

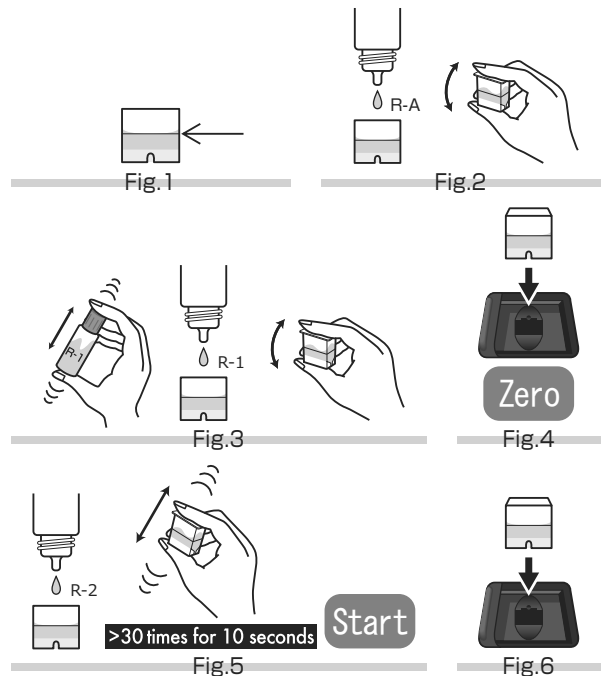
SO₄ Sulfate

Color development: Transparent → White Turbidity
Method : Barium sulfate turbidimetry
Range : 5 — 100 mg/L(ppm)
Reagent : DPR—SO₄ R—A (Dropper) , R-1 (Dropper) , R-2 (Dropper)
Reaction time : 3 min. after R-2 reagent is added.

Cell : PACKTEST Square Cup
Wavelength : 615 nm

Procedure

1. Press **[SO₄]**.
2. Press **[OK]** to switch to the photometry window.
3. Fill the Cell with the sample for 1.5 mL (up to line). (Fig.1)
4. Add one droplet of the R-A reagent, attach the cap, and shake the Cell 2 to 3 times. (Fig.2)
5. Add one droplet of the R-1 reagent after shaking it intensely, attach the cap, and shake the Cell 2 to 3 times. (Fig.3)
6. Remove the cap of the Cell, put the Cell in the cell box and press **[Zero]**. (Fig.4)
7. Add one droplet of the R-2 reagent, attach the cap, shake the Cell 30 times or more in 10 seconds, and press **[Start]**. (Fig.5)
8. Remove the cap of the Cell, set the Cell in the cell box again. (Fig.6)
9. After 3 minutes have elapsed, the concentration will be automatically displayed.



CAUTION

1. In this method, the concentration of ionized sulfuric acid (SO₄²⁻) is measured.
2. The optimum pH during color development is about 2. If the pH of the sample is not within the range from 2 to 9, neutralize the sample with dilute hydrochloric acid or dilute sodium hydroxide solution, etc. (Do not use sulfuric acid.)
3. Perform measurement with the sample temperature set to 20 to 30°C.
4. Depending on the operation method, the results vary. In Step 7 of "Procedure", shake the Cell in a constant manner. If the Cell is shaken gently, the measurement value tends to be low. If the Cell is shaken intensely, the measurement value tends to be high.
5. To set the Cell in the cell box, remove the cap. Wipe off water droplets before setting the Cell in the cell box.
6. As turbid substances attach to the Cell after measurement, thoroughly clean the Cell.

Influence of coexisting substance

The stored calibration curve has been created by using the standard solution. If the influence of other substance is considered, check the measurement value by comparing it with the official method or by standard addition method. The right chart is the list of interference data for acceptable level by adding each of the single substances to the standard solution.

It is possible to measure seawater, but as it has a high concentration of sulfate ions, dilution is necessary. (Approximately 100 times in the case of artificial seawater)

Substances such as sulfite ions and thiosulfuric acid ions turn into sulfate ions and are measured depending on their oxidation state.

If anions that cause production of insoluble barium salt are contained under the acid condition, measurement is not possible.

Except for Heavy metal ions:

- ≤ 1000mg/L.: B (III) , Ca²⁺ , Cl⁻ , F⁻ , K⁺ , Na⁺ , NH₄⁺ , NO₂⁻ , NO₃⁻ , Phenol
- ≤ 500mg/L.: PO₄³⁻
- ≤ 200mg/L.: Residual Chlorine
- < 1mg/L.: Anionic Surfactant

Heavy metal ions:

- ≤ 200mg/L.: Fe³⁺
- ≤ 100mg/L.: Cr (VI)
- ≤ 20mg/L.: Al³⁺

Information on reagent

Refer to the usage supplied with "DPR-SO₄".

The pH of the R-1 reagent and the solution is about 2 or less.