APPLICATION NOTE

SIMPLIFIED TOTAL ORGANIC CARBON VIAL TESTING

Improved Vial Testing With TNTplus

Hach Total Organic Carbon (TOC) vial tests make TOC testing simple and fast. The TNT810 and TNT811 vial tests take the accurate and inexpensive chemistry of the traditional Hach TNT TOC vial tests and integrates it into a unique and innovative double-vial analysis unit. The new TOC-X5 shaker makes sample preparation significantly faster and less complicated.

TNTplus TOC analysis cuts in half the number of steps required for the traditional TNT TOC vial analysis, while also allowing for the simultaneous preparation of 8 samples.

- Samples are only transferred once, pipetted from the sample bottle to the digestion vial.
- Total inorganic carbon (TIC) removal is automated with the TOC-X5 shaker.
- There are no powder pillows to open or pour.
- There is no blank analysis required.
- There is no glass indicator ampule to clean or break.

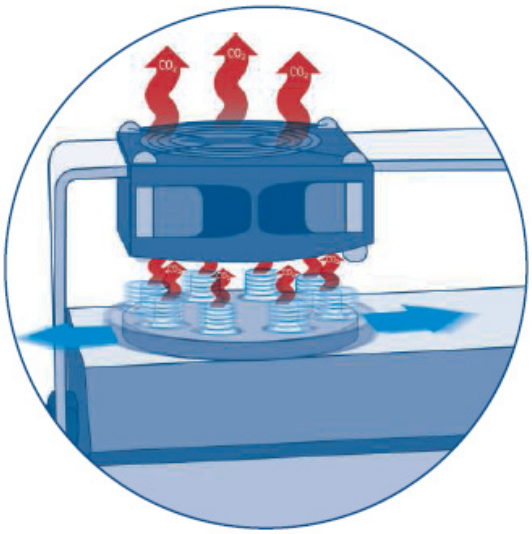
Comparison of Procedural Steps

TNT810/TNT811

1. Pipet sample into sample vial
2. Place sample vial into shaker and shake for 5 min to remove TIC
3. Screw membrane double-cap onto indicator vial
4. Screw membrane double-cap onto sample vial
5. Digest vial for 2 hours at 100C
6. Read results

TNT TOC

1. Transfer sample to graduated cylinder
2. Transfer sample to flask with stir bar
3. Add buffer solution
4. Check pH
5. Stir for 10 min to remove TIC
6. Pour persulfate powder pillow into sample and blank vials
7. Add organic-free water to blank vial
8. Add TIC-free sample to sample vial
9. Rinse indicator ampule and wipe clean
10. Place one indicator ampule into each sample vial
11. Break open each glass ampule
12. Cap vials
13. Digest vials for 2 hours at 103-105C
14. Read results

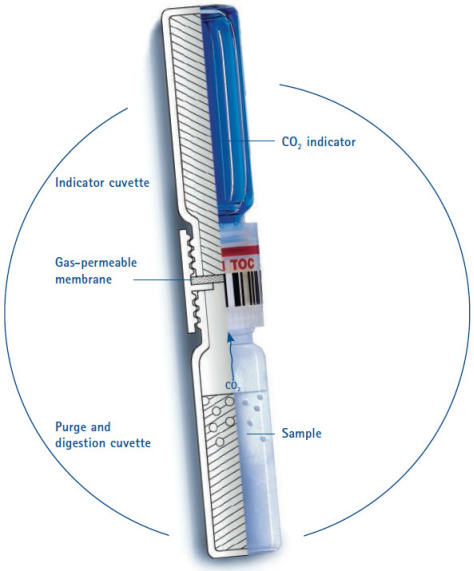


TOC-X5 Shaker

TIC must be purged from the sample prior to digestion for accurate TOC determination. The traditional TOC vial test requires that the user transfer sample to a beaker, acidify, and stir for 10 minutes. Each sample must be prepared separately, so that a set of 8 samples would take 80 minutes to purge.
The new TNT810/811 sample vials already contain the correct amount of purging reagent, so separate acidification steps are unnecessary. The X5 shaker provides mixing and convection, converting TIC to carbon dioxide in 5 minutes, on up to 8 samples at a time. This reduces the sample prep time for a set of 8 samples by 94%.

Membrane Double-Cap

The TNT810/811 kit utilizes an innovative gas-permeable membrane to separate the indicator cuvette from the sample. During digestion, organic carbon is oxidized to carbon dioxide which crosses the membrane into the pH indicator cuvette. Carbon dioxide is converted to carbonic acid which changes the pH and the color of the indicator. The double-vial unit is simply cooled, flipped over, and inserted into the spectrophotometer for determination.



Hach TNTplus TOC Reagents and Apparatus

- DR6000 - PN LPV441, DR3900 - PN LPV440, or DR1900 - PN DR1900-01H
- DRB200 Digital Reactor Block – PN DRB200
- TNTplus TOC vials – PN TNT810 or TNT811
- TOC-X5 Shaker – PN LQV148.99.00002

FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:
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To locate the HACH office or distributor serving you, visit: www.hach.com

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