

## USEPA Gravimetric Method<sup>1, 2</sup>

## Method 8271

**Scope and application:** For potable, surface and saline water and for domestic and industrial wastewater, brine solutions, produced waters and hydraulic fracturing waters.

<sup>1</sup> USEPA accepted.

<sup>2</sup> Adapted from *Standard Methods for the Examination of Water and Wastewater*, Section 2540B.



### Test preparation

#### Before starting

If applicable, use the test result in Method 8276—Solids, Total Volatile and Fixed

Dry the aluminum dishes at 103–105 °C for 1 hour. Keep dried dishes in a desiccator.

For larger samples, use a steam bath and evaporating dishes as an alternative to the aluminum dishes.

#### Items to collect

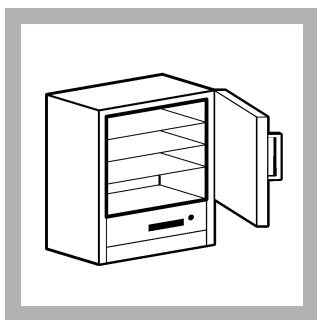
| Description                | Quantity |
|----------------------------|----------|
| Weighing dish, aluminum    | 1        |
| Drying oven                | 1        |
| Cylinder, graduated, 50-mL | 1        |
| Desiccator with desiccant  | 1        |
| Analytical balance         | 1        |
| Tongs                      | 1        |

Refer to [Consumables and replacement items](#) on page 3 for order information.

#### Sample collection and storage

- Collect samples in clean glass or plastic bottles.
- To preserve samples for later analysis, keep the samples at or below 6 °C (43 °F) for up to 7 days.
- Let the sample temperature increase to room temperature before analysis.

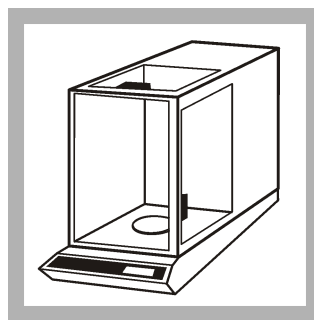
#### Test procedure



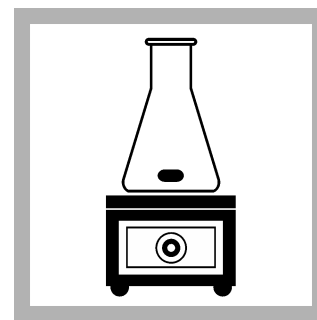
1. Put an aluminum dish in a drying oven at 103–105 °C for 1 hour.



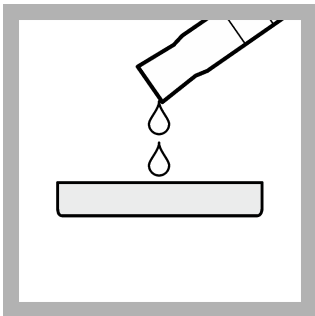
2. Remove the dish from the oven. Let the dish temperature decrease to room temperature in a desiccator.



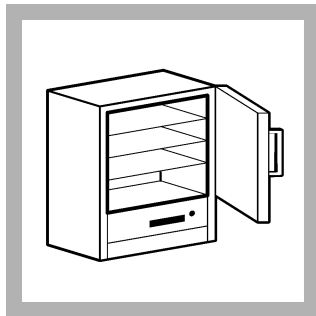
3. Use an analytical balance to weigh the dish to the nearest 0.1 mg (0.0001 g). Record this mg value as B.



4. Mix the sample. Use a blender or a beaker with stir bar and stir plate to mix the sample.



5. Use a graduated cylinder to add 50 mL of sample to the aluminum dish.

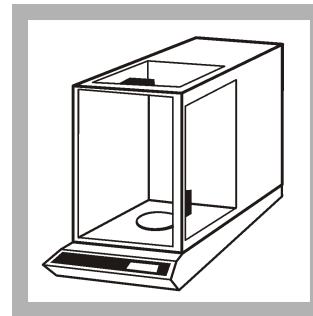


6. Put the sample in a preheated oven. Dry at 103–105 °C for approximately 6 hours. More time can be necessary for high mineralized water.

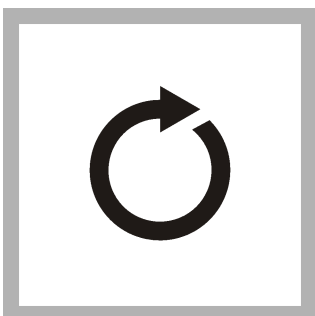
**Note:** For larger samples, use a steam bath and an evaporating dish as an alternative to the drying oven. After the sample is dried on the steam bath, dry the dish to constant weight in a 103–105 °C drying oven.



7. Remove the dish from the oven. Let the dish temperature decrease to room temperature in a desiccator.

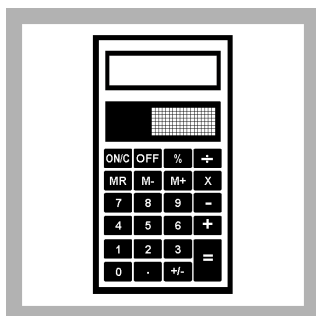


8. Use an analytical balance to weigh the dish to the nearest 0.1 mg (0.0001 g). Record this mg value as A.



9. Do steps 6–8 again until results do not change more than 0.4 mg.

Successive weight results that are identical for some wastewater samples are unlikely because of slow organic volatilization.



10. Calculate the test results:

$$[(A - B) \times 1000] \div \text{mL sample} = \text{mg/L Total Solids}$$

Where:

A = Weight (mg)<sup>1</sup> of sample + dish

B = Weight (mg) of dish

**Note:** If applicable, continue with Method 8276 for Volatile and Fixed Solids results.

## Summary of method

A well-mixed sample is dried in a pre-weighed dish to a constant weight in an oven at 102–105 °C. The difference of weight between the empty dish and the dried dish shows the total solids of the sample.

<sup>1</sup> Weight in mg = grams × 1000

## Consumables and replacement items

### Required reagents and apparatus

| Description                    | Quantity/test | Unit    | Item no. |
|--------------------------------|---------------|---------|----------|
| Balance, analytical, 115 VAC   | 1             | each    | 2936801  |
| Cylinder, graduated, 50-mL     | 1             | each    | 50841    |
| Desiccant, indicating Drierite | 1             | each    | 2088701  |
| Desiccator, without stopcock   | 1             | each    | 1428500  |
| Desiccator plate, ceramic      | 1             | each    | 1428400  |
| Water, deionized               | varies        | 4 L     | 27256    |
| Dish, aluminum (63 x 17.5 mm)  | 1             | 100/pkg | 2164000  |
| Oven, drying, 120 VAC          | 1             | each    | 1428900  |
| Oven, drying, 240 VAC          | 1             | each    | 1428902  |
| Tongs, crucible, 9-inch        | 1             | each    | 56900    |

### Optional reagents and apparatus

| Description  | Unit   | Item No. |
|--|--------|----------|
| Blender, 1.2 liter, 120 VAC                                | each   | 2616100  |
| Blender, 1.2 liter, 240 VAC                                | each   | 2616102  |
| Stirrer, magnetic  | each   | 2881200  |
| Stirrer, magnetic, 4 x 4, 230 VAC                          | each   | 2881202  |
| Beaker, 250-mL   | each   | 50046H   |
| Stir bar, 22 x 8 mm  | each   | 2095350  |
| Steam bath, 8 inch diameter                                | each   | 2347900  |
| Evaporating dish, porcelain, 120 mL                        | each   | 52561    |
| Sampling bottle with cap, low density polyethylene, 500-mL | 12/pkg | 2087079  |



**FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:**  
In the U.S.A. – Call toll-free **800-227-4224**  
Outside the U.S.A. – Contact the **HACH office or distributor serving you.**  
On the Worldwide Web – **www.hach.com**; E-mail – **techhelp@hach.com**

**HACH COMPANY**  
WORLD HEADQUARTERS  
Telephone: (970) 669-3050  
FAX: (970) 669-2932