Ozone

DOC316.53.01468

Indigo Method

Method 8311

0.01 to 0.25 mg/L O_3 (LR), 0.01 to 0.75 mg/L O_3 (MR)

AccuVac® Ampuls

Scope and application: For water.

Test preparation

Before starting

Analyze the samples immediately. The samples cannot be preserved for later analysis.
Always do tests in sample cells or AccuVac© Ampuls. Do not put the instrument in the sample or pour the sample into the cell holder.
Make sure that the sample cells are clean and there are no scratches where the light passes through them.
Rinse the sample cell and cap with the sample three times before the sample cell is filled.
Make sure that there are no fingerprints or liquid on the external surface of the sample cells or AccuVac© Ampuls. Wipe with a lint-free cloth before measurement.
Cold waters can cause condensation on the sample cell or bubbles in the sample cell during color development. Examine the sample cell for condensation or bubbles. Remove condensation with a lint-free cloth. Invert the sample cell to remove bubbles.
Install the instrument cap over the cell holder before ZERO or READ is pushed.
After the test, immediately empty and rinse the sample cell. Rinse the sample cell and cap three times with deionized water.
Use tap water or deionized water for the blank (ozone-free water).
The AccuVac Ampul Snapper makes AccuVac Ampul tests easier to do. The AccuVac Ampul Snapper keeps the broken tip of the ampul, prevents exposure to the sample and provides controlled conditions for filling the ampule.
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.
Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Items to collect

Description	Quantity
Low Range: Ozone AccuVac® Ampules, 0-0.25 mg/L	2
OR	
Mid-Range: Ozone AccuVac® Ampules, 0-0.75 mg/L	2
Beaker, 50 mL	2
Stoppers, for 18-mm tubes and AccuVac Ampuls	2
Water, ozone-free	varies

Refer to Consumables and replacement items on page 3 for order information.

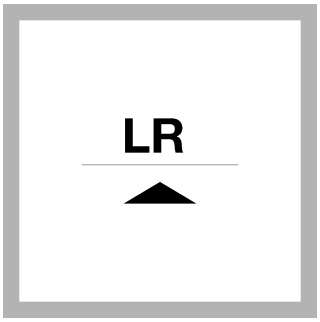
Sample collection

- Analyze the samples immediately. The samples cannot be preserved for later analysis.

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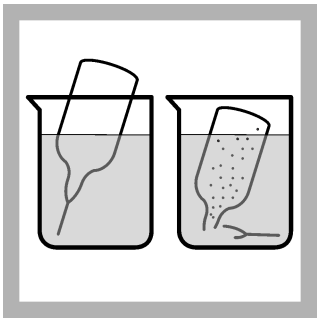
- The most important consideration during sample collection is to prevent the escape of ozone from the sample.
- Collect the sample gently and analyze immediately. Do not shake or stir the sample or allow the sample temperature to increase.
- Do not transfer the sample from one container to another unless absolutely necessary.

AccuVac® Ampul procedure

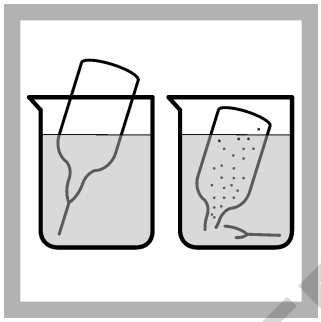


1. Set the instrument to low range (LR) when using low range AccuVac Ampuls or mid-range (MR) when using mid-range AccuVac Ampuls.

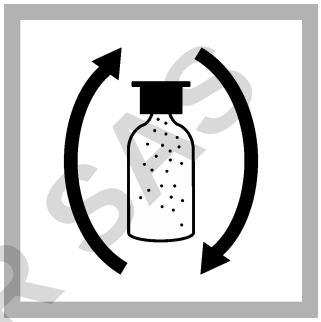
For DR300, push the up arrow button. For PCII, push the menu button, checkmark button, then the menu button again.



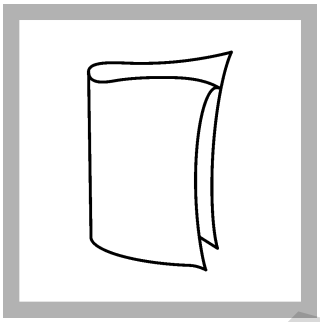
2. Prepare the blank: Pour at least 40 mL of ozone-free water in a 50-mL beaker. Fill an Indigo Ozone Reagent AccuVac Ampul with the ozone-free water. Keep the tip immersed while the Ampul fills fully, then immediately put the stopper on the tip.



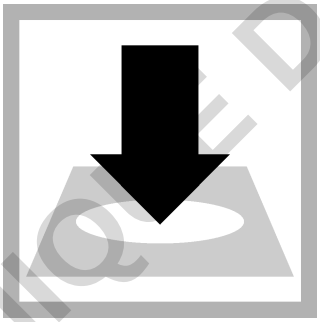
3. Prepare the sample: Pour at least 40 mL of sample in a 50-mL beaker. Fill an Indigo Ozone Reagent AccuVac Ampul with the sample. Keep the tip immersed while the Ampul fills fully, then immediately put the stopper on the tip.



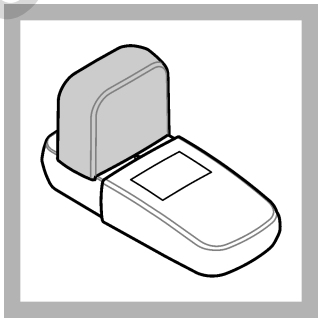
4. Quickly invert the AccuVac Ampuls several times to mix.
Some of the blue color will be bleached if ozone is in the sample.



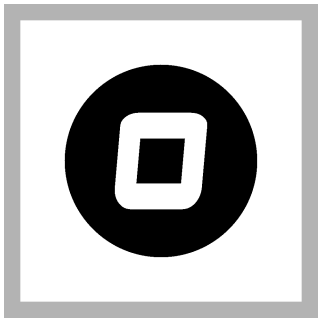
5. Clean the blank AccuVac Ampul.



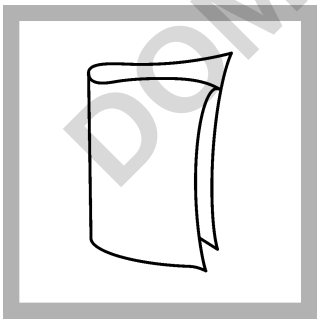
6. Insert the blank AccuVac Ampul into the cell holder.



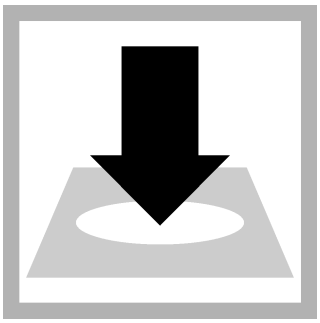
7. Install the instrument cap over the cell holder.



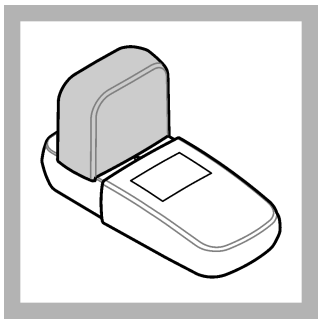
8. Push **ZERO**. The display shows “0.00”.



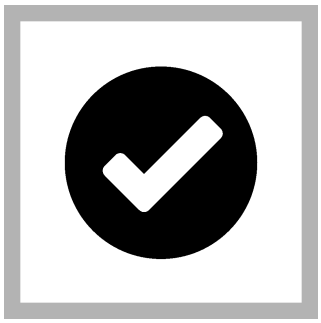
9. Clean the prepared sample AccuVac Ampul.



10. Insert the prepared sample AccuVac Ampul into the cell holder.



11. Install the instrument cap over the cell holder.



12. Push **READ**. Results show in mg/L ozone (O_3).

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Reagent stability

The indigo reagent is light-sensitive. Keep the unused AccuVac Ampuls in the dark. The indigo solution decomposes slowly under room light after the AccuVac Ampul is filled. The filled blank Ampul can be used for multiple measurements during the same day.

Summary of method

The reagent formulation adjusts the sample pH to 2.5 after the Ampule has filled. The indigo reagent reacts immediately and quantitatively with ozone. The blue color of indigo is bleached in proportion to the amount of ozone present in the sample. Other reagents in the formulation prevent chlorine interference. No transfer of sample is needed in the procedure, therefore ozone loss due to sampling is eliminated.

Consumables and replacement items

Required reagents

Description	Quantity/test	Unit	Item no.
Ozone AccuVac® Ampuls, 0–0.25 mg/L	2	25/pkg	2516025
Ozone AccuVac® Ampuls, 0–0.75 mg/L	2	25/pkg	2517025

Required apparatus

Description	Quantity/Test	Unit	Item no.
Beaker, 50 mL	2	each	50041H
Stoppers for 18-mm tubes and AccuVac Ampuls	2	6/pkg	173106

Optional reagents and apparatus

Description	Unit	Item no.
AccuVac® Ampul Snapper	each	2405200
Water, deionized	4 L	27256
SpecCheck™ Gel Secondary Standard Kit, Ozone, 0–0.75 mg/L set	each	2708000

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On the Worldwide Web – **www.hach.com**; E-mail – **techhelp@hach.com**

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12/2018, Edition 2