



1200 COLORIMETER AMMONIA-NITROGEN CODE 3680-01

QUANTITY	CONTENTS	CODE
30 mL	Ammonia Nitrogen Reagent #1	V-4797-G
3 x 30 mL	*Ammonia Nitrogen Reagent #2	*V-4798-G
1	Pipet, 1 mL, plastic	0354
1	Colorimeter Tubes, with caps	0290-6
1	Water Sample Collecting Bottle	0688
1	1200 Colorimeter for Ammonia Nitrogen	26737

***WARNING:** Reagents marked with an * are considered to be potential health hazards. To view or print a Material Safety Data Sheet (MSDS) for these reagents go to lamotte.com. To obtain a printed copy, contact LaMotte by e-mail, phone or fax.

To order individual reagents or test kit components, use the specified code number.

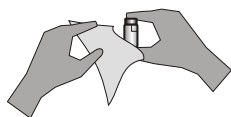
INTRODUCTION

Ammonia nitrogen is present in various concentrations in many surface and ground water supplies. Any sudden change in the concentration of ammonia nitrogen in a water supply is cause for suspicion. A product of microbiological activity, ammonia nitrogen is sometimes accepted as chemical evidence of pollution when encountered in natural waters.

Ammonia is rapidly oxidized in natural water systems by special bacterial groups that produce nitrite and nitrate. This oxidation requires that dissolved oxygen be available in the water. Ammonia is an additional source of nitrogen as a nutrient which may contribute to the expanded growth of undesirable algae and other forms of plant growth that overload the natural system and cause pollution.

AMMONIA NITROGEN TEST PROCEDURE: NESSLER METHOD

Read the 1200 Colorimeter Manual before proceeding. Carefully wipe tubes dry before inserting into the colorimeter chamber.



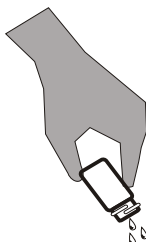
AMMONIA NITROGEN

1.



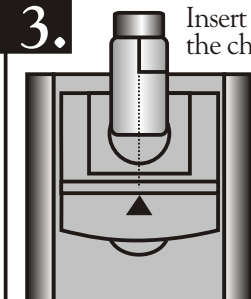
Fill the Water Sample Collecting Bottle (0688) with sample water. This will be used to dispense sample water for the tests.

2.



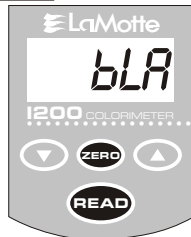
Rinse and fill a colorimeter tube (0290) to the 10 mL line with sample water. Cap and wipe dry.

3.



Insert the tube into the chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the blank or zero.

4.



Push the **READ** button to turn the meter on. Press

the **ZERO** button and hold it for 2 seconds until **BLA** is displayed. Release the button to take a blank reading (0.0 ppm).

5.



Remove tube from colorimeter. Add 8 drops of Ammonia Nitrogen Reagent #1 (V-4797). Cap and mix.

6.



Use 1.0 mL pipet (0354) to add 1.0 mL of *Ammonia Nitrogen Reagent #2 (V-4798).

7.



Cap and invert to mix. Wait 5 minutes for full color development. Wipe tube dry.

8.



Align the index line with the arrow on the meter, insert tube into chamber. Close the lid. Push the **READ** button. Record results as ppm Ammonia Nitrogen ($\text{NH}_3\text{-N}$).

NOTE: For the best possible results, carry a reagent blank through the procedure. After scanning the blank in Step 4, perform the test procedure on clear, colorless, distilled or deionized water. Subtract results of reagent blank from all subsequent test results.

NOTE: If the reading displays *ERR*, repeat procedure on diluted sample, and multiply the result by the appropriate dilution factor. See 1200 Colorimeter Instruction Manual for procedure.

CALCULATIONS

To express results as Unionized Ammonia (NH_3):

$$\text{Unionized Ammonia (NH}_3\text{)} = \text{ppm Ammonia Nitrogen (NH}_3\text{-N)} \times 1.2$$

To express results as Ionized Ammonia (NH_4^+):

$$\text{Ionized Ammonia (NH}_4^+\text{)} = \text{ppm Ammonia Nitrogen (NH}_3\text{-N)} \times 1.3$$

Ammonia in water occurs in two forms: toxic unionized ammonia (NH_3) and the relatively non-toxic ionized form, ammonium ion (NH_4^+). This test method measures both forms as ammonia-nitrogen ($\text{NH}_4\text{-N}$) to give the total ammonia-nitrogen concentration in water. The actual proportion of each compound depends on temperature, salinity, and pH. A greater concentration of unionized ammonia is present when the pH value and salinity increase.

1. Consult the table below to find the percentage that corresponds to the temperature, pH and salinity of the sample.
2. To express the test result as ppm Unionized Ammonia Nitrogen ($\text{NH}_3\text{-N}$), multiply the total ammonia-nitrogen test result by the percentage from the table.
3. To express the test result as ppm Ionized Ammonia Nitrogen ($\text{NH}_4^+\text{-N}$), subtract the unionized ammonia-nitrogen determined in Step 2 from the total ammonia nitrogen.

pH	10 C		15°C		20 C		25°C	
	FW ¹	SW ²	FW	SW	FW	SW	FW	SW
7.0	0.19		0.27		0.40		0.55	
7.1	0.23		0.34		0.50		0.70	
7.2	0.29		0.43		0.63		0.88	
7.3	0.37		0.54		0.79		1.10	
7.4	0.47		0.68		0.99		1.38	
7.5	0.59	0.459	0.85	0.665	1.24	0.963	1.73	1.39
7.6	0.74	0.577	1.07	0.836	1.56	1.21	2.17	1.75
7.7	0.92	0.726	1.35	1.05	1.96	1.52	2.72	2.19
7.8	1.16	0.912	1.69	1.32	2.45	1.90	3.39	2.74
7.9	1.46	1.15	2.12	1.66	3.06	2.39	4.24	3.43
8.0	1.83	1.44	2.65	2.07	3.83	2.98	5.28	4.28
8.1	2.29	1.80	3.32	2.60	4.77	3.73	6.55	5.32
8.2	2.86	2.26	4.14	3.25	5.94	4.65	8.11	6.61
8.3	3.58	2.83	5.16	4.06	7.36	5.78	10.00	8.18
8.4	4.46	3.54	6.41	5.05	9.09	7.17	12.27	10.10
8.5	5.55	4.41	7.98	6.28	11.18	8.87	14.97	12.40

¹Freshwater data from Trussel (1972).

²Seawater values from Bower and Bidwell (1978). Salinity for the Seawater values = 34‰ at an ionic strength of 0.701 M.

FOR EXAMPLE:

A fresh water sample at 20 °C has a pH of 8.5 and the test result is 1.0 ppm as total Ammonia-Nitrogen.

1. The percentage from the table is 11.18% (or 0.1118).
2. 1 ppm total Ammonia-Nitrogen \times 0.1118 = 0.1118 ppm Unionized Ammonia-Nitrogen
3.

Total Ammonia-Nitrogen	1.0000 ppm
Unionized Ammonia-Nitrogen	0.1118 ppm
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Ionized Ammonia-Nitrogen	= 0.8882 ppm

AMMONIA NITROGEN TEST METHOD SPECIFICATIONS

APPLICATION

Drinking , surface, and saline waters; domestic and industrial wastes.

RANGE

0 to 5.0 ppm Ammonia Nitrogen

METHOD

Ammonia forms a colored complex with Nessler's Reagent in proportion to the amount of ammonia present in the sample. Rochelle salt is added to prevent precipitation of calcium or magnesium in undistilled samples.

HANDLING & PRESERVATION

Preservation is accomplished by the addition of 2 mL of concentrated H_2SO_4 at 4°C.

INTERFERENCES

Sample turbidity and color may interfere. Turbidity may be removed by a filtration procedure. Color interference may be eliminated by adjusting the instrument to 100%T with a sample blank.

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