

APPLICATION NOTE

T2O-AN-251

ALUMINIUM METHOD

The following application note explains the procedure for the detection of Aluminium using the HM2000 Metalometer.

PLEASE READ THIS APPLICATION NOTE CAREFULLY. TRACE2O[®] HAS ALTERED THE NAMES OF SOME REAGENTS FOR SIMPLICITY AND SO THE PROCEDURE MAY BE DIFFERENT FROM THAT FOLLOWED PREVIOUSLY.

Equipment:

- **HM2000 Kit**
- **Al Blank vial**
- **Al Sample vial**
- **Plastic sample beaker**
- **Stirring rod**
- **HT6 Vario Aluminium ECR F20 PP Sachet** (Previously M51a sachet)
- **HT7 Vario Hexamine F20 PP Sachet** (Previously M51b sachet)
- **HT8 Vario Aluminium ECR Masking Reagent** (Previously M51c reagent)
- **AL160 Al Standard** (Previously M51 standard)
- **Pipette**

Safety:

- Consult the safety data sheet for all of the reagents before use. Even if you have used Metalometer reagents before, the formulation may have changed.
- **HT7 Vario Hexamine F20 PP Sachet** is highly flammable – keep away from naked flame.

Getting started:

- Switch the unit on using the power key.



- Select the Aluminium method by depressing the [MODE] key until 'Al' is displayed.



Sample preparation:

- Ensure that both vials are clean.
- Fill the plastic sample beaker to the **20ml** line with the sample water.
- Add the contents of **one HT6 Vario Aluminium ECR F20 PP Sachet** straight from the foil to the water sample.
- Dissolve the powder using a clean stirring rod.
- **Wait for a reaction period of 30 seconds.**
- After reaction is finished, proceed as follows:
- Add the contents of **one HT7 Vario Hexamine F20 PP Sachet** straight from the foil to the same water sample.
- Dissolve the powder using a clean stirring rod.
- Add **1 drop of HT8 Vario Aluminium ECR Masking Reagent** to the **Al Blank** vial.
- Add **10ml** of the prepared water sample to the **Al Blank** vial.
- Add the remaining **10ml** of prepared water sample to the **Al Sample** vial.
- Close the vials tightly with the caps and invert several times to mix the contents.

Analysis

- Place the **Al Blank vial** in the sample chamber, making sure that the marks on the instrument and vial are aligned.
- **Wait for a reaction period of 5 minutes.**
- Press the [ZERO/TEST] key.



- The method symbol flashes for approx. 8 seconds.
- The display shows: 0.0.0
- Remove the **Al Blank** vial from the sample chamber.
- Place the **Al Sample** vial in the sample chamber, making sure that the marks on the instrument and vial are aligned.
- Press the [ZERO/TEST] key.



- The method symbol flashes for approx. 3 seconds.
- The result is shown in the display as mg/l Aluminium.

Preparation of check standard

- Attach a clean pipette tip to the end of the pipette and set the pipette to 250µL.
- Add 250µL of the **AL160 Al Standard** to the clean sample beaker, and then add deionised water to the 20ml line.
- Continue with sample preparation and analysis as above from step 3 of 'Sample preparation'.
- The result displayed should be 0.20 mg/l Aluminium \pm 0.02 mg/l.
- If the result obtained deviates by more than the above limits, thoroughly rinse both vials and the sample beaker with deionised water, clean the vials and sample beaker with an IPA wipe, rinse again with deionised water, and repeat the measurement with a fresh check standard sample.
- If the result still deviates by more than the above limits, contact Trace2o for further assistance.

LOD/Tolerance

- The lower LOD is 0.01 mg/l (10ppb), upper LOD is 0.25 mg/l (250ppb).
- Tolerance: \pm 0.005 mg/l Al.

Notes

- For best results, thoroughly clean the vials and the measuring beaker between tests with IPA wipes. Rinse thoroughly with deionised water. Ensure that the outside of the vials are clean, dry and free from fingerprints. Always handle the vials by the lid where possible. Take care to avoid any scratches on the internal or external surfaces of the vials.
- To get accurate results the sample temperature must be between 20°C and 25°C.
- Known interferences: Fluorides and Polyphosphates.
- Solutions are available for combating some interferences in the sample. These may be specific to particular water types or conditions. For further information, please contact Trace2o Technical Support department – technical@trace2o.com