

# **Ammonia Nitrogen Test Kit** NI-SA (2428700)

DOC326 98 00007

### **Test preparation**

CAUTION: A Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

- Put the color disc on the center pin in the color comparator box (numbers to the front).
- Use sunlight or a lamp as a light source to find the color match with the color comparator box.
- Rinse the tubes with sample before the test. Rinse the tubes with deionized water after the test.
- · If the color match is between two segments, use the value that is in the middle of the two
- If the color disc becomes wet internally, pull apart the flat plastic sides to open the color disc. Remove the thin inner disc. Dry all parts with a soft cloth. Assemble when fully dry.
- To verify the test accuracy, use a standard solution as the sample.
- · This test kit is for seawater. If used for brackish or fresh water, the test kit gives a higher than actual value. The error in brackish water is usually less than 10%. The error in low salinity or fresh water is a maximum 16%.
- This test is very sensitive to contamination. Try to get the same result on a second test. Fully rinse the tubes with fresh sample before the second test. The reagents clean the tubes during
- To increase the range of this test to 4 mg/L NH<sub>3</sub>-N, dilute the sample as follows. Use a 3-mL syringe to add 2.5 mL of sample to each tube. Dilute the sample to the 5-mL mark with deionized water. Use the diluted sample in the test procedure and multiply the result by 2.

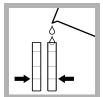
## Replacement items

Description	Unit	Item no.
Ammonia Salicylate Reagent Powder Pillows, 5 mL	50/pkg	2395266
Ammonia Cyanurate Reagent Powder Pillows, 5 mL	50/pkg	2395466
Color disc, ammonia nitrogen, salicylate, 0–2.0 mg/L	each	9261300
Color comparator box	each	173200
Glass viewing tubes, glass, 18 mm	6/pkg	173006
Stoppers for 18-mm glass tubes and AccuVac Ampuls	6/pkg	173106

#### Optional items

[	Description	Unit	Item no.	
١	Nitrogen ammonia standard solution, 1.0 mg/L NH <sub>3</sub> –N	500 mL	189149	
١	Water, deionized	500 mL	27249	
5	Syringe, Luer-Lok® Tip, 3 mL	each	4321300	

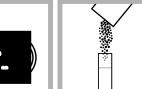
## Test procedure—Ammonia-nitrogen (0–2.0 mg/L NH<sub>3</sub>–N)



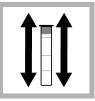
1. Fill two tubes to 2. Put one tube the first line (5 mL) into the left with sample.



opening of the color comparator box.



3. Add one Ammonia Powder Pillow to the second tube.



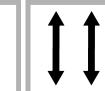
**4.** Put a stopper on the tube. Shake Salicylate Reagent until the powder fully dissolves.



5. Wait 3 minutes. 6. Add one



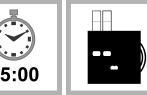
Ammonia Cvanurate Reagent Powder Pillow to the same tube. Put a stopper on the tube.



7. Shake until the 8. Wait powder fully dissolves.



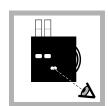
15 minutes. A green color develops.



**9.** Put the second tube into the color comparator box.



10. Hold the color comparator box in front of a light source. Turn the color disc to find the color match.



**11.** Read the result in mg/L in the scale window.

## Calculate the mg/L NH<sub>3</sub> and mg/L NH<sub>4</sub><sup>+</sup>

Ammonia in water is in the form of the ammonium ion (NH<sub>4</sub><sup>+</sup>) and un-ionized ammonia (NH<sub>3</sub>). NH<sub>3</sub> is toxic to fish. Table 1 shows that the percent of NH<sub>3</sub> increases as the pH and temperature increase. This test kit measures both NH<sub>4</sub><sup>+</sup> and NH<sub>3</sub> as ammonia nitrogen (NH<sub>3</sub>–N).

To calculate the mg/L NH<sub>3</sub> in the sample, refer to Table 1 and the equation that follows.

mg/L NH<sub>3</sub> =  $((mg/L NH_3-N \times percent NH_3 \text{ from Table 1}) \div 100) \times 1.2$ 

Example: The test result was 1.6 mg/L NH<sub>3</sub>-N. The sample pH was 7.6 and the sample temperature was 16 °C. The mg/L NH<sub>3</sub> is  $((1.6 \times 1.16) \div 100) \times 1.2 = 0.02 \text{ mg/L NH}_3$ .

To calculate the mg/L NH<sub>4</sub><sup>+</sup> in the sample, refer to Table 1 and the equation that follows.

 $mg/L NH_4^+ = ((mg/L NH_3 - N \times (100 - percent NH_3 \text{ from Table 1})) \div 100) \times 1.3$ 

Example: The test result was 1.6 mg/L NH<sub>3</sub>-N. The sample pH was 7.6 and the sample temperature was 16 °C. The mg/L NH<sub>4</sub><sup>+</sup> is  $((1.6 \times (100 - 1.16)) \div 100) \times 1.3 = 2.056$  mg/L NH<sub>4</sub><sup>+</sup>.

Table 1 Percent of NH<sub>3</sub> in water

16 °C	18 °C	20 °C	22 °C	24 °C	26 °C	28 °C	30 °C	32 °C
	-	-				-		0.91
0.46	0.54	0.62	0.82	0.83	0.96	1.10	1.26	1.44
0.73	0.85	0.98	1.14	1.31	1.50	1.73	1.98	2.26
1.16	1.34	1.55	1.79	2.06	2.36	2.71	3.10	3.53
1.82	2.11	2.44	2.81	3.22	3.70	4.23	4.82	5.48
2.86	3.30	3.81	4.38	5.02	5.74	6.54	7.43	8.42
4.45	5.14	5.90	6.76	7.72	8.80	9.98	11.29	12.72
6.88	7.90	9.04	10.31	11.71	13.26	14.95	16.78	18.77
10.48	11.97	13.61	15.41	17.37	19.50	21.78	24.22	26.80
15.66	17.73	19.98	22.41	25.00	27.74	30.62	33.62	36.72
22.73	25.46	28.36	31.40	34.56	37.83	41.16	44.53	47.91
31.80	35.12	38.55	42.04	45.57	49.09	52.58	55.99	59.31
42.49	46.18	49.85	53.48	57.02	60.45	63.73	66.85	69.79
53.94	57.62	61.17	64.56	67.77	70.78	73.58	76.17	78.55
64.99	68.31	71.40	74.28	76.92	79.33	81.53	83.51	85.30
74.63	77.35	79.83	82.07	84.08	85.88	87.49	88.92	90.19
82.34	84.41	86.25	87.88	89.33	90.60	91.73	92.71	93.58
	1.16 1.82 2.86 4.45 6.88 10.48 15.66 22.73 31.80 42.49 53.94 64.99 74.63	0.29 0.34   0.46 0.54   0.73 0.85   1.16 1.34   1.82 2.11   2.86 3.30   4.45 5.14   6.88 7.90   10.48 11.97   15.66 17.73   22.73 25.46   31.80 35.12   42.49 46.18   53.94 57.62   64.99 68.31   74.63 77.35	0.29 0.34 0.39   0.46 0.54 0.62   0.73 0.85 0.98   1.16 1.34 1.55   1.82 2.11 2.44   2.86 3.30 3.81   4.45 5.14 5.90   6.88 7.90 9.04   10.48 11.97 13.61   15.66 17.73 19.98   22.73 25.46 28.36   31.80 35.12 38.55   42.49 46.18 49.85   53.94 57.62 61.17   64.99 68.31 71.40   74.63 77.35 79.83	0.29 0.34 0.39 0.46   0.46 0.54 0.62 0.82   0.73 0.85 0.98 1.14   1.16 1.34 1.55 1.79   1.82 2.11 2.44 2.81   2.86 3.30 3.81 4.38   4.45 5.14 5.90 6.76   6.88 7.90 9.04 10.31   10.48 11.97 13.61 15.41   15.66 17.73 19.98 22.41   22.73 25.46 28.36 31.40   31.80 35.12 38.55 42.04   42.49 46.18 49.85 53.48   53.94 57.62 61.17 64.56   64.99 68.31 71.40 74.28   74.63 77.35 79.83 82.07	0.29 0.34 0.39 0.46 0.52   0.46 0.54 0.62 0.82 0.83   0.73 0.85 0.98 1.14 1.31   1.16 1.34 1.55 1.79 2.06   1.82 2.11 2.44 2.81 3.22   2.86 3.30 3.81 4.38 5.02   4.45 5.14 5.90 6.76 7.72   6.88 7.90 9.04 10.31 11.71   10.48 11.97 13.61 15.41 17.37   15.66 17.73 19.98 22.41 25.00   22.73 25.46 28.36 31.40 34.56   31.80 35.12 38.55 42.04 45.57   42.49 46.18 49.85 53.48 57.02   53.94 57.62 61.17 64.56 67.77   64.99 68.31 71.40 74.28 76.92   74.63 77.35 79.83	0.29 0.34 0.39 0.46 0.52 0.60   0.46 0.54 0.62 0.82 0.83 0.96   0.73 0.85 0.98 1.14 1.31 1.50   1.16 1.34 1.55 1.79 2.06 2.36   1.82 2.11 2.44 2.81 3.22 3.70   2.86 3.30 3.81 4.38 5.02 5.74   4.45 5.14 5.90 6.76 7.72 8.80   6.88 7.90 9.04 10.31 11.71 13.26   10.48 11.97 13.61 15.41 17.37 19.50   15.66 17.73 19.98 22.41 25.00 27.74   22.73 25.46 28.36 31.40 34.56 37.83   31.80 35.12 38.55 42.04 45.57 49.09   42.49 46.18 49.85 53.48 57.02 60.45   53.94 57.6	0.29 0.34 0.39 0.46 0.52 0.60 0.69   0.46 0.54 0.62 0.82 0.83 0.96 1.10   0.73 0.85 0.98 1.14 1.31 1.50 1.73   1.16 1.34 1.55 1.79 2.06 2.36 2.71   1.82 2.11 2.44 2.81 3.22 3.70 4.23   2.86 3.30 3.81 4.38 5.02 5.74 6.54   4.45 5.14 5.90 6.76 7.72 8.80 9.98   6.88 7.90 9.04 10.31 11.71 13.26 14.95   10.48 11.97 13.61 15.41 17.37 19.50 21.78   15.66 17.73 19.98 22.41 25.00 27.74 30.62   22.73 25.46 28.36 31.40 34.56 37.83 41.16   31.80 35.12 38.55 42.04 45.	0.29 0.34 0.39 0.46 0.52 0.60 0.69 0.80   0.46 0.54 0.62 0.82 0.83 0.96 1.10 1.26   0.73 0.85 0.98 1.14 1.31 1.50 1.73 1.98   1.16 1.34 1.55 1.79 2.06 2.36 2.71 3.10   1.82 2.11 2.44 2.81 3.22 3.70 4.23 4.82   2.86 3.30 3.81 4.38 5.02 5.74 6.54 7.43   4.45 5.14 5.90 6.76 7.72 8.80 9.98 11.29   6.88 7.90 9.04 10.31 11.71 13.26 14.95 16.78   10.48 11.97 13.61 15.41 17.37 19.50 21.78 24.22   15.66 17.73 19.98 22.41 25.00 27.74 30.62 33.62   22.73 25.46 28.36