

Turbidimetric Method

Method 8139

5 to 50 mg/L (spectrophotometers)

Powder Pillows

7 to 55 mg/L (colorimeters)

Scope and application: For water, pools and spas.



Test preparation

Instrument-specific information

Table 1 shows all of the instruments that have the program for this test. The table also shows sample cell and orientation requirements for reagent addition tests, such as powder pillow or bulk reagent tests.

To use the table, select an instrument, then read across to find the applicable information for this test.

Table 1 Instrument-specific information

Instrument	Sample cell orientation	Sample cell
DR 3800 DR 2800 DR 2700 DR 1900	The fill line is to the right.	2495402 
DR 3900	The fill line is toward the user.	
DR 900	The orientation mark is toward the user.	2401906 

Before starting

For turbidimetric methods, install the instrument cap or cover on all instruments before ZERO or READ is pushed.

Clean sample cells with soap, water and a brush soon after each test to prevent a build-up of film on the sample cells.

Filter samples that are turbid with filter paper and a funnel.

Do not use the Pour-Thru Cell or sipper module (for applicable instruments) with this test.

Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

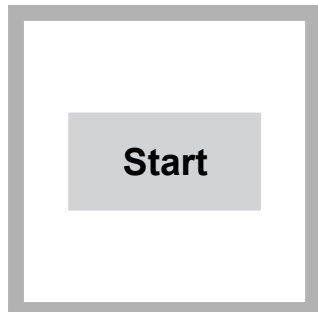
Items to collect

Description	Quantity
Bottle, mixing, square glass	1
Cyanuric Acid 2 Reagent Powder Pillow	1
Sample cells (For information about sample cells, adapters or light shields, refer to Instrument specific information PP.)	2

Sample collection

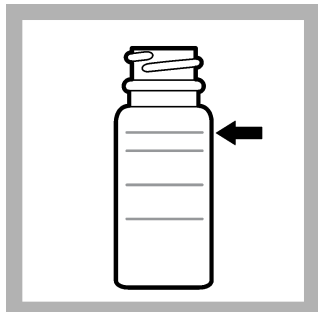
- Collect samples in clean glass or plastic bottles.
- Samples must be analyzed within 24 hours.

Turbidimetric method

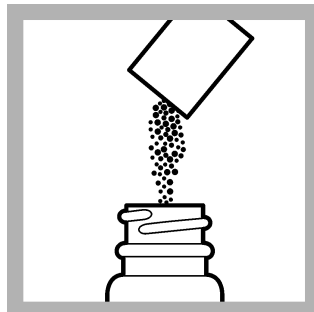


1. Start program **170 Cyanuric Acid**. For information about sample cells, adapters or light shields, refer to [Instrument specific information PP](#).

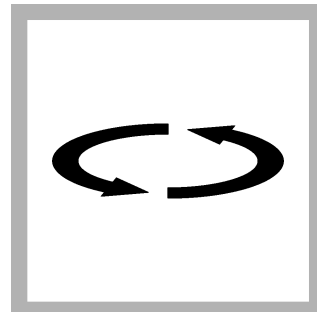
Note: Although the program name can be different between instruments, the program number does not change.



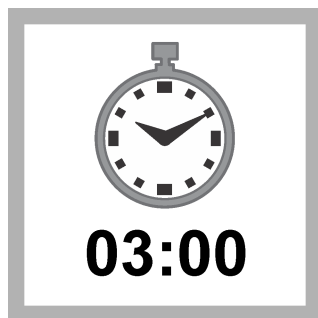
2. **Prepare the sample:** Fill a marked bottle to the 25-mL line with sample. For instruments that measure with a 25-mL sample cell, prepare the sample in the sample cell.



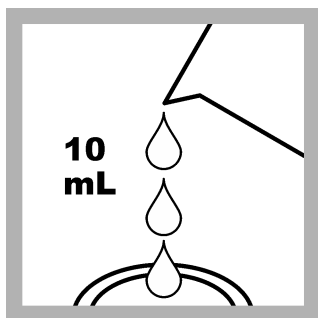
3. Add the contents of one Cyanuric Acid 2 Reagent Powder Pillow.



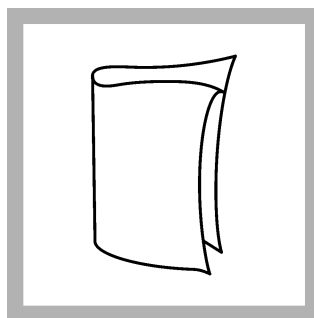
4. Swirl to mix. After the reagent is added, a white turbidity will show if cyanuric acid is in the sample. Accuracy is not affected by undissolved powder.



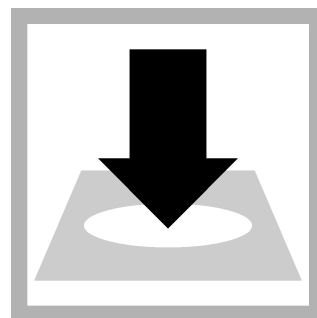
5. Start the instrument timer. A 3-minute reaction time starts.



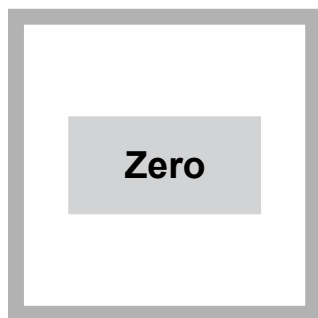
6. **Prepare the blank:** Fill a sample cell with 10 mL of unreacted sample.



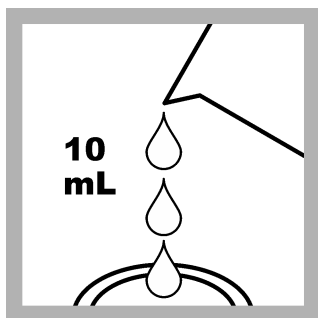
7. Clean the blank sample cell.



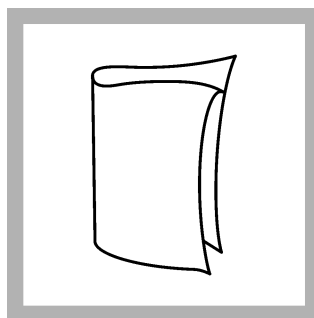
8. Insert the blank into the cell holder.



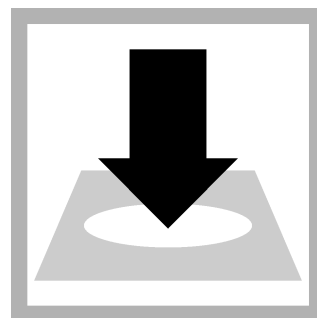
9. Push **ZERO**. The display shows 0 mg/L Cyan Acid.



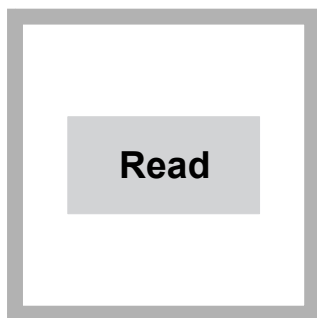
10. When the timer expires, fill a second sample cell with 10 mL of prepared sample from the mixing bottle.



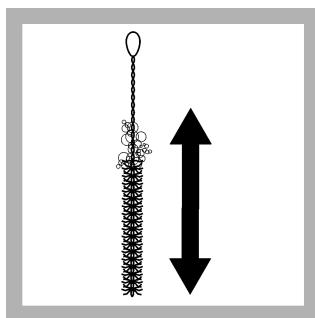
11. Clean the prepared sample cell.



12. Within 7 minutes of the reagent addition, insert the prepared sample into the cell holder.



13. Push **READ**. Results show in mg/L Cyan Acid.



14. Clean sample cells with soap, water and a brush soon after each test. Cells that are not cleaned may form a white film inside the sample cell.

Interferences

Turbidity interferes. Filter turbid samples before the test is started.

Accuracy check

Standard solution method

Use the standard solution method to validate the test procedure, the reagents and the instrument.

Items to collect:

- 1.000 g cyanuric acid
- 1-L volumetric flask, Class A
- 100-mL volumetric flask, Class A
- 3-mL volumetric pipet, Class A and pipet filler safety bulb
- Deionized water

1. Prepare a 1000-mg/L cyanuric acid stock solution as follows:
 - a. Add 1.000 g of cyanuric acid into a 1-L volumetric flask. Add several hundred mL of deionized water and mix well. The cyanuric acid can take several hours to dissolve.
 - b. Dilute to the mark with deionized water. Mix well. This solution is stable for several weeks.
2. Prepare a 30 mg/L cyanuric acid standard solution as follows:
 - a. Use a pipet to add 3.00 mL of the 1000-mg/L cyanuric acid stock solution into a 100-mL volumetric flask.
 - b. Dilute to the mark with deionized water. Mix well. Prepare the standard solution each day.
3. Use the test procedure to measure the concentration of the prepared standard solution.
4. Compare the expected result to the actual result.

Note: The factory calibration can be adjusted slightly with the standard adjust option so that the instrument shows the expected value of the standard solution. The adjusted calibration is then used for all test results. This adjustment can increase the test accuracy when there are slight variations in the reagents or instruments.

Method performance

The method performance data that follows was derived from laboratory tests that were measured on a spectrophotometer during ideal test conditions. Users can get different results under different test conditions.

Program	Standard	Precision (95% confidence interval)	Sensitivity Concentration change per 0.010 Abs change
170	10 mg/L cyanuric acid	7–13 mg/L cyanuric acid	at 10 and 30 mg/L: 0.3 mg/L; at 50 mg/L: 0.4 mg/L cyanuric acid

Summary of method

The test for cyanuric acid uses the turbidimetric method. Cyanuric Acid 2 Reagent precipitates any cyanuric acid in the sample and holds it in suspension. The amount of turbidity caused by the suspended particles is directly proportional to the amount of cyanuric acid in the sample. The measurement wavelength is 480 nm for spectrophotometers or 520 nm for colorimeters.

Consumables and replacement items

Required reagents

Description	Quantity/test	Unit	Item no.
Cyanuric Acid 2 Reagent Powder Pillow	1	50/pkg	246066

Required apparatus

Description	Quantity/test	Unit	Item no.
Bottle, square, with 25-mL mark	1	each	1704200
Sample cells, 10-mL square, matched pair	2	2/pkg	2495402

Recommended standards

Description	Unit	Item no.
Cyanuric Acid	25 g	712924
Water, deionized	4 L	27256

Optional reagents and apparatus

Description	Unit	Item no.
Balance, 600 g x 0.01 g, 100–240 VAC	each	2937201
Brush, test tube	each	69000
Filter paper, 2–3-micron, pleated, 12.5-cm	100/pkg	189457
Flask, volumetric, Class A, 100-mL glass, Certified	each	2636642
Flask, volumetric, Class A, 1000-mL glass, Certified	each	2636653
Funnel, poly, 65-mm	each	108367
Liqui-Nox Phosphate-free detergent	946 mL	2088153
Pipet, TenSette [®] , 1.0–10.0 mL	each	1970010
Pipet tips for TenSette [®] Pipet, 1.0–10.0 mL	50/pkg	2199796
Pipet, volumetric, Class A, 3-mL	each	1451503
Pipet filler, safety bulb	each	1465100



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