eXact® Micro 7+ Direct Read Specifications

Menu	Tests for <sup>1</sup>	Range	Accuracy (±)		Display Resolution	Optimal Water Temp.
			ppm	%		
CL1	<b>Free Chlorine &amp; Total Chlorine (DPD-1) &amp; (DPD-3)</b>	0 - 11 ppm	0.05 (0.00-3.00)	2	0.01 (0-5.99 ppm)	10-40 °C 50-104 °F
			0.7 (3.0-7.0)	10		
			1 (7-11)	12		
PH2	<b>pH</b>	6.2 - 8.4 ppm	0.3	3	0.1	10-40 °C/50-104 °F
			0.6 (2.5-14)	8		
BR3	<b>Bromine</b>	0 - 14 ppm	0.08 (0.00-2.5)	3	0.01	10-40 °C 50-104 °F
			0.6 (2.5-14)	8		
AL4	<b>Total Alkalinity</b>	12 - 180 ppm	10 (12-110)	9	0.1 (<100 ppm)	10-40 °C 50-104 °F
			25 (110-180)	14		
CA5	<b>Calcium Hardness as CaCO<sub>3</sub></b>	10 - 500 ppm	10 (0-200)	5	0.1	10-40 °C 50-104 °F
			25 (200-500)	5		
CU6	<b>Copper (Cu<sup>+2</sup>)</b>	0.04 - 8 ppm	0.01 (0.04-3)	3	0.01	10-40 °C 50-104 °F
			0.25 (3-8)	3		
TR7	<b>Transmission</b> <sup>3</sup> (Other tests coming soon)	99.9 - 0.01 %T		0.1	0.1 (99.9-10 %T)	N/A
				0.01		
HR8	<b>HR Free Chlorine</b>	0 - 300 ppm	4 (0-50)	8	1	10-40 °C 50-104 °F
			15 (50-200)			
			25 (200-300)			

<sup>1</sup> Performance verified with various salt systems, pool and spa water samples.

<sup>2</sup> Above 35°C requires a 10-second dip time for accurate results.

<sup>3</sup> Measurement requires a conversion chart for value.

# About Your eXact® Micro 7+ Instrument

In order to save power, the meter is designed to turn off after 3 minutes (timed from the last button pressed). Should the meter turn off in the middle of a test, the last stored zero in the meter will remain valid when the meter is turned on again. Also, the test result is stored in memory for easy retrieval.

The eXact® Micro 7+ meter is controlled by three buttons:

1. **ZERO/ON:** When first pressed, this button turns the meter on. When the meter is on and this button is pressed, it zeroes the sample in the cell. Once the meter is zeroed, this zero value applies to all parameters and is stored and retained even when meter turns off. However, it is recommended that each new water sample analyzed is zeroed before testing, to maximize sensitivity and accuracy.
2. **MENU:** With each press, the MENU button advances through the tests in the following sequence: CL1, PH2, BR3, AL4, CA5, CU6, TR7, HR8. Each test menu can store up to 20 results. To **retrieve the stored results**, go to the desired test using the MENU key. When the desired test is displayed, **press and hold down the MENU key**. Continue holding down the MENU key to scroll the stored results for that test, starting with the most recent result. The meter will display, from memory, the last 20 readings in sequence beginning with -20, which is the latest result, followed by -19, which is the 2<sup>nd</sup> latest result, etc; and finally -01, which is the oldest result retained. Only the last 20 readings are stored in each menu. This meter is able to store 160 results in memory (20 in each menu).
3. **READ:** When pressed once, this button starts the timer for the parameter being tested. When pressed a second time the meter exits the timer and immediately prepares to colorimetrically measure the sample, and simultaneously stores the measurement in memory.

If the parameter being measured is below or above the detection range, the display will show "**LO**" (Under Range) or "**HI**" (Over Range), respectively. This feature is menu specific and does not apply to all parameters.

## About The Accuracy / Calibration Of The Micro 7+ System

All tests have been calibrated using certified reference standards and standard analytical spectrophotometric methods. The algorithms in the software reflect the best correlation of the eXact® Micro 7+ Systems against the AWWA, US EPA, DIN, and ISO reference test methods for chlorine. Studies show that the eXact® Micro 7+ System repeatedly agrees with an EPA Compliant reference method greater than 99% ( $R^2 = 0.9989$ , 0 - 6.0 ppm - see page 36). The eXact® Micro 7+ Advanced Photometric System has been factory calibrated for your convenience. You can expect the fixed calibrations in the meter to be valid for the life of the meter because of the quality, Long-Life LED, the photo cell, and the software as written into the meter. This is why the meter comes with a 2-Year Warranty. NOTE: Test algorithms in the new version of photometer (serial numbers above 5000) give accurate results in fresh and salt water.

## Compliance Verification for Free and Total Chlorine Testing

This DPD test system is accepted by most health departments because this test is USEPA (DIN Standard 38 408 G4, ISO 7393/2) accepted for testing requirements for Free and Total Chlorine. The Micro 7+ meter uses a wavelength of 525nm; and the compliance requirement is that the colorimeter wavelength is between 490 and 530nm. The eXact® Strip Micro CL (DPD-1) uses the same reagents and proportions, and the resulting solution pH is maintained between 6.2 and 6.5 as specified by AWWA (American Water Works Association) method 4500-Cl G. It should be understood that the USEPA does not "approve" commercial DPD delivery systems such as reagent powder pillows, tablets, dispensers, or eXact® Strip DPD delivery devices. The eXact® Strip Micro CL (DPD-1) for Free Chlorine, and the eXact® Strip Micro CL (DPD-3) or the eXact® Strip Micro CL (DPD-4) for Total Chlorine meet your reportable testing requirements because the eXact® Strip Micro CL delivers the same chemicals in identical proportions (see table below); therefore, the system is compliant. Likewise, AWWA proportions are followed as required for Total Chlorine measurements using Potassium Iodide.

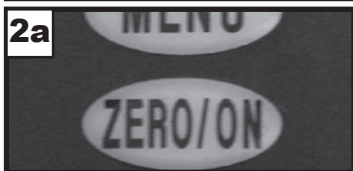
<b>Component (Free Chlorine)</b>	<b>AWWA 4500-Cl G</b>	<b>eXact® DPD-1</b>
Anhydrous DPD sulfate	1.5%	1.5%
Anhydrous Na <sub>2</sub> HPO <sub>4</sub>	33.4%	33.4%
Anhydrous KH <sub>2</sub> PO <sub>4</sub> Na <sub>2</sub>	64.0%	64.0%
EDTA	1.1%	1.1%



1

**REMOVE STRIP**

Remove one (1) *eXact® Strip Micro CL (DPD-1), Part No. 486637* from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

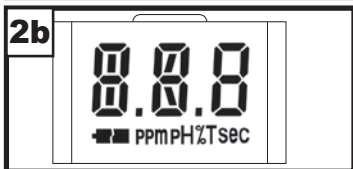


2a

2

**TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.



2b

3

**SELECT TEST: CL1**

Press and re-press the **MENU** button until the display shows the parameter **CL1**.

**CL1 is also used for testing:**

Total Chlorine (DPD-4), Ozone (DPD-4), Permanganate (DPD-1), and Total Chlorine (DPD-3). (Contact ITS for specs and details if you are planning on using **CL1** for Permanganate or Ozone measurements)



3

5

**ZERO METER**

Press the **ZERO/ON** button. The cursor will move across the display followed by **0.00 PPM**. Sample is ready for testing.

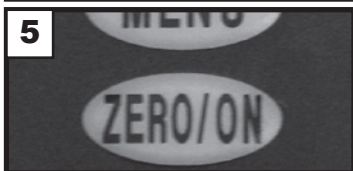


4

6

**DIP STRIP AND PRESS "READ"**

Dip the *eXact® Strip Micro CL (DPD-1), Part No. 486637* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears.**



5

7

**RECORD RESULT DISPLAYED**

The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in **CL1**).



6

**DO NOT** discard the sample from the Free Chlorine test if you are planning to run *eXact® Strip Micro DPD-3* (Total Chlorine) Procedure. Move directly to steps 8-10 on page 5. Otherwise, rinse the cell immediately.

For best results with this *eXact® Micro 7+ Photometer* and *DPD-1 strips*:

This version of the *eXact® Micro 7+* meter has a range to 11ppm Chlorine. The algorithm for Free Chlorine (**CL1**) with the use of *DPD-1 strip* gives most accurate results below 6ppm.

For Chlorine testing above 6ppm, you may use the *eXact® Strip Micro HRC, Part No. 486672*, product. This procedure can be found on page 9.

This procedure is only valid when run as a continuation of the eXact® Strip Micro CL (DPD-1 Free Chlorine ) Test Procedure located on the previous page.

8

**REMOVE STRIP**

Remove one (1) eXact® Strip Micro CL (DPD-3), Part No. 486638 from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

9

**DIP STRIP AND PRESS “READ”**

Dip the eXact® Strip Micro CL (DPD-3) into the CELL and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip when “1” on the display disappears.** The cursor will move across the display while the meter prepares to measure the sample. This result is automatically stored in CL1 (NOTE: The Iodide added with DPD-3 will, in the presence of Combined Chlorine or Chloramines, convert into Iodine).

10

**PRESS READ AGAIN**

Press **READ** again and the meter will count down and display the next reading. If this reading matches the previous result, then record this as the Total Chlorine result. This value is automatically stored in CL1. After testing is completed, rinse cell immediately. Record the Total Chlorine as the highest value the meter displayed.

**\*NOTE:** Standard Method (4500-Cl G, procedure for total chlorine) requires the reading to be made after 2 minutes from the time the KI is added. For compliance testing, you must time the two minutes and then make your measurement. NOTE: From testing in our lab, water samples above 70°F (20°C), generally, reach a stabilized reading quicker than 2 minutes.

CL1: Chlorine and Iodine react with N,N-diethyl-p-phenylenediamine as it is released from the strip to form a magenta color, directly proportional to the Chlorine concentration. (Ozone, Bromine, and Permanganate also form the color)

**eXact® Strip Micro CL (DPD-1/DPD-3/DPD-4) Interferences (part nos. 486637/486638/486670)**

Interfering Substance	Interfering Levels & Treatments
Acidity	If sample has acidity above 150mg/L CaCO <sub>3</sub> test may not develop full color. Neutralize to pH 6.0 to 7.0 with 0.5N Sodium hydroxide.
Alkalinity	If sample has alkalinity above 200mg/L CaCO <sub>3</sub> test may not develop full color. Neutralize to pH 6.0 to 7.0 with 0.5N Sulfuric acid.
Bromine & Bromamines, Br <sub>2</sub>	Color similar to free chlorine reaction at all levels.
Chlorine Dioxide, ClO <sub>2</sub>	Color similar to free chlorine reaction at all levels.
Copper, Cu <sup>+2</sup>	Color development is reduced above 10 ppm (mg/L).
Iodine, I <sub>2</sub>	Color similar to free chlorine reaction at all levels.
Manganese, oxidized (Mn <sup>+4</sup> , Mn <sup>+7</sup> ) or Chromium, oxidized (Cr <sup>+6</sup> )	See AWWA procedure 4500-CL F, 1(d) for removal of interferences.
Monochloramines (NH <sub>2</sub> Cl) (applies to DPD-1 only)	Monochloramine interferences are known to occur in free chlorine DPD methods. This interference is dependent on temperature and monochloramine concentration.
Ozone, O <sub>3</sub>	Color similar to free chlorine reaction at all levels.
Peroxides	Interference is possible.
pH	Typical pH samples of potable water with a pH of 6.0 to 9.0 are OK. If outside this range adjust to pH 6.0 to 7.0 using acid (0.5N Sulfuric acid) or base (0.5N Sodium hydroxide).

## MENU DPD-4 (Total Chlorine or Ozone) Test Procedure

CL

CL1

**1 REMOVE STRIP**  
Remove one (1) **eXact® Strip Micro CL (DPD-4 for Total Chlorine or Ozone), Part No. 486670** from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

**2 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**3 SELECT TEST: CL1**  
Press and re-press the **MENU** button until the display shows the parameter **CL1**.

**4 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross- contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**5 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **0.00 PPM**. Sample is ready for testing.

**6 DIP STRIP AND PRESS "READ"**  
Dip the **eXact® Strip Micro CL (DPD-4), Part No. 486670** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in CL1).

**7 PRESS READ AGAIN**  
Press **READ** again and the meter will count down and display the next Total Chlorine result. If this reading matches the previous result, then record this as Total Chlorine value (this result is stored in CL1). After testing is completed, rinse cell immediately. Record the Total Chlorine as the highest value the meter displayed.

**NOTE:** Standard Method (4500-Cl G, procedure for total chlorine) requires the reading to be made after 2 minutes. 2 minute wait is not necessary for Ozone measurements.

MENU

## pH Test Procedure

PH

PH2

**1 REMOVE STRIP**  
Remove one (1) **eXact® Strip Micro PH, Part No. 486639** from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

**2 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**3 SELECT TEST: PH2**  
Press and re-press the **MENU** button until the display shows the parameter **PH2**.

**4 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**5 ZERO METER\***  
Press the **ZERO/ON** button. When the display shows **0.0 PH**, the sample is ready for testing.

**6 DIP STRIP AND PRESS "READ"**  
Dip the **eXact® Strip Micro PH, Part No. 486639** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion (approx. 2 strokes/sec). **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in PH2). After testing, rinse cell immediately. **NOTE:** For best results, Total Alkalinity of the sample should be 40-140 ppm.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

**CL**

## Bromine DPD-1 Test Procedure

**MENU****BR3****1****REMOVE STRIP**

Remove one (1) *eXact® Strip Micro CL (DPD-1), Part No. 486637* from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

**2****TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**3****SELECT TEST: BR3**

Press and re-press the **MENU** button until the display shows the parameter BR3.

**4****FILL METER WITH SAMPLE**

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**5****ZERO METER**

Press the **ZERO/ON** button. The cursor will move across the display, followed by **0.00 PPM**. The sample is ready for testing.

**6****DIP STRIP AND PRESS “READ”**

Dip the *eXact® Strip Micro CL (DPD-1), Part No. 486637* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion (approx. 2 strokes/sec). **Remove and discard the strip after “1” on the display disappears.** The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is stored in BR3 memory). After testing is completed, rinse cell immediately and press **MENU** to select next test.

**AL**

## Total Alkalinity Test Procedure

**MENU****AL4****1****REMOVE STRIP**

Remove one (1) *eXact® Strip Micro AL, Part No. 486641* from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

**2****TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**3****SELECT TEST: AL4**

Press and re-press the **MENU** button until the display shows the parameter AL4.

**4****FILL METER WITH SAMPLE**

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**5****ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **0.00 PPM**. The sample is ready for testing.

**6****DIP STRIP AND PRESS “READ”**

Dip the *eXact® Strip Micro AL, Part No. 486641* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion (approx. 2 strokes/sec). **Remove and discard the strip after “1” on the display disappears\*.**

NOTE: For water temperatures above 95°F/35°C (hot tubs), remove and discard the strip when the timer displays “10”, countdown continues. For the hot water samples, a 10-second dip time is best. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in AL4). After testing is completed, rinse cell immediately.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

**MENU**

# Calcium Hardness Test Procedure

**CA****CA5****1 REMOVE STRIP**

Remove one (1) *eXact® Strip Micro CA, Part No. 486629* from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

**2 TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**3 SELECT TEST: CA5**

Press and re-press the **MENU** button until the display shows the parameter **CA5**.

**4 FILL METER WITH SAMPLE**

Rinse the **CELL** 2 or 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**5 ZERO METER**

Press the **ZERO/ON** button. The cursor will move across the display, followed by **0.00 PPM**. The sample is ready for testing.

**6 DIP STRIP AND PRESS "READ"**

Dip the *eXact® Strip Micro CA, Part No. 486629* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears**. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in CA5). After testing is completed, rinse cell immediately and use brush to remove any residual from previous test.

CA5: Calcium reacts with Oxalic acid as it is released from the strip to form a white precipitate, directly proportional to the Calcium concentration. Values are reported as Calcium Carbonate.

**MENU**

# Copper Test Procedure

**CU****CU6****1 REMOVE STRIP**

Remove one (1) *eXact® Strip Micro CU, Part No. 486632* from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

**2 TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**3 SELECT TEST: CU6**

Press and re-press the **MENU** button until the display shows the parameter **CU6**.

**4 FILL METER WITH SAMPLE**

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**5 ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **0.00 PPM**. The sample is ready for testing.

**6 DIP STRIP AND PRESS "READ"**

Dip the *eXact® Strip Micro CU, Part No. 486632* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The display will immediately start counting up from **1 to 20** (this extra time allows more thorough color development). At 20 sec, the cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in CU6). After testing is completed, rinse cell immediately.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.



# High Range Chlorine Test Procedure



**1**

## **REMOVE STRIP**

Remove one (1) *eXact® Strip Micro HRC, Part No. 486672* from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

**2**

## **TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**3**

## **SELECT TEST: HR8**

Press and re-press the **MENU** button until the display shows the parameter HR8.

**4**

## **FILL METER WITH SAMPLE**

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**5**

## **ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **0.0 PPM**. The sample is ready for testing.

**6**

## **DIP STRIP - (read carefully and follow procedure closely)**

Dip the *eXact® Strip Micro HRC, Part No. 486672* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The display will immediately start counting up from **1 to 120** (this extra time allows more thorough color development). At 120 sec, the cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in HR8). After testing is completed, rinse cell immediately with brush and water.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

- 1 REMOVE STRIP**  
Remove one (1) *eXact® Strip Micro*, part number is dependent upon the test being run, from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.
  
- 2 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
  
- 3 SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter **TR7**. Tests listed on pages 10 through 30 will require the TR7 MENU and the conversion charts included. Other tests listed on page 35 will require the use of a conversion chart available at [www.sensafe.com](http://www.sensafe.com).
  
- 4 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.
  
- 5 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. The sample is ready for testing.
  
- 6 DIP STRIP AND PRESS “READ”**  
Dip the *eXact® Strip Micro (or add Reagent)* into the **CELL** immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the after “1” on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7). After testing is completed, rinse cell immediately.

TR7: Different ions react with a specific indicator to form a color or a precipitate that proportionally indicates the concentration of the ion present by the transmission value found. A conversion table is then used to determine the ion concentration using the transmission value. The advantage of using transmission measurement is that many different ions can be determined in one MENU, which expands the flexibility of this meter. Once you have determined the %T result for the test you ran, find this %T result in the conversion chart and read the concentration corresponding for this %T. The Micro 7+ gives the %T values as 3 digits (example 99.2) but only the first two digits are used in the charts (round off your %T value to two digits). Tests that can be used with the Micro 7+ in TR7 MENU are listed on page 35. Typically, the most common tests are supplied with the conversion chart in this booklet. For conversion charts and information about the tests not given in this booklet, visit our website. You can also use the TR7 MENU to develop your own custom conversion chart for unusual samples to get more accurate results.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

**1** **TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**2** **SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter TR7.

**3** **FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**4** **ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

**5** **DIP STRIP AND PRESS "READ"**  
Dip the **eXact® Strip Micro Acid pH, Part No. 486624** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).

**6** **USE TABLE**  
Find the "TR7" result in the table below to determine the pH. (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a pH value of 4.9). Record result. After testing is completed, rinse cell immediately.

## Acid pH Table

Acid pH results require the table below. Follow **eXact® Micro 7+ Acid pH Test Procedure** (above) using **eXact® Strip Micro Acid pH, Part No. 486624**

**eXact® Strip Micro Acid pH, Part No. 486624 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	3.1	3.2	3.2
80	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.9	4.0	4.1
70	4.2	4.2	4.3	4.3	4.4	4.4	4.5	4.5	4.6	4.6
60	4.7	4.7	4.8	4.8	4.9	4.9	4.9	5.0	5.0	5.1
50	5.1	5.1	5.2	5.2	5.2	5.3	5.3	5.3	5.4	5.4
40	5.4	5.5	5.5	5.5	5.6	5.6	5.7	5.7	5.7	5.8
30	5.8	5.8	5.9	5.9	5.9	6.0	6.0	6.1	6.1	6.2
20	6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2
10	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2
0	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2

Rev. 020609 AcPH

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

1

**TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

2

**SELECT TEST: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

3

**FILL METER WITH SAMPLE**

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

4

**ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

5

**DIP STRIP AND PRESS "READ"**

Dip the **eXact® Strip Micro Alkali pH, Part No. 486609** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).

6

**USE TABLE**

Find the "TR7" result in the table below to determine the pH. (Example: a "TR7" result of 55.3 (use only the 55 for the chart) equals a pH value of 8.2). Record result. After testing is completed, rinse cell immediately.

## Alkali pH Table

Alkali pH results require the table below. Follow **eXact® Micro 7+ Alkali pH Test Procedure** (above) using **eXact® Strip Micro Alkali pH, Part No. 486609**

**eXact® Strip Micro Alkali pH, Part No. 486609 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
80	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
70	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
60	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	8.0
50	8.1	8.1	8.1	8.1	8.2	8.2	8.2	8.2	8.3	8.3
40	8.3	8.3	8.3	8.4	8.4	8.4	8.4	8.5	8.5	8.5
30	8.5	8.6	8.6	8.6	8.6	8.7	8.7	8.7	8.7	8.8
20	8.8	8.8	8.8	8.9	9.0	9.0	9.0	9.1	9.1	9.2
10	9.2	9.3	9.3	9.4	9.5	9.6	>9.6	>9.6	>9.6	>9.6
0	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6

Rev. 062210 AlkpH

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

**1 TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**2 SELECT TEST: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

**3 FILL METER WITH SAMPLE**

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample. **NOTE:** For Salt Water Analysis, tilt meter to discard about 0.2mL water in order to leave room for liquid reagent. Add 10 drops of **eXact® Reagent NH3, Part No. 486654-B** to the **CELL**.

**4 ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

**5 DIP STRIP - (read carefully and follow procedure closely)**

Dip the **eXact® Strip Micro NH<sub>3</sub>, Part No. 483343-M** into the **CELL** and immediately press **READ**. This starts the countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample (ignore this result). Time the reaction in the cell for **580 seconds (~10 minutes)** (timer not included). During this time, meter will shut off. When **580 seconds** have elapsed, turn on the meter and wait for the last reading to be displayed and then press **READ**, which will start a final **20 SECOND** countdown. The cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in TR7).

**6 USE TABLE**

Find the "TR7" result in the table below to determine the Ammonia concentration in ppm (parts per million). (Example: a "TR7" result of 55.3 (use only the 55 for the chart) equals an Ammonia value of 1.72 ppm). Record result. After testing is completed, rinse cell immediately.

**Ammonia (NH<sub>3</sub>/NH<sub>4</sub><sup>+</sup>) Table**

Ammonia results require the table below. Follow **eXact® Micro 7+ Ammonia (NH<sub>3</sub>/NH<sub>4</sub><sup>+</sup>) Tap Water Test Procedure** (above) using **eXact® Strip Micro NH<sub>3</sub>, Part No. 483343-M**.

**eXact® Micro NH<sub>3</sub>, Kit No. 483343-M - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0.06	0.08	0.09	0.10	0.12	0.14
70	0.18	0.22	0.24	0.30	0.34	0.40	0.46	0.52	0.58	0.64
60	0.70	0.78	0.84	0.90	0.98	1.04	1.12	1.20	1.26	1.34
50	1.40	1.48	1.56	1.64	1.72	1.80	1.88	1.96	2.04	2.12
40	2.20	2.30	2.38	2.48	2.56	2.66	2.76	2.84	2.92	3.02
30	3.12	3.22	3.32	3.42	3.54	3.64	3.76	3.86	3.98	4.10
20	4.22	4.32	4.46	4.56	4.70	4.82	4.96	5.00	>5	>5
10	>5	>5	>5	>5	>5	>5	>5	>5	>5	>5
0	>5	>5	>5	>5	>5	>5	>5	>5	>5	>5

Rev. 040711-BT

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

# For Tap Water

## Chloride (as NaCl) Test Procedure

**CH****MENU  
TR7****1**

### TURN METER ON

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**2**

### SELECT TEST: TR7

Press and re-press the **MENU** button until the display shows the parameter TR7.

**3**

### FILL METER WITH SAMPLE

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**4**

### ZERO METER\*

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

**5**

### DIP STRIP AND PRESS "READ"

Dip the **eXact® Strip Micro CH (as NaCl), Part No. 481657-II** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).

**6**

### USE TABLE

Find the "TR7" result in the table below to determine the Chloride concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Chloride value of 70 ppm). Record result. After testing is completed, rinse cell immediately.

## Chloride (as NaCl) Table

Sodium Chloride results require the table below. Follow **eXact® Strip Micro 7+ Chloride (as NaCl) Test Procedure** (above) using **eXact® Strip Micro CH, Part No. 481657-II**. **NOTE: To convert the NaCl value to Chloride (as Cl<sup>-</sup>), multiply the value from the chart below by 0.6. (Example: 115ppm NaCl = 69ppm Cl<sup>-</sup>)**

### eXact® Strip Micro CH, Part No. 481657-II - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	0	2	4	6	8	10	12	14	16	18
80	20	22	24	26	28	30	32	34	36	38
70	40	42	44	48	50	52	54	56	58	60
60	62	64	66	68	70	72	74	76	78	80
50	82	84	86	88	90	92	94	96	98	100
40	102	103	105	107	109	110	112	114	116	118
30	120	123	125	127	129	131	133	135	137	139
20	141	143	145	147	149	152	154	157	160	162
10	164	167	170	173	176	179	182	185	188	192
0	197	202	210	214	222	233	250	292	350	>350

Rev. 041311-BT

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

# For Pool and Spa Salt Systems

## MENU Salt/Chloride (as NaCl) Test Procedure

CH

### TR7

#### 1 **TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

#### 2 **SELECT TEST: TR7**

Press and re-press the **MENU** button until the display shows the parameter **TR7**.

#### 3 **PREPARE THE CELL**

Using deionized or distilled water, rinse the **CELL** at least 3 times to minimize potential cross contamination from a previous test. Finally, fill the cell to the top with deionized or distilled water.

#### 4 **ADD THE SAMPLE**

Use the small pipet provided to add 0.2ml of the sample to the water in the cell. This is a 1 to 20 dilution of the pool water that is required to perform this test. NOTE: If you are using the more accurate dilution procedure with the Dilution Kit (487200) or Mini Dilution Kit II (487202), follow the procedure as provided with those kits.

#### 5 **ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Meter is ready for testing.

#### 6 **DIP STRIP**

Dip the **eXact® Strip Micro CH (as NaCl), Part No. 481657-II** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).

#### 7 **USE TABLE**

Find the "TR7" result in the table below to determine the Sodium Chloride concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Sodium Chloride value of 1400 ppm). Record result. After testing is completed, rinse cell immediately.

### Chloride (as NaCl) Table

Sodium Chloride results require the table below. Follow **eXact® Micro 7+ Chloride (as NaCl) Test Procedure** (above) using **eXact® Strip Micro CH, Part No. 481657-II**. **NOTE:** To convert the NaCl value to Chloride (Cl<sup>-</sup>), multiply the value from the chart below by 0.6. (Example: 1380ppm NaCl = 828ppm Cl<sup>-</sup>)

#### eXact® Strip Micro CH, Part No. 481657-II - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	0	40	80	120	160	200	240	280	320	360
80	400	440	480	520	560	600	640	680	720	760
70	800	840	880	960	1000	1040	1080	1120	1160	1200
60	1240	1280	1320	1360	1400	1440	1480	1520	1560	1600
50	1640	1680	1720	1760	1800	1840	1880	1920	1960	2000
40	2040	2060	2100	2140	2180	2200	2240	2280	2320	2360
30	2400	2460	2500	2540	2580	2620	2660	2700	2740	2780
20	2820	2860	2900	2940	2980	3040	3080	3140	3200	3240
10	3280	3340	3400	3460	3520	3580	3640	3700	3760	3840
0	3940	4040	4200	4280	4440	4660	5000	5840	7000	>7000

Rev. 041311-BT

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

- 1 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2 SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter TR7.
- 3 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.
- 4 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.
- 5 DIP STRIP - (read carefully and follow procedure closely)**  
Dip the *Glycine ReagentStrip™, Part No. 484014* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip when the time displays 1.** The cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Dip the *eXact® Strip Micro CL (DPD-1), Part No. 486637* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after “1” on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7). After testing is completed, rinse cell immediately.
- 6 USE TABLE**  
Find the “TR7” result in the table below to determine the Chlorine Dioxide concentration in ppm (parts per million). (Example: a “TR7” result of 65.3 (use only the 65 for the chart) equals a Chlorine Dioxide value of 0.96 ppm). Record result. After testing is completed, rinse cell immediately.

## Chlorine Dioxide Table

Chlorine Dioxide results require the table below. Follow *eXact® Micro 7+ Chlorine Dioxide Test Procedure* (above) using *eXact® Strip Micro CL (DPD-1), Part No. 486637*

**eXact® Strip Micro CL (DPD-1), Part No. 486637 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	<0.03	<0.03	0.03	0.06	0.08	0.11	0.13	0.16	0.18	0.21
80	0.23	0.26	0.29	0.31	0.34	0.37	0.40	0.42	0.45	0.48
70	0.51	0.54	0.57	0.60	0.63	0.66	0.69	0.73	0.76	0.79
60	0.82	0.86	0.90	0.93	0.96	1.00	1.03	1.07	1.11	1.15
50	1.19	1.23	1.27	1.31	1.35	1.40	1.44	1.48	1.53	1.58
40	1.62	1.67	1.72	1.78	1.83	1.88	1.94	2.0	2.1	2.1
30	2.2	2.2	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9
20	2.9	3.0	3.1	3.2	3.3	3.5	3.6	3.7	3.8	4.0
10	4.1	4.2	4.4	4.6	4.7	4.9	5.0	5.2	5.4	5.5
0	5.7	5.9	6.0	6.2	6.3	6.5	>6.5	>6.5	>6.5	>6.5

Rev. 121908 ClO2

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

- 1 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2 SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter TR7.
- 3 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.
- 4 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.
- 5 DIP STRIP - (read carefully and follow procedure closely)**  
Dip the **eXact® Strip Micro CR, Part No. 486614** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample (ignore this result). Time the reaction in the cell for **four (4) minutes** (timer not included). For salt water, wait for eight (8) minutes. During this time, meter will shut off. When minutes have elapsed, turn on the meter and wait for the last reading to be displayed and then press **READ**, which will start a final **20 SECOND** countdown. The cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in TR7).
- 6 USE TABLE**  
Find the "TR7" result in the table below to determine the Chromium (IV) concentration in ppm (parts per million). (Example: a "TR7" result of 66.3 (use only the 66 for the chart) equals a Chromium (IV) value of 0.14 ppm). Record result. After testing is completed, rinse cell immediately.

## Chromium (VI) Table

Chromium results require the table below. Follow **eXact® Micro 7+ Chromium (VI) Test Procedure** (above) using **eXact® Strip Micro CR, Part No. 486614**. This Test can also be used for Salt Water Testing.

**eXact® Strip Micro CR Part No. 486614 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	0.01	0.02	0.02	0.03	0.03	0.04	0.04
80	0.04	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08
70	0.08	0.09	0.09	0.09	0.10	0.11	0.11	0.11	0.12	0.12
60	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.18
50	0.18	0.19	0.19	0.20	0.21	0.21	0.22	0.22	0.23	0.24
40	0.25	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.31	0.32
30	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.42
20	0.43	0.44	0.46	0.47	0.48	0.50	0.52	0.53	0.54	0.57
10	0.59	0.61	0.63	0.66	0.69	0.72	0.75	0.79	0.83	0.86
0	0.91	0.97	1.06	1.18	1.29	1.37	1.45	1.50	>1.5	>1.5

This test is designed to detect Chromium (VI).

Rev. 090210 BT

**Note:** To convert Chromium(VI) to Dichromate (Cr2O7) multiply the value with 2.07 factor and as Chromate (CrO4) multiply with 2.23.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.



# Cyanuric Acid Test Procedure



- 1 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2 SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter **TR7**.
- 3 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.
- 4 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.
- 5 ADD REAGENT, CAP, PRESS “READ”, AND MIX**  
Shake the bottle of **eXact® Reagent CY, Part No. 481652-II** to mix the chemical in the bottle. Then, add five (5) drops of eXact® Reagent CY to the cell and cap meter cell with mixing cap. Press **READ** to start timer, place thumb or finger over cap, and mix the sample by turning the meter upside-down repetitively during the **20 SECOND** countdown. NOTE: Cover the cap completely and hold firmly. **When timer displays 1**, place meter on flat surface. Time the reaction in the **CELL** for **40 seconds** (timer not included). After the 40 seconds, press **READ** again to start another **20 SECOND** countdown. At the end of the 20 seconds, the cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in CY7). After testing is completed, rinse cell immediately and use brush to remove any residual from previous test.
- 6 USE TABLE**  
Find the “TR7” result in the table below to determine the Cyanuric Acid concentration in ppm (parts per million). (Example: a “TR7” result of 75.3 (use only the 75 for the chart) equals a Cyanuric Acid value of 6.8 ppm). Record result. After testing is completed, rinse cell immediately.

## Cyanuric Acid Table

Cyanuric Acid results require the table below. Follow **eXact® Micro 7+ Cyanuric Acid Test Procedure** (above) using **eXact® Reagent CY, Part No. 481652-II**.

**NOTE:** For levels above 95ppm Cyanuric Acid, dilute the sample ½ or ¼ with distilled water and retest.

### eXact® Reagent CY, Part No. 481652-II - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	0	0.5	1	1.5	1.8	2	2.2	2.4	2.7	2.9
80	3.2	3.4	3.7	3.9	4.2	4.4	4.9	5.2	5.4	5.6
70	5.9	6.1	6.3	6.5	6.8	7.3	7.6	7.8	8	8.3
60	8.8	9	9.3	9.5	9.8	10.3	10.5	10.7	11.2	11.5
50	11.7	11.9	12.2	12.7	13.2	13.5	13.7	14.2	14.4	14.6
40	15.1	15.6	16.1	16.3	16.6	17.1	17.6	18.1	18.6	19
30	19.5	20	20.5	21	21.5	22	22.5	22.9	23.4	23.9
20	24.4	24.9	25.9	26.9	27.3	27.8	28.8	29.8	30.8	31.7
10	32.2	33.2	34.2	35.6	36.6	38.1	39.6	41	43	44.9
0	46.9	49.3	52.2	55.2	59.1	64	70	80	95	>95

Rev. 040811-BT

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

**1** **TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**2** **SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter TR7.

**3** **FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**4** **ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Discard the sample (empty cell).

**5** **ADD REAGENT**  
Shake the bottle of **eXact® Reagent F<sup>-</sup> (SPADNS), Part No. 486643** to mix chemical in the bottle. Then, add ten (10) drops of eXact® Reagent F<sup>-</sup> (SPADNS) to the empty cell.

**6** **ADD SAMPLE AND CAP**  
Fill the cell to the top with the sample to be tested (do this slowly to prevent overfilling). Cap the meter with the cell mixing cap.

**7** **PRESS READ**  
Press **READ** to start timer, mix sample by pressing one finger over the cap to keep it in place. Then, gently turn the meter over from side to side to mix during the **20 SECOND** countdown. **When time displays 1**, hold meter upright and the cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in TR7).

**8** **USE TABLE**  
Find the "TR7" result in the table below to determine the Fluoride concentration in ppm (parts per million). (Example: a "TR7" result of 3.42 (use only the 3.4 for the chart) equals a Fluoride value of 0.9 ppm). Record result. After testing is completed, rinse cell immediately. For all values with a Transmission above 5.00%, the Fluoride level is greater than 1.1 ppm. For all samples above 1.1 ppm, it is recommended that the sample is diluted with distilled or deionized water and retested.

## Fluoride Table

Fluoride results require the table below. Follow **eXact® Micro 7+ Fluoride (as F<sup>-</sup>) Test Procedure** (above) using **eXact® Reagent F<sup>-</sup> (SPADNS), Part No. 486643**.

**eXact Reagent F<sup>-</sup> (SPADNS), Part No. 486643 - for 4mL Samples**

%T	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0
4	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1
3	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7
2	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3
1	0.2	0.2	0.2	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Rev. 121208 F

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

**1****TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**2****SELECT TEST: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

**3****FILL METER WITH SAMPLE**

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**4****ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

**5****DIP STRIP AND PRESS "READ"**

Dip the **eXact® Strip Micro H<sub>2</sub>O<sub>2</sub> LR, Part No. 486616** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip when "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample (ignore this result). Time the reaction in the **CELL** for 100 seconds (timer not included). Press **READ** again. This starts another **20 SECOND** countdown timer. After the 20 seconds, the cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).

**6****USE TABLE**

Find the "TR7" result in the table below to determine the Peroxide concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Peroxide value of 0.18 ppm). Record result. After testing is completed, rinse cell immediately.

**Hydrogen Peroxide LR Table**

Peroxide results require the table below. Follow **eXact® Micro 7+ Hydrogen Peroxide LR Test Procedure** (above) using **eXact® Strip Micro H<sub>2</sub>O<sub>2</sub> LR, Part No. 486616**.

**eXact® Strip Micro H<sub>2</sub>O<sub>2</sub> LR, Part No. 486616 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	0	<0.01	0.02	0.02	0.02	0.03	0.03
80	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08
70	0.09	0.09	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14
60	0.15	0.15	0.16	0.16	0.17	0.18	0.19	0.20	0.20	0.21
50	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.27	0.28	0.29
40	0.29	0.30	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39
30	0.40	0.41	0.42	0.43	0.45	0.46	0.48	0.49	0.50	0.53
20	0.54	0.55	0.57	0.59	0.61	0.63	0.64	0.67	0.69	0.71
10	0.74	0.77	0.80	0.83	0.86	0.90	0.94	0.98	1.04	1.1
0	1.16	1.24	1.35	1.48	1.66	2.04	3.0	>3.0	>3.0	>3.0

Rev. 030111-BT

**About Our Hydrogen Peroxide Tests with Micro 7+**

We offer two different Hydrogen Peroxide tests and they all develop a colorimetric red color by a slow oxidation reaction of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) with iodide to form iodine. The iodine then reacts instantly with the DPD indicator to form a red color. To speed up the reaction a catalyst, Molybdate salt, is added in the Low range and Mid Range products.

The Low Range product (part No. 486616) is buffered to about a pH of 5.0 to 5.5, and the chemistry is essentially complete in 2 minutes at this pH if the water sample is at room temperature (between 18°C to 22°C). Cold samples (below 14C) will require 4 minutes or more to complete the reaction. Warm samples (above 23°C) will read about 10% higher. Follow directions as written to get accurate results. For values above 1.8 PPM you should dilute with distilled or Deionized water and retest.

The Mid range product (part no. 486648) is buffered to about a pH of 2.1 to 2.4. This slows the catalytic reaction and allows the test to measure higher levels of hydrogen peroxide. This test is only accurate if your sample is at room temperature and if you follow directions as written.

The High Range product (part no. 486670) uses no Molybdate catalyst; and therefore the reaction proceeds slowly. This allows for the detection range to be expanded to 2100 PPM. This test is accurate when directions are followed and sample temperature is at 73°F/23°C. Sample temperature has significant effect on High Range results; at 13°C values are about 40% low, and at 33°C values are about 40% high.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

# MENU Hydrogen Peroxide MR Test Procedure

H<sub>2</sub>O<sub>2</sub> MR

## TR7

### TURN METER ON

- 1 Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

### SELECT TEST: TR7

- 2 Press and re-press the **MENU** button until the display shows the parameter TR7.

### FILL METER WITH SAMPLE

- 3 Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

### ZERO METER\*

- 4 Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

### DIP STRIP AND PRESS "READ"

- 5 Dip the **eXact® Strip Micro H<sub>2</sub>O<sub>2</sub> MR, Part No. 486648** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears.** The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).

### USE TABLE

- 6 Find the "TR7" result in the table below to determine the Peroxide concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Peroxide value of 2 ppm). Record result. After testing is completed, rinse cell immediately.

## Hydrogen Peroxide MR Table

Peroxide results require the table below. Follow **eXact® Micro 7+ Hydrogen Peroxide MR Test Procedure** (above) using **eXact® Strip Micro H<sub>2</sub>O<sub>2</sub> MR, Part No. 486648**.

### eXact® Strip Micro H<sub>2</sub>O<sub>2</sub> MR, Part No. 486648 - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	<1	<1	<1	<1
70	<1	<1	1	1	1	1	2	2	2	2
60	2	2	2	2	2	2	3	3	3	3
50	3	3	3	3	4	4	4	4	4	4
40	5	5	5	5	5	5	6	6	6	6
30	7	7	7	7	7	8	8	8	8	9
20	9	9	10	10	10	10	11	11	11	12
10	12	13	13	14	14	15	15	16	16	17
0	18	19	20	21	22	24	27	30	33	>33

Rev. 102010 BT

## About Our Hydrogen Peroxide Tests with Micro 7+

We offer two different Hydrogen Peroxide tests and they all develop a colorimetric red color by a slow oxidation reaction of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) with iodide to form iodine. The iodine then reacts instantly with the DPD indicator to form a red color. To speed up the reaction a catalyst, Molybdate salt, is added in the Low range and Mid Range products.

The Low Range product (part No. 486616) is buffered to about a pH of 5.0 to 5.5, and the chemistry is essentially complete in 2 minutes at this pH if the water sample is at room temperature (between 18°C to 22°C). Cold samples (below 14C) will require 4 minutes or more to complete the reaction. Warm samples (above 23°C) will read about 10% higher. Follow directions as written to get accurate results. For values above 1.8 PPM you should dilute with distilled or Deionized water and retest.

The Mid range product (part no. 486648) is buffered to about a pH of 2.1 to 2.4. This slows the catalytic reaction and allows the test to measure higher levels of hydrogen peroxide. This test is only accurate if your sample is at room temperature and if you follow directions as written.

The High Range product (part no. 486670) uses no Molybdate catalyst; and therefore the reaction proceeds slowly. This allows for the detection range to be expanded to 2100 PPM. This test is accurate when directions are followed and sample temperature is at 73°F/23°C. Sample temperature has significant effect on High Range results; at 13°C values are about 40% low, and at 33°C values are about 40% high.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.



# Total Iron, TPTZ (Fe<sup>+2</sup>/Fe<sup>+3</sup>) Test Procedure



- 1 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2 SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter **TR7**.
- 3 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Fill cell to capacity (4ml) with the water sample.
- 4 ADD REAGENT, CAP, AND MIX**  
Tilt meter to discard about 0.2mL water in order to leave room for powder reagent. Add the contents of one **eXact® Reagent EZ Open REDUCER, Part No. 486601** to the **CELL** and cap meter cell with mixing cap. Press **READ** to start the **20 SECOND** countdown timer, place thumb over cap, and mix the sample by turning the meter upside-down repetitively. **When time displays 1**, hold the meter upright and the cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Wait 40 seconds (timer not included).
- 5 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.
- 6 DIP STRIP AND PRESS "READ"**  
Dip the **eXact® Strip Micro FE (TPTZ), Part No. 486631** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time, move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample (ignore this result). Wait 20 seconds (timer not included) and press **READ** to start an additional **20 SECOND** countdown. **When time displays 1**, the cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in TR7).
- 7 USE TABLE**  
Find the "TR7" result in the table below to determine the Iron concentration in ppm (parts per million). (Example: a "TR7" result of 85.3 (use only the 85 for the chart) equals an Iron value of 0.08 ppm). Record result. After testing is completed, rinse cell immediately.

## Total Iron, TPTZ (Fe<sup>+2</sup>/Fe<sup>+3</sup>) Table

Iron results require the table below.

### eXact® Reagent EZ Open REDUCER, Part No. 486601 - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
80	0.02	0.04	0.05	0.06	0.08	0.09	0.10	0.11	0.12	0.14
70	0.15	0.16	0.17	0.18	0.20	0.21	0.22	0.24	0.25	0.26
60	0.28	0.30	0.31	0.32	0.34	0.36	0.37	0.38	0.40	0.42
50	0.43	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.57	0.58
40	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.80
30	0.82	0.84	0.86	0.90	0.92	0.94	0.98	1.00	1.02	1.06
20	1.10	1.12	1.16	1.20	1.24	1.28	1.32	1.36	1.40	1.46
10	1.50	1.56	1.62	1.68	1.76	1.84	1.92	2.00	2.10	2.20
0	2.30	2.44	2.58	2.74	2.92	3.14	3.42	4.00	5.00	>5.00

This table was calibrated using Fe<sup>+2</sup> Iron Standards

Rev. 020311 TPTZ

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

# MENU Total Iron, Ferro (Fe<sup>2+</sup>/Fe<sup>3+</sup>) Test Procedure

FE

TR7

**NOTE:** Water samples with suspended solids and particulates may cause incorrect results, since the reducing agent in the powder pillow often dissolves the suspended solids and particulates. If the meter is zeroed with the original water sample the zero is no longer valid for this kind of sample. So, for this kind of sample, zero the meter using a water sample free of suspended solids and particulates (use distilled, deionized, or bottled water in Step 4). Then, rinse the cell three times with the water sample you will be testing, and finally fill the cell with this water sample. Continue with Steps 5 and 6 as directed.

## 1 TURN METER ON

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

## 2 SELECT TEST: TR7

Press and re-press the **MENU** button until the display shows the parameter TR7.

## 3 FILL METER WITH SAMPLE

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample. In order to leave room for powder reagent, do not overfill cell.

## 4 ZERO METER\*

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

## 5 ADD REAGENT, CAP, PRESS "READ", AND MIX

Add the contents of one **eXact® Reagent Iron Ferro Powder Pillow, Part No. 481623** to the **CELL** and cap meter cell with mixing cap. Press **READ** to start the timer, mix the sample by pressing one finger over the cap to keep it in place. Then, turn the meter over from side to side to mix during the 20 second countdown. **When time displays 1**, hold the meter upright and the cursor will move across the display, informing you that it is about to measure the sample. Time the reaction in the cell for an additional **three (3) minutes** (timer not included). During this time, meter will shut off. When **3 minutes** have elapsed, turn meter on and wait for the display to show last reading. Then, press **READ**, which will start a final **20 SECOND** countdown\*. The cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in TR7).

## 6 USE TABLE

Find the "TR7" result in the table below to determine the Iron concentration in ppm (parts per million). (Example: a "TR7" result of 85.3 (use only the 85 for the chart) equals an Iron value of 0.37 ppm). Record result. After testing is completed, rinse cell immediately.

## Total Iron, Ferro (Fe<sup>2+</sup>/Fe<sup>3+</sup>) Table

Iron results require the table below. Follow **eXact® Micro 7+ Total Iron, Ferro (Fe<sup>2+</sup>/Fe<sup>3+</sup>) Test Procedure** (above) using **eXact® Reagent Iron Ferro Powder Pillow, Part No. 481623**

### eXact® Reagent Iron Ferro Powder Pillow, Part No. 481623 - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.15	0.18	0.21	0.24
80	0.25	0.29	0.32	0.35	0.37	0.40	0.43	0.46	0.49	0.52
70	0.55	0.58	0.61	0.64	0.67	0.70	0.74	0.77	0.80	0.84
60	0.87	0.90	0.94	0.97	1.01	1.05	1.09	1.12	1.16	1.20
50	1.24	1.28	1.32	1.36	1.41	1.45	1.49	1.54	1.59	1.64
40	1.69	1.74	1.79	1.84	1.89	1.95	2.0	2.07	2.13	2.19
30	2.26	2.32	2.39	2.46	2.5	2.6	2.7	2.8	2.9	3.0
20	3.1	3.2	3.4	3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5
10	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5
0	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5

This table was calibrated using Fe<sup>2+</sup> Iron Standards

Rev. 012809 TFE

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

- 1 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2 SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter TR7.
- 3 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.
- 4 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.
- 5 DIP STRIP AND PRESS "READ"**  
Dip the **eXact® Strip Micro TH, Part No. 486630** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).
- 6 USE TABLE**  
Find the "TR7" result in the table below to determine the Total Hardness concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Total Hardness value of 8 ppm). Record result. After testing is completed, rinse cell immediately.

## Total Hardness Low Range Table

Low Range Total Hardness results require the table below. Follow **eXact® Micro 7+ Total Hardness Low Range Test Procedure** (above) using **eXact® Strip Micro TH, Part No. 486630**

**eXact® Strip Micro TH, Part No. 486630 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
80	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2	3	3
70	3	3	4	4	4	5	5	6	6	6
60	7	7	7	8	8	9	9	10	10	10
50	11	11	12	12	13	13	14	14	15	15
40	16	16	17	17	18	19	19	20	21	22
30	22	23	24	25	25	26	27	28	29	30
20	31	32	33	34	35	36	38	39	41	43
10	46	49	53	56	59	63	66	70	73	77
0	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80

This table was calibrated using CaCO<sub>3</sub> Standards

Rev. 121308 LRTH

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

**1 TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**2 SELECT TEST: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

**3 FILL METER WITH SAMPLE**

Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**4 ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

**5 DIP STRIP - (read carefully and follow procedure closely)**

Dip the *Mn Strip #1, Part No. 481020-1* into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip when the time displays 1**. The cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Next, Dip the *Mn Strip #2, Part No. 481020-2* into the **CELL** and immediately press **READ**. This starts a **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip when the time displays 1** (CAUTION: discard this strip in regular trash that is inaccessible to children and pets). The cursor will move across the display, informing you that it is about to measure the sample (ignore this result again).

**6 ADD REAGENT, CAP, MIX, AND WAIT 2 MINUTES**

Add three (3) drops of **eXact® Reagent MN, Part No. 486606-R** to the cell, cap, and mix sample briefly by pressing one finger over the cap to keep it in place and rotate meter upside-down twice. Wait for **two (2) minutes**, then press **READ**. This will start a final **20 SECOND** countdown timer. **When the time displays 1**, the cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in TR7).

**7 USE TABLE**

Find the "TR7" result in the table below to determine the Manganese concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Manganese value of 0.04 ppm). Record result. After testing is completed, rinse cell immediately.

**Manganese (as Mn<sup>2+</sup>) Table**

Manganese results require the table below. Follow **eXact® Micro 7+ Manganese Test Procedure** (above) using *Mn Strip #1, Part No. 481020-1, Mn Strip #2, Part No. 481020-2, and PAN Reagent, Part Number 486606-R*.

**Mn Strip #1, Part No. 481020-1, Mn Strip #2, Part No. 481020-2, & PAN Reagent, Part No. 486606-R - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
80	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
70	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
60	<0.03	<0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08
50	0.09	0.10	0.10	0.11	0.12	0.13	0.13	0.14	0.15	0.16
40	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26
30	0.27	0.29	0.30	0.31	0.33	0.34	0.36	0.37	0.39	0.40
20	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.57	0.59	0.61
10	0.65	0.68	0.72	0.75	0.78	0.82	0.87	0.91	0.96	1.00
0	1.06	1.11	1.18	1.25	1.35	1.5	>1.5	>1.5	>1.5	>1.5

This table was calibrated using Mn<sup>2+</sup> Manganese Standards

Rev. 121108 MN

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

1

**TURN METER ON**

Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

2

**SELECT TEST: TR7**

Press and re-press the **MENU** button until the display shows the parameter **TR7**.

3

**FILL METER WITH SAMPLE**

Add sample water to the cell. For accurate results, brush the cell to remove any excess zinc from previous tests. Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

4

**ZERO METER\***

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

5

**DIP STRIP - (read carefully and follow procedure closely)**

Dip the **eXact® Strip Micro NO<sub>3</sub>, Part No. 486655** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a very gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display, while the meter prepares to measure the sample. Time the reaction in the cell for **580 seconds** (timer not included). During this time, the meter will shut off. When **580 seconds** have elapsed, turn meter on and wait for the display to show last reading. Then, press **READ**, which will start a final **20 SECOND** countdown. The cursor will move across the display, while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).

6

**USE TABLE**

Find the "TR7" result in the table below to determine the Nitrate concentration in ppm (parts per million). (Example: a "TR7" result of 66.3 (use only the 66 for the chart) equals a Nitrate value of 3.40 ppm). Record result. After testing is completed, rinse cell immediately to remove zinc dust.

**Nitrate (NO<sub>3</sub><sup>-</sup>) Table**

Nitrate results require the table below. Follow **eXact® Micro 7+ Nitrate (NO<sub>3</sub><sup>-</sup>) Test Procedure** (above) using **eXact® Strip Micro NO<sub>3</sub>, Part No. 486655**

**NOTE:** For levels above 45ppm Nitrate, dilute the sample ½ or ¼ with distilled water and retest.

**eXact® Strip Micro NO<sub>3</sub>, Part No. 486655 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	0	0	0.1	0.2	0.3	0.4	0.5
80	0.6	0.7	0.8	0.9	1	1.1	1.2	1.4	1.5	1.6
70	1.8	1.9	2	2.1	2.2	2.3	2.5	2.6	2.7	2.9
60	3	3.1	3.3	3.4	3.5	3.7	3.8	3.9	4.1	4.2
50	4.4	4.5	4.7	4.8	5	5.2	5.3	5.5	5.6	5.8
40	6	6.2	6.4	6.6	6.7	6.9	7.1	7.3	7.5	7.8
30	8	8.2	8.4	8.7	8.9	9.2	9.5	9.8	10.1	10.4
20	10.7	11.1	11.4	11.8	12.2	12.6	13.1	13.6	14.1	14.7
10	15.3	16	16.8	17.6	18.5	19.6	20.9	22.3	24	25.6
0	27.6	30	33	37.3	43	45	>45	>45	>45	>45

This table was calibrated using NO<sub>3</sub> Nitrate Standards

Rev. BT 040711

NOTE: Divide the above Nitrate result by 4.4 to determine Nitrate value as Nitrogen (NO<sub>3</sub> as N)

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

**1** **TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

**2** **SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter TR7.

**3** **FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

**4** **ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

**5** **DIP STRIP - (read carefully and follow procedure closely)**  
Dip the **eXact® Strip Micro NO<sub>2</sub>, Part No. 486623** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample (ignore this result). Time the reaction in the cell for **340 seconds** (timer not included). During this time, meter will shut off. When **340 seconds** have elapsed, turn on the meter and wait for the last reading to be displayed and then press **READ**, which will start a final **20 SECOND** countdown. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).

**6** **USE TABLE**  
Find the "TR7" result in the table below to determine the Nitrite concentration in ppm (parts per million). (Example: a "TR7" result of 66.3 (use only the 66 for the chart) equals a Nitrite value of 0.26 ppm). Record result. After testing is completed, rinse cell immediately.

## Nitrite (NO<sub>2</sub><sup>-</sup>) Table

Nitrite results require the table below. Follow **eXact® Micro 7+ Nitrite (NO<sub>2</sub><sup>-</sup>) Test Procedure** (above) using **eXact® Strip Micro NO<sub>2</sub>, Part No. 486623**. This test can also be used for Salt Water Testing.

**eXact® Strip Micro NO<sub>2</sub>, Part No. 486623 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0.01	0.02	0.03	0.03	0.04	0.05	0.05	0.06
80	0.07	0.08	0.08	0.09	0.10	0.10	0.12	0.12	0.13	0.14
70	0.15	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23
60	0.24	0.25	0.26	0.26	0.27	0.28	0.29	0.30	0.31	0.32
50	0.33	0.34	0.35	0.36	0.38	0.39	0.40	0.41	0.42	0.43
40	0.44	0.46	0.48	0.49	0.50	0.52	0.54	0.55	0.56	0.58
30	0.60	0.62	0.64	0.66	0.68	0.70	0.74	0.76	0.78	0.82
20	0.84	0.88	0.92	0.96	1.00	1.04	1.08	1.12	1.16	1.24
10	1.28	1.36	1.42	1.48	1.56	1.64	1.74	1.88	2.04	2.44
0	2.88	3.20	3.94	4.32	4.50	>4.5	>4.5	>4.5	>4.5	>4.5

This table was calibrated using NO<sub>2</sub><sup>-</sup> Nitrite Standards

Rev. 040711-BT

NOTE: Divide the above Nitrite result by 3.3 to determine Nitrite value as Nitrogen (NO<sub>2</sub><sup>-</sup> as N)

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

- 1 TURN METER ON**  
 Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2 SELECT TEST: TR7**  
 Press and re-press the **MENU** button until the display shows the parameter TR7.
- 3 FILL METER WITH SAMPLE**  
 Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.
- 4 ZERO METER\***  
 Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.
- 5 DIP STRIP AND PRESS "READ"**  
 Dip the **eXact® Strip Micro CL (DPD-4), Part No. 486670** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record the result displayed (this result is automatically stored in TR7).
- 6 USE TABLE**  
 Find the "TR7" result in the table below to determine the Peracetic Acid concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Peracetic Acid value of 0.35). Record result. After testing is completed, rinse cell immediately.

## Peracetic Acid Table

Peracetic Acid results require the table below. Follow **eXact® Micro 7+ Peracetic Acid Test Procedure** (above) using **eXact® Strip Micro CL (DPD-4), Part No. 486670**

**eXact® Strip Micro CL (DPD-4), Part No. 486670 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08
80	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18
70	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.27	0.28	0.29
60	0.30	0.31	0.33	0.34	0.35	0.36	0.38	0.39	0.41	0.42
50	0.44	0.45	0.47	0.48	0.50	0.52	0.53	0.55	0.56	0.58
40	0.59	0.61	0.64	0.66	0.67	0.70	0.72	0.73	0.76	0.80
30	0.80	0.83	0.85	0.88	0.90	0.92	0.95	0.98	1.01	1.05
20	1.08	1.11	1.14	1.18	1.22	1.26	1.30	1.34	1.38	1.43
10	1.48	1.54	1.59	1.66	1.72	1.80	1.89	1.98	2.08	2.18
0	2.30	2.44	2.61	2.88	3.2	3.6	4	>4	>4	>4

Rev. 032510 PAA

**NOTE:** Various oxidizing agents such as halogens, ferric ions, and cupric ions will produce high test results. The detection of peracetic acid is very selective in the presence of peroxide and tests can tolerate up to 35 times excess of Peroxide to Peracetic Acid ratio. If your Hydrogen Peroxide to Peracetic Acid ratio is in excess of 35, it is recommended that Hydrogen Peroxide interference be removed by adding a small amount of catalase enzyme to the test solution before testing.

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.



# Sulfate (SO<sub>4</sub><sup>-2</sup>) Test Procedure



- 1 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2 SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter TR7.
- 3 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.
- 4 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.
- 5 DIP STRIP AND PRESS "READ"**  
Dip the **eXact® Strip Micro SO<sub>4</sub>, Part No. 486608** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).
- 6 USE TABLE**  
Find the "TR7" result in the table below to determine the Sulfate concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Sulfate value of 22.5 ppm). Record result. After testing is completed, rinse cell immediately.

## Sulfate (SO<sub>4</sub><sup>-2</sup>) Table

Sulfate results require the table below. Follow **eXact® Micro 7+ Sulfate (SO<sub>4</sub><sup>-2</sup>) Test Procedure** (above) using **eXact® Strip Micro SO<sub>4</sub>, Part No. 486608**.

**eXact® Strip Micro SO<sub>4</sub>, Part No. 486608 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	0	5	5.5	6	6.5	7	8
80	8.5	9	9.5	10	11	11.5	12	12.5	13	13.5
70	14	15	15.5	16	16.5	17	17.5	18	19	19.5
60	20	20.5	21	21	22.5	23	23.5	24	25	26
50	26.5	27	27.5	28	29	30	30.5	31	32	33
40	34	34.5	35	36	37	37.5	38	40	41	41.5
30	42	43	44	45	46	48	49	50	51	52
20	53	55	56	58	59	60	63	64	66	68
10	70	73	75	77	80	83	85	88	92	96
0	100	105	110	115	125	131	143	150	>150	>150

Rev. 111510 BT

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

- 1 TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2 SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter TR7.
- 3 FILL METER WITH SAMPLE**  
Rinse the **CELL** at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.
- 4 ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.
- 5 DIP STRIP AND PRESS "READ"**  
Dip the **eXact® Strip Micro H<sub>2</sub>S, Part No. 486646** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a gentle back and forth motion. **Remove and discard the strip after "1" on the display disappears\***. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in TR7).
- 6 USE TABLE**  
Find the "TR7" result in the table below to determine the Sulfide concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Sulfide value of 1.0 ppm). Record result. After testing is completed, rinse cell immediately.

## Sulfide (as H<sub>2</sub>S) Table

Sulfide results require the table below. Follow **eXact® Micro 7+ Sulfide Test Procedure** (above) using **eXact® Strip Micro H<sub>2</sub>S, Part No. 486646**.

**eXact® Strip Micro H<sub>2</sub>S, Part No. 486646 - for 4mL Samples**

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1
80	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4
70	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8
60	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.1
50	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7
40	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.2
30	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9	3.0	3.1
20	3.2	3.3	3.4	3.5	3.6	3.7	3.9	4.0	4.1	4.2
10	4.4	4.6	4.8	4.9	5	5	5	6	6	7
0	7	8	8	9	9	10	10	11	13	>15

Rev. 040809 H2S

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

- 1 TURN METER ON**  
 Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
  
- 2 SELECT TEST: TR7**  
 Press and re-press the **MENU** button until the display shows the parameter **TR7**.
  
- 3 FILL METER WITH DISTILLED OR DEIONIZED WATER**  
 Rinse the **CELL** at least 3 times with distilled or deionized water. Finally, fill cell to capacity (4ml) with the distilled or deionized water water.
  
- 4 ZERO METER\***  
 Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Discard the distilled or deionized water. Rinse the meter cell at least 3 times and finally fill cell to capacity (4ml) with water to be tested for Turbidity.
  
- 5 PRESS “READ”**  
 Press **READ**; this starts the **20 SECOND** countdown timer. Press **READ\*** again and the cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (This result is automatically stored in TR7).
  
- 6 USE TABLE**  
 Find the “TR7” result in the table below to determine the Turbidity concentration in NTU (Nephelometric Turbidity Units). (Example: a “TR7” result of 85.3 (use only the 85 for the chart) equals a Turbidity value of 22 NTU). Record Turbidity result.

## Turbidity Table

Turbidity results require the table below. Follow **eXact® Micro 7+ (4mL) Turbidity Test Procedure** (above). Values below are not for Compliance Testing.

**(NOTE: These Turbidity values are not for Potable water Compliance Testing)**

%T	9	8	7	6	5	4	3	2	1	0
90	<2	3	4	6	7	9	10	12	13	15
80	16	18	19	21	22	24	25	27	28	30
70	32	34	36	37	40	41	43	44	46	48
60	50	52	54	56	58	60	62	64	66	69
50	70	73	75	77	80	83	85	87	90	93
40	96	98	102	105	108	110	114	117	120	123
30	128	130	135	138	142	146	150	155	160	165
20	170	175	180	187	192	199	205	212	220	229
10	238	245	257	268	280	293	308	325	340	360
0	380	405	430	460	490	530	580	>580	>580	>580

*This table was calibrated using stabilized Formazin Turbidity Standards.*

**Rev. 051611 NTU**

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.

# MENU How to use Reference Standard Solution

**CL1** **TR7** NOTE: The 2.0 ppm Reference Standard Solution, *Part No. 486602*, can be used for verifying the performance of the eXact® Micro 7+ Photometer, *Part No. 486691*.

- 1** **TURN METER ON**  
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.
- 2** **SELECT TEST: TR7**  
Press and re-press the **MENU** button until the display shows the parameter **TR7**.
- 3** **RINSE AND FILL CELL WITH DISTILLED OR DEIONIZED WATER**  
Rinse the **CELL** at least 3 times with distilled or deionized water - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the distilled or deionized water.
- 4** **ZERO METER\***  
Press the **ZERO/ON** button. The cursor will move across the display followed by **100 %T**. Press the **READ** button. After 20 second countdown, the cursor will move across the display followed by **100 %T**. If result is not **100 %T**, repeat Step 4 by pressing the **ZERO/ON** button again. Press **READ**. If result is **100 %T**, meter is ready for standard testing. Discard water from cell. Gently shake the meter to remove any excess water. **NOTE:** This step is very important for accurate verification of photometer performance.
- 5** **FILL CELL WITH 2.0 PPM REFERENCE STANDARD SOLUTION**  
Fill cell to capacity (4ml) with the **2.0 ppm Reference Standard Solution, Part No. 486602**. Discard this sample and refill the **CELL** with fresh 2.0 ppm Reference Standard Solution.
- 6** **PRESS "READ"**  
Press **READ\*** to start the **20 SECOND** countdown timer. After 20 seconds, the cursor will move across the display while the meter prepares to measure the sample. Record the displayed result below (this result is automatically stored in **TR7**). Do not discard solution. Continue with Step 7.
- 7** **REPEAT STEP 6 ABOVE FOR CL1 MENU**  
Press and re-press **MENU** button until **CL1** appears on the display. Press **READ** and, after 20 seconds, record result displayed below. The 2.0 Reference Standard result for Micro 7+ Meters with serial number 5000 and higher deviates from the certified value listed on the bottle (2.00 ppm ± 0.10 ppm). Instead, you should expect a value of 13.0% ± 1.3% in the **TR7** Menu and 2.20 ppm ± 0.2 ppm in the **CL1** Menu. Record your results in the chart below for later reference. After meter performance verification is complete, immediately empty the cell and rinse it with clean water.

**Serial Number of Meter for Data below** \_\_\_\_\_ (see back of meter)

**Date of meter purchase** \_\_\_\_\_ (warranty valid for 2 years)

DATE	TR7	CL1	DATE	TR7	CL1

\*NOTE: When testing outdoors (sunlight), for best accuracy, use the Mixing Cap/Cell Cover when Zeroing and Reading the sample.


## eXact® Micro 7+ Tips For Best Accuracy

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1. Become familiar with the meter and the different tests by reading the instructions carefully.
2. The Free Chlorine, Combined Chlorine, and Total Chlorine reagents are compliant for meeting USEPA (4500-Cl G); ISO 7393/2; and German DIN 38408 G4-2 requirements.
3. Observe the dip time (*as required for the test*) for accurate results.
4. Test immediately after filling the **CELL** with water sample when testing for oxidizers such as Chlorine and Bromine (Ozone can be measured in CL3 MENU).
5. Be sure the **CELL** is filled to capacity (4ml), especially for pH and Total Alkalinity.
6. Rinse the **CELL** with clean water immediately after completing each test. Some reagents may stain the CELL if not rinsed shortly after use. Other reagents including Cyanuric Acid, Chloride, and Calcium Hardness may coat the CELL wall. It is recommended, after these tests, to use the Cell Cleaning Brush with water to clean the CELL.
7. Just before testing, rinse the sample **CELL** with the sample water several times to get a representative sample. (*Use deionized or distilled water for rinsing if you have a limited amount of sample*).
8. Store the meter and all test materials out of direct sunlight and away from chemical storage areas.
9. Minimize exposure of meter and test reagents to heat above 38°C (100°F).
10. Dry the outside of the meter when testing is complete or before storage of the meter.
11. When running a DPD-1 Free Chlorine test **AFTER** a Total Chlorine DPD-3, a Total Chlorine DPD-4, or a HR Chlorine test, rinsing is very important to remove residual KI, which may interfere.
12. Each eXact® Strip Micro is valid for **ONLY** one test. Discard strip after single use in regular refuse that is inaccessible to children and pets.
13. Each bottle of eXact® Strip Micro contains the quantity of strips notated on the bottle. Due to the strip slitting process, you may find one or two strips that are noticeably smaller or larger in width than the normal strips in the bottle. These should be discarded. Using these strips may give unreliable results.
14. Each table supplied has a unique revision number located in the bottom right corner of the table. It is recommended that you visit [www.sensafe.com](http://www.sensafe.com) at least every 6 months to check for any updated revisions.
15. The eXact® Micro 7+ Meter is not compatible for use with DPD-1, DPD-3, and DPD-4 powder pillows, tablets, and liquids available from other manufacturers. Accurate results can only be guaranteed by using genuine eXact® Micro strips or reagents (*reorder information on page 19*).
16. Our lab testing with the Micro 7+ meter has shown that zeroing and measuring of the sample normally does not require any cell cover for accurate results, except in sunlight. To obtain optimal accuracy when testing with the meter outdoors (sunlight), use the Mixing Cap/Cell Cover when zeroing and reading the sample.
17. Remove batteries when meter is not used for more than a month (Warranty Requirement).
18. It is recommended that Pool and Spa samples for oxidizers (such as Chlorine) be taken 18 inches below the surface as follows: submerge meter with open cell facing down 18 inches, and then turn meter upright at that depth to fill the cell. Remove meter from water with the sample for testing.

## eXact® Micro 7+ Meter Messages

The following are some common messages that may be displayed, including error messages. If an error message other than those listed below is displayed, please contact technical support in the USA at (803) 329-0162 (ext. 0).

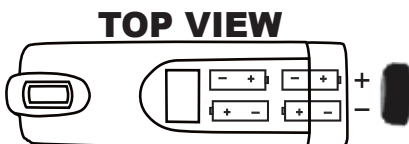
LCD Message	Description	Corrective Action
HI	In READ mode: test sample concentration is above the measurement range (test specific).	Dilute and retest. Dilution Kit available (Part Number 487200).
LO	In READ mode: test sample concentration is below the measurement range (test specific).	Sample value is below measurement range.
LO	In ZERO mode: sample absorbance (due to a cloudy or colored sample or a dirty cell) is too high to zero, the meter will read "LO".	Dilute sample, filter sample, or clean cell. One of these options should remedy the problem.
ER	Excessive stray light detected. Normally this does not occur, even when testing in sunlight.	Place the LIGHT BLOCKING CAP over the CELL for zeroing and for reading result. Moving to a shaded area can also fix this problem.
	Low battery indication.	Replace the batteries.

## About The Built-In Cell

The built-in **CELL** is transparent plastic and, when filled to the top, contains 4ml. The sturdy **CELL** design will last for over 20,000 readings. Scratches on the **CELL** will not interfere or compromise the accuracy of the readings because of its fixed position. For best accuracy, rinse cell with clean water immediately after a test is completed. Do not use solvents, such as acetone, to clean the cell. When the **CELL** becomes stained or cloudy from repeated testing, or when the meter does not blank when you press the **ZERO/ON** button, the cell needs to be cleaned. **Clean as follows:** Fill cell with clean water and move the **Cell cleaning brush** up-and-down and back-and-forth along the walls of the cell. Afterwards, rinse the cell and the meter is ready for use again. Cleaning the cell regularly is especially recommended after you run a test that is using turbidity or precipitation chemistry for analysis (Calcium Hardness and Cyanuric Acid).

## To Install/Replace "AAA" Batteries:

1. Unscrew the O-ring sealed battery cover counter-clockwise. Use proper sized pliers if necessary. Do not disturb the sealing O-ring. Batteries are not included.
2. Remove the used batteries and install 4 new AAA batteries following the diagram for correct polarity (see diagram). We recommend high quality AAA alkaline batteries be used.
3. Replace the battery cover. Be sure to tighten the cover securely. This is necessary for meter to be waterproof.
4. Dispose of the used batteries in accordance with your local regulations.
5. Press ZERO/ON button to confirm the meter turns on. The meter is now ready for operation.
6. Meter will not work if battery orientation is incorrect.



## eXact® Photometer 2-Year Limited Warranty

Registration of your eXact® photometer must be received within 30 days from date of purchase to activate the warranty. The eXact® photometer is warranted to be free from defects in materials and workmanship for a period of two (2) years from the date of purchase by the customer. ITS will repair or replace any part of the product which is deemed to be faulty or otherwise defective. The non-transferable warranty does not cover product damage caused by abuse (such as crushing a tablet in the cell) or improper use. If the meter is faulty or otherwise defective contact ITS by phone (+1-803-329-9712 Ext. 0) or email (its@sensafe.com) to describe the problem and obtain a return authorization form before returning the photometer to ITS. Damage caused by improper packing of the photometer for return shipment to ITS will not be covered by the warranty. Customer is responsible for shipping charges to ITS. ITS pays postage when photometer is returned to customer. A maximum processing fee of \$75 will be charged for repair or replacement of non-registered photometers and damages not covered by this warranty. Registration is available over the phone (+1-803-329-9712 Ext. 0) or online at <http://www.sensafe.com/micro/warranty/> (Personal data is kept confidential)

# eXact® Strip Micro 7+ Reagent Reorder Information

**eXact® Strip Micro (4mL) Reagent Specifications - For use with eXact® Micro 7+, Part no. 486691**

No.	PARAMETER	PART NO.	# OF TESTS	DETECTION RANGE	CHEMISTRY
	eXact® Micro Carrying Case w/ foam	486001	N/A	N/A	N/A
	Dilution Kit	487200	N/A	N/A	N/A
	Reference Standard	486602	15	N/A	N/A
1	Alkalinity, Total	486641	100	12 - 180 ppm	Alizarin Red S + Citrate
2	Bromine (DPD-1)	486637	100	0 - 14 ppm	DPD
3	Calcium (as CaCO <sub>3</sub> )	486629	50	10 - 500 ppm	Oxalic Acid
4	Chlorine, Free (DPD-1)	486637	100	0 - 11 ppm	DPD
	Chlorine, Free (DPD-1)	484051	100 Foils	0 - 11 ppm	DPD
5	Chlorine, HR	486672	50	0 - 300 ppm	KI + Buffer
6	Chlorine, Total (DPD-3)**	486638	100	0 - 11 ppm	KI
7	Chlorine, Total (DPD-4)	486670	100	0 - 11 ppm	DPD + KI
	Chlorine, Total (DPD-4)	484054	100 Foils	0 - 11 ppm	DPD + KI
8	Copper (Cu <sup>+2</sup> )	486632	50	0.04 - 8 ppm	Biquinoline
9	Ozone (DPD-4)	486670	100	0 - 11 ppm	DPD + KI
10	Permanganate (DPD-1)	486637	100	0.01 - 4.5 ppm	DPD
11	pH	486639	100	6.2 - 8.4 pH	Phenol Red
12	Ammonia (as NH <sub>3</sub> /NH <sub>4</sub> <sup>+</sup> )*	483343-MK	25	0 - 5 ppm	Salicylate Method
13	Chloride (as NaCl)*	481657-II	25	0 - 350 ppm	Silver (ppt)
14	Chlorine Dioxide (DPD-1)*	486637	100	0.03 - 6.5 ppm	DPD
15	Chromium (VI)*	486614	50	0 - 1.5 ppm	Diphenylcarbazide
16	Cyanuric Acid*	481652-II	60	0 - 95 ppm	Melamine (ppt)
17	Fluoride (as F <sup>-</sup> )*	486643	25	0.1 - 1.1 ppm	SPADNS
18	Hydrazine*	486649	50	0 - 2.5 ppm	4-Dimethylaminocinnamaldehyde
19	Hydrogen Peroxide LR*	486616	50	0 - 3 ppm	DPD + PO <sub>4</sub> + MoO <sub>4</sub> + KI
20	Hydrogen Peroxide MR*	486648	50	0 - 33 ppm	DPD + MoO <sub>4</sub> + KI + acid
21	Hydrogen Peroxide HR (DPD-4)*	486670	100	0 - 2100 ppm	DPD + KI
22	Iodine (DPD-1)*	486637	100	0 - 11.9 ppm	DPD
23	Total Iron, TPTZ (Fe <sup>+2</sup> /Fe <sup>+3</sup> )*	486650	50	0.02 - 5 ppm	TPTZ + PP
24	Total Iron, Ferro (Fe <sup>+2</sup> /Fe <sup>+3</sup> )*	481623	50	0.15 - 3.5 ppm	1,10 Phenanthroline
25	Total Hardness (as CaCO <sub>3</sub> )*	486673	50	0 - 300 ppm	Phthalein Purple
26	LR Total Hardness (as CaCO <sub>3</sub> )*	486630	100	2 - 77 ppm	Phthalein Purple
27	Manganese (as Mn <sup>+2</sup> )*	486606	24	0.03 - 1.5 ppm	PAN + Cyanide
28	Molybdate (as MoO <sub>4</sub> )*	486653	50	0.04 - 2.3 ppm	Alizarin Red S + Buffer
29	Nitrate (as NO <sub>3</sub> <sup>-</sup> )*	486655	50	0 - 45 ppm	Zinc Reduction
30	Nitrite (as NO <sub>2</sub> <sup>-2</sup> )*	486623	50	0 - 4.5 ppm	Chromotropic Acid
31	Peracetic Acid (PAA) (DPD-4)*	486670	100	0 - 4 ppm	DPD + KI
32	pH, Acid*	486624	50	3 - 6.2 pH	Alizarin Red S
33	pH, Alkali*	486609	50	8 - 9.6 pH	Thymol Blue
34	pH, BT*	486652	100	5.9 - 9 pH	Bromothymol Blue and Thymol Blue
35	Phosphate*	486814	50	0.03 - 4 ppm	Molybdate Method
36	Protein (as BSA)*	486620	50	0.3 - 16 mg/L	Sulfosalicylic Acid
37	Sulfate (as SO <sub>4</sub> <sup>-2</sup> )*	486608	50	0 - 150 ppm	Barium (ppt)
38	Sulfide (as H <sub>2</sub> S)*	486646	50	0 - 13 ppm	NPS
39	Turbidity* (as transmission)	None	No Reagent	3 - 580 NTU	Turbidity values as NTU

\* Results utilize the Tr-7 (Transmission) meter function and require the use of a conversion table. See respective test procedures for more information and tables.  
 \*\* Total Chlorine DPD-3 Test requires Free Chlorine DPD-1 (486637) to be run first.

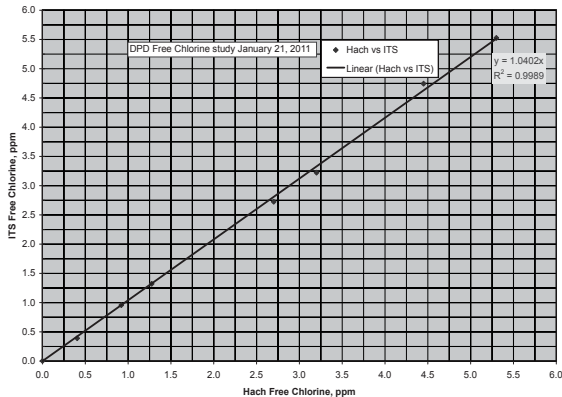
NOTE: Because most of our products are test strips or use reagents that have little or no hazard in the quantity sold, MSDS sheets are not supplied with the test. The exceptions are the Manganese (486606) test, which comes with 2 strips and one liquid reagent (PAN); Fluoride (486643) test, which is a liquid reagent (SPADNS), and Iron (481623) test, which is a powder reagent. Hydrazine (486649) uses a liquid and strip. **If your required procedure is not listed in this manual, please see the back page for our contact information.**

**To ensure optimal performance, store your eXact® kit in a cool, dry place away from excess heat (below 100°F / 38°C), moisture, and oxidizers such as Chlorine and Bromine.**

# eXact® Strip Micro DPD-1 Accuracy

Free Chlorine results are compared using the eXact® Strip Micro CL (DPD-1) with the eXact® Micro 7+ Meter in Menu CL1 and Hach® DR890 Colorimeter in Program 9 and Program 12 using Hach® powder pillows.

DR890	Micro 7+
0.00	0.00
0.41	0.39
0.92	0.96
0.79	0.73
1.28	1.32
2.70	2.73
3.20	3.22
4.45	4.75
5.30	5.53



Meter	Menu	Range (PPM)	Resolution
Micro 7+	CL1	0.00 to 5.99	0.01
		6.0 to 11.0	0.1
DR890	Program 9	0.00 to 2.20	0.01
	Program 12	0.0 to 11.0	0.1

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## The eXact® Micro 7+ Line of Kits

**(486691-K)**  
**Standard Kit**  
**Includes:**

- 1 eXact® Micro 7+ Meter (486691)
- eXact® Strip Micro DPD-1 (486637-25)
- eXact® Strip Micro DPD-3 (486638-25)
- eXact® Strip Micro pH (486639-25)
- eXact® Strip Micro Total Alkalinity (486641-25)
- eXact® Strip Micro Calcium Hardness (486629-25)
- eXact® Strip Micro Copper (486632-25)
- eXact® Strip Micro High Range Chlorine (486672)
- 1 Mixing Cap
- 1 Cell Cleaning Brush
- This Instruction Booklet
- Plastic Carrying Case

**(486691-KP)**  
**Pool/Spa Kit**  
**Includes:**

- 1 eXact® Micro 7+ Meter (486691)
- eXact® Strip Micro DPD-1 (486637-25)
- eXact® Strip Micro DPD-3 (486638-25)
- eXact® Strip Micro pH (486639-25)
- eXact® Strip Micro Total Alkalinity (486641-25)
- eXact® Strip Micro Calcium Hardness (486629-25)
- eXact® Strip Micro Copper (486632-25)
- eXact® Reagent Cyanuric Acid (481652-II)
- eXact® Strip Micro High Range Chlorine (486672)
- 1 Mixing Cap
- 1 Cell Cleaning Brush
- This Instruction Booklet
- Plastic Carrying Case

**(486691-WD)**  
**Well Driller Kit**  
**Includes:**

- 1 eXact® Micro 7+ Meter (486691)
- eXact® Strip Micro DPD-1 (486637-25)
- eXact® Strip Micro DPD-3 (486638-25)
- eXact® Strip Micro pH (486639-25)
- eXact® Strip Micro Total Alkalinity (486641-25)
- eXact® Strip Micro Calcium Hardness (486629-25)
- eXact® Strip Micro Copper (486632-25)
- eXact® Micro TPTZ Total Iron (486650)
- eXact® Micro Manganese (486606)
- eXact® Strip Micro High Range Chlorine (486672)
- 1 Mixing Cap
- 1 Cell Cleaning Brush
- This Instruction Booklet
- Plastic Carrying Case

## Contact Information

**For US Inquiries and Re-Orders:**  
**Industrial Test Systems, Inc.**

1875 Langston Street,  
 Rock Hill, SC 29730 USA  
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 1-803-329-9712 - *OUTSIDE THE U.S.*

**Fax:** 1-803-329-9743  
**ITS@SENSAFE.COM**  
**WWW.SENSAFE.COM**  
 www.poolcheckonline.com



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