

# Instruction Sheet

## *Thermo Scientific Orion AQUAfast AC4010 Ammonia Ultra Low Range Ampoules*

This instruction sheet provides step-by-step instructions for using the Thermo Scientific™ Orion™ AQUAfast™ AC4010 Ammonia Ultra Low Range Auto-Test Ampoules with the Orion AQUAfast AQ4000 colorimeter. The Orion AQUAfast Auto-Test ampoules are designed for use with the Orion AQUAfast AQ4000 colorimeter. Auto-Test ampoules contain a pre-measured amount of liquid reagent and easily fill with the correct volume of sample for simplified reagent and sample mixing. Each ampoule contains an Auto-ID barcode that is read by the AQ4000 colorimeter and used to automatically identify the test parameter and initiate the test. For complete setup and operation instructions for the colorimeter, consult the Orion AQUAfast AQ4000 colorimeter user guide.

|                                     |
|-------------------------------------|
| <b>Product: AC4010</b>              |
| <b>Revision Date: April 6, 2015</b> |
| 256431-001 Revision C               |

## Product Information

AC4010 Ammonia as Nitrogen (N) Ultra Low Range Auto-Test Ampoules

0.2 – 3.0 mg/L

Program ID# 034

## Test Method Overview

The Ammonia as Nitrogen Ultra Low Range Auto-Test method employs the salicylate chemistry.<sup>1,2</sup> Free ammonia reacts with hypochlorite to form monochloramine. Monochloramine reacts with salicylate, in the presence of sodium nitroferricyanide, to form 5-aminosalicylate, a green colored complex. This test method measures free ammonia and monochloramine in drinking water, clean surface water, and good-quality nitrified wastewater effluent. Results are expressed in ppm (mg/L) ammonia as nitrogen,  $\text{NH}_3\text{-N}$ .

High levels (>20 ppm) of ammonia can reduce the intensity of the developed color from this reagent. In this case, instead of an over range result, a false low test result may be obtained. If high levels of ammonia are suspected, a series of dilutions should be performed on the sample to confirm reagent performance.

1. Krom, Michael D. (1980) Spectrophotometric Determination of Ammonia: A Study of a Modified Berthelot Reduction Using Salicylate and Dichloroisocyanurate, *The Analyst*, V105, pp. 305-316.
2. Methods for the Chemical Analysis of Water and Wastes, March 1979, Method 351.2.

## Safety Information

Read the Safety Data Sheet (SDS) before performing this test. Wear safety glasses and gloves.

## Test Procedure

**Note:** Before testing, zero the Orion AQUAfast AQ4000 colorimeter using a sealed zero vial from the Orion AQUAfast Zero Auto-Test Kit, Cat. No. AQ4ZER. If the sample is colored, use the sample cup provided to dilute the sample using the following steps: 1) Add 10 mL of sample and 5 mL of deionized water to the sample cup for a total of 15 mL. 2) Transfer the diluted sample to a clean, dry screw top vial from the Zero Auto-Test Kit and use that vial to zero the meter. 3) See the AQ4000 colorimeter user guide for details on the zero procedure for the colorimeter. Discard the diluted sample after the zero procedure. Repeat for each colored sample. Re-zero with the sealed zero vial before testing any colorless samples.

1. Fill the sample cup to the 25 mL mark with the sample. *See Figure 1.*
2. Add 5 drops of the Stabilizer solution to the contents of the sample cup. *See Figure 2.* Stir briefly with the tip of the ampoule.
3. Add 2 drops of the Catalyzer solution to the contents of the same sample cup. *See Figure 2.* Stir briefly with the tip of the ampoule.
4. Add 2 drops of the Activator solution to the contents of the same sample cup. *See Figure 2.* Stir briefly with the tip of the ampoule.
5. Place the Auto-Test ampoule in the sample cup. Snap the tip by pressing the ampoule against the side of the cup. The ampoule will fill leaving a small bubble to facilitate mixing. *See Figure 3.*
6. Mix the contents of the ampoule by inverting it several times, allowing the bubble to travel from end to end each time. Wipe all liquid from the exterior of the ampoule.
7. Insert the ampoule into the AQ4000 colorimeter. Align the ▼ on the Auto-Test ampoule with the ◆ on the adapter to obtain a continuous beeping and view \*\*\*\*\* across the display. If \*\*\*\*\* and beeping are not observed, rotate the ampoule to the right or left to initiate the measurement.
8. Immediately cover the ampoule with the colorimeter's light cover.
9. The AQ4000 will begin a 15 minute countdown. After the countdown is completed, the AQ4000 will automatically proceed to the measure mode.
10. Record the concentration reading from the AQ4000 display as either mg/L or ppm NH<sub>3</sub>-N or log measurement into the data logger by pressing the log key.

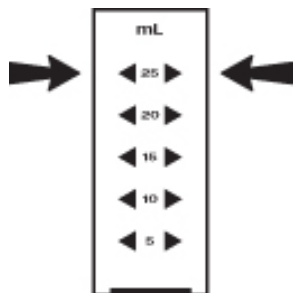


Figure 1:



Figure 2:

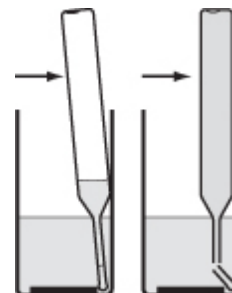


Figure 3:

## Ordering Information

| Cat. No. | Description                                                                                                                                                                                                     |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AC4010   | Orion AQUAfast Ammonia as N Ultra Low Range Auto-Test Kit, 30 Ampoules                                                                                                                                          |
| AC4012   | Orion AQUAfast Ammonia as N Low Range Auto-Test Kit, 30 Ampoules                                                                                                                                                |
| AC4011   | Orion AQUAfast Ammonia as N High Range Auto-Test Kit, 30 Ampoules                                                                                                                                               |
| AC4070   | Orion AQUAfast Chlorine (Free & Total) Auto-Test Kit, 30 Ampoules                                                                                                                                               |
| AC4078   | Orion AQUAfast Iron (Total & Soluble) Auto-Test Kit, 30 Ampoules                                                                                                                                                |
| AC4082   | Orion AQUAfast Sulfate Auto-Test Kit, 30 Ampoules                                                                                                                                                               |
| AQ4ZER   | Orion AQUAfast Zero Vial Auto-Test Kit                                                                                                                                                                          |
| AQ4CBL   | Orion AQUAfast RS232 Cable for AQ4000 Colorimeter                                                                                                                                                               |
| AQ4000   | Orion AQUAfast AQ4000 Colorimeter, Includes 4 AA Batteries, 16 mm Vial, Zero Vial Auto-Test Kit, 16 mm Vial Adapter, 13 mm Vial Adapter, Field Case, User Guide, Tablet Tampering Stir Rod, Vial Cleaning Brush |

For a complete listing of all available Thermo Scientific Orion AQUAfast reagents, colorimeters and accessories, please visit [www.thermoscientific.com/water](http://www.thermoscientific.com/water).

## Contact Information

Thank you for your continued support of Thermo Scientific Orion products. Please visit [www.thermoscientific.com/water](http://www.thermoscientific.com/water) to view the Orion meter, electrode, sensor and solution products and download product literature, user guides and software updates. To access additional product support files, please visit our [Online Library](#).

For any questions or if you require assistance, contact our Technical Support Specialists:

Email [wai.techservbev@thermofisher.com](mailto:wai.techservbev@thermofisher.com)

Within the United States, call 1-800-225-1480

Outside the United States, call +1-978-232-6000

For additional product information, contact your local authorized dealer, local Thermo Scientific Orion technical sales representative or contact us using the Water and Lab Products (WLP) contact information below.

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### Water and Lab Products

North America  
Toll Free: 1-800-225-1480  
Tel: 1-978-232-6000  
[info.water@thermofisher.com](mailto:info.water@thermofisher.com)

Germany  
Tel: (49) 6184-90-6000  
[info.water.uk@thermofisher.com](mailto:info.water.uk@thermofisher.com)

India  
Tel: (91) 22-4157-8800  
[wai.asia@thermofisher.com](mailto:wai.asia@thermofisher.com)

Japan  
Tel: (81) 045-453-9175  
[wai.asia@thermofisher.com](mailto:wai.asia@thermofisher.com)

China  
Tel: (86) 21-68654588  
[wai.asia@thermofisher.com](mailto:wai.asia@thermofisher.com)

Singapore  
Tel: (65) 6778-6876  
[wai.asia@thermofisher.com](mailto:wai.asia@thermofisher.com)

Australia  
Tel: (613) 9757-4300  
In Australia: (1300) 735-295  
[InfoWaterAU@thermofisher.com](mailto:InfoWaterAU@thermofisher.com)