

TM 1358 - ISOLATION MEDIUM FOR IRON BACTERIA

INTENDED USE

For isolation of iron bacteria, especially those belonging to *Sphaerotilus-Leptothrix* group.

PRODUCT SUMMARY AND EXPLANATION

Sphaerotilus-Leptothrix group are filamentous bacteria that form sheath. The sheathed bacteria have the ability to deposit ferric hydroxide and sometimes manganese dioxide on their sheaths. The specific deposition of ferric ions on the sheath of *S. discophorus* (also *Leptothrix* species) was demonstrated by Rogers and Anderson. Iron bacteria obtain energy by the oxidation of iron from the ferrous to ferric state. Some bacteria that do not oxidize ferrous ions may dissolve or deposit it indirectly. During their growth, they either liberate iron by utilizing organic radicals to which the iron is attached, or alter environmental conditions to permit the deposition of iron. Isolation Medium for Iron Bacteria is recommended by APHA for the isolation of iron bacteria, especially those belonging to the *Sphaerotilus-Leptothrix* group. The medium has been proven helpful for identifying various groups of filamentous organisms including iron bacteria.

COMPOSITION

Ingredients	Gms / Ltr
Dextrose (Glucose)	0.150
Ammonium sulphate	0.500
Calcium nitrate	0.010
Dipotassium hydrogen phosphate	0.050
Magnesium sulphate heptahydrate	0.050
Potassium chloride	0.050
Calcium carbonate	0.100
Cyanocobalamin(Vitamin B12)	0.00001
Thiamine	0.0004
Agar	10.000

PRINCIPLE

Magnesium sulphate, ammonium sulphate, potassium chloride and calcium nitrate are sources of ions that stimulate metabolism. Glucose acts as the carbon source. Dipotassium phosphate buffers the medium. The bacteria of both genera, *Sphaerotilus* and *Leptothrix* require vitamin B12 as an essential growth factor. A number of *Leptothrix* strains have been found to require additionally thiamine as growth factor.

INSTRUCTION FOR USE

- Dissolve 10.88 grams in 1000 ml purified / distilled water.
- Heat just to boiling. Sterilize by autoclaving at 15 psi pressure (121°C) for 15 minutes.
- Cool to 45-50°C. Mix well and dispense into sterile test tubes.

Note: Due to the presence of calcium carbonate, the prepared medium forms opalescent solution with white precipitate.

QUALITY CONTROL SPECIFICATIONS



Appearance of Powder : Cream to beige homogeneous free flowing powder.
Appearance of prepared medium : Medium yellow coloured, clear to slightly opalescent gel forms in tubes as slants.
pH (at 25°C) : 7.5 ± 0.2

INTERPRETATION

Cultural characteristics observed after an incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Incubation Temperature	Incubation Period
<i>Leptothrix discophora</i>	43182	50-100	Good-luxuriant	22-25°C	5 days
<i>Sphaerotilus natans</i>	13338	50-100	Good-luxuriant	22-25°C	5 days
<i>Ferrobacillus ferrooxidans</i>	27853	50-100	Good-luxuriant	22-25°C	5 days

PACKAGING:

In pack size of 100 gm and 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.










DISPOSAL

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

REFERENCES

1. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.
2. Balows A., Truper H. G., Dworkin M., Harder W., Schleifer K. H., (Eds.), The Prokaryotes, 2nd Edition, Vol. III, Springer-Verlag.
3. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
4. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock, D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
5. Rogers S. R., Anderson J. J., 1976, J. Bacteriol., 126: 257-263.
6. Rogers S. R., Anderson J. J., 1976, J. Bacteriol., 126: 264-271.
7. VanVeen W. L., 1973, Antonie Van Leeuwenhoek (Holland), 39:189.



 GMP Good Manufacturing Practices Certified	 Best Before	 QTY. Quantity	 REF Catalogue Number	 Manufacturer
 Temperature Unit	 LOT/ B. NO. Lot / Batch Number	 Consults Instructions for Use	 QR Code	

NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

***For Lab Use Only**
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