

CM 21168 - MOF MEDIUM (MARINE OXIDATION FERMENTATION MEDIUM)

INTENDED USE

For differentiation of marine bacteria by fermentative and oxidative metabolism of carbohydrates.

PRODUCT SUMMARY AND EXPLANATION

Some organisms metabolize glucose oxidatively and others ferment glucose fermentatively when the hydrogen acceptor is not oxygen. Such organisms can be differentiated based on the Oxidation Fermentation Test. This test is also known as the "oxferm" test. MOF medium is a modified version of the formula originally developed by Leifson; used for differentiating oxidative and fermentative carbohydrate metabolizing marine bacteria. The marine environment of the oceans illustrates a different view of microbial populations in water. In the high salt concentration of ocean water, halophilic or salt-loving microorganisms survive. In addition, the organisms must be psychrophilic since it is very cold below the surface. Those at bottom must also withstand great pressure and are therefore barophilic or pressure loving. For differentiating the fermentation and oxidation of carbohydrates, inoculate two tubes of medium containing carbohydrate with each culture to be tested. Cover one medium tube of each culture with sterile melted petrolatum to form a layer of about one inch in height.

Carbohydrate-fermenting marine bacteria change the colour of the medium in both the tubes (covered and uncovered) from red to yellow whereas carbohydrate-oxidizing marine bacteria change the colour of the medium from red to yellow only in the uncovered (open) tube. Marine bacteria that are neither oxidative nor fermentation do not exhibit any change in the covered medium and exhibit an alkaline (red to deep pink) reaction in the uncovered medium. Gas production is detected as splitting or displacement of agar or formation of small bubbles. Motile organisms form a diffuse zone of growth originating from the line of inoculation. Non-motile organisms grow along the line of inoculation.

COMPOSITION

Ingredients	Gms / Ltr
Casein enzymic hydrolysate	1.000
Yeast extract	0.100
Tris hydroxymethyl aminomethane	0.500
Boric acid	0.011
Ammonium sulphate	0.500
Disodium phosphate	0.004
Ammonium nitrate	0.0008
Sodium chloride	9.700
Magnesium chloride	4.400
Sodium sulphate	1.600
Calcium chloride	0.900
Potassium chloride	0.275
Sodium bicarbonate	0.080
Potassium bromide	0.040
Strontium chloride	0.017
Sodium silicate	0.002
Sodium fluoride	0.0012
Phenol red	0.010



Agar

3.000

PRINCIPLE

Casein enzymic hydrolysate and yeast extract in the medium supply the necessary nitrogenous nutrients including amino acids, vitamins etc. The mineral content of this medium is equivalent to one-half that of seawater. It contains a variety of salts found in seawater, which not only makes the medium suitable for marine bacteria but also buffers the medium. Phenol red is the pH indicator in the medium.

INSTRUCTION FOR USE

Dissolve 22.14 grams in 1000 ml distilled water.

Heat to boiling to dissolve the medium completely.

Sterilize by autoclaving at 15 psi pressure (121°C) for 15 minutes.

Cool to 55-60°C and aseptically add sterile dextrose solution (or other carbohydrate of choice) to a final concentration of 1%.

Mix well and dispense into sterile test tubes.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder : Light yellow to pinkish purple homogeneous free flowing powder.

Appearance of prepared medium : Pink coloured clear to slightly opalescent gel forms in tubes as butts.
pH (at 25°C) : 8.0±0.2

INTERPRETATION

Cultural characteristics observed after an incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Motility	Acid	Gas	Incubation Temperature	Incubation Period
Vibrio cholerae	15748	50-100	Luxuriant	Positive, growth away from stabline causing turbidity	Positive reaction, yellow colour	Positive reaction	35-37°C	18-24 Hours
Vibrio parahaemolyticus	17802	50-100	Luxuriant	Negative, growth along the stabline, surrounding medium remains clear	Negative reaction	Negative reaction	35-37°C	18-24 Hours

PACKAGING:

In pack size of 500 gm bottles.

STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.

Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

