

# Discover the complete solution for drinking water

## Hach Complete Microbiology Solutions

Whichever method a customer chooses for examining drinking water samples, Hach has prepared media and convenient apparatus to make testing easy and fast. Highlighted products are recommended for drinking water 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's

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 – 22873-26  
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  
Bromcresol 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-GlC (5-bromo-6-chloro-3-indolyl-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  
Protease 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](http://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](http://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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Inc., U.S. Patent 4,906,566.  
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# Hach has the complete solution for drinking water

Hach Complete Microbiology Solutions

## Testing Drinking Water

Regardless of water's origin, it needs to be free of total and fecal coliforms before it is safe to drink. The presence of total coliforms can signal fecal contamination and the potential presence of disease-causing organisms – pathogens – meaning that disinfection may be inadequate.

## Pathogen Overview

Pathogens occur sporadically in water and are not easily detected. Methods have been developed to detect other fecal organisms, which indicate the presence of pathogens. These indicator bacteria are usually harmless, occur in high densities in their natural environments,

and are easily cultured. If you routinely monitor drinking water quality, you need to test for total coliforms, and either fecal coliforms or *E. coli*.

## Detecting Contamination

Depending on the region, certain regulations must be met before treated water is released into the drinking water distribution system. In the United States, for example, total coliform regulations require a maximum contaminant level of zero total coliform bacteria (including fecal coliforms and *E. coli*) based on the presence or absence of total coliforms in 100 mL of sample. Analysts need to check with local authorities to determine which methods are best suited for samples.

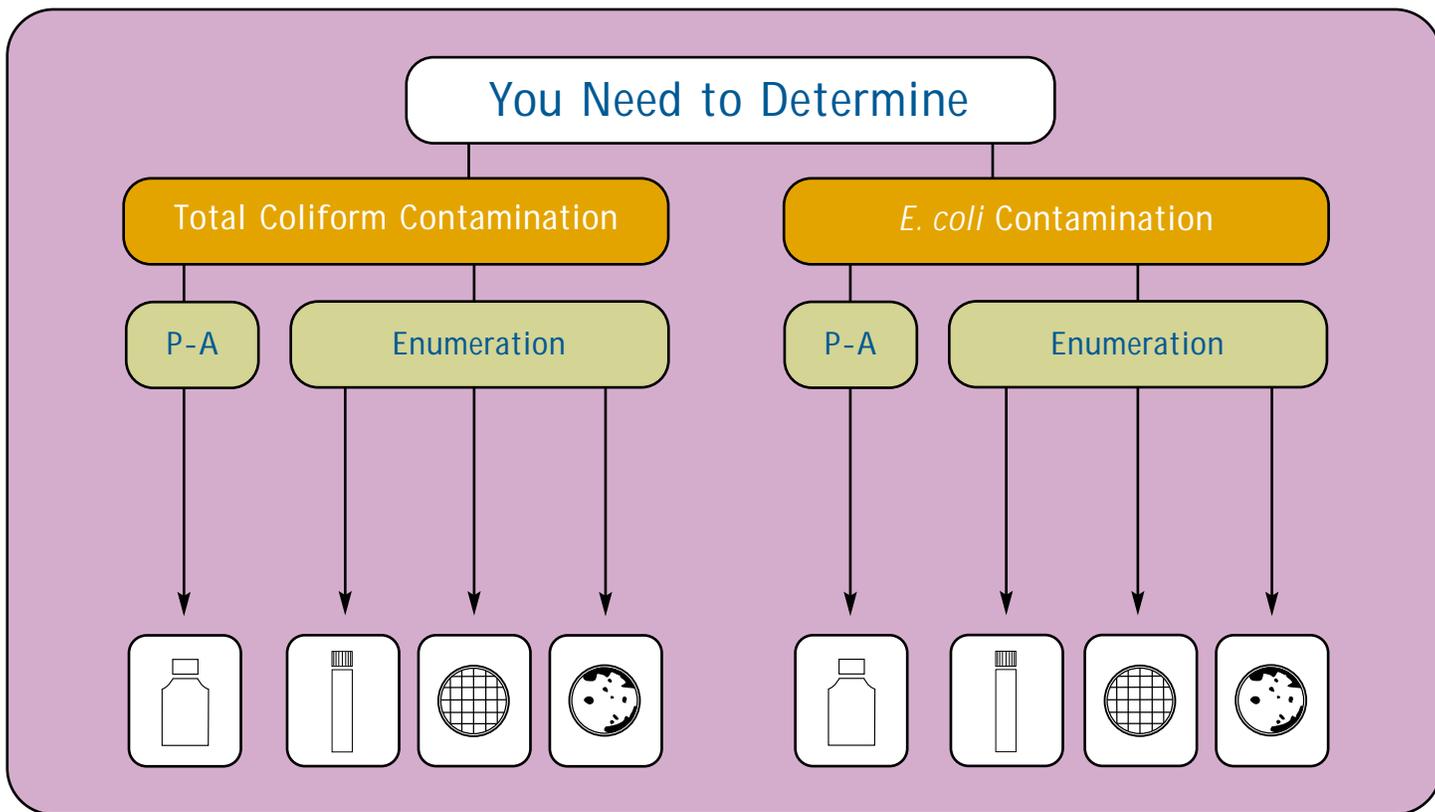
## Options for Testing

If a sample tests positive for total coliforms, then fecal coliforms or *E. coli* must also be tested. Depending on the regulations for a particular water plant, analysts may need to test for fecal coliforms, which is time-consuming. Or the 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*<sup>1</sup> explains many accepted methods for detecting bacterial contamination in drinking water. This resource may be helpful when selecting appropriate tests.

<sup>1</sup> *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 drinking water:



MPN Most Probable Number(MPN)

MF Membrane Filtration(MF) Using Broth

P-A Presence-Absence(P-A)

MF Membrane Filtration(MF) Using Agar