Bacteria, Acid-producing

DOC316.53.01328

Visual determination

Semi-quantitative

APB-BART™[1]

Scope and application: For the determination of acid-producing bacteria in brine solutions, produced waters and hydraulic fracturing waters.

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

Test preparation

Before starting

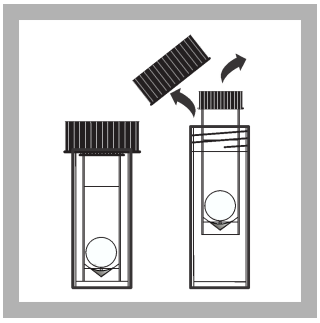
Do not touch the inner surface of the tube or lid. Keep contamination out of the tube and lid. Use the aseptic technique.
Set the caps on a clean surface with the flat surface down.
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.
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 acid-producing bacteria (APB)	1

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

Test procedure

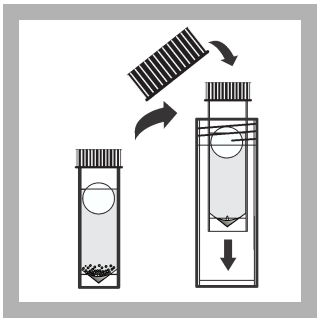


1. Remove the inner tube from the outer tube.

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

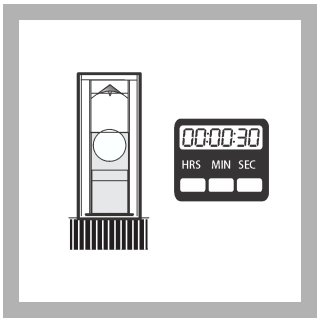
3. Fill the inner tube to the fill line with the sample that is in the outer tube. Tighten the cap on the inner tube.

Discard the unused sample in the outer tube.

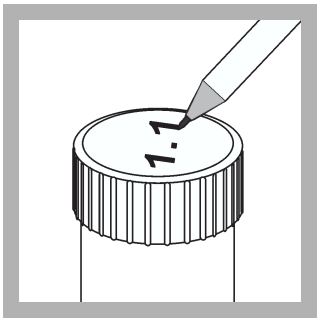


4. Put the inner tube in the empty outer tube. Tighten the cap on the outer tube.

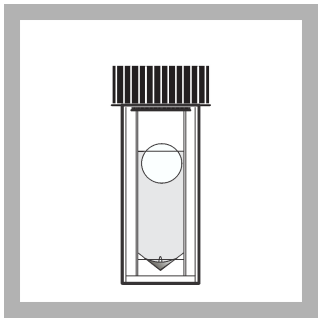
Do not shake or swirl the tubes after the sample is added. Let the ball float to the top with no help.



5. Invert the tube for 30 seconds to dissolve the dye under the cap.

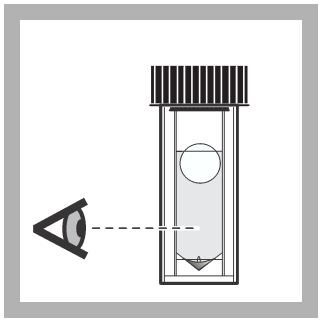


6. Write the date and sample name on the outer tube.



7. Keep the tube at room temperature and away from direct sunlight for 8 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.

Interferences

Interfering substance	Interference level
Acidic	Less than pH 6.0. Adjust to pH 6.9 to 7.2 with sterile potassium hydroxide. Subtract 2 days from the Days to reaction in Table 1 on page 2 because the adjustment has a stressful effect on the bacteria.
Salt	More than 6% salt can result in false negatives. Dilute with sterile distilled water until the salt concentration is less than 6%.

Test results

Presence/Absence

When acid-producing bacteria are in the sample, the color of the solution changes from a purple to a yellow-orange color. The solution frequently becomes cloudy.

- Negative (absent/non-aggressive)—The color stays purple.
- Positive (present/aggressive)—The color becomes yellow-orange. The solution can be 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.

If the acid-producing bacteria (APB) population is highly or moderately aggressive (less than 7 days), a total coliform test is recommended on a fresh sample to identify if there is a hygiene risk.

Table 1 Approximate bacteria population

Days to reaction	Approximate APB population (cfu/mL)	Aggressivity
1	800,000	High
2	70,000	High
3	9000	High
4	1500	Moderate
5	500	Moderate
6	150	Moderate
7	< 100	Low
8	< 100	Low

Advanced test information

If the test result is positive, examine the tubes for dominant bacteria. The dominant bacteria for this test is gRAM-negative fermenting bacteria.

Summary of method

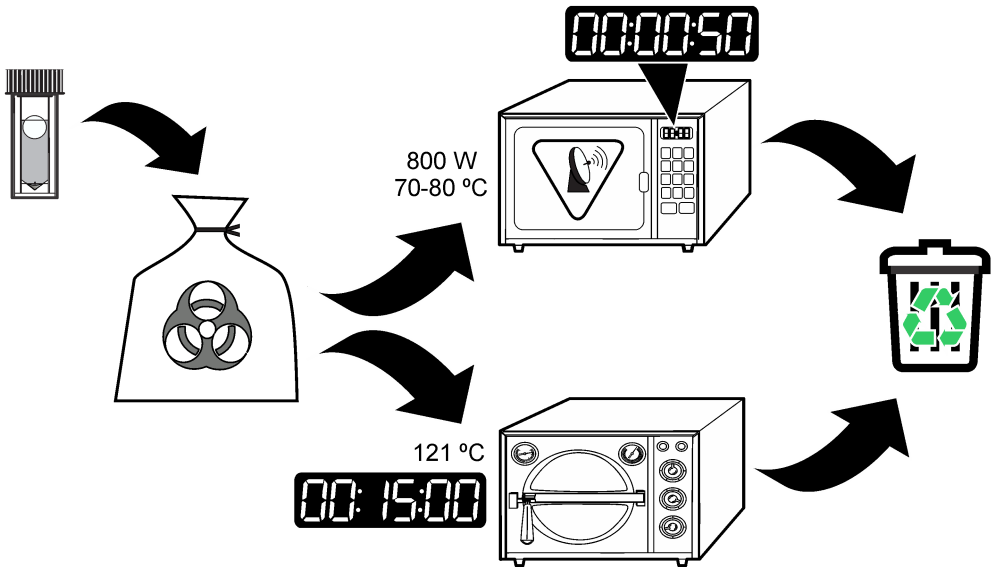
When acid-producing bacteria (APB) are in the sample, the sample becomes acidic (pH 3.5 to 5.5) during incubation. A pH indicator, bromocresol purple, in the APB-BART tube changes from a purple to an orange or yellow color as the pH decreases. This change occurs at a pH of 5.2 to 5.8.

The acid-producing bacteria make acids in very reductive (no oxygen) environments. If oxygen is in the sample, the acid-producing bacteria do not cause acidity in the water, but can cause acidity at the interface between the biofilm and the supporting material (e.g., concrete, steel).

Disposal

Sterilize the reacted sample before disposal. Refer to Figure 1.

Figure 1 Disposal



Consumables and replacement items

Required reagents

Description	Quantity/Test	Unit	Item no.
BART Test for acid-producing bacteria (APB)	1	9/pkg	2831409

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**

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