

## Gravimetric Method<sup>1</sup>

## Method 8276

**Scope and application:** For potable, surface and saline water and domestic and industrial wastewater.

<sup>1</sup> Adapted from *Standard Methods for the Examination of Water and Wastewater*.



### Test preparation

#### Before starting

When measuring volatile solids, ignite the aluminum dishes for 1 hour at 550 °C (1022 °F) before use.

If applicable, use larger sample sizes. For larger samples, use an evaporating dish and a steam bath to evaporate the liquid.

If applicable, use resulting samples from Method 8271 in this procedure. Use the resulting sample and start this method at step 10.

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

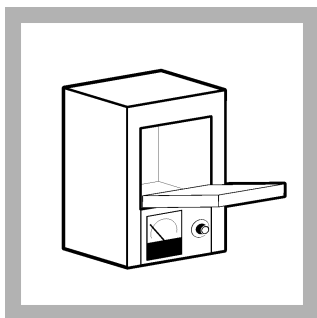
Description	Quantity
Weighing dish, aluminum	1
Drying oven	1
Cylinder, graduated, 50 mL	1
Desiccator and desiccant	1
Analytical balance	1
Muffle furnace	1

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

#### Sample collection preservation and storage

- Collect samples in clean glass or plastic bottles.
- Analyze the samples as soon as possible for best results.
- If prompt analysis is not possible, keep the samples at or below 4 °C (39 °F) for up to 7 days.
- Let the sample temperature increase to room temperature before analysis.

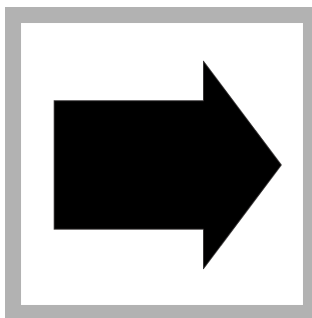
## Test procedure



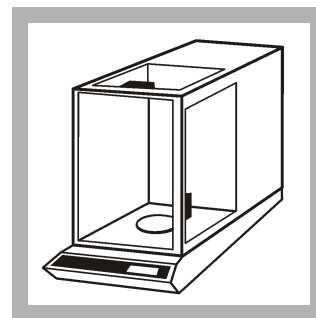
1. Put an aluminum dish in a drying oven at 550 °C (1022 °F) for 1 hour.



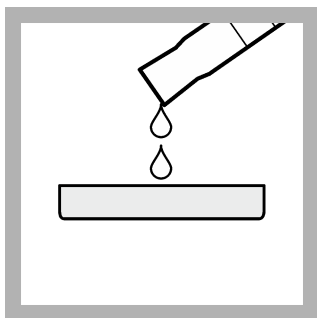
2. Remove the dish from the oven. Let the dish temperature decrease to room temperature in a desiccator.



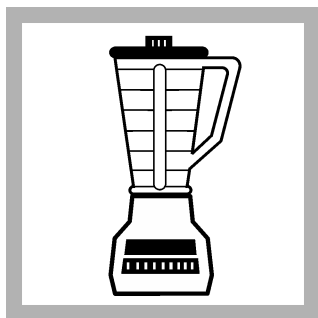
3. For resulting samples from Method 8271, do not do steps 4–9. Proceed to step 10.



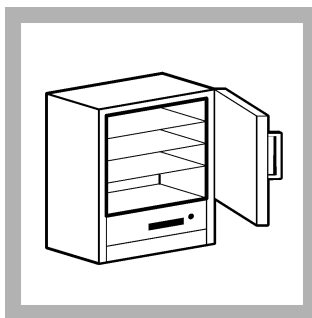
4. Use an analytical balance to weigh the dish to the nearest 0.1 mg (0.0001 g). Record this mg value as C.



5. Mix the sample. Add 50 mL of the sample to the aluminum dish.

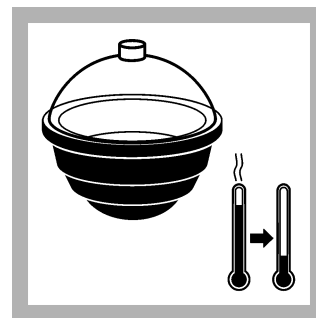


6. Use a blender (or a beaker with stir bar and stir plate) to mix the samples.

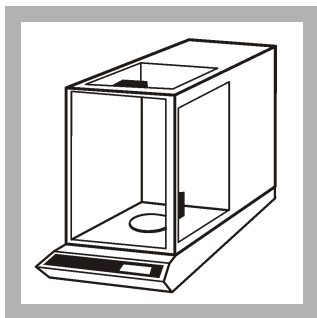


7. Place the sample in a preheated oven and evaporate at 103–105 °C (217–221 °F) for approximately 6 hours. Highly mineralized water can prolong the drying time.

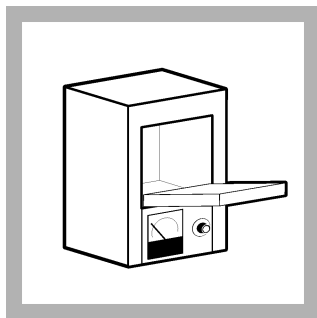
**Note:** A steam bath and evaporating dish can be used in place of the drying oven for larger samples. After evaporation on the steam bath, dry the dish to constant weight in a 103–105 °C (217–221 °F) drying oven.



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



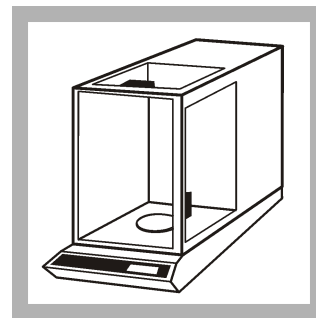
**9.** Use an analytical balance to weigh the dish to the nearest 0.1 mg (0.0001 g). Record this mg value as A.



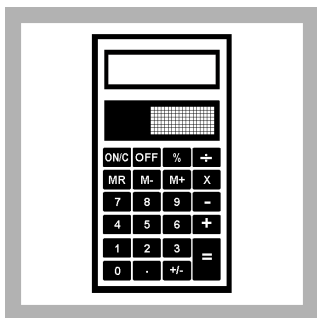
**10.** Put the aluminum dish into a pre-heated muffle furnace at 550 °C (1022 °F) for 30 minutes.



**11.** After 30 minutes, remove the dish from the furnace with tongs. Let the dish temperature decrease to room temperature in a desiccator.



**12.** Use an analytical balance to weigh the dish to the nearest 0.1 mg (0.0001 g). Do steps 10–11 again, until the difference between two successive sample weighings is not more than 4% or 0.5 mg, whichever is less. Record this mg value as B.



**13.** The loss of weight is total volatile solids. Weighed residue is total fixed solids. Calculate the test results:

$$(A - B) \times 1000 = \text{mg/L}$$

Volatile Solids

$$(B - C) \times 1000 = \text{mg/L}$$

Fixed Solids

## Summary of method

A well-mixed sample is evaporated in a weighed dish and dried to a constant weight in a 103–105 °C (217–221 °F) oven. The dish and sample are ignited at 550 °C (1022 °F) for 30 minutes. The loss of sample mass upon ignition represents the volatile solids. The remaining sample after ignition represents the fixed solids.

## Consumables and replacement items

### Required apparatus

Description	Quantity/test	Unit	Item no.
Balance, Analytical, 115 VAC, 60 Hz	1	each	2936701
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

**Required apparatus (continued)**

Description	Quantity/test	Unit	Item no.
Dish, aluminum (63 x 17.5 mm)	1	100/pkg	2164000
Furnace, muffle, 120 VAC, 50/60 Hz	1	each	1429600
Furnace, muffle, 240 VAC, 50/60 Hz	1	each	1429624
Water, deionized	varies	4 L	27256
Oven, drying, 240 VAC	1	each	1428902
Oven, drying, 120 VAC	1	each	1428900
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
Digital stirring/hot plate 7 x 7 in., 230 VAC	each	2881602
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



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