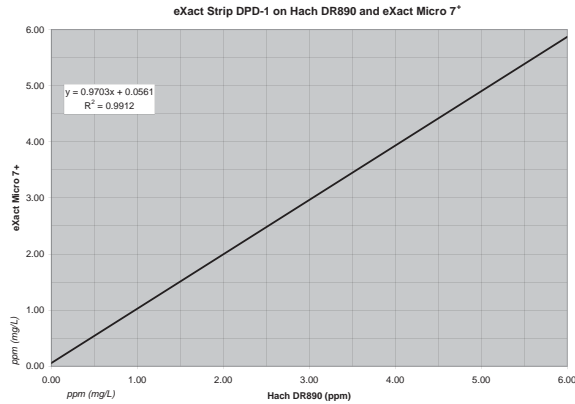


eXact® Strip Micro DPD-1 Accuracy

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	0.01
0.04	0.03
0.07	0.08
0.79	0.73
0.98	0.96
1.55	1.52
2.08	2.12
2.4	2.6
2.9	3.3
4.0	3.9
5.5	5.2



Meter	Menu	Range (PPM)	Resolution
Micro 7+	CL1	0.00 to 2.39	0.01
		2.4 to 6.0	0.1
DR890	Program 9	0.00 to 2.20	0.01
	Program 12	0.0 to 11.0	0.1

Hach® is a registered trademark of Danaher Corporation

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)
- 1 Mixing Cap
- 1 Cell Cleaning Brush
- This Instruction Booklet
- Plastic Carrying Case
- AAA Batteries (4)

(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)
- 1 Mixing Cap
- 1 Cell Cleaning Brush
- This Instruction Booklet
- Plastic Carrying Case
- AAA Batteries (4)

(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® Strip Micro Iron (486631)
- eXact® Micro Manganese (486606)
- 1 Mixing Cap
- 1 Cell Cleaning Brush
- This Instruction Booklet
- Plastic Carrying Case
- AAA Batteries (4)

Contact Information

For US Inquiries and & Re-Orders:
Industrial Test Systems, Inc.
1875 Langston Street,
Rock Hill, SC 29730 USA
Phone: 1-800-861-9712 - *INSIDE THE U.S.*
1-803-329-9712 - *OUTSIDE THE U.S.*
Fax: 1-803-329-9743
ITS@SENSAFE.COM
WWW.SENSAFE.COM
www.poolcheckonline.com



For European & Middle East Inquiries and & Re-Orders:
ITS Europe, LTD
Unit B Stanley Crt., Glenmore Business Park, Telford Rd.
Churchfields Industrial Estate,
Salisbury, Wiltshire SP2 7GL, United Kingdom
Tel: +44 (0)1722 329502 **Fax:** +44 (0) 1722 329880
SALES@SENSAFE.COM
WWW.ITSEUROPE.CO.UK
www.poolcheckonline.com

Revision 01/09/09
486691-K Standard Kit
486691-KP Pool/Spa Kit
486691-WD Well Driller Kit

eXact® 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)

For use in accordance with U.S. Patent No. 7,333,194 and other patent applications including:
International Patent Appln. No. PCT/US2005/033985; and Eur. Pat. App. 1,725,864



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

Manufactured By: Industrial Test Systems, Inc.
1875 Langston Street, Rock Hill, SC 29730 USA
Phone: 1-800-861-9712 - *INSIDE THE U.S.*
1-803-329-9712 - *OUTSIDE THE U.S.*
Fax: 1-803-329-9743
ITS@SENSAFE.COM
WWW.SENSAFE.COM
www.poolcheckonline.com



Index:

Parameter	Page	MENU
Free Chlorine (DPD-1)	4	CL1
Permanganate (DPD-1)	4	CL1
Total Chlorine (DPD-3)	5	CL1
Ozone (DPD-4)	6	CL1
Total Chlorine (DPD-4)	6	CL1
pH	6	PH2
Bromine	7	BR3
Total Alkalinity	7	AL4
Calcium Hardness (as CaCO ₃)	8	CA5
Copper	8	CU6

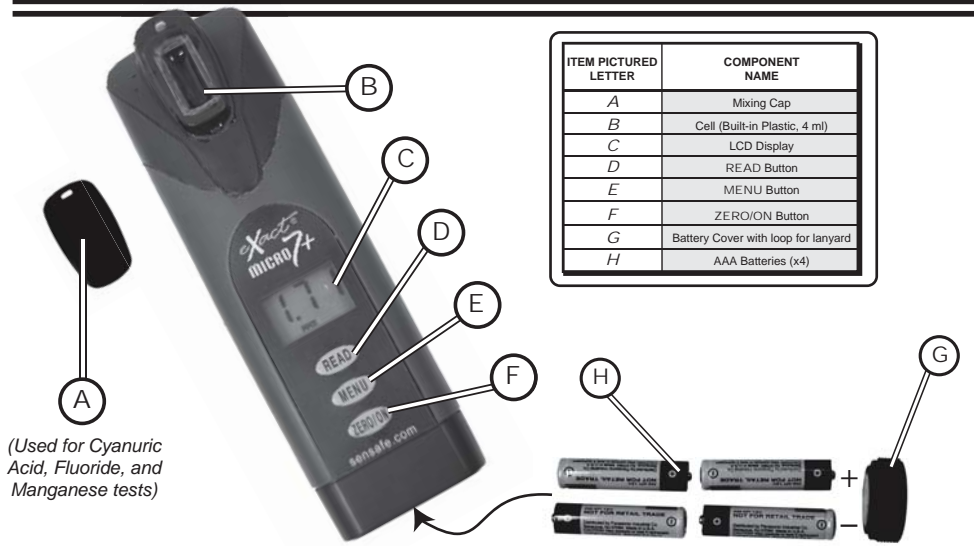
(NOTE: The below tests are read as %Transmission and require use of a conversion table)

General TR7 Procedure	9	Tr7
Turbidity	10	Tr7
Cyanuric Acid	11	Tr7
Ammonia	12	Tr7
Chloride (in Tap Water)	13	Tr7
Iron (as Fe ⁺² / Fe ⁺³)	14	Tr7
LR Total Hardness (up to 77ppm)	15	Tr7
Nitrate	16	Tr7
Nitrite	17	Tr7
Manganese	18	Tr7
Fluoride	19	Tr7
Chloride (Pool Salt Systems)	20	Tr7

Specifications	2
About Your Meter	3
Tips for Best Accuracy	21
Battery Installation	22
Warranty (2 year)	22
Reorder Information	23
USEPA Compliance	2, 24
Kit Components	24

Visit us online at SENSAFE.COM for up-to-date product information & NEW tests available.

eXact® Micro 7+ Meter



ITEM PICTURED LETTER	COMPONENT NAME
A	Mixing Cap
B	Cell (Built-in Plastic, 4 ml)
C	LCD Display
D	READ Button
E	MENU Button
F	ZERO/ON Button
G	Battery Cover with loop for lanyard
H	AAA Batteries (x4)

(Used for Cyanuric Acid, Fluoride, and Manganese tests)

eXact® Micro 7+ Meter Specifications

Measurement Method:	Photometric	Cell Chamber:	Custom-molded, proprietary, PET plastic fused into chamber, non-removable
Light Source:	Light Emitting Diode (LED)	Sample Required:	4 ml (0.13 oz)
Wavelength:	525 nm	Operating Temperature Range:	0 - 50°C (32° - 122°F)
Transmission Range:	100 - 0.00 %T	Power Supply:	(4) AAA alkaline batteries
Photometric Precision:	+/- 0.1/0.01 %T	Battery Life:	>2000 tests with alkaline batteries
Automatic Range Selection:	See Specifications below	Electromagnetic Compliance (EMC):	Emitted Interference - EN 61326 Immunity to Interference - EN 61326
Display:	3-digit customized liquid crystal display with annunciators	Waterproof Rating:	Exceeds IP67
CELL Pathlength:	20mm	Weight:	Instrument: 140 g (5 oz)
		Dimensions:	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+ Specifications

Menu	Tests for	Range	Resolution	+/- Accuracy
CL1	Free Chlorine (DPD-1) & Total Chlorine (DPD-3)	0.00-2.39 ppm	0.01	0.02
		2.4-6.0 ppm	0.1	0.1, or 4%
PH2	pH	6.2-8.4 pH	0.1	0.3
BR3	Bromine (DPD-1)	0.00-2.99 ppm	0.01	0.03
		3.0 - 9.0 ppm	0.1	0.1, or 4%
AL4	Total Alkalinity	20-180 ppm	1	25
CA5	Calcium as CaCO ₃	20-990 ppm	10	20 or 7%
CU6	Copper (Cu ⁺²)	0.00-1.99 ppm	0.01	0.02
		2.0 - 8.0 ppm	0.1	0.1 or 4%
TR7	Transmission (17 other test parameters)	99.9-10.0 %T	0.1	0.1
		9.99-0.01 %T	0.01	0.01

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 NUMBER	# OF TESTS	DETECTION RANGE	CHEMISTRY
1	Alkalinity, Total	486641	100	20 - 180 ppm	Alizarin Red S + Citrate
2	Bromine (DPD-1)	486637	100	0.01 - 9.0 ppm	DPD
3	Calcium (as CaCO ₃)	486629	50	20 - 990 ppm	Oxalic Acid
4	Chlorine, Free (DPD-1)	486637	100	0.01 - 6.0 ppm	DPD
5	Chlorine, Total (DPD-3)**	486638	100	0.01 - 6.0 ppm	KI
6	Chlorine, Total (DPD-4)	486670	100	0.01 - 6.0 ppm	DPD + KI
7	Copper (Cu ⁺²)	486632	50	0.04 - 8.0 ppm	Biquinoline
8	Ozone (DPD-4)	486670	100	0.01 - 10.0 ppm	DPD + KI
9	Permanganate (DPD-1)	486637	100	0.01 - 4.5 ppm	DPD
10	pH	486639	100	6.2 - 8.4	Phenol Red
11	Ammonia*	483343-M	25	0.03 - 5.8 ppm	Salicylate Method
12	Chloride (as NaCl)* 1:40 Dilution of sample	481657	25	3 - 285 ppm 100 - 11000 ppm	Silver (ppt)
13	Chlorine Dioxide (DPD-1)*	486637	100	0.03 - 6.0 ppm	DPD
14	Chromium Hexavalent*	486614	50	0.02 - 7.0 ppm	Diphenylcarbazide
15	Cyanuric Acid*	481652	130	5 - 62 ppm	Melamine (ppt)
16	Fluoride*	486643	25	0.1 - 1.1 ppm	SPADNS
17	Iodine (DPD-1)*	486637	100	0.01 - 10 ppm	DPD
18	Iron (Fe ⁺² /Fe ⁺³)*	486631	50	0.01 - 2.00 ppm	TPTZ
19	LR Total Hardness (as CaCO ₃)*	486630	100	2 - 77 ppm	Phthalein Purple
20	Manganese*	486606	24	0.03 - 1.5 ppm	PAN + Cyanide
21	Nitrate (as NO ₃)*	486617	50	13 - 140 ppm	Zinc Reduction
22	Nitrite (as NO ₂)*	486623	50	0.05 - 3.5 ppm	Chromotropic Acid
23	pH, Acid*	486624	50	3.4 - 6.4	Alizarin Red S
24	pH, Alkali*	486609	50	8.7 - 10.6	Thymol Blue
25	Potassium*	486621	50	2 - 200 ppm	Tetraphenylborate
26	Sulfate*	486608	50	1 - 100 ppm	Barium (ppt)
27	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.

PRICES & SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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); and Fluoride (486643), which is a liquid reagent (SPADNS).

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® 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).

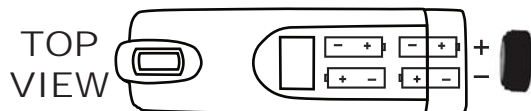
LCD Message	Description	Corrective Action
HI	In READ mode: test sample concentration is above the measurement range (test specific).	Dilute and retest.
LO	In READ mode: test sample concentration is below the measurement range (test specific).	Sample value is below measurement range.
LO	In ZERO mode: 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 or clean cell.
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 METER** 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, Potassium, and Cyanuric Acid).

To Replace/Install "AAA" Batteries:

1. Unscrew the O-ring sealed battery compartment counter-clockwise. Do not disturb the sealing O-ring.
2. Remove the used batteries.
3. Install 4 new AAA batteries following the diagram for correct polarity (see below).
4. Replace the battery cover. Be sure not to overtighten the cover.
5. Dispose of the used batteries in accordance with your local regulations.
6. Press ZERO/ON button to confirm the meter turns on.
The meter is now ready for operation.
7. Meter will not work if battery orientation is incorrect.



eXact® Micro 7+ Meter Limited Warranty

ITS warrants this product to be free from defects in materials and workmanship, and to conform to its published product specifications, under normal use and service, for a period of 24 months commencing from the date of purchase. This limited warranty is extended only to the first purchaser and applies only to product failures due to defective materials and/or workmanship. Without limiting the generality of the foregoing, the foregoing warranty will not apply if, upon inspection, it is found that the product was: misused or abused; used for a purpose for which it is not designed; mishandled; placed in an improper environment; repaired by unauthorized personnel; or improperly adjusted. The sole and exclusive remedy in the event of any breach of the foregoing warranty shall be for the original purchaser to return the product to ITS, freight and insurance prepaid, for repair or replacement, at ITS' option. Any product repair or replacement under the foregoing warranty shall be shipped back to the customer freight and insurance prepaid. In no event shall ITS be liable for any loss, inconvenience, or damages, including without limitation, direct, indirect, special, incidental or consequential damages, resulting from or relating to the use or inability to use a product whether resulting from breach of warranty or any other legal theory, even if ITS has been advised of the possibility of such inconvenience, damage, or loss.

To prevent warranty issues, it is recommended that within 30 days of purchase, you should register your ownership and include the serial number (on bottom of Micro 7+ Meter) by going to our website (<http://www.sensafe.com/micro7+>). By registering, you will be updated when needed regarding the Micro 7+.

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. 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**. The stored results for that test are then displayed, 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 2nd 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 140 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

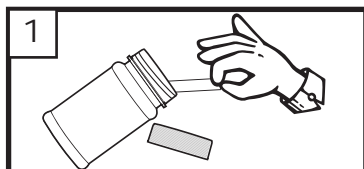
The algorithms in the software reflect the best correlation of the eXact® Micro 7+ Systems against the AWWA, US EPA, Din, and ISO reference test methods for chlorine. Studies show that the eXact® Micro 7+ System repeatedly agrees with an EPA Compliant reference method greater than 99% (R²= 0.9912, 0 - 6.0 ppm - see page 24). The eXact® Micro 7+ Advanced Photometric System has been factory calibrated for your convenience. Customer calibration can be performed in the Transmission Menu. 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.

Compliance Verification for Free and Total Chlorine Testing

This DPD test system is accepted by most state health departments because this test is USEPA 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.

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

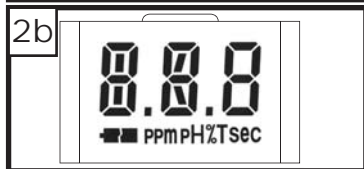
eXact® Micro 7+ CL (DPD-1 Free Chlorine) Test Procedure



1 REMOVE STRIP
Remove one (1) **eXact® Strip Micro CL (DPD-1)**, part number 486637, from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

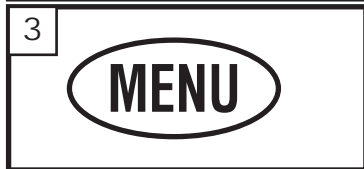


2 TURN METER ON
Press the **ZERO/ON** button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.



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

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)



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.



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 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 CL1).



DO NOT discard the sample from the Free Chlorine test, if you are planning to run eXact® Strip Micro DPD-3 (Total Chlorine) Procedure, Continue steps 7-9 on page 5. Otherwise, rinse the cell immediately.



CL1: Chlorine reacts 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, Total Chlorine, and Permanganate are also determined in the CL1 MENU)

eXact® Micro 7+ Tips For Best Accuracy

- Become familiar with the meter and the different tests by reading the instructions carefully.
- The DPD-1 & DPD-4 strips supply enough reagent for accurate results at room temperature. If samples are below 60°F (15°C) the 20 second strip dip time will give low results for chlorine values above 4 ppm. For cold samples, best results are obtained when a 40 second dip time is used (Dip one strip for two (2) twenty second periods).
- The Free Chlorine and Total Chlorine results are compliant for meeting USEPA (4500-Cl G); ISO 7393/2; and German DIN 38408 G4-2 requirements.
- Observe the dip time (*as required for the test*) for accurate results.
- Test immediately after filling the **CELL** with water sample when testing for an oxidizer such as Chlorine, Bromine, Ozone, etc...
- Be sure the **CELL** is filled to capacity (4ml), especially for pH and Total Alkalinity.
- Sample water that may splash out of the **CELL** during movement of the eXact® Strip Micro will not affect accuracy, as long as the cell is 50% full at end of test.
- Rinse the **CELL** with clean water immediately after completing the test. (*Some test reagents will stain or coat the CELL*)
- 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*).
- Store the meter and all test materials out of direct sunlight and away from chemical storage areas.
- Minimize exposure of meter and test reagents to heat above 100°F (38°C).
- Dry the outside of the meter when testing is complete or before storage of the meter.
- When running a DPD-1 Free Chlorine test **AFTER** a Total Chlorine DPD-3 or DPD-4 test, rinsing is very important to remove residual KI, which may interfere.
- Each eXact® Strip Micro is valid for **ONLY** one test. Discard strip after single use in regular trash that is inaccessible to children and pets.
- Each bottle of eXact® Strip Micro contains the quantity of strips notated on the bottle. Due the manufacturing 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.
- Each conversion table supplied has a unique revision number located in the bottom right corner of the chart. It is recommended that you visit www.sensafe.com at least every 6 months to check for any updated revisions.
- Tests are calibrated at 75°F +/- 2°F (24°C +/- 1°C). If water sample is 60°F (15°C) or cooler, most tests like Copper, Manganese, Nitrate, and Nitrite may require additional time for full chemical development. At the end of the normal test procedure, press **READ** again and compare value after this countdown. If the new value is higher, then use the new value for your result. It is recommended that the water sample be warmed to room temperature before testing.
- 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.
- Normally the mixing cap is used for tests like Cyanuric Acid, Fluoride, and Manganese. A stirrer (such as a clean, plastic coffee stirrer) may also be used in place of the mixing cap by using the stirrer with gentle, back and forth motion, during the 20-second countdown timing.
- Our lab testing with the Micro 7+ meter has shown that zeroing and measuring of the sample does not require any cell cover for accurate results, even in full sunlight.
- Remove batteries when meter is not used for more than a month.
- Pool and Spa samples should be taken 18 inches below the surface as follows; submerge meter with open cell facing down 18 inches, and then turn meter upright to fill cell. Remove meter from water with the sample for testing.

For Pool and Spa Salt Systems

eXact® Micro 7+ Chloride (as NaCl) 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** 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 0.1ml of the sample to the water in the cell.

- 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.

- 5** DIP STRIP
Dip the **eXact® Strip Micro CHLORIDE (as NaCl), Part No. 481657** 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. Record result displayed (this result is automatically stored in TR7).

- 6** USE TABLE
Find the "TR" result in the table below to determine the Sodium Chloride concentration in ppm (parts per million). (Example: a "TR" result of 65.3 (use only the 65 for the chart) equals a Sodium Chloride value of 4600 ppm). Record result. After testing is completed, rinse cell immediately.

eXact® Micro 7+ 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 CHLORIDE, Part No. 481657**. **NOTE: To convert the NaCl value to Chloride (Cl⁻), multiply the value from the chart below by 0.6. (Example: 4600ppm NaCl = 2760ppm Cl⁻)**

eXact® Strip Micro CHLORIDE, Part No. 481657 - for 4mL Samples										
tr	9	8	7	6	5	4	3	2	1	0
90	<100	<100	100	200	400	600	700	900	1000	1200
80	1300	1500	1700	1800	2000	2100	2300	2400	2600	2700
70	2900	3000	3100	3300	3400	3500	3700	3800	3900	4000
60	4200	4300	4400	4500	4600	4700	4800	5000	5100	5200
50	5300	5400	5500	5600	5700	5800	5900	6000	6100	6200
40	6300	6400	6500	6600	6700	6700	6800	6900	7000	7100
30	7200	7300	7400	7500	7600	7700	7800	7900	8000	8100
20	8200	8300	8400	8500	8600	8700	8800	8900	9000	9100
10	9200	9400	9500	9600	9700	9800	10000	10200	10500	11000
0	>11000	>11000	>11000	>11000	>11000	>11000	>11000	>11000	>11000	>11000

Rev. 121608 NACL

eXact® Micro 7+ CL (DPD-3 Total Chlorine) Test Procedure

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.

- 7** 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.

- 8** 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 the time displays 1**. The cursor will move across the display, informing you that it is about to measure the sample. This result is automatically stored in CL1.

- 9** 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. If reading has increased by 0.01, press **READ** again and repeat as before. 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 quickly.

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 ₃ 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 ₃ test may not develop full color. Neutralize to pH 6.0 to 7.0 with 0.5N Sulfuric acid.
Bromine & Bromamines, Br ₂	Color similar to free chlorine reaction at all levels.
Chlorine Dioxide, ClO ₂	Color similar to free chlorine reaction at all levels.
Copper, Cu ⁺²	Color development is reduced above 10 ppm (mg/L).
Iodine, I ₂	Color similar to free chlorine reaction at all levels.
Manganese, oxidized (Mn ⁺⁴ , Mn ⁺⁷) or Chromium, oxidized (Cr ⁺⁶)	See AWWA procedure 4500-CL F, 1(d) for removal of interferences.
Monochloramines (NH ₂ 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 ₃	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).

eXact® Micro 7+ CL (DPD-4) Test Procedure

- 1 **REMOVE STRIP**
Remove one (1) **eXact® Strip Micro CL (DPD-4 for Total Chlorine or Ozone)**, part number 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 you want to run.
- 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 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 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 result. This result is stored in CL1. If reading has increased by 0.01, press **READ** again and repeat. 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 2 minutes after the reagents are added.

eXact® Micro 7+ PH Test Procedure

- 1 **REMOVE STRIP**
Remove one (1) **eXact® Strip Micro PH**, part number 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. **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. Record result displayed (this result is automatically stored in PH2). After testing is completed, rinse cell immediately.
NOTE: For best results, Total Alkalinity of the sample should be 40-140 ppm.

PH2: pH reacts with Phenol Red, which is yellow at pH 6.1, but forms a red color as the pH level rises. Maximum red is at about pH 8.4.

eXact® Micro 7+ Fluoride 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**. Discard the sample (empty cell).
- 5 **ADD REAGENT**
Use the dropper bottle to add exactly ten (10) drops of **SPADNS, Part No. 486643** reagent 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 "TR" result in the table below to determine the Fluoride concentration in ppm (parts per million). (Example: a "TR" 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.

eXact® Micro 7+ Fluoride Table

Fluoride results require the table below. Follow **eXact® Micro 7+ Fluoride Test Procedure** (above) using **eXact® Reagent Micro F, Part No. 486643**

eXact® Reagent Micro F, Part No. 486643 - for 4mL Samples										
tr	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

eXact® Micro 7+ Manganese 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**
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 **PAN Reagent, 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 "TR" result in the table below to determine the Manganese concentration in ppm (parts per million). (Example: a "TR" 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.

eXact® Micro 7+ Manganese Table

Manganese results require the table below. Follow **eXact® Micro 7+ Manganese Test Procedure** (above) using *eXact® Manganese, Part No. 486606*

eXact® Strip Micro MN, Part No. 486606 - for 4mL Samples										
tr	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

Rev. 121108 MN

eXact® Micro 7+ CL (DPD-1 Bromine) Test Procedure

- 1 **REMOVE STRIP**
Remove one (1) **eXact® Strip Micro CL (DPD-1)**, part number 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. **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. Record result displayed (this result is automatically stored in BR3). After testing is completed, rinse cell immediately. **NOTE:** Bromine result is the sum reaction of Bromine and Bromamine. This reaction will have interferences from other oxidizers such as Chlorine, Iodine, and Permanganate. **DO NOT** discard the sample from the Bromine test if you are using MPS and desire to measure total oxidizer present. Run eXact® Strip Micro DPD-3 (Total Chlorine) Procedure, see steps 7-9 on page 5. Otherwise, rinse the cell immediately. BR3: Bromine reacts with N,N-diethyl-p-phenylenediamine sulfate as it is released from the strip to form a magenta color, directly proportional to the Bromine Concentration.

eXact® Micro 7+ AL (Total Alkalinity) Test Procedure

- 1 **REMOVE STRIP**
Remove one (1) **eXact® Strip Micro AL**, part number 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. **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. Record result displayed (this result is automatically stored in AL4). After testing is completed, rinse cell immediately.

AL4: Total Alkalinity reacts with the Alizarin Red S and citric acid as it is released from the strip to form a red color, directly proportional to the alkalinity present in the sample.

eXact® Micro 7+ CA (Calcium Hardness) Test Procedure

- 1 **REMOVE STRIP**
Remove one (1) **eXact® Strip Micro CA**, part number 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 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 CA5). After testing is completed, rinse cell immediately.

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.

eXact® Micro 7+ CU (Copper) Test Procedure

- 1 **REMOVE STRIP**
Remove one (1) **eXact® Strip Micro CU**, part number 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 when the time displays 1**. The display will flash "**Slt**" and begin immediately counting up from **1 to 20** (this extra time allows more thorough color development). When the timer reaches **20**. At 20 sec, 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 CU6). After testing is completed, rinse cell immediately.

CU6: Copper reacts with Biquinoline or Bicinchoninic Acid as it is released from the strip to form a purple color, directly proportional to the copper concentration.

eXact® Micro 7+ Nitrite (NO₂) 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 - (read carefully and follow procedure closely)**
Dip the **eXact® Strip Micro NO₂, 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 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). Time the reaction in the cell for **four (4) minutes** (timer not included). During this time, meter will shut off. When **4 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 "TR" result in the table below to determine the Nitrite concentration in ppm (parts per million). (Example: a "TR" result of 66.3 (use only the 66 for the chart) equals a Nitrite value of 0.52 ppm). Record result. After testing is completed, rinse cell immediately.

eXact® Micro 7+ Nitrite (NO₂) Table

Nitrite results require the table below. Follow **eXact® Micro 7+ Nitrite (NO₂) Test Procedure** (above) using **eXact® Strip Micro NO₂, Part No. 486623**

eXact® Strip Micro NO ₂ , Part No. 486623 - for 4mL Samples										
tr	9	8	7	6	5	4	3	2	1	0
90	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.08
80	0.09	0.11	0.13	0.15	0.16	0.18	0.20	0.22	0.23	0.25
70	0.27	0.29	0.31	0.32	0.34	0.36	0.38	0.40	0.42	0.44
60	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64
50	0.66	0.68	0.70	0.73	0.75	0.77	0.79	0.82	0.84	0.86
40	0.89	0.91	0.93	0.96	0.98	1.01	1.03	1.06	1.09	1.12
30	1.15	1.17	1.20	1.23	1.26	1.29	1.33	1.36	1.39	1.43
20	1.46	1.50	1.53	1.57	1.61	1.65	1.70	1.75	1.79	1.84
10	1.90	1.96	2.02	2.08	2.16	2.24	2.33	2.43	2.56	2.71
0	2.9	3.1	3.3	3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5

Rev. 121608 NO2

NOTE: Divide the above Nitrite result by 3.3 to determine Nitrite value as Nitrogen (NO₂⁻ as N)

eXact® Micro 7+ Nitrate (NO₃) 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 - (read carefully and follow procedure closely)**
Dip the **eXact® Strip Micro NO₃, Part No. 486617** 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 avoiding contact with cell wall. When the time displays **1**, continue the back and forth motion with the strip. The cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Press **READ** again, which will start another 20 SECOND countdown. **This time when the time displays 1**, remove the strip and observe that all test pads are present, then discard the strip. If a test pad is remaining in the sample cell, remove test pad(s) prior to reading result. Note that the total dip time was approximately 50 seconds. Ignore the result that is displayed. Time the reaction in the cell for **five (5) minutes** (timer not included). During this time, meter will shut off. When **5 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 "TR" result in the table below to determine the Nitrate concentration in ppm (parts per million). (Example: a "TR" result of 65.8 (use only the 66 for the chart) equals a Nitrate value of 77 ppm). Record result. After testing is completed, rinse cell immediately.

eXact® Micro 7+ Nitrate (NO₃) Table

Nitrate results require the table below. Follow **eXact® Micro 7+ Nitrate (NO₃) Test Procedure** (above) using **eXact® Strip Micro NO₃, Part No. 486617**

NOTE: For levels above 140ppm Nitrate, dilute the sample ½ or ¼ with distilled water and retest.

eXact® Strip Micro NO ₃ , Part No. 486617 - for 4mL Samples										
tr	9	8	7	6	5	4	3	2	1	0
90	<8	<8	<8	<8	<8	<8	<8	<8	13	18
80	22	26	30	33	36	39	41	43	46	49
70	51	53	55	57	60	62	64	66	68	70
60	71	73	75	77	78	80	82	84	86	88
50	90	92	94	96	98	100	102	104	106	108
40	110	112	114	117	119	121	124	126	128	131
30	134	137	140	>140	>140	>140	>140	>140	>140	>140
20	>140	>140	>140	>140	>140	>140	>140	>140	>140	>140
10	>140	>140	>140	>140	>140	>140	>140	>140	>140	>140
0	>140	>140	>140	>140	>140	>140	>140	>140	>140	>140

Rev. 121708 NO3

NOTE: Divide the above Nitrate result by 4.4 to determine Nitrate value as Nitrogen (NO₃ as N)

eXact® Micro 7+ TR7 (Transmission) Test Procedure

- 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 20 will require the TR7 MENU and the conversion charts included. Other tests listed on page 23 will require the use of a conversion chart available at 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 strip 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). 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 chart 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 23. 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.

eXact® Micro 7+ Turbidity 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 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 "TR" result in the table below to determine the Turbidity concentration in NTU (Nephelometric Turbidity Units). (Example: a "TR" result of 85.3 (use only the 85 for the chart) equals a Turbidity value of 22 NTU). Record Turbidity result.

eXact® Micro 7+ 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)

Tr	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. 121608 NTU

eXact® Micro 7+ LR Total Hardness (as CaCO₃) 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 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 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).
- 6 **USE TABLE**
Find the "TR" result in the table below to determine the Total Hardness concentration in ppm (parts per million). (Example: a "TR" 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.

eXact® Micro 7+ LR Total Hardness (as CaCO₃) Table

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

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

tr	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

Rev. 121308 LRTH

eXact® Micro 7+ Iron (Fe²⁺/Fe³⁺) 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 FE, 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 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).

- 6 **USE TABLE**
Find the "TR" result in the table below to determine the Iron concentration in ppm (parts per million). (Example: a "TR" result of 85.3 (use only the 85 for the chart) equals an Iron value of 0.07 ppm). Record result. After testing is completed, rinse cell immediately.

eXact® Micro 7+ Iron (Fe²⁺/Fe³⁺) Table

Iron results require the table below. Follow **eXact® Micro 7+ Iron (Fe²⁺/Fe³⁺) Test Procedure** (above) using **eXact® Strip Micro FE, Part No. 486631**

eXact® Strip Micro FE, Part No. 486631 - for 4mL Samples										
tr	9	8	7	6	5	4	3	2	1	0
90	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
80	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.11	0.13	0.14
70	0.16	0.17	0.19	0.20	0.21	0.23	0.24	0.26	0.27	0.28
60	0.30	0.31	0.33	0.34	0.36	0.37	0.38	0.40	0.41	0.43
50	0.44	0.46	0.47	0.49	0.50	0.52	0.54	0.55	0.57	0.59
40	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76	0.78
30	0.80	0.82	0.85	0.87	0.89	0.92	0.94	0.97	1.00	1.03
20	1.06	1.10	1.13	1.17	1.21	1.25	1.30	1.35	1.40	1.45
10	1.51	1.57	1.64	1.70	1.76	1.82	1.88	1.95	2.00	>2
0	>2	>2	>2	>2	>2	>2	>2	>2	>2	>2

Rev. 121508 FE

eXact® Micro 7+ 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** 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, mix 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 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).

- 6 **USE TABLE**
Find the "TR" result in the table below to determine the Cyanuric Acid concentration in ppm (parts per million). (Example: a "TR" result of 75.3 (use only the 75 for the chart) equals a Cyanuric Acid value of 7 ppm). Record result. After testing is completed, rinse cell immediately.

eXact® Micro 7+ 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**

NOTE: For levels above 60ppm Cyanuric Acid, dilute the sample ½ or ¼ with distilled water and retest.

eXact® Reagent CY, Part No. 481652 - for 4mL Samples, USE MICRO VIAL										
tr	9	8	7	6	5	4	3	2	1	0
90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
80	<5	<5	<5	<5	<5	5	5	5	5	6
70	6	6	7	7	7	7	8	8	8	9
60	9	9	10	10	10	11	11	11	12	12
50	12	13	13	13	14	14	14	15	15	15
40	16	16	17	17	17	18	18	19	19	20
30	20	21	21	21	22	23	23	24	24	25
20	25	26	26	27	28	29	29	30	31	31
10	32	33	34	35	36	37	39	40	42	45
0	48	51	54	57	59	62	>60	>60	>60	>60

Rev. 121408 CY

eXact® Micro 7+ Ammonia (NH₃) 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 - (read carefully and follow procedure closely)**
Dip the **eXact® Strip Micro NH₃, Part No. 483343-M** 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). Time the reaction in the cell for **five (5) minutes** (timer not included). During this time, meter will shut off. When 5 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 "TR" result in the table below to determine the Ammonia concentration in ppm (parts per million). (Example: a "TR" result of 66.3 (use only the 66 for the chart) equals an Ammonia value of 0.65 ppm). Record result. After testing is completed, rinse cell immediately.

eXact® Micro 7+ Ammonia (NH₃) Table

Ammonia results require the table below. Follow **eXact® Micro 7+ Ammonia (NH₃) Test Procedure** (above) using **eXact® Strip Micro NH₃, Part No. 483343-M**

eXact® Strip Micro NH ₃ , Part No. 483343-M - for 4mL Samples										
tr	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	0.08	0.14	0.21	0.27	0.33	0.39
60	0.46	0.52	0.59	0.65	0.72	0.78	0.85	0.93	0.99	1.06
50	1.14	1.21	1.28	1.36	1.43	1.51	1.59	1.67	1.75	1.84
40	1.92	2.01	2.10	2.19	2.28	2.37	2.47	2.6	2.7	2.8
30	2.9	3.0	3.1	3.3	3.4	3.5	3.6	3.8	3.9	4.1
20	4.3	4.5	4.7	5.0	5.3	5.8	>5.8	>5.8	>5.8	>5.8
10	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8
0	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8	>5.8

Rev. 121508 NH3

For Tap Water eXact® Micro 7+ Chloride (as NaCl) 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 **0.00 PPM**. Sample is ready for testing.
- 5 **DIP STRIP AND PRESS "READ"**
Dip the **eXact® Strip Micro CHLORIDE (as NaCl), Part No. 481657** 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. Record result displayed (this result is automatically stored in TR7).
- 6 **USE TABLE**
Find the "TR" result in the table below to determine the Chloride concentration in ppm (parts per million). (Example: a "TR" result of 65.3 (use only the 65 for the chart) equals a Chloride value of 115 ppm). Record result. After testing is completed, rinse cell immediately.

eXact® Micro 7+ Chloride Table

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

eXact® Strip Micro CHLORIDE, Part No. 481657 - for 4mL Samples										
tr	9	8	7	6	5	4	3	2	1	0
90	<3	<3	3	5	10	15	18	23	25	30
80	33	38	43	45	50	53	58	60	65	68
70	73	75	78	83	85	88	93	95	98	100
60	105	108	110	113	115	118	120	125	128	130
50	133	135	138	140	143	145	148	150	153	155
40	158	160	163	165	168	168	170	173	175	178
30	180	183	185	188	190	193	195	198	200	203
20	205	208	210	213	215	218	220	223	225	228
10	230	235	238	240	243	245	250	255	263	273
0	285	>290	>290	>290	>290	>290	>290	>290	>290	>290

Rev. 121608 NACL

To determine NaCl concentration from 100-11000 ppm for salt pools, do a 1 to 40 dilution of the pool water and perform test as described on page 20.