AMT RAPID BAC SRB FRAC

AMT-I-B-005 (low salinity)

Sulfate-Reducing Bacteria Test for Fracturing Fluids

BRINKING THE LABORATORY TO THE FIELD

AMT Scientific brings the testing laboratory where it is needed most—the field. Our tests are easy to use, fast and reliable, have an extended shelf life and present a unique, cost-effective way to perform microbiological analysis in the field or the laboratory.

Our tests allow you to identify microorganisms that traditionally could only be cultured or identified using expensive equipment in a laboratory setting for a fraction of what a laboratory charges. When using AMT tests, you can make the decisions in the field, where they count.

Read all directions entirely before running this test.

SUMMARY AND EXPLANATION

Bacteria are responsible for key parts of the process that generates natural gas, but during the Fracturing process, bacteria can be the enemy. Sulfate-Reducing Bacteria (SRB) which use sulfate ions in the water for energy produce sulfide, a toxic molecule that "sours" the gas product being recovered.

To combat this process, biocides such as formaldehyde and gluteraldehyde are used in an attempt to kill bacteria and preserve a usable product.

Biocides are expensive and add to the process cost. They can also leak into the surrounding environment causing environmental concerns.

These facts make it extremely import for Hydraulic Fracturing companies to use biocides properly, environmentally responsibly and cost effectively.

AMT RAPID BAC SRB FRAC Test is a multi-purpose test based on a modified Postgate B media for the detection and cultivation of SRB's that does not have Salt (NaCl). Salt is supplied by the FRAC water sample so that the test always matches the salinity of the original sample without need to measure salinity of the sample in the field.

AMT RAPID BAC SRB FRAC Test for Fracturing Fluids rapidly and easily detect the problem-causing Sulfate-Reducing Bacteria (SRB) allowing field engineers the ability to identify the correct dosages of chemical biocides and to monitor their effectiveness, ensuring processes run smoothly and maximizing well yield faster and without the hassles of traditional SRB tests currently on the market.

PRESENCE/ABSENCE METHOD

If using the supplied sample cup, triple rinse the cup with the water sample prior to use.

- Gather the sample in the supplied sample cup filling to the 25 mL line or preferably in a single use sterile sample container.
- (Optional) If samples contain chlorine, add 5 drops of the De-chlorination solution for every 25 mL of sample. Swirl to mix and let sit 2 minutes.
- Remove ampoule from box and carefully remove and save the provided safety cap. Inspect the ampoule tip for breakage. If broken discard properly and get a new ampoule.
- With an unbroken ampoule, place the tip (without safety cap) in the sample container with the tip against the sample container wall holding the ampoule at a 45° angle. Gently push the tip against the sample container wall with a slight twisting motion. The ampoule tip will break and the sample will automatically be drawn into the ampoule. Make sure to keep the ampoule tip in the sample until it has finished filling.
- Remove the ampoule from the sample.
- Incubate the ampoule at 25 °C. Check after 24 and then again every 24 hours (for up to 30 days) for a Black color. Black color indicates the presence of Sulfate-Reducing Bacteria.
- Sterilize sample container with 10% bleach before next test. For example, to a 20 mL bacterial sample, add 2 mL or ~40 drops bleach solution. Rinse 3 times with sterile milli-Q water to remove residual bleach.
- Note: The ampoule will show light blue color in the beginning of the test if low amount of oxygen is present in the sample. After about 1 day, the light blue color should fade away.
- If the test result is positive, estimate the bacteria population by referring to the chart below.

Approximate bacteria population:

Elapsed Time (days)	Approximate bacteria population (CFU/mL)	Contamination Severity
1	$>10^6$	Very High
2	$10^5 – 10^6$	High
3	$10^4 – 10^5$	High
4	$10^3 – 10^4$	Moderate
5	$10^2 – 10^3$	Moderate
6 - 7	$10 – 10^2$	Low
8 - 9	<10	Low

EXPECTED RESULTS

Ampoules positive for Sulfate-Reducing Bacteria (SRB) will produce a black color and or black precipitate and possibly a Hydrogen Sulfide (rotten egg) order.

LIMITATIONS OF PROCEDURE

AMT RAPID BAC SRB FRAC is used for cultivating anaerobic Sulfate-Reducing Bacteria in Fracturing Fluids only. The test contains Methylene Blue (oxygen indicator) that will turn blue in the presence of oxygen and clear in the absence of oxygen. Initially the test will start blue but should turn clear within 30-45 minutes of incubation. Tubes that do not go from blue to clear will not give proper results and should be discarded.

For the detection of SRB's in other liquid samples contact AMT Customer Service for a list of available tests.

STORAGE

Upon receipt, store tubes in the dark at 2 – 25°C. Avoid freezing and overheating. Ampoulated media stored as indicated may be inoculated up to the expiration date. Minimize exposure to light.

PRODUCT DETERIORATION

Do not use ampoules if they show evidence of microbial contamination, discoloration, or other signs of deterioration.

EXPIRATION DATE

The product is stable if stored properly for 1 year from manufacture. The expiration date applies to media stored at or below 30 °C without direct exposure to light.

QUALITY CONTROL ORGANISMS

Escherichia coli ATCC 25922. Good Growth.
Desulfovibrio vulgaris ATCC 29579. Good Growth.

WARNING AND PRECAUTIONS

- For *in vitro* Diagnostic Use.
- For laboratory and field use by trained professionals.
- The AMT RAPID TM is a glass ampoule with a sharp tip when activated. USE EXTREME CAUTION when breaking the tip. Always carefully apply the provided safety cap.
- Dispose of broken unused ampoules in a broken glass receptacle.
- Dispose of used ampoules in an appropriate sharps container or sealed puncture resistant receptacle then offer for biohazard processing according to local, state and Federal regulations.
- Keep away from children.
- Not for use as a diagnostic tool on humans or animals.
- Observe aseptic techniques and established precautions against microbiological hazards throughout all procedures before, during and after use.
- Prepared ampoules, specimen containers and other contaminated materials must be sterilized by autoclaving or disinfectant solution before discarding.

CONTACT US

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