

Program ID #58

Ammonia as Nitrogen

0-0.50 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.

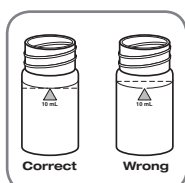
AQUAfast IV Zero

Figure 1

1. Turn the colorimeter on by pressing the **power** key.
2. Press **prgm** key and select program 58. 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 **s** on the vial to the **s** 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 “0.000” A4P NH₃ for ammonia as nitrogen.
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.

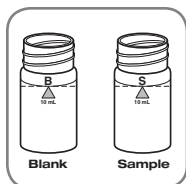
Test Procedure

Figure 2

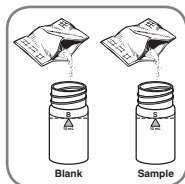


Figure 3



Figure 4

1. Using program 58, use the 24 mm vial with 10 mL of sample from the zero procedure as the Sample vial. **See Fig 1.**
2. Fill another 24 mm vial with 10 mL of deionized water and use it as the Blank vial. Label each vial. **See Fig 2.**
3. Take one Ammonia Salicylate Powder Pack, tap down gently and tear open in the direction of the text. Add the contents to the Blank vial. Take another Ammonia Salicylate Powder Pack, tap down gently and tear open in the direction of the text. Add the contents to the Sample vial. **See Fig 3.**
4. Screw caps onto both the Blank vial and the Sample vial tightly and invert each vial several times to dissolve the powder. **See Fig 4.**
5. Allow a three-minute reaction time to take place. To use the timer, press timer key. Press ▲ and ▼ keys to set up 3:00 MIN/SEC. Press **yes** key.



Figure 5

6. After the three-minute reaction time is up, uncap the vials. Take one Ammonia Cyanurate Powder Pack, tap down gently and tear open in the direction of the text. Add the contents to the Blank vial. Take another Ammonia Cyanurate Powder Pack, tap down gently and tear open in the direction of the text. Add the contents to the Sample vial. **See Fig 3.**
7. Screw caps onto both the Blank vial and the Sample vial tightly and invert each vial to mix. A green color will develop if ammonia is present.
8. Immediately place the prepared Blank vial into the AQ4000 sample chamber. Cover with the vial cover. **See Fig 5.**
9. Allow a fifteen-minute reaction time to take place. To use the timer, press **timer** key. Press **▲** and **▼** keys to set up 15:00 MIN/SEC. Press **yes** key.
10. After the fifteen-minute reaction time is up, perform reagent blank correction.
 - a. Press **setup** key.
 - b. Press the **▲** and **▼** keys until "BLANK" is displayed.
 - c. Press the **yes** key. "SET BLANK?" will be displayed.
 - d. Press the **yes** key. "SAMPLE?" will be displayed.
 - e. Press the **yes** key. Blank value will be displayed.
 - f. Press **meas** key to return to measurement mode.
11. Remove the Blank vial and place the prepared Sample vial into the AQ4000 sample chamber. Cover with the vial cover. **See Fig 5.**
12. Press **meas** key for sample measurement. The result in mg/L or ppm ammonia as nitrogen will be displayed.

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

Test Method

The Ammonia as Nitrogen Powder Chemistry employs the salicylate method.¹ Ammonia and chlorine compounds are combined which forms monochloramines, and reacts with salicylate to form 5-aminosalicylate. When 5-aminosalicylate is oxidized in the presence of a sodium nitroprusside catalyst, a blue color develops. Since the blue color is masked by the yellow color due to the excess reagent present, the final color of the solution is green. This green color will be directly proportional to the ammonia concentration in the sample.

1. Adapted from: Clinica Chimica Acta, 14, 403 (1996)

Ordering Information

Cat. No.	Description
AC4P12	Orion AQUAfast IV Ammonia as Nitrogen Powder Chemistry, 100 tests
AC2V24	24 mm Vials, 12 pack
AQ4CBL	Orion AQUAfast IV RS232 Cable
AQ4000	Orion AQUAfast IV Advanced Colorimeter

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