

Discover the complete solution for wastewater

Hach Complete Microbiology Solutions

Hach has prepared media and convenient apparatus to make wastewater and non-potable water testing fast and easy. Highlighted products are recommended for wastewater applications.

Membrane Filtration (MF) Prepared Media

Acridine Orange – 23756-20
KF-Streptococcus – 28127-50
m-ColiBlue24[®] Broth – 26084-50, 26084-20, 26084-42
m-ColiBlue Agar Plates, 47 mm – 28052-15
m-CB24 MF Economy Kits – 27792-00, 27792-01, 27792-02
m-CB24 Convenience Kits – 27793-00, 27793-01, 27793-02
m-EI Agar Plates, 47 mm – 28117-15
m-Endo Agar Plates – 28116-15
m-Endo Broth – 23735-50, 23735-20, 23735-42
m-FC Agar Plates – 28115-15
m-FC Broth – 23732-50, 23732-20
m-FC Broth w/Rosolic Acid – 24285-50, 24285-20
m-Green Yeast and Mold – 24283-50, 24283-20
m-HPC Agar Plates, 47 mm – 28114-15
m-HPC Broth – 28124-50
m-TEC Agar Plates, modified – 28118-15
m-TEC Agar Tubes – 25611-06
m-TGE Broth – 23738-50, 23738-20
m-TGE Broth with TTC – 24284-50, 24284-20
Nutrient Agar Plates with MUG – 28121-15
Nutrient Agar Tubes with MUG – 24373-06
Orange Serum Broth – 28125-50
Pseudomonas Broth – 28122-50
R2A Agar Plates – 28142-15
R2A Agar Tubes – 27241-06
R2A Broth Ampules – 28123-50
Rose Bengal Agar – 28119-15
Tryptic Soy Broth (TSB) – 28126-50

Presence-Absence (P-A) Prepared Media

Paddle Testers – 26108-10, 26109-10, 26195-10
PathoScreen[™] – 26106-96
P-A Broth Ampules – 24949-25
P-A Broth Ampules w/MUG – 24955-25
P-A Broth Disposable Bottles – 23232-12, 23232-50
P-A Broth w/MUG Disposable Bottles – 24016-12, 24016-50

BART[™]

Blue Green Algae – 24327-09, 24327-27
Denitrifying Bacteria – 26193-09
Fluorescing Pseudomonads – 24326-09
Heterotrophic Aerobic Bacteria – 24904-09, 24904-27
Iron Related Bacteria – 24323-09, 24323-27
Nitrifying Bacteria – 26194-07
Pool and Spa Bacteria – 24784-09
Slime Forming Bacteria – 24325-09, 24325-27
Sulfate-Reducing Bacteria – 24324-09, 24324-27
Combination Pack: IRB, SRB and SLYM – 24348-09

Most Probable Number Method (MPN) Prepared Media

A-1 Medium – 25609-15
Azide Dextrose Broth Tubes – 26478-15
Bile Esculin Azide Agar Tubes – 24069-20
Brilliant Green Bile (BGB) Tubes – 322-15
EC Medium Tubes – 14104-15
EC Medium with MUG Tubes – 24715-15, 22824-15
Lactose Broth Tubes, concentrated – 21013-10
Lauryl Tryptose Ampules – 14725-20, 21623-15, 21014-15
Lauryl Tryptose w/MUG – 21821-15, 22175-15
PathoScreen[™] Medium MPN Pillows – 26107-96
Total Bacterial Count Tubes – 22777-00

Pour Plate/Spread Plate Method Prepared Media

Plate Count Agar Tubes – 24067-20

Dilution Products

Ready-to-use Dilution Water Buffered, Sterile
Butterfield's Buffered Phosphate Diluent – 23191-09,
23191-25, 23191-45, 23191-10
Magnesium Chloride/Potassium Phosphate
Buffer – 14305-72, 14305-98

Dilution Water Concentrate Pillows

Magnesium Chloride and Potassium Dihydrogen
Phosphate – 21431-66
Potassium Dihydrogen Phosphate (Butterfield's
Buffered Phosphate Diluent) – 23236-68
Peptone Pillows – 21429-64

Dehydrated Media

A-1 Medium Broth – 23099-34
Bile Esculin Agar – 28156-34
Brain Heart Infusion Agar – 24056-34
Brain Heart Infusion Broth – 28155-34
Brilliant Green Bile Broth – 159-26, 159-34
EC Medium – 14103-26, 14103-34
EC w/MUG – 23101-26
Eosin Methylene Blue Agar – 21777-26
Esculin Iron Agar – 22813-26
KF Streptococci Agar – 14853-34
Lactose Broth – 196-26, 196-34
Lauryl Tryptose Broth – 197-26, 197-34
Lauryl Tryptose w/MUG Broth – 22557-26, 22557-34
m-E Agar – 22812-26, 22182-34
m-Endo Agar LES – 24066-34
m-Endo Broth – 14623-26, 14623-00
m-FC Broth – 14624-26, 14624-34
m-Green YM Broth – 24282-00
m-HPC Agar – 22807-34
m-TEC Agar – 22811-26
m-TGE Broth – 24264-00
Nutrient Agar – 21792-26
Nutrient Agar w/MUG – 24876-26
Nutrient Broth – 25606-26
Plate Count Agar (Tryptone-glucose-yeast agar) – 21778-26
Presence-Absence Broth – 22809-34
R2A Agar – 22810-34
Tryptic Soy Agar – 25659-26
Tryptic Soy Broth – 22535-34

Chemicals, Extracts, and Reagents

Agar – 23250-34
Asparagine – 23100-26
Beta-D-Lactose – 28157-34
Bromocresol Purple, pH Indicator – 361-22
Cefsulodin – 28152-35
Dechlorinating Reagent Powder Pillows for
dechlorinating water samples – 14363-99
Immersion Oil – 23875-00
Indoxyl beta-D-glucopyranoside: Blue color
indicator for Enterococci – 28139-35
IBDG (indoxyl-beta-D-glucuronide): Blue color
indicator for *E. coli* – 28140-35
Kovac's Reagent (indole test) – 27161-23
Magenta-GlcA (5-bromo-6-chloro-3-indoyl-beta-D-glu-
curonide): Red color indicator for *E. coli* – 28150-35
Magnesium Chloride – 6114-34
Magnesium Sulfate – 6088-34
MUG Reagent: Fluorescent indicator for *E. coli* – 21844-21
MUGGAL (4-Methylumbelliferyl beta-D-galactopyranoside):
Fluorescent indicator for total coliforms – 28141-35
Nalidixic Acid – 24071-24
Oxidase Reagent, 0.75 mL – 26225-00
Phenol Red Sodium Salt, pH indicator – 25639-22
Phosphate Buffer Solution: Pillows for use as a rinse in
acridine orange direct count analysis – 23758-66
Potassium Phosphate, Dibasic, buffer ingredient – 7080-34
Potassium Phosphate, Monobasic, buffer ingredient – 170-01H
Proteose Peptone #3 – 28151-34
Rosolic Acid (Increase selectivity of m-FC Broth) – 21629-21
Sodium Azide – 27345-26
Sodium Sulfite – 23860-26
Tryptic Soy Broth Bottles – 25643-25
TTC Solution, 1%, presterilized (Enhances visibility
of bacteria) – 24060-42
Urea (Used in confirmation of *E. coli* when
using m-TEC agar) – 11237-26

For volumes, pricing, shelf life, and more, see
pages 133-138 of Hach's *Products for Analysis
2001* catalog (pages 133-138), call 800-227-4224,
or visit www.hach.com.

Consumables

Ampule Breaker for Glass PourRite[™] Ampules – 24846-00
Ampule Breaker for P-A Broth Ampules – 25640-00

Dispenser, Digital, and Adapter for 100 mL
Bottles – 25631-37 and 28170-00
E. coli Fluorescence Standard – 23611-00
Envirochek[™] Sampling Capsule – 26861-00
Envirochek[™] HV Sampling Capsule – 28112-00
Forceps – 21411-00
Inoculating Loops, Disposable – 27491-25
Membrane Filters, Gelman – 13530-01
Membrane Filters, Millipore – 28176-00
Oxidase Reagent – 26225-00
Petri Dish w/Pad, Gelman – 14717-99
Petri Dish w/Pad, Millipore – 28177-00
Whirl-Pak[®] Sampling Bags – 22331-99
Whirl-Pak[®] Sampling Bags with Dechlorinating
Agent – 20753-33

For a complete listing of consumables, apparatus,
and labware, see alphabetical listing starting on page
214 of Hach's new *Products for Analysis 2001*
catalog, or visit us at www.hach.com.

For a "Guide to Microbiological Testing"
poster, request literature piece 9485.

For the "Microbiological Laboratory Start-up Guide"
request literature piece 7047.

USEPA: United States Environmental Protection Agency
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Hach has the complete solution for wastewater

Hach Complete Microbiology Solutions

Testing Wastewater

Water discharging from homes, businesses, industrial plants, agricultural fields, and other sources contains waste. To assure safe recreational waters and clean waters for fish and other aquatic animals, waste must be removed before water is released into the environment. Wastewater treatment plants monitor fecal coliforms, a part of the total coliform group.

Detecting Contamination

The objectives of examining wastewater or non-potable water are to estimate the density of bacterial contamination, determine a source of pollution, enforce water quality standards, or trace the survival of microorganisms. Each objective requires a numerical value for

reporting results. Analysts need to check with local authorities to determine which methods are best suited for samples.

Options for Testing

In the United States, the discharge limit of a wastewater plant's chlorinated effluent is 200 coliforms/100mL. Either the Most Probable Number (MPN) method or the Membrane Filtration (MF) method can be used, but reporting requirements vary from state to state.

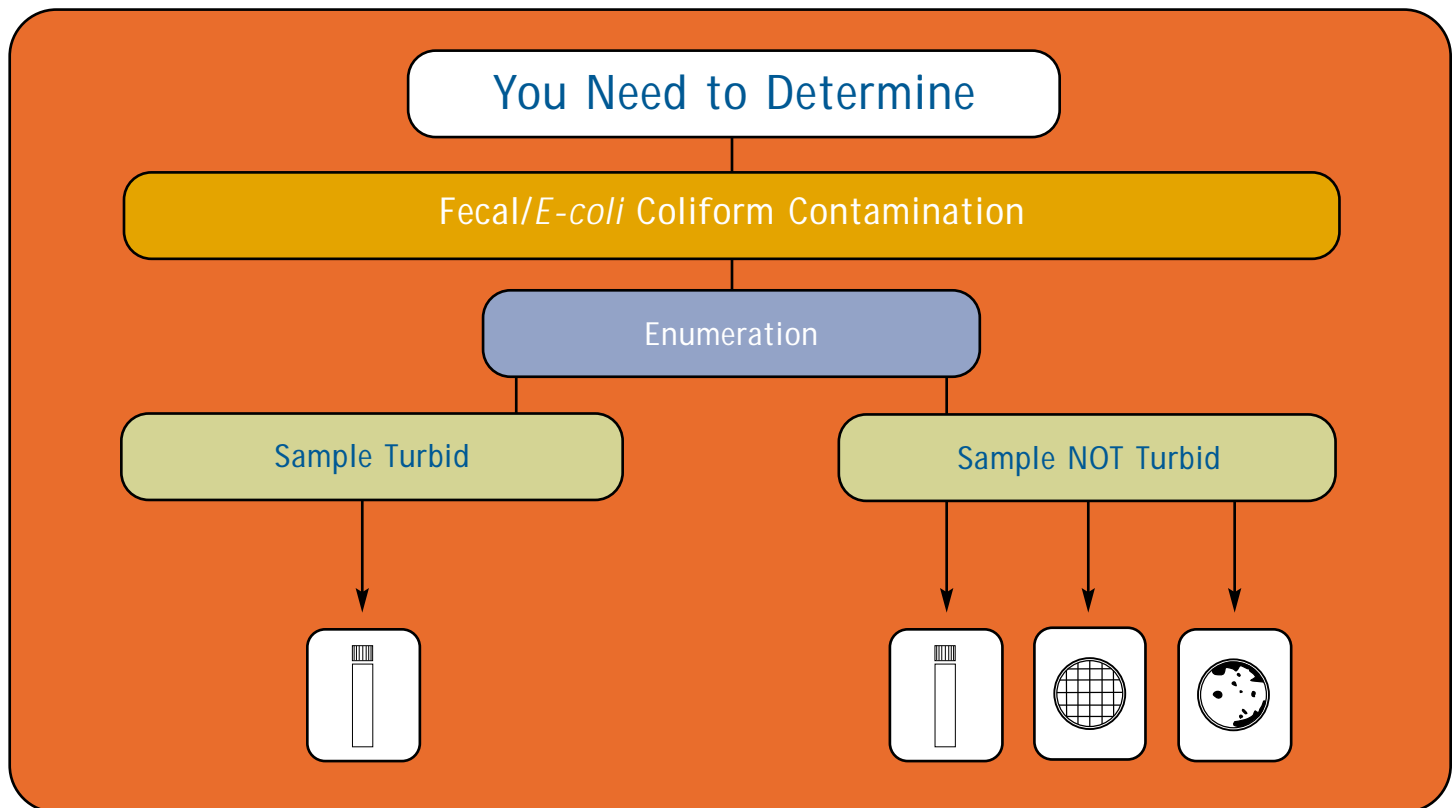
To effectively evaluate for both total and fecal coliform contamination, analysts will need to use the presumptive and confirming phases of the method chosen. Depending on the regulations for a water treatment plant and


its regional location, testing for fecal coliforms may be necessary. Or regulations may approve *E. coli* testing, which is easier to perform, takes less time, and is a more specific indicator of fecal contamination.

*Standard Methods*¹ explains many accepted methods for detecting bacterial contamination in drinking water. This resource may be helpful when selecting appropriate tests.

¹ *Standard Methods* refers to the 19th edition of *Standard Methods for the Examination of Water and Wastewater*.

Use this chart to help determine the right solution for wastewater:



 Most Probable Number(MPN)

 Membrane Filtration(MF) Using Broth

 Membrane Filtration(MF) Using Agar