

Testing Times

The Swaggy of Environmental Test Systems, investigates improvements in water testing methods.

With so many tests available to pool and spa professionals, it is hard to believe that there are still new and innovative tests being introduced. Water testing is an important issue and as technology continues to improve, testing becomes more accurate and less time-consuming. Many of the new tests that are introduced are improvements on existing tests and methods; however, the new total dissolved solids (TDS) test strip from Environmental Test Systems is a great example of a brand new test.

TDS is important in troubleshooting the water quality of a pool or spa and TDS is an essential piece of the equation when calculating the

Langlier Saturation Index. The swimming pool and spa industry, as referenced in the National Spa and Pool Institute Standards, defines TDS as "a measure of the total amount of dissolved matter in water, e.g. calcium, magnesium, carbonates, bicarbonates, metallic compounds, etc." High pool or spa TDS levels can result in hazy water, fixture corrosion, and scale build-up. High levels can also reduce the efficiency of other chemicals present. Reducing high TDS levels in pools and spas is commonly achieved by partial draining and adding fresh water. High TDS in a pool or spa, when initially setting up, might indicate poor water quality from corrosive mineral salts, humus, or organ-

ic matter. The pool and spa industry recommendation is to consult the local water authority if initial TDS is high.

Practicalities

Until now, the only practical method to determine TDS

concentrations was an expensive conductivity meter, which requires the use of calibration standards. TDS meters measure conductivity of the charged species of a sample and then use factors to compute guideline TDS ppm values. Several industry experts suggested that an alternate method of measuring TDS would be advantageous to pool and spa professionals, so Environmental Test Systems determined that a test was needed that was easier to use than an electronic meter, and would not require the use of calibration standards.

ETS initiated a research project to develop a test strip to measure total dissolved solids. Their chemists developed a formulation that would measure TDS concentrations at the appropriate levels in the form of a test strip. During the course of development, the researchers evaluated the potential test strip under various conditions to ensure that the test would be accurate in all pools and spas, regardless of the chemicals used in the system. They also determined expiration dating based on the potential shelf life of the product.

Once the other conditions were finalised, the research chemists established colour block levels. For proper swimming pool and spa maintenance, NSPI suggests the following operational guideline levels for TDS: 300 ppm – minimum, 1,000-2,000 ppm – ideal, 3,000 ppm – maximum. Needing to establish levels that would correspond to the national standards, ETS set levels at 2,000, 2,500, 3,000, 3,500, 4,000, 4,500, 5,000, 5,500, 6,000, 6,500, 7,000, 7,500, 8,000, 8,500, 9,000, 9,500, 10,000, 10,500, 11,000, 11,500, 12,000, 12,500, 13,000, 13,500, 14,000, 14,500, 15,000, 15,500, 16,000, 16,500, 17,000, 17,500, 18,000, 18,500, 19,000, 19,500, 20,000, 20,500, 21,000, 21,500, 22,000, 22,500, 23,000, 23,500, 24,000, 24,500, 25,000, 25,500, 26,000, 26,500, 27,000, 27,500, 28,000, 28,500, 29,000, 29,500, 30,000, 30,500, 31,000, 31,500, 32,000, 32,500, 33,000, 33,500, 34,000, 34,500, 35,000, 35,500, 36,000, 36,500, 37,000, 37,500, 38,000, 38,500, 39,000, 39,500, 40,000, 40,500, 41,000, 41,500, 42,000, 42,500, 43,000, 43,500, 44,000, 44,500, 45,000, 45,500, 46,000, 46,500, 47,000, 47,500, 48,000, 48,500, 49,000, 49,500, 50,000, 50,500, 51,000, 51,500, 52,000, 52,500, 53,000, 53,500, 54,000, 54,500, 55,000, 55,500, 56,000, 56,500, 57,000, 57,500, 58,000, 58,500, 59,000, 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The PCcheck photometer, from German-based Tintometer, measuring chlorine (free, combined, total), pH and cyanuric acid to assess pool-water quality, has enjoyed increasing popularity among public swimming pool operators. Now, in response to customer demand, Tintometer has added the parameter 'urea'

(CH₄N₂O) to the photometer range. There is no doubt that the discharge of urine into the water leads to deterioration of water quality and it is therefore an important auxiliary hygiene parameter that was previously only possible to measure under laboratory conditions.

The Netherlands, Belgium and Switzerland control and optimise fresh water supplies by setting a limit for urea. Measurements that only used to be feasible in a laboratory setting can now be obtained reliably and rapidly in the pool environment. This enables swimming pool operators to monitor water quality themselves and therefore saves them time and money.

Tride and Tested

The Compact 200 Trides A disinfectant monitor/controller is one of the instruments from a comprehensive range of water-quality products available from Bristol Industrial and Research Associates Ltd (BIRAL).

Made by Swan Instruments AG of Switzerland, the Compact 200 can be used to monitor and control chlorine, hypochlorite, chlorine dioxide, bromine, iodine and even ozone dosing systems.

With its unique, self-cleaning TRIDES three-electrode amperometric system, the Compact 200 can easily determine disinfection concentrations and free chlorine and chlorine dioxide down to 0.01 mg/l (ppm), as well as ozone down to 0.005 mg/l. Not only is the instrument extremely accurate, giving highly reproducible results, but the backlight LED display gives a clear visual output of the monitored parameters.

The pH measuring ability of the Compact 200 also enables it to compensate the hypochlorous/hypochlorite balance for pH variation as well as temperature.

The built-in control and alarm functions are able to meet some standard requirements giving you instant warning of any changes in the system. Switching contacts and -4-20mA outputs are standard, as are PID control for pump, valve or dosing system control. Serial printers can be added to record data and analysers can be linked to a central control station if required.

BIRAL can also provide hand-held analysers for water-quality analysis as well as a range of other water-quality instruments.

TOP TEN TIPS FOR TEST KITS

1. Always keep test kits scrupulously clean.
 2. Do not exceed shelf-life of reagents.
 3. Only use the tablets specified by the test box manufacturer.
 4. Sludge or bubbles could indicate incompatible tablets.
 5. Buying tablets in bulk may not be cost-effective if you change testing units.
 6. In the case of halogen residuals, do not guess or assume colour samples at either end of the test scale.
 7. Ensure operators are fully trained.
 8. Ensure operators are not colour-blind (although photometric measuring systems eliminate the need for colour matching).
 9. Remember pool-cleaning chemicals can interfere with results.
 10. Buying a cheaper test kit may not be ultimately cost-effective or ensure longer-term reliability.
- Condensed extract from PWTAG *Swimming Pool Water Book*.

Test Strips, has announced the addition of a new professional product for 2001.

AquaChek TDS is an easy, inexpensive way for professionals to determine Total Dissolved Solid levels for proper treatment of pool and spa water.

High TDS levels can cause problems such as cloudy water and inefficient chemicals. Performed in 30 seconds or less, with one dip of the strip, AquaChek TDS helps pool and spa professionals check TDS levels quickly and inexpensively.

Old methods of measuring TDS require costly conductivity meters and calibration standards. The AquaChek TDS test strips allow for high accuracy with less expense. The strips feature easily matched colour pads for precise readings of the chemical condition of the water. The ETS strip has a patent-pending chemistry that measures TDS from 0-5,000 parts per million (ppm.) Colour blocks are shown at 0, 500, 1,500, 3,000, and 5,000ppm.

Designed and packaged for the Pool and Spa Professional, each AquaChek TDS bottle contains 25 test strips and features its trade-friendly purple colour-coding.

TDS plays an important role in affecting the health of pool and spa water. High saturation levels of TDS can lead to corrosion and scaling of equipment and pool and spa surfaces. Cloudy water and reduced efficiency are additional problems.

The best way to reduce TDS is to drain and refill, which may mean pool closure. This can be costly and time-consuming, and problematic in areas subject to water shortages. Checking TDS levels with AquaChek TDS can help pool and spa professionals avoid misdiagnosing chemical imbalances.

"Draining a pool or spa can be expensive and time-consuming. Up until now, the only way for a professional to be sure this is necessary is with the use of expensive meters, which require calibration for accuracy," says sales director, Ron Merwin.

"AquaChek's One-Dip TDS Test offers an easy, accurate way for professionals to recognise when (or if) they need to perform this action. We are confident that service professionals will find greater assurance in evaluating TDS situations quickly and inexpensively."

Other One-Dip Packages for the



In America, the comprehensive range of Taylor test kit products is available through a network of 340 distributors, while international sales are handled exclusively by Horner Discus.

Kits in available in both a residential and commercial series. More information from Horner Discus, tel. + 1954 938 5355 or fax + 1954 938 5244.

COMPANY CONTACTS

Biral
Tel. 011275 847787
Fax. 01275 847303

Environmental Test Systems
www.aquachek.com

Tintometer
Tel. + 49 231 73 69 03
Fax + 49 231 73 46 92

Palintest
Tel. 0191 491 0808
Fax. 0191 482 5372

PWTAG
Tel. 01379 783687

Taylor Technologies Ltd
Tel. + 01954 938 5355

Service Professional include:

- AquaChek Pro, which allows for the four critical tests of Total Chlorine, Free Chlorine, pH and Total Alkalinity.
- AquaChek Silver and AquaChek Green, with improved Cyanuric Acid test.
- Individual tests for Copper, Iron, Nitrate and Nitrite, and Total Hardness.

AquaChek also offers a full line of one-dip, easy-match consumer product test strips, including tests for Total Alkalinity, Free Chlorine, Total Chlorine, Total Hardness, pH, Total Bromine, Salt, Biguanide, and Monopersulfate.

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New dip-and-read test measures TDS

By Joe Sweazy

With so many tests available to pool and spa professionals, it is hard to believe that there are still new and innovative tests being introduced.

Water testing is an important issue, and as technology continues to improve, testing becomes more accurate and less time consuming.

Many of the new tests that are introduced are improvements over existing tests and method. However, the new total dissolved solids (TDS) test strip from Environmental Test Systems is a great example of a brand new test.

TDS is important in troubleshooting the water quality of a pool or spa, and TDS is an essential piece of the equation when calculating the Langelier Saturation Index. The swimming pool and spa industry, as referenced in the National Spa & Pool Institute standards, defines TDS as "a measure of the total amount of dissolved matter in water, e.g., calcium, magnesium, carbonates, bicarbonates, metallic compounds, etc."

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and spas is commonly achieved by partial draining and adding fresh water. High TDS in a pool or spa when initially setting up might indicate poor water quality from corrosive mineral salts, humus or organic matter. The pool and spa industry recommendation is to consult the local water authority if initial TDS is high.

Until now, the only practical method to determine TDS concentrations was an expensive conductivity meter, which requires the use of calibration standards. TDS meters measure electrical conductivity of a water sample and then use mathematical factors to convert units of electrical conductance into TDS values, expressed in parts per million.

Several industry experts suggested that an alternate method of measuring TDS would be advantageous to pool and spa professionals, so ETS determined that a test was needed that was easier to use than an electronic meter and would not require calibration standards.

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the appropriate levels in the form of a test strip. During the course of development, the researchers evaluated the potential test strip under various conditions to ensure that the test would be accurate in all pools and spas, regardless of the chemicals used in the system. They also determined expiration dating based on the potential shelf life of the product.

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ETS needed to establish levels that would correspond to the national standards. Researchers set levels at 0, 500, 1,500, 3,000 and 5,000 ppm TDS. This scale allows for measurement in the low, acceptable and high ranges. It also gives users an ideal "target" color block at 1,500, which is in the center of the range suggested by the NSPI.

Finally, the test strip was ready to be beta-site tested in other pools and spas. This assists in verifying that the test strip is ready for use.

strip works accurately in a sampling of various pools and spas, the project is completed, and the test is introduced. The TDS test from Environmental Test Systems has been through each step of the process successfully.

The AquaCheck TDS test provides a great advancement in testing technology. Patent-pending chemistry developed by ETS allows users to accurately measure the actual TDS of pool and spa water. This dip-and-read test requires only a 1-second dip and 15-second read time, so tests can be completed quickly. Service professionals will find greater assurance in evaluating TDS situations quickly and inexpensively.

This process of developing a new test is a science that results in methods that make it easier to monitor the quality of water in pools and spas. Improvements in the future will continue to add convenience and value to testing for professionals and their customers.

Experienced manufacturers in the testing industry will continue to help busy service professionals, who conduct millions of tests a year. ■

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