

# Instruction Sheet

## *Thermo Scientific Orion AQUAfast AC4008 Oxygen Ampoules*

This instruction sheet provides step-by-step instructions for using the Thermo Scientific™ Orion™ AQUAfast™ AC4008 Oxygen 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: AC4008</b>
<b>Revision Date: April 6, 2015</b>
256429-001 Revision B

## Product Information

AC4008 Oxygen Auto-Test Ampoules

2.0 – 15 mg/L

Program ID# 015

**Important Note:** The Oxygen Auto-Test ampoules contain a reagent that will deteriorate upon prolonged exposure to light. They will remain stable only if stored in the dark.

## Test Method Overview

The Oxygen Auto-Test method employs the indigo carmine method.<sup>1,2</sup> In an acidic solution, oxygen oxidizes the yellow-green colored leuco form of indigo carmine to form a highly colored blue dye.

The resulting blue color is proportional to the dissolved oxygen concentration in the sample. Results are expressed in ppm (mg/Liter) O<sub>2</sub>.

1. ASTM D 888-87, Dissolved Oxygen in Water, Test Method A – Colorimetric Indigo Carmine
2. Gilbert, T. W., Behymer, T. D., Castañeda, H. B., “Determination of Dissolved Oxygen in Natural and Wastewaters,” American Laboratory, March 1982, pp. 119-134

## Safety Information

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

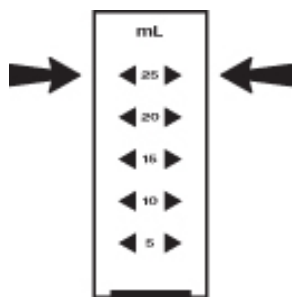
## Sample Pretreatment

The most critical part of any dissolved oxygen test is sampling. It is difficult to obtain an aliquot that accurately reflects the oxygen content of a sample. Exposure to the high oxygen content of “air” will cause a sample to approach saturation. Biological activity may cause rapid oxygen depletion. Dipping and pouring should be performed with as little agitation as possible.

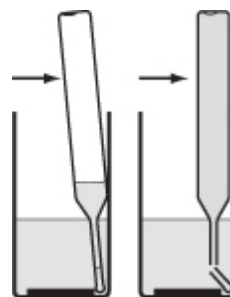
## Test Procedure

**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. 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 2*.
3. 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.
4. 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.
5. Immediately cover the ampoule with the colorimeter's light cover.
6. The AQ4000 will begin a 2 minute countdown. After the countdown is completed, the AQ4000 will automatically proceed to the measure mode.
7. Record the concentration reading from the AQ4000 display as mg/L or ppm O<sub>2</sub> or log the measurement into the data logger by pressing the log key.



**Figure 1:**



**Figure 2:**

## Ordering Information

Cat. No.	Description
AC4008	Orion AQUAfast Oxygen Auto-Test Kit, 30 Ampoules
AC4010	Orion AQUAfast Ammonia as N Ultra Low 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
AC4016	Orion AQUAfast Sulfide (Soluble) 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 the [WLP 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.

© 2015 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. & its subsidiaries.

### 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)