

Program ID #61

Sulfate

0 - 70 mg/L)

The Orion AQUAfast IV Powder Chemistries are intended for use with the Orion AQ4000 Advanced Colorimeter. For detailed setup and measurement procedures for the Orion AQ4000, consult your colorimeter manual.

NOTE: The Orion AQ4000 must be zeroed using a vial filled with sample. If the sample is colored, use actual sample. Use the 24 mm glass vials from Orion AC2V24.

Safety Information

Read MSDS before performing this test procedure. Wear safety glasses and gloves. Material Safety Data Sheets are available on request or see website.

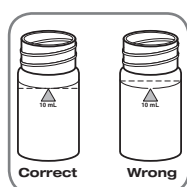
AQUAfast IV Zero

Figure 1

1. Turn the colorimeter on by pressing the **power** key.
2. Press **prgm** and select program 61. Press **yes** key.
3. Fill a clean, dry 24 mm vial with 10 mL of sample. **See Fig 1.**
4. Screw the cap onto the vial and wipe the exterior of the vial to ensure it is clean and dry.
5. Insert the zero vial into the Orion AQ4000 sample chamber. No adapters are required. Align the ▲ on the vial to the ▲ on the colorimeter. Cover the vial with the vial cover.
6. Press the **zero** key. The “zero” icon will light up on the upper right hand corner.
7. “WAIT” is then displayed. The result is displayed as “0.0” A4P SO₄ for sulfate.
8. The colorimeter is now zeroed and ready for measurements.

NOTE: For best results, pipette samples and zero using the sample before each measurement. The Orion AQ4000 must be zeroed before each method.

Test Procedure*

Figure 2



Figure 3



Figure 4

1. Using program 61, use the 24 mm vial with 10 mL of sample from the zero procedure. **See Fig 1.**
2. Take one Sulpha 4 Powder Pack, tap down gently and tear open in the direction of the text. Add the contents to the sample vial. **See Fig 2.**
3. Screw the cap onto the vial tightly and invert the vial several times to dissolve the powder. A white turbid color will form if sulfate is present. **See Fig 3.**
4. Immediately place the prepared sample into the AQ4000 sample chamber. Cover with the vial cover. **See Fig 4.**
5. Press **meas** key for sample measurement. A five-minute reaction countdown will begin. The result in mg/L or ppm sulfate will be displayed.

NOTE: If the display flashes “overrng”, it is due to high sulfate levels. Dilute a fresh sample and repeat the test. Multiply the result by the dilution factor.

** When very accurate results are required, method 61 should be replaced with a “user programmed calibration”. This will remove the inherent variations associated with turbidimetric measurements. See the*

Test Method

The Sulfate Powder Chemistry employs the turbidimetric method.^{1,2} Barium chloride reacts with sulfate in an acidic solution to form barium sulfate. The resulting turbidity is proportional to the sulfate concentration in the sample.

1. Standard Methods for the Treatment Water and Wastewater, 20th Edition, 4500-SO₄²⁻E. Turbidimetric Method, pp 4-178.

2. EPA Approved Method 375.4 for Sulfate (Turbidimetric) (1978).

Ordering Information

Cat. No.	Description
AC4P82	Orion AQUAfast IV Sulfate Powder Chemistry, 100 tests
AC2V24	24 mm Vials, 12 pack
AQ4CBL	Orion AQUAfast IV RS232 Cable
AQ4000	Orion AQUAfast IV Advanced Colorimeter

Environmental Instruments Water Analysis Instruments

166 Cummings Center
Beverly, MA 01915 USA

256462-001 Rev.A 0108

Toll Free: 1-800-225-1480
Tel: 1-978-232-6000
Dom. Fax: 1-978-232-6015
Int'l Fax: 978-232-6031
www.thermo.com/water

© 2008 Thermo Fisher Scientific Inc. All rights reserved.

Thermo
SCIENTIFIC