

Alkalinity, Total

DOC316.53.01257

Colorimetric Method

Method 10239

25 to 400 mg/L CaCO₃

TNTplus™ 870

Scope and Application: For drinking water, wastewater and boiler water.



Test preparation

Before starting the test:

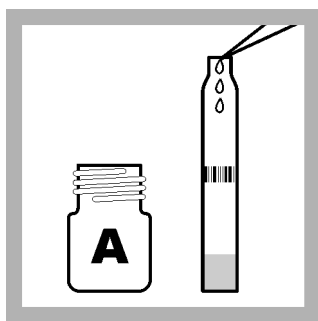
DR 2800 only: Install the light shield in Cell Compartment #2 before performing this test.
Read the Safety Advice and Expiration Date on the package.
The recommended sample and reagent temperature is 15–25 °C (59–77 °F).
The recommended reagent storage temperature is 15–25 °C (59–77 °F).
TNTplus methods are activated from the Main Menu when the sample vial is inserted into the sample cell holder.

Collect the following items:

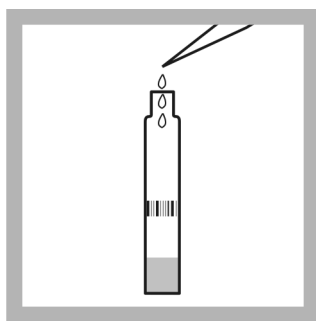
Description	Quantity
Total Alkalinity TNT870 vials	varies
Light Shield (DR 2800 only)	1
Pipet for 2.0 mL sample	1
Pipet for 0.5 mL sample	1
Pipet tips	varies

See [Consumables and replacement items](#) for reorder information.

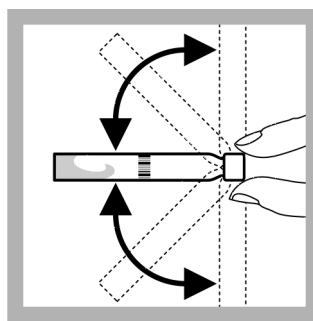
TNTplus method



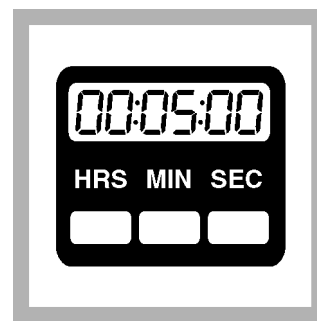
1. Pipet 2.0 mL of **Solution A** into the test vial.



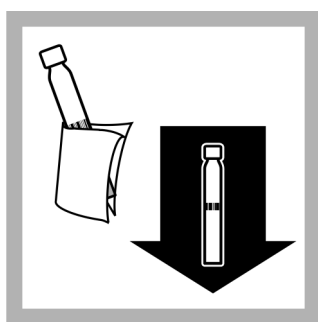
2. Pipet 0.5 mL of sample into the vial.



3. Cap and invert the vial until the contents are well mixed.



4. Wait 5 minutes.



5. After the timer expires, wipe the vial and insert it into the cell holder.

The instrument reads the barcode, selects the method and makes the measurement. No instrument zero is required.

Results are in mg/L CaCO_3 .

Interferences

If samples contain particles, remove the particles by filtration through a 0.45 μm filter.

Sample collection, preservation and storage

- Collect samples in clean plastic or glass bottles. Fill completely and cap tightly.
- Prevent excessive agitation or prolonged exposure to air. Complete the test procedure as soon as possible after collection for best accuracy.
- The sample can be stored for 24 hours if cooled to 4 °C (39 °F) or below. Warm to room temperature before the test is started.

Accuracy check

Standard solution method

Required for accuracy check:

- Alkalinity Voluette® Ampule Standard Solution, 25,000 mg/L CaCO₃ (0.500 N)
 - Ampule breaker
 - Variable volume pipet
 - Pipet tips
 - 100-mL volumetric flask, Class A
 - Deionized water
1. Prepare a 250 mg/L CaCO₃ standard solution as follows:
 - a. Pipet 1.0 mL of Alkalinity Standard Solution, 25,000 mg/L as CaCO₃, into a clean 1.0-mL volumetric flask.
 - b. Dilute to the mark with deionized water. Mix well. Prepare this solution daily.
 2. Use this solution in place of the sample. Follow the *TNTplus method* test procedure. The result should be within 10% of the expected value.

Summary of method

Carbonates and other buffers react with the reagent in the vial to change the pH. The pH affects the color of the indicator, which is measured photometrically at 615 nm.

Alkalinity, Total

Consumables and replacement items

Required reagents

Description	Quantity/Test	Unit	Catalog number
Total Alkalinity TNT870 Reagent Set	1	25/pkg	TNT870

Required apparatus

Description	Quantity/Test	Unit	Catalog number
Light Shield (DR 2800 only)	1	each	LZV646
Pipet, variable volume, 1 to 5 mL	1	each	BBP065
Pipet tips, for BBP065 pipet	varies	75/pkg	BBP068
Pipet, variable volume, 0.2 to 1.0 mL	1	each	BBP078
Pipet tips, for BBP078 pipet	varies	100/pkg	BBP079

Recommended standards

Description	Unit	Catalog number
Alkalinity Voluette® Ampule Standard Solution, 25,000 mg/L CaCO ₃ (0.500 N), 10 mL	16/pkg	1427810

Optional reagents and apparatus

Description	Unit	Catalog number
Ampule Breaker Kit, Voluette Ampules	each	2196800
Bottle, sample, low density poly, with cap, 500 mL	12/pkg	2087079
Deionized Water	4 L	27256
Filter, membrane, pore size 0.45 µm, 25-mm diameter	100/pkg	2514101
Filter Holder, 25-mm, for Luer-type syringe	each	246800
Syringe, Luer-lock tip, 10 cc	each	2202400
Volumetric Flask, 100-mL, Class A	each	1457442



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