Bacteria, Heterotrophic Aerobic

DOC316.53.01329

Visual determination

Semi-quantitative

HAB-BART™[1]

Scope and application: For the determination of total aerobic bacteria in brine solutions, produced waters and hydraulic fracturing waters.

[1] HAB-BART is a trademark of Droycon Bioconcepts Inc.

Test preparation

Before starting

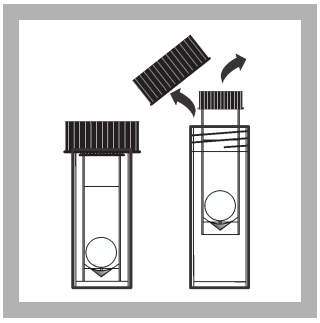
Do not touch the inner surface of the tube or lid. Keep contamination out of the tube and lid. Use the aseptic technique.
Set the caps on a clean surface with the flat surface down.
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.
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.
Sterilize the reacted sample before disposal. Refer to Disposal on page 3.

Items to collect

Description	Quantity
BART Test for heterotrophic aerobic bacteria (HAB)	1

Refer to Consumables and replacement items on page 3 for order information.

Test procedure

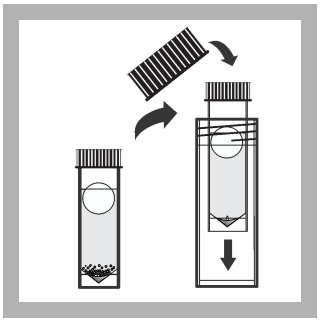


1. Remove the inner tube from the outer tube.

2. Pour at least 20 mL of sample in the outer tube.

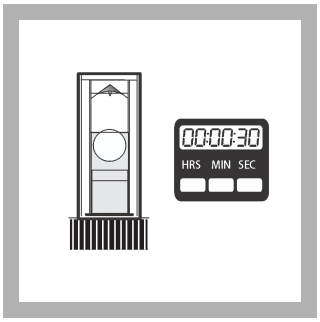
3. Fill the inner tube to the fill line with the sample that is in the outer tube. Tighten the cap on the inner tube.

Discard the unused sample in the outer tube.

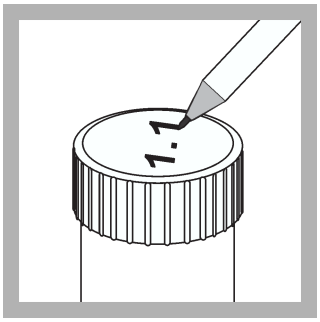


4. Put the inner tube in the empty outer tube. Tighten the cap on the outer tube.

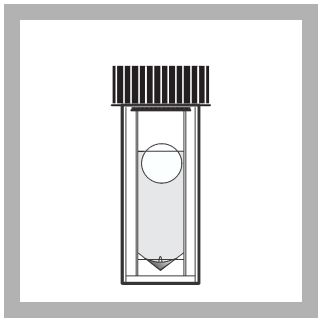
Do not shake or swirl the tubes after the sample is added. Let the ball float to the top with no help.



5. Invert the tube for 30 seconds to dissolve the dye under the cap. For saline waters, invert the tube for 5 minutes.

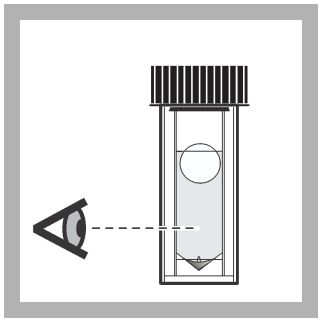


6. Write the date and sample name on the outer tube.



7. Keep the tube at room temperature and away from direct sunlight for 4 days.

Do not move the tube.



8. Examine the tube each day. Record the date when a reaction is first seen. Refer to Test results on page 2.

Test results

Presence/Absence

When heterotrophic aerobic bacteria are in the sample, the color of the solution changes from a blue to a light or medium yellow color. The solution frequently becomes cloudy.

- Negative (absent/non-aggressive)—The color stays blue.
- Positive (present/aggressive)—The color becomes yellow. The solution frequently becomes cloudy.

Make an estimate of the bacteria population

If the test result is positive, make an estimate of the bacteria population and the aggressivity. Refer to Table 1. A faster reaction occurs when the bacteria population is high.

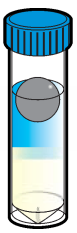
Table 1 Approximate bacteria population

Days to reaction	Approximate HAB population (cfu/mL)	Aggressivity
1	5,400,000	Very high
2	575,000	High
3	61,000	Moderate
4	6500	Moderate to low
5	700	Low
6	Less than 75	Very low

Advanced test information

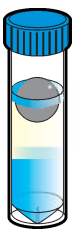
If the test result is positive, examine the tubes for dominant bacteria. Refer to Figure 1.

Figure 1 Dominant bacteria



Aerobic bacteria

The color is bleached from the bottom to the top.



Facultative anaerobic bacteria

The color is bleached from the top to the bottom.

Summary of method

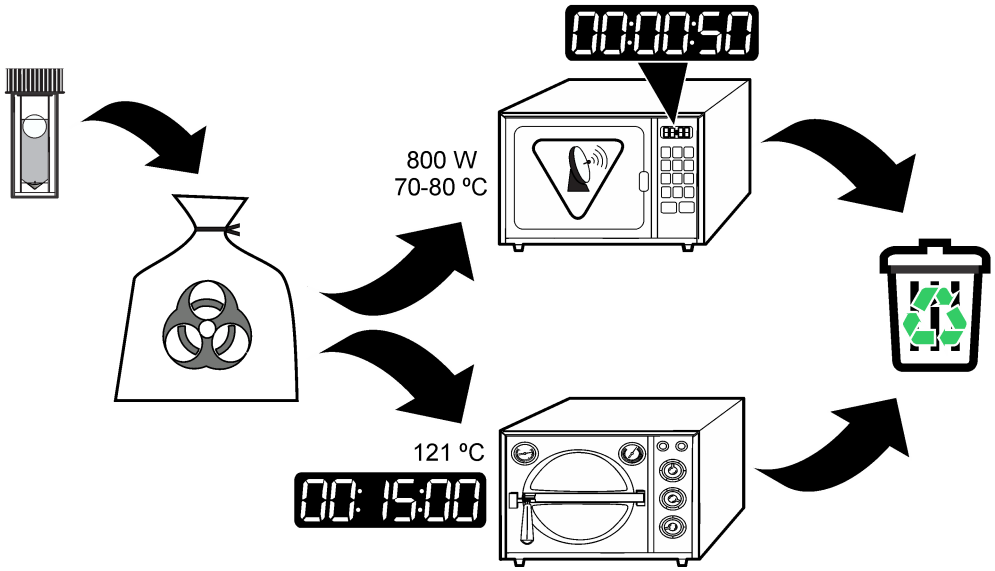
When heterotrophic aerobic bacteria (HAB) are in the sample, the bacteria consume oxygen during incubation. When the oxygen is gone, the bacteria react with the methylene blue dye in the HAB-BART tube and change the dye to the colorless form. The faster the color change, the higher the level of respiration and the larger or more aggressive the bacteria population.

Aerobic bacteria can cause several problems in water (e.g., slime formation, turbidity, taste and odor, corrosion, health risks and hygiene risks). When a problem is found, more tests are recommended to give more information about the microbial problem. This method does not give information about the particular groups of bacteria that can be in the sample.

Disposal

Sterilize the reacted sample before disposal. Refer to Figure 2.

Figure 2 Disposal



Consumables and replacement items

Required reagents

Description	Quantity/Test	Unit	Item no.
BART Test for heterotrophic aerobic bacteria (HAB)	1	9/pkg	2490409
BART Test for heterotrophic aerobic bacteria (HAB)	1	27/pkg	2490427

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
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