

APPLICATION NOTE

GLUTARALDEHYDE

For Produced and Flowback Oil and Gas Waters

Test Preparation:

- Do not use deionized water for dilutions as aldehydes from ion exchange resins may interfere with this method. For dilutions, use distilled water or water purified by reverse osmosis (RO).
- The reagents used in this method are also used in other Hach procedures. The labels on the reagent containers may show specific sample volumes. Disregard this information for this test.
- Keep the prepared MTBH and Ferric Chloride solutions at room temperature. Discard unused solutions after one week.

Required Apparatus:

COD Tubes (empty): Hach PN 2517600

COD Rack: Hach PN 1864100

DRB200: Hach PN LTV082.53.44001 (16 mm wells)

Spectrophotometer or colorimeter - DR900, DR1900, DR3900 or DR6000

Pipette (5 mL, 1 mL and 0.25 mL additions) - Hach PN for 1.0 - 5.0 mL BBP065: Tips - BBBP068

Hach PN for 0.2 - 1.0 mL BBP078: Tips - BBP079

100-mL Graduated Cylinder: Hach PN 2088642

125-mL Plastic Bottle: Hach PN 2087073 (12/pk)

Required Reagents:

Dissolved Oxygen 3 Reagent Powder Pillows: Hach PN 98799

Ferric Chloride Reagent Ampules: Hach PN 2171820

MBTH Powder Pillows: Hach PN 2257169

Distilled or RO Water

Reagent Preparation:

- 1) Add one MBTH reagent powder pillow to a 125-mL bottle and add 100 mLs of distilled or RO water, invert to mix.
- 2) Add one Dissolved Oxygen 3 reagent powder pillow and one Ferric Chloride reagent ampule to a 125-mL bottle and add 100 mLs of distilled or RO water, invert to mix.

Test Procedure:

- 1) Turn on DRB200 and preheat to 100°C.
- 2) Pipette 5 mL of Distilled or RO water to (empty) COD tube.
- 3) Pipette 0.25 mL of Distilled or RO water to COD tube for the blank (reagent blank for zeroing spectrophotometer).
- 4) Pipette 0.25 mL of sample to COD tube.
- 5) Pipette 1.0 mL of MBTH reagent solution to both blank and sample COD tube.
- 6) Heat COD tubes at 100°C for 5 minutes.
- 7) Place COD tubes in beaker of water to cool tube down to room temperature.
- 8) Pipette 1.0 mL of Ferric Chloride reagent solution to both blank and sample COD tube.
- 9) Allow sample and reagent to react for 5 minutes, if glutaraldehyde is present the sample will turn blue.

- 10) Clean the outside of the tube with a laboratory wipe to ensure that there are no finger prints or other smudges on the tube.
- 11) After the 5 minute reaction time as elapsed, immediately zero on the reagent blank and read the sample at 610 nm. If you are measuring multiple samples, only one blank or zero is necessary.

Calibration equation:

It is recommended that the analysts create their own calibration curve for better accuracy. Customers can program their spectrophotometer with the following equation:

$$C = 66.116 * A + 16.241 * A^2$$

Standard preparation:

Zero the instrument with a reagent blank (distilled or RO water reacted with the reagents). The calibration standards used were 10, 25, 50, 100 and 200 mg glutaraldehyde/L.

User Program Instructions:

First time users of the Oil in Water method must enter a new User Program into the spectrophotometer.

Step	Enter/Press/Select
1. Go to User Programs:	Press USER PROGRAMS from the Main Menu
2. Select New Program:	Press PROGRAM OPTIONS > NEW
3. Assign Program Name:	Enter available program number
4. Enter Program Name:	Enter GLUT (or something similar)
5. Select Program Type:	Select Single Wavelength
6. Select Units:	Select mg/L
7. Enter Wavelength:	Enter 610
8. Select Resolution:	Select 1
9. Enter Chemical Form:	Enter GLUT (or something similar)
10. Select Calibration:	Select Enter Formula
11. Select Curve Fit:	Select C = a + bA + cA²
12. Enter Coefficient a:	Press a and enter 0.0000
13. Enter Coefficient b:	Press b and enter 66.116
14. Enter Coefficient c:	Press c and enter 16.241
15. Select Upper Limit:	Select Upper Limit > EDIT
16. Enter Upper Limit:	Select ON , press 0.000 and enter 220
17. Select Timer:	Select Timer 1 > EDIT
18. Enter Timer 1:	Select 1 and enter 5:00
19. Enter Timer 2:	Select 2 and enter 5:00
20. Store User Program:	Press STORE

After all steps in the above table have been completed, the User Program for Glutaraldehyde is ready for measuring samples. Proceed to step 1 of the test procedure.

FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:

Tel: 800-227-4224 | E-Mail: techhelp@hach.com

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