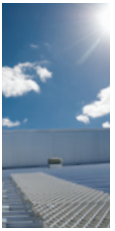
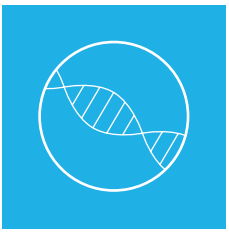




Water Safety and Quality Reference Guide

BIO-RAD

Contents

This booklet is provided by Bio-Rad for use only with Bio-Rad products. It is not a contractual document.

Total Flora

Bacteria

PCA without Dextrose

ISO Standard

ISO 6222:1999

Water quality

Enumeration of culturable microorganisms

Colony count by inoculation in a nutrient agar culture medium

Pour Plate Method

Water sample (preparation)

↓

PCA without Dextrose

↓ 22 ± 2°C 68 ± 4 hr

Reading/enumeration

↓ 36 ± 2°C 44 ± 4 hr

Reading/enumeration

Ordering Information

Catalog #	Description
Plate Count Agar (PCA) without Dextrose	
3554437	200 ml × 6 bottles
3564474	500 g, dehydrated

Escherichia coli

ISO Standard

ISO 9308-3:1998

Water quality

Detection and enumeration of *E. coli* and coliforms

Part 3: Miniaturized method (most probable number [MPN]) for the detection and enumeration of *E. coli* in surface and residual water

Water sample
(dilutions in **DSM** or **EDS**)

MUG/EC Microplates

44 ± 0.5°C
36–72 hr

Reading (λ = 366 nm — UV light)
UV Lamp

Calculation and interpretation
Fluoplate 2 Software

Ordering Information

Catalog #	Description
Special Microplate Diluent (DSM) with Bromophenol Blue	
3554282	18 ml × 60 tubes
Special Microplate Diluent (DSM)	
3553784	100 g, dehydrated
Sterile Distilled Water (EDS) for Microplates	
3554283	18 ml × 60 tubes
Fluoplate 2 Software	
3591790	Data management software for the statistical estimation of MPN and confidence interval. Please contact your local Bio-Rad representative for more information.
MUG/EC Microplates for *E. coli* Testing	
3553785	25 opaque white plates with sealers
3553782	25 transparent plates with sealers
UV Lamp	
1660500	1 compact, portable lamp (366 nm, requires 4 AA batteries)
Wood Lamp	
3550717	1 chamber
3550718	1 UV tube (366 nm)

Key Benefits

- Statistical control of the input values
- Creation of a database easily exportable into Excel or Access
- Multi-language software and reports: English, French, Spanish, Italian, and German
- NF EN ISO/IEC 17025 validated

Alternative Method

XplOrer64 System

Automated real-time and continuous quantification of *E. coli* in bathing (coastal sea and inland water), waste, and drinking water

Samples with Low Suspended Matter (SM) Level	Samples with High SM Level	Nonfilterable Water Samples
100 ml Protocol	**10 ml Protocol**	**1 ml Protocol**
Bathing water (sea, inland) Treated wastewater Drinking water	**Treated or untreated wastewater**	**Untreated wastewater**

Water sample filtration

Membrane inserted into **CheckN'Safe *E.coli***

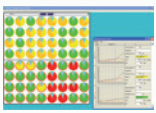
Pipetting of 1 ml of water sample

Direct inoculation **CheckN'Safe *E.coli***

Automated detection or quantification with **XplOrer64 System**

Total *E. coli* analysis cycle:
- **Bathing water: 8 hr**
- **Wastewater: 12 hr**
- **Drinking water: 12 hr**

Automated real-time results analysis and interpretation with **XplOrer64 Software**



Ordering Information

Catalog #	Description
XplOrer64 System without PC (220 V)	
3593451	XplOrer64 System (220 V) for up to 64 samples, CheckN'Safe temperature control cells, cleaning box, and 4 racks
CheckN'Safe *E.coli* Kit	
3554720	9 ml × 60 tests
CheckN'Safe Screw Caps	
3593457	Sterile caps (1 bag of 30 units)

Please contact your local Bio-Rad representative for more information.

Key Benefits

- Easy-to-use and automated method to quantify *E. coli* in real time, without confirmation
- Random access for up to 64 samples analyzed simultaneously
- Fast results:
  - 2,000 *E. coli*/100 ml sample detected in 4 hr 20 min
  - 500 *E. coli*/100 ml sample detected within 5 hr
- Automatic expression of results according to 76/160/EEC or 2006/7/EC European Directive
- Accurate alternative method compared to miniaturized MUG/EC Microplates

E. coli / Coliforms

Ordering Information

Catalog #	Description
Bromocresol Purple (BCP) Lactose Broth	
3553414	10 ml × 25 tubes
Brilliant Green Bile Lactose Broth (BGBLB)	
3578024	10 ml × 25 tubes
Kovacs Reagent (for Indole Detection)	
3555313	15 ml × 2 bottles
Tergitol 7 (0.2%) Supplement	
3562632	50 ml × 1 bottle
TTC (0.05%) Supplement	
3562652	50 ml × 1 bottle
TTC Tergitol 7 Agar, Base Medium	
3554687	200 ml × 6 bottles
3564454	500 g, dehydrated
TTC Tergitol 7 Agar, Complete Medium	
3563706	55 mm × 10 dishes
Trypto-Casein-Soy Agar (TSA)	
3563884B	90 mm × 20 dishes
3564554	500 g, dehydrated
Tryptophan Broth	
3554194	3 ml × 25 tubes

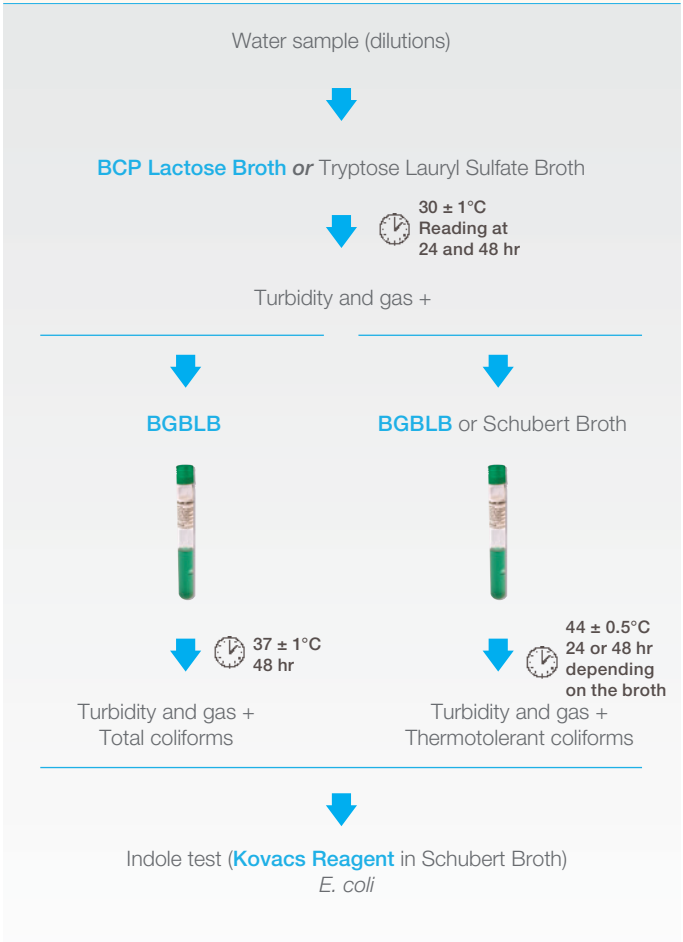
NF Standards

NF T90-413 (1985)

Water testing

Detection and enumeration of coliforms and thermotolerant coliforms

General method by culture in liquid media (MPN)



ISO Standard

NF EN ISO 9308-1:2000

Water quality

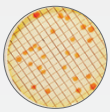
Detection and enumeration of *E. coli* and coliforms

Part 1: Membrane filtration method

Water sample filtration

Membrane

Standard test **TTC Tergitol 7**



36 ± 2°C, 21 ± 3 hr (up to 44 ± 4 hr if absence of typical colonies)

10 yellow colonies with yellow area

Rapid test **TSA**

36 ± 2°C 4–5 hr

Transfer the membrane on tryptone bile agar

TSA
10 tubes

Tryptophan Broth
10 tubes

44 ± 0.5°C 19–20 hr

Membrane on indole paper + UV

36 ± 2°C 21 ± 2 hr

Oxidase test

44 ± 0.5°C 21 ± 3 hr

Indole test **Kovacs Reagent**

10–30 min

Red colonies

ISO 9308-1:2014

Water quality

Enumeration of *E. coli* and coliforms

Part 1: Membrane filtration method for waters with low bacterial background flora

Water sample filtration

Membrane

36 ± 2°C 21–24 hr for *E. coli* and coliforms

Chromogenic Coliform Agar

Enumeration of typical colonies

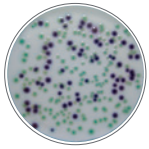
- Pink colonies = coliforms
- Violet colonies = *E. coli*
- Confirmation: minimum 10 colonies, oxidase test of at least 10 coliform colonies

E. coli / Coliforms

E. coli

Other Coliforms

Total Coliforms



RAPID'*E.coli* 2

Alternative Method

RAPID'*E.coli 2* for Water Testing

Chromogenic agar medium for the direct detection and enumeration of *E. coli* and coliforms by membrane filtration

NF VALIDATION

EPA validation

Water sample filtration

Membrane

36°C
for *E. coli* and coliforms
21 ± 3 hr (NF VALIDATION)
24 ± 2 hr (EPA validation)

RAPID'*E.coli* 2 Agar for Water Testing

Enumeration of typical colonies
- Green colonies = coliforms
- Gray blue to violet colonies = *E. coli*

Ordering Information

Catalog #	Description
RAPID'*E.coli* 2 Agar Kit for Water Testing	
17005373	6 bottles of agar and 6 vials of supplement
RAPID'*E.coli* 2 Agar for Water Testing	
3563982	55 mm × 20 dishes
Ready to use (to be supplemented)	
3555297	200 ml × 6 bottles
3555299	100 ml × 6 bottles
Dehydrated base	
3564024	500 g
Supplement	
12008041	6 vials

Key Benefits

- Certified by NF VALIDATION and U.S. EPA
- A single plate for simultaneous *E. coli* and coliform testing with the same incubation temperature
- Strong colony coloration contrast for rapid and easy reading
- No confirmation step required for rapid results

Enterococcus

ISO Standard

ISO 7899-1:1988

Water quality

Detection and enumeration of intestinal *Enterococci* in surface and wastewater

Miniaturized method (most probable number) by inoculation in liquid medium

Water sample
(dilutions in **DSM** or **EDS**)

MUD/SF Microplates

44 ± 0.5°C
36–72 hr

Reading (λ = 366 nm — UV light)
UV Lamp

Calculation and interpretation
Fluoplate 2 Software

Ordering Information

Catalog #	Description
Special Microplate Diluent (DSM) with Bromophenol Blue	
3554282	18 ml × 60 tubes
Special Microplate Diluent (DSM)	
3553784	100 g, dehydrated
Sterile Distilled Water (EDS) for Microplates	
3554283	18 ml × 60 tubes
Fluoplate 2 Software	
3591790	Data management software for the statistical estimation of MPN and its confidence interval. Please contact your local Bio-Rad representative for more information.
MUD/SF Microplates for *Enterococcus* Testing	
3553786	25 opaque white plates with sealers
3553783	25 transparent plates with sealers
UV Lamp	
1660500	1 compact, portable lamp (366 nm, requires 4 AA batteries)
Wood Lamp	
3550717	1 chamber
3550718	1 UV tube (366 nm)

Key Benefits

- Statistical control of the input values
- Creation of a database easily exportable into Excel or Access
- Multi-language software and reports: English, French, Spanish, Italian, and German
- NF EN ISO/IEC 17025 validated

Alternative Method

XplOrer64 System

Automated real-time and continuous quantification of intestinal *Enterococci* in bathing (coastal sea and inland water) and wastewater

Samples with Low SM Level	Samples with High SM Level	Nonfilterable Water Samples
100 ml Protocol	**10 ml Protocol**	**1 ml Protocol**
Bathing water (sea, inland) Treated wastewater	**Treated or untreated wastewater**	**Untreated wastewater**

Water sample filtration

Membrane inserted into **CheckN'Safe *Enterococci***

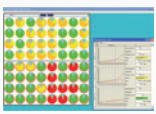
Pipetting of 1 ml of water sample

Direct inoculation **CheckN'Safe *Enterococci***

Automated detection or quantification with **XplOrer64 System**

Total *Enterococci* analysis cycle:
- **Bathing water: 12.5 hr**
- **Wastewater: 16 hr**

Automated real-time results analysis and interpretation with **XplOrer64 Software**



Ordering Information

Catalog #	Description
XplOrer64 System without PC (220 V)	
3593451	XplOrer64 System (220 V) for up to 64 samples, CheckN'Safe temperature control cells, cleaning box, and 4 racks

Please contact your local Bio-Rad representative for more information.

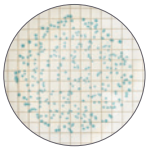
CheckN'Safe *Enterococci* Kit	
3554721	9 ml × 60 tests
CheckN'Safe Screw Caps	
3593457	Sterile caps (1 bag of 30 units)

Key Benefits

- First alternative method certified by NF VALIDATION for bathing and wastewater monitoring
- Easy-to-use and automated method to quantify in real time, without confirmation
- Random access for up to 64 samples analyzed simultaneously
- Fast results:
  - 400 *Enterococci*/100 ml sample detected in 8 hr 30 min
  - 250 *Enterococci*/100 ml sample detected within 9 hr
- Automatic expression of results according to 76/160/EEC or 2006/7/EC European Directive
- Accurate alternative method compared to miniaturized MUD/SF Microplates

Enterococcus

Enterococcus



RAPID'*Enterococcus*

ISO Standard

ISO 7899-2:2000

Water quality

Detection and enumeration of intestinal *Enterococci*

Part 2: Membrane filtration method

Water sample filtration

Membrane

Slanetz and Bartley

36 ± 2°C
44 ± 4 hr

Reading
Transfer the membrane on **BEA**

44 ± 0.5°C
2 hr

Reading/enumeration

Alternative Method

RAPID'*Enterococcus*

Chromogenic agar for the direct detection and enumeration of intestinal *Enterococci* by membrane filtration

Water sample filtration

Membrane

RAPID'*Enterococcus*

8–10 ml per
55 mm plate

44 ± 1°C
44 ± 4 hr

Enumeration of typical colonies
- Blue colonies = *Enterococcus*

Ordering Information

Catalog #	Description
Bile Esculin Azide (BEA) Agar	
3563994	90 mm × 20 dishes
3564184	500 g, dehydrated
TTC (0.2%) Supplement	
3562665	5 ml × 1 vial
Slanetz and Bartley Agar, Base Medium	
3554819	100 ml × 6 bottles
3564934	500 g, dehydrated
Slanetz and Bartley Agar, Complete Medium	
3563716	55 mm × 10 dishes
3563981	55 mm × 100 dishes
RAPID'*Enterococcus* Agar for Water Testing	
3554409	100 ml × 6 bottles

Key Benefits

- Direct identification and enumeration of *Enterococci*
- No confirmation step required
- Ready-to-use medium
- Time and material savings

Sulfite-Reducing Anaerobes *(Clostridium)*

NF Standard

NF T90-415 (1985)

Water testing

Detection and enumeration of spores of sulfite-reducing anaerobic bacteria and *Clostridium*

General method by incorporation of agar in deep tubes

Water sample (preparation)

80 ± 2°C
10 min

Meat-Liver Sulfite Iron

Anaerobic conditions

37 ± 1°C
24 hr

Reading

Anaerobic conditions

37°C
48 hr

Reading/enumeration

ISO Standards

ISO 6461-1:1986

Water quality

Detection and enumeration of spores of sulfite-reducing anaerobic microorganisms (*Clostridia*)

Part 1: Method by enrichment in a liquid medium

Water sample (preparation)

75 ± 5°C
15 min

Differential Reinforced Clostridial Medium (DCRM)

37 ± 1°C
44 ± 4 hr

Interpretation

TSC without D-Cycloserine

Anaerobic conditions

44 ± 1°C
21 ± 3 hr

Confirmation
Columbia Agar

Anaerobic conditions

36 ± 2°C
21 ± 3 hr

Reading/enumeration

ISO 6461-2:1986

Water quality

Detection and enumeration of the spores of sulfite-reducing anaerobes (*Clostridia*)

Part 2: Membrane filtration method

Water sample (preparation)

↓ 75 ± 5°C, 15 min

Water sample filtration

↓

Membrane

↓

TSC without D-Cycloserine

Anaerobic conditions ↓ 37 ± 1°C, 20 ± 4 hr and 44 ± 4 hr

Reading/enumeration

ISO 14189:2013

Water quality

Enumeration of *Clostridium perfringens*

Membrane filtration method

Water sample (preparation)

↓ 60 ± 2°C, 15 ± 1 min

Water sample filtration

↓

Membrane

↓

TSC with D-Cycloserine

Anaerobic conditions ↓ 44 ± 1°C, 21 ± 3 hr

Reading/enumeration

↓

Confirmation

Columbia Agar

↓

Acid phosphatase test

Ordering Information

Catalog #	Description
Columbia Agar	
3564674	500 g, dehydrated
3564678	5 kg, dehydrated
Meat-Liver Sulfite Iron Agar, Complete Medium	
3554777	20 ml × 25 tubes
3569654	500 g, dehydrated
TSC without D-Cycloserine Agar, Base Medium	
3554419	100 ml × 6 bottles
3569644	500 g, dehydrated

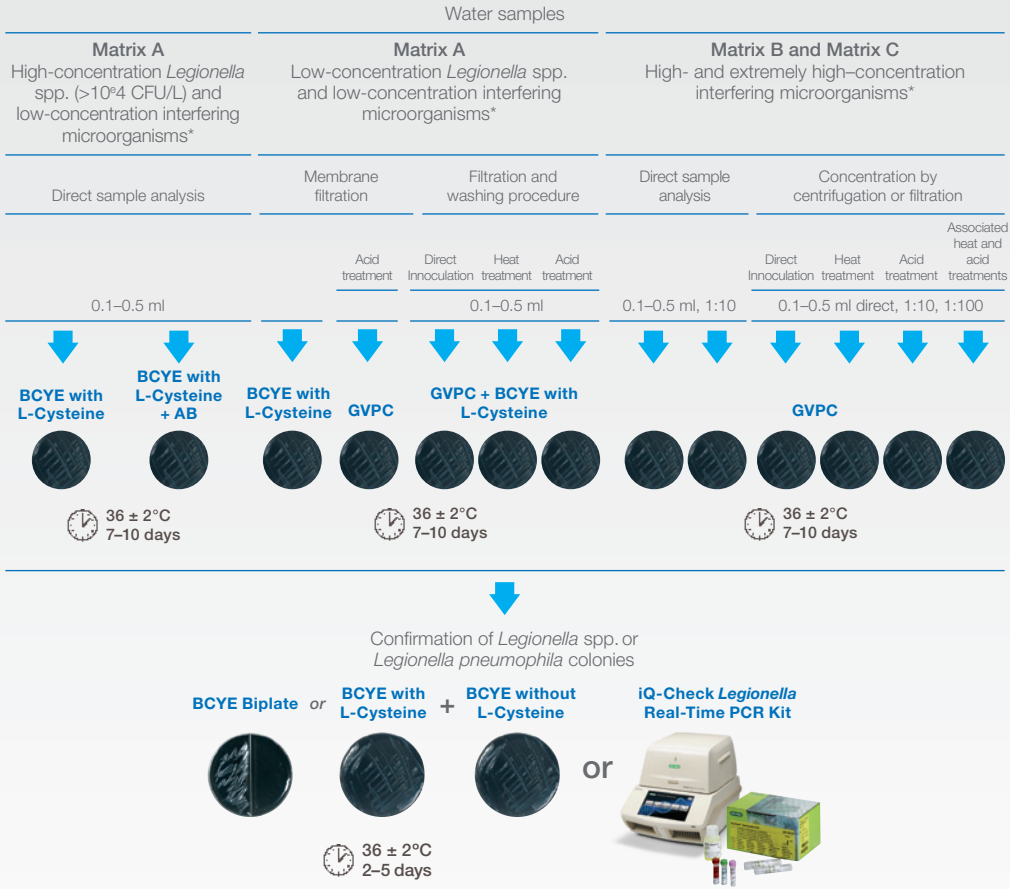
Legionella spp. and *Legionella pneumophila*

ISO Standard

ISO 11731:2017

Water quality

Enumeration of *Legionella*



* A decision matrix can be found in ISO 11731:2017, Annex J.

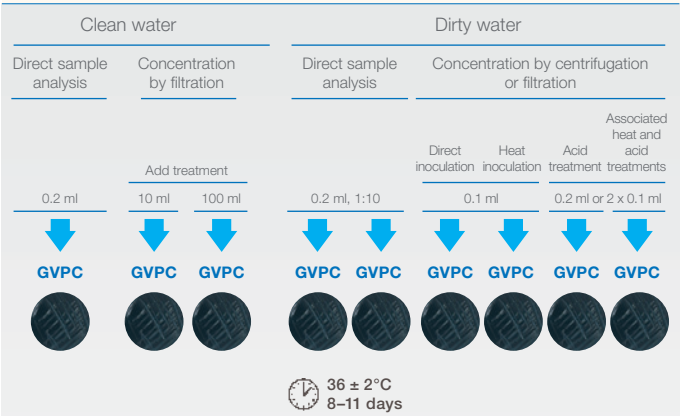
NF Standard

NF T90-431 (2017)

Water quality

Detection and enumeration of *Legionella* spp. and *L. pneumophila*

Method by direct inoculation and, after concentration, by membrane filtration or centrifugation



Confirmation of *Legionella* spp. or *Legionella pneumophila* colonies

Identification of *Legionella pneumophila* colonies
iQ-Check *Legionella* Real-Time PCR or
***Legionella pneumophila* Latex Kit**
or confirmation of *Legionella pneumophila*
with **MonoFluo Kit**

Ordering Information

Catalog #	Description
BCYE Biplate Agar	
3563718	90 mm × 20 dishes
BCYE with L-Cysteine Agar	
3563720	90 mm × 20 dishes
BCYE without L-Cysteine Agar	
3563722	90 mm × 20 dishes
GVPC Agar	
3563717	90 mm × 20 dishes
3563719	90 mm × 100 dishes
***Legionella pneumophila* Latex Kit**	
3562790	50 tests
***Legionella pneumophila* and *Legionella* Species Latex Kit**	
3562795	50 tests
MonoFluo *Legionella pneumophila* Kit	
3532514	24 tests
UV Lamp	
1660500	1 compact, portable lamp (366 nm, requires 4 AA batteries)
Wood Lamp	
3550717	1 chamber
3550718	1 UV tube (366 nm)

Legionella spp. and *Legionella pneumophila*

Alternative Method

Aquadien DNA Extraction Kit

NF VALIDATION certified according to NF T90-471 (2015) and ISO/TS 12869:2019

Water quality

Detection and quantification of *Legionella* spp. and/or *L. pneumophila* by concentration and amplification by real-time PCR

Aerosol sample  Biofilm sample  Water sample 

Standard Protocol

Water sample filtration

Lysis of bacteria using thermal shock
Aquadien Kit

95°C
15 min

Optional treatment with
Aquadien W2 Wash Solution
for dirty water samples

Purification of DNA using ultrafiltration

10 min

10 min

Elution of DNA for real-time PCR analysis

Short Protocol

Water sample filtration

Optional treatment with
iQ-Check Free DNA Removal Solution

Lysis of bacteria using thermal shock + centrifugation
Aquadien Kit

95°C
15 min

Optional treatment with
Aquadien W2 Wash Solution
for dirty water samples

Purification of DNA using ultrafiltration

10 min

Elution of DNA for real-time PCR analysis

Alternative Method: Real-Time PCR

iQ-Check *Legionella* spp. Real-Time PCR Detection Kit
iQ-Check *L. pneumophila* Real-Time PCR Detection Kit

NF VALIDATION certified according to NF T90-471 (2015) and ISO/TS 12869:2019

Water quality

Detection and quantification of *Legionella* spp. and/or *L. pneumophila* by concentration and amplification by real-time PCR

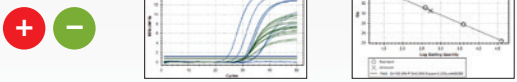
DNA extraction
Aquadien Kit

Real-time PCR amplification

Screening
iQ-Check Screen *Legionella* spp.
iQ-Check Screen *L. pneumophila*

Quantification
iQ-Check Quanti *Legionella* spp.
iQ-Check Quanti *L. pneumophila*

Automatic results analysis and interpretation



Legionella spp. and *Legionella pneumophila*

Ordering Information

Catalog #	Description
Aquadien Bacterial DNA Extraction and Purification Kit	
3578121	96 tests
Also available: Protocol for dirty samples	
Aquadien W2 Wash Solution	
3578119	48 tests
Aquadien Lysis Solution	
3578125	100 ml × 1 bottle, sufficient for 32 air samples
Real-Time PCR Kits and Reagents	
iQ-Check Quanti *Legionella* spp. Kit	
3578102	96 tests
iQ-Check Quanti *L. pneumophila* Kit	
3578103	96 tests
iQ-Check Screen *Legionella* spp. Kit	
3578104	96 tests
iQ-Check Screen *L. pneumophila* Kit	
3578105	96 tests
iQ-Check Free DNA Removal Solution	
3594970	1 vial lyophilized iQ-Check Free DNA Removal Reagent (to make 10 ml) and 1 vial iQ-Check 10x Activation Buffer (9 ml)
***Legionella* DNA Free Water**	
12006823	1 L

Catalog #	Description
Documentation	
Method Validation Guide: NF T90-471 (2015) and ISO/TS 12869:2019	

Please contact your local Bio-Rad representative for more information.

Key Benefits

- High extraction yield
- Compatible with all types of water (drinking as well as cooling tower water)
- Just 4 hours to results without confirmation
- Detection of *Legionella* spp. and *L. pneumophila* in the same assay
- Fully automated results analysis
- Reference material provided
- Connected to the standard reference material
- NF VALIDATION certified, including protocol for management of free DNA in the sample

Pseudomonas aeruginosa

ISO Standard

ISO 16266:2006

Water quality
Detection and enumeration of *P. aeruginosa*
Membrane filtration method

Water sample filtration

Membrane

CN

36 ± 2°C
44 ± 4 hr

Reading/enumeration

Reading (λ = 366 nm — UV light)
UV Lamp

Nutrient Agar for Water Testing

Acetamide Broth

36 ± 2°C
22 ± 2 hr

Nessler reagent

Reading/enumeration of ammonia-producing colonies

36 ± 2°C
22 ± 2 hr

Oxidase test

King B

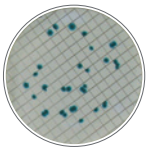
36 ± 2°C
5 days

Reading at λ = 366 nm
UV Lamp

Enumeration of fluorescent colonies

Pseudomonas aeruginosa

P. aeruginosa



RAPID'*P.aeruginosa*

Alternative Method

RAPID'*P.aeruginosa*

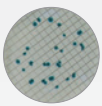
Chromogenic agar medium for the direct detection and enumeration of *P. aeruginosa* by membrane filtration

Water sample filtration

Membrane

36 ± 2°C
22–30 hr

RAPID'*P.aeruginosa*



Enumeration of typical colonies:
blue to blue-green colonies

Ordering Information

Catalog #	Description
Acetamide Broth	
3554355	5 ml × 25 tubes
CN Agar	
3563915	55 mm × 10 dishes
3556034	200 ml × 6 bottles
3564899	500 g, dehydrated
UV Lamp	
1660500	1 compact, portable lamp (366 nm, requires 4 AA batteries)
Wood Lamp	
3550717	1 chamber
3550718	1 UV tube (366 nm)
King B Agar	
12018502	7 ml × 25 tubes
RAPID'*P.aeruginosa* Agar for Water Testing	
3563984	55 mm × 20 dishes
3564900	500 g, dehydrated

Key Benefits

- High specificity for direct enumeration of *P. aeruginosa*
- Complete results in 22–30 hr
- Strong colony coloration contrast for rapid and easy reading
- No confirmation step required for rapid results

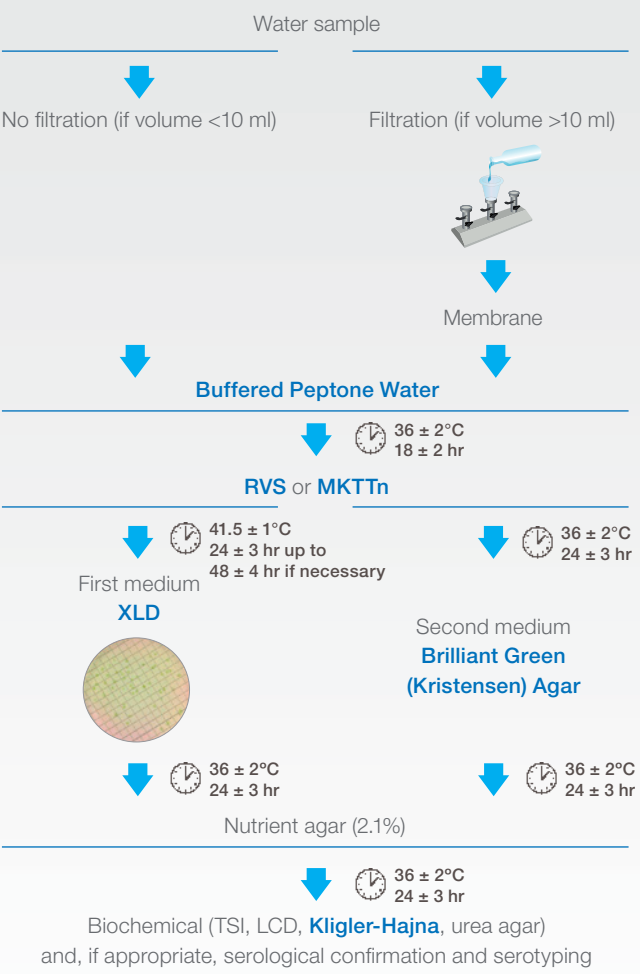
Salmonella spp.

ISO Standard

ISO 19250:2010

Water quality

Detection of *Salmonella* spp.

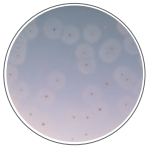


Ordering Information

Catalog #	Description
Brilliant Green (Kristensen) Agar	
3564464	500 g, dehydrated
Buffered Peptone Water (BPW)	
BPW Plus	
Ready to use	
3554179	225 ml x 6 bottles
3555795	3 L x 4 bags
3555790	5 L x 2 bags
Dehydrated	
3564684	500 g
3564686	5 kg
BPW Standard	
Ready to use	
12013260	5 L x 2 bags
Dehydrated	
12013259	500 g
12013258	5 kg
Buffered Peptone Water Broth	
3554179	225 ml × 6 bottles
3564684	500 g, dehydrated
Kligler-Hajna Agar	
3555378	10 ml × 25 slanted tubes
LDC-ODC-ADH Broth	
12017489	5 ml × 3 bottles
Muller-Kauffmann Tetrathionate Novobiocin (MKTTn) Broth	
3556140	10 ml × 50 tubes
3564714	500 g, dehydrated
Physiological Sterile Water (0.85%)	
3554164	9 ml × 25 tubes
Rappaport Vassiliadis Soya (RVS) Broth	
3555773	10 ml × 25 tubes
3564324	500 g, dehydrated
Xylose Lysine Desoxycholate (XLD) Agar	
3541751	90 mm x 20 dishes
3569124	500 g, dehydrated

Staphylococcus aureus

S. aureus



S. aureus

NF Standard

NF T90-412 (2016)

Water quality

Enumeration of pathogenic staphylococci

Membrane filtration method

Water sample filtration

Membrane

BP + RPF

36 ± 2°C
First reading: 21 ± 3 hr
If no colonies, continue incubation
Second reading: 44 ± 4 hr

Direct enumeration of black or gray colonies surrounded by a whitish opaque halo/gram-positive bacteria

Confirmation by microscopic observation

For transfer membrane methods

Confirmation
Pastorex Staph Plus

Coagulation reading
Rabbit Plasma

Ordering Information

Catalog #	Description
Baird-Parker Agar, Base Medium	
3564814	500 g, dehydrated
Baird-Parker Agar, Complete Medium	
3563991	90 mm × 20 dishes
Baird-Parker Agar with Rabbit Plasma Fibrinogen (RPF), Complete Medium	
3563996	90 mm × 20 dishes
3578618	90 ml × 6 bottles and 6 vials of supplement
Brain Heart Infusion (BHI) Broth	
3553664	10 ml × 25 tubes
3564014	500 g, dehydrated
Egg Yolk with Potassium Tellurite Supplement	
3554205	25 ml × 1 bottle
Pastorex Staph Plus Kit	
3556353	5 × 50 tests
3556356	50 tests
Rabbit Plasma Kit	
3556352	Pack for 20 reactions
RPF Supplement	
3564618	10 vials
Sulfamethazine Solution (0.2%) Supplement	
3562682	2.5 ml × 1 vial

Microorganisms Detected According to Sample Origin and Method

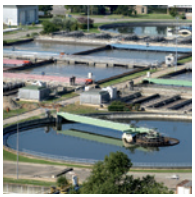



Water Characteristic	Treated Water			
	Network Tap	Industrial Process	Artificial Surface	Bottled
Origin of water	Drinking water	Treated cooling towers, process, sanitary water	Spa, hydrotherapy, swimming pool, whirlpools	Natural mineral and source water
Turbidity	+	+	+	+
Microbial load	+	+	+	+
Typical methods	MF (Europe) P/A (U.S.) PCR	MF PCR	MF PCR	MF
Typical quality indicators	Total flora *E. coli* Coliforms *Enterococcus*	Total flora *E. coli* Coliforms *Enterococcus*	Total flora *E. coli* Coliforms *Enterococcus*	Total flora Coliforms (*E. coli*)
Typical pathogens	*Legionella* *P. aeruginosa* *Salmonella* SRA	*Legionella* *P. aeruginosa* *Salmonella* SRA	*Legionella* *P. aeruginosa* *S. aureus* *Salmonella* SRA	*P. aeruginosa*

+, low; ++, medium; +++, high; ++++, very high.
MF, membrane filtration; MPN, most probable number; P/A, presence/absence; PCR, polymerase chain reaction; SRA, sulfite-reducing anaerobes.

Visit **bio-rad.com/water** for more information.





Nontreated Water

Surface	Bathing	Waste	Cooling Towers	Aerosols
Lakes, rivers	Coastal sea, estuarine, inland water	Residual raw waters, sludge, soil, treatment plant effluents	Nontreated cooling towers	Drops from cooling towers, tap water
+++	+++	+++	++++	++
++	++	+++	+++	+++
MF/MPN	MF/MPN Impedance	MPN/PCR Impedance	MPN/PCR	PCR
Total flora *E. coli* Coliforms *Enterococcus*	Total flora *E. coli* Coliforms *Enterococcus*	Total flora *E. coli* Coliforms *Enterococcus*	Total flora	Total flora
Salmonella SRA	—	*Legionella* *Salmonella*	*Legionella*	*Legionella*

Validations

Kit or Agar Method	AFNOR NF VALIDATION*	EPA**
CheckN'Safe *Enterococci* Kit	BRD 07/19-11/09	
iQ-Check *Legionella* spp. Real-Time PCR Detection Kit	BRD 07/15-12/07	
iQ-Check *L. pneumophila* Real-Time PCR Detection Kit	BRD 07/16-12/07	
RAPID'*E.coli* 2 Agar Kit for Water Testing	BRD 07/20-03/11	Approved
RAPID'*P.aeruginosa* Agar for Water Testing	BRD 07/21-04/12	

* Go to nf-validation.afnor.org/en/water-analysis/ for alternative analytical methods for water.
** Method approval certification available at epa.gov.

Quality and Certification

Our quality policy, which is the result of our dedicated efforts to food and water environmental and surface testing, is based on a constant commitment to improvement.

Within the scope of the CE labeling process for all of its medical diagnostic activities, a number of Bio-Rad sites received ISO 13485 certification in 2002. Bio-Rad's ISO 9001 version 2000 certification is also maintained for all of its activities.

United States Department of Agriculture (USDA) and Food and Drug Administration (FDA) inspections have confirmed Bio-Rad's quality systems' and products' compliance with U.S. regulatory standards.

Production

From the delivery of raw materials right up to marketing of the finished products, Quality Assurance applies to every product manufactured by Bio-Rad. Each batch of finished products undergoes strict quality control testing and is marketed only if it complies with acceptance criteria.

All documentation relating to the production and quality control of a given batch is archived.

Distribution

Stock is maintained in a temperature-controlled environment with barcode readings of code, batch, expiration date, product status, commercial validity, and country authorization verified at each step in product storage and distribution.

Normally, products are transported at room temperature. Bio-Rad takes shipping-related stress conditions into account when developing reagents. This allows reagents to be carried via standard shipping services. For those rare instances when a product's performance cannot be guaranteed under these conditions, Bio-Rad offers specialized methods of transport.

Traceability

All Bio-Rad products can be traced electronically, making it possible to identify the customer(s) linked with a specific product and/or batch or serial number.

As part of the company's "reagent vigilance," this traceability makes it possible to inform clients when there's a problem with a particular batch or lot number, to indicate any actions to be taken based on the results, and, where applicable, to recall a given product.

Documents and Certificates

Technical Data Sheets

For more information about our products, please refer to the technical data sheets.

Depending on the products, our technical sheets include:

- Applications of the product
- Corresponding standard references
- Product description
- Presentation or type(s) of packaging offered
- Stock status
- Typical formula
- Necessary product(s) or material(s) that are not supplied
- Detailed protocols
- Special precautions for use
- Quality controls indicating test strains and expected results

All of our technical data sheets are available on our website.

Quality Control Certificates

These certificates have been established for every product and indicate all the control tests carried out on the finished product, the expected specifications, and the results obtained.

These documents can be consulted online and can be downloaded in PDF format by using a product code and batch number.

ISO/IEC 17025 Certification

ISO/IEC 17025 certification enables solution manufacturers and user laboratories the ability to demonstrate that they operate competently and use reliable and valid products for reliable and valid results. The accreditation of the Bio-Rad culture media manufacturing facility and quality control laboratory was performed by Cofrac (French Accreditation Committee), an impartial, independent third-party auditor, following strict requirements according to the ISO/IEC 17025 standard.

Safety Data Sheets

These are established by our Department of Regulatory Affairs for every product containing hazardous substances and are recorded in the product reference information. These safety data sheets are available upon request.

Certificates of Health and Origin

These documents, available during audit, are delivered to us by our suppliers for peptones of animal origin when they are elements in the composition of a product.

Brochure

Legionella Testing Solutions Brochure
Bulletin 16414

Fliers

RAPID'*E.coli* 2 Agar for Water Testing Flier
Bulletin 6944

RAPID'*P.aeruginosa* Agar for Water Testing Flier
Bulletin 6945

Visit **bio-rad.com/water** for more information.

Videos

Visit the Bio-Rad Food Science video library, which includes product tutorials, technical information, and more.

bio-rad.com/FoodScienceVideos

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