



On-Site Determination of Ammonia

**A. PURPOSE AND SCOPE**

Describes the on-site measurement of ammonia in water samples using the Palintest Ammonia Tablet method.

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**C. CHANGES IN THIS DOCUMENT**

DESCRIPTION OF CHANGE
Minor name changes in document

**D. RECORDS / FORMS / LOGS**

REFERENCE	TITLE	LOCATION
<a href="#">FM-QSC-0013</a>	Photometer Validation Records	Intranet
<a href="#">FM-QSC-0027</a>	Photometer Tables	Intranet
	Test Certificate	Accompanies Standards

**E. REFERENCES**

REFERENCE	TITLE	LOCATION

**On-Site Determination of Ammonia****F. PROCEDURE****1. Reagent Shelf Life**

If boxes of reagents do not have a legible 'packed on' date mark those with the date received.

Reject reagents where more than 18 months has passed since the packed on or the received date.

**2. Instrument Traceability and Care.**

Mark all photometers with a unique Customs number. Ensure portable measurement equipment is kept clean and stored according to the manufacturers' recommendations. Replace batteries when required.

**3. Determination**

Prior to analysis turbid raw water samples will be filtered.

Prior to analysis all samples will be warmed to approximately 20 - 40°C using a water bath.

Fill the water bath to the manufacturers recommended levels and set the thermostat dial to 60°C. Over time the bath will require topping up and occasional emptying and cleaning. Whenever significant quantities of water are added to the bath, allow to reach a stable temperature before use. A heater activity lamp is normally provided as an indication that a stable temperature has been reached.

- Flush the sample point in order to obtain a representative sample.
- Fill a clean 250ml conical flask to approximately 75mls (2cm or 1" deep).
- Place the flask containing the sample into the water bath and allow to stand for approximately 10mins or until the sample feels warm when splashed onto the back of your hand.

**3.1. 0 - 1.0 mg/l Ammonia using a Photometer 5000.**

- Select 640nm wavelength on photometer.
- Rinse and fill SAMPLE and BLANK test tubes with water under test to the 10ml mark. Wipe to dry.
- To the SAMPLE test tube add one Ammonia No1 tablet and one Ammonia No 2, crush and mix with a clean crusher to dissolve.
- Stand for at least 15 minutes to allow full colour development.
- Place BLANK tube into test chamber.
- Press the ON button. Keep depressed until the display reads 100 (100% Transmittance).
- Release ON button. Remove BLANK tube and place in tube holder.
- Place SAMPLE tube in the test chamber. Note the display reading when steady. Instrument turns off automatically after 6-8 seconds.

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- Compare displayed reading (%T) against the Table 1 in Appendix 1 or the appropriate table in [FM-QSC-0027](#) - Photometer Tables.
- The result represents the level of ammonia in sample as mg/l N, to convert to ammonium mg/l NH<sub>4</sub> multiply by 1.3.

**3.2. 0-1.0 mg/l Ammonia Using a Photometer 7000**

- Press [ON] key (or press [0] and [ON] keys for continuous operation) and select method Phot 4.
- Rinse and fill SAMPLE and BLANK test tubes with water under test to the 10ml mark. Wipe to dry.
- To the SAMPLE test tube add one Ammonia No1 tablet and one Ammonia No 2, crush and mix with a clean crusher to dissolve.
- Stand for at least 15 minutes to allow full colour development.
- Press ENTER until the following message appears 'INSERT BLANK'. Place BLANK tube into test chamber and press ENTER.
- The instrument will be set automatically and after a few seconds the following display will appear - 'INSERT SAMPLE'.
- Place SAMPLE tube in the test chamber and press ENTER.
- The result represents the level of ammonia in sample as mg/l N, to convert to ammonium mg/l NH<sub>4</sub> multiply by 1.3.

**4. Recording Results**

Record results on sample label, works log or form as appropriate.

**5. Validation and Calibration**

- Validate photometer as described below on a weekly basis or, if used less frequently than once a week, prior to each use.
- Using a certified photometer standard (640nm) and blank carry out a measurement as described in the relevant section above.
- Record the result along with the standard number, blank number and expiry date on form [FM-QSC-0013](#) - 'Photometer Validation Records'.
- Check result is within the test tolerance value quoted on the Test Certificate.
- Only use photometers that give satisfactory validation results. If unsatisfactory validation results are obtained, clean sample tubes and photometer wells and repeat test.
- If repeat test proves unsatisfactory return photometer to manufacturer for re-calibration.
- Inform appropriate **Scientist (Potable Water)** if the error on the photometer and the subsequent use of unvalidated data is likely to have impacted on water quality.
- **Scientist (Potable Water)** will determine appropriate action.
- When complete [FM-QSC-0013](#) is kept at local Science and Water Quality Office, Water Distribution Depot, Water Treatment Office or Customer Service Office as appropriate to the user of the photometer.
- Temperature testing of the on-site ammonia method demonstrated that in temperatures of <15°C colour development can take more than 20 minutes.



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- Therefore, low temperatures can result in artificially low results.
- If sample is <18°C it must be warmed to 20 - +2°C prior to commencing analysis.

**6. Appendix 1**

**Table 1: Ammonia Calibration Chart**

AMMONIA	Ammonia mg/l N										640 nm
%T	9	8	7	6	5	4	3	2	1	0	
80	-	-	-	-	-	0.00	0.00	0.01	0.01	0.02	
70	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	
60	0.07	0.08	0.09	0.09	0.10	0.11	0.11	0.12	0.13	0.13	
50	0.14	0.15	0.16	0.16	0.17	0.18	0.19	0.20	0.20	0.21	
40	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	
30	0.32	0.33	0.34	0.36	0.37	0.38	0.39	0.41	0.42	0.44	
20	0.45	0.47	0.48	0.50	0.51	0.53	0.55	0.57	0.59	0.61	
10	0.63	0.66	0.68	0.71	0.74	0.77	0.80	0.83	0.87	0.91	
0	0.96	1.00	-	-	-	-	-	-	-	-	