

Water Safety and Quality Reference Guide

BIO-RAD

Contents

PART 1 QUALITY INDICATORS	1	PART 2 PATHOGEN TESTING	10
Total Flora		Sulfite-Reducing Anaerobes (<i>Clostridium</i>)	
ISO Standard	1	NF Standard and ISO Standards	10
<i>Escherichia coli</i>		<i>Legionella</i> spp. and <i>Legionella pneumophila</i>	
ISO Standard	2	ISO Standard	12
Alternative Method: XplOrer64 System	3	NF Standard	13
<i>E. coli</i> / Coliforms		Alternative Method: Aquadien DNA Extraction Kit	14
NF Standards	4	Alternative Method: Real-Time PCR	15
ISO Standard	5	<i>Pseudomonas aeruginosa</i>	
Alternative Method: RAPID' <i>E.coli</i> 2 for Water Testing	6	ISO Standard	17
<i>Enterococcus</i>		Alternative Method: RAPID' <i>P.aeruginosa</i>	18
ISO Standard	7	<i>Salmonella</i> spp.	
Alternative Method: XplOrer64 System	8	ISO Standard	19
ISO Standard	9	<i>Staphylococcus aureus</i>	
Alternative Method: RAPID' <i>Enterococcus</i>	9	NF Standard	20
		APPENDIX	22
		Microorganisms Detected According to Sample Origin and Method	22
		Validations	24
		Quality and Certification	24
		Documents and Certificates	25

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

Ordering Information

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

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

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



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 <i>E. coli</i> 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**
100 ml Protocol

Bathing water
(sea, inland)
Treated wastewater
Drinking water

**Samples with High
SM Level**
10 ml Protocol

Treated or untreated
wastewater

**Nonfilterable Water
Samples**
1 ml Protocol

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

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

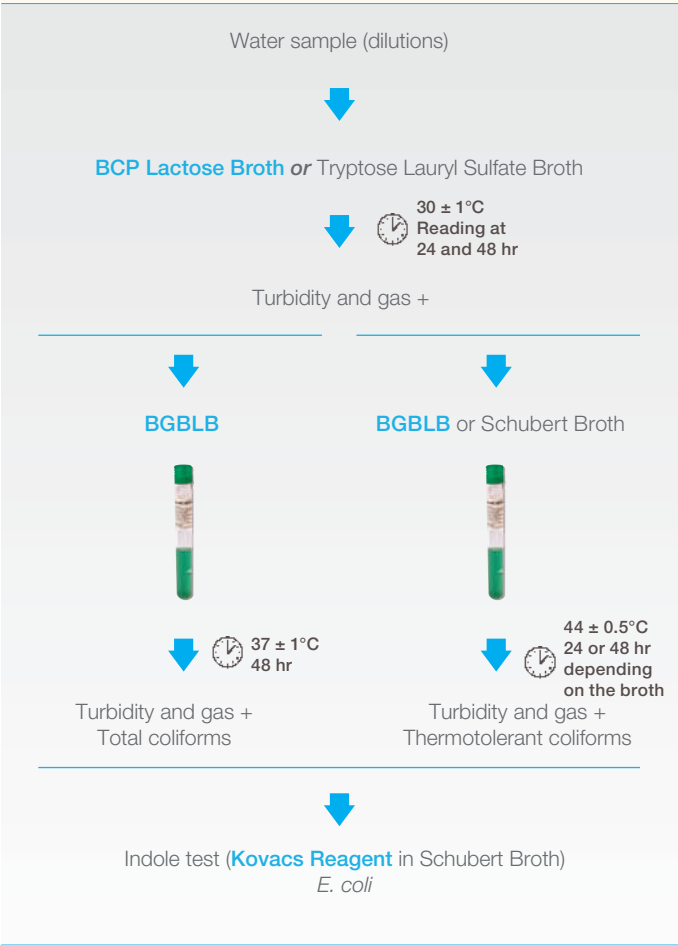
NF Standards

NF T90-413 (1985)

Water testing

Detection and enumeration of coliforms and thermotolerant coliforms

General method by culture in liquid media (MPN)



NF EN ISO 9308-1:2000

Water quality

Detection and enumeration of *E. coli* and coliforms

Part 1: Membrane filtration method

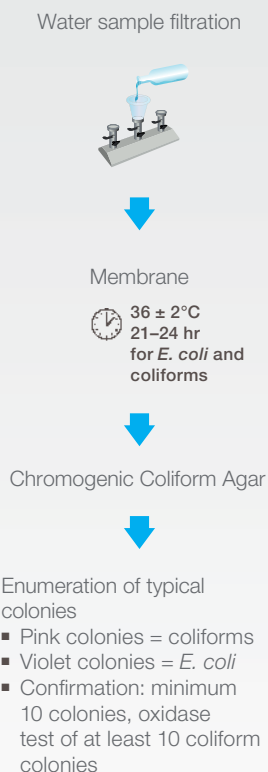
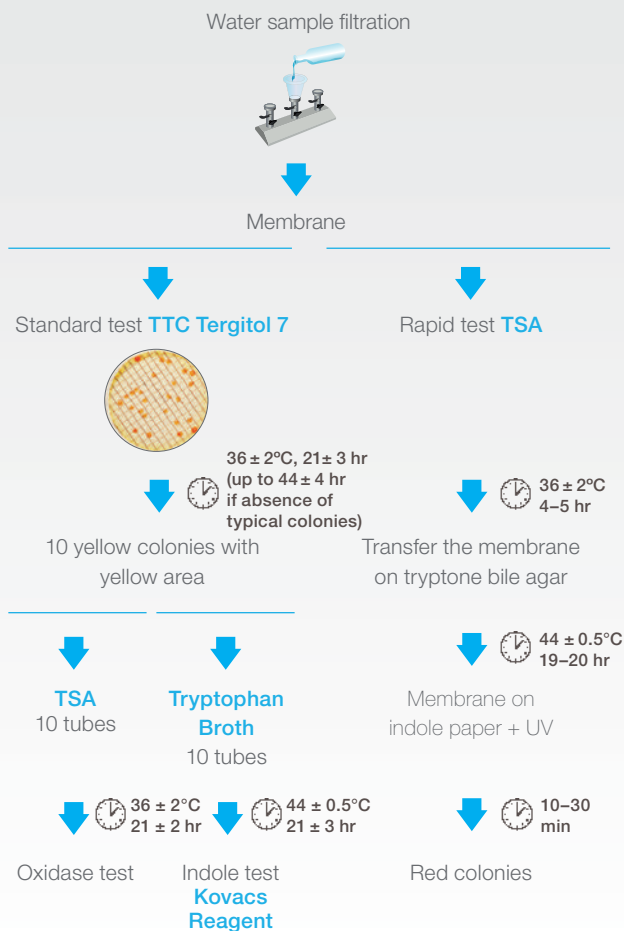
ISO Standard

ISO 9308-1:2014

Water quality

Enumeration of *E. coli* and coliforms

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



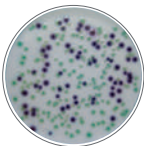
E. coli/Coliforms



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



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



 $44 \pm 0.5^{\circ}\text{C}$
36–72 hr

Reading ($\lambda = 366 \text{ nm}$ — 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)

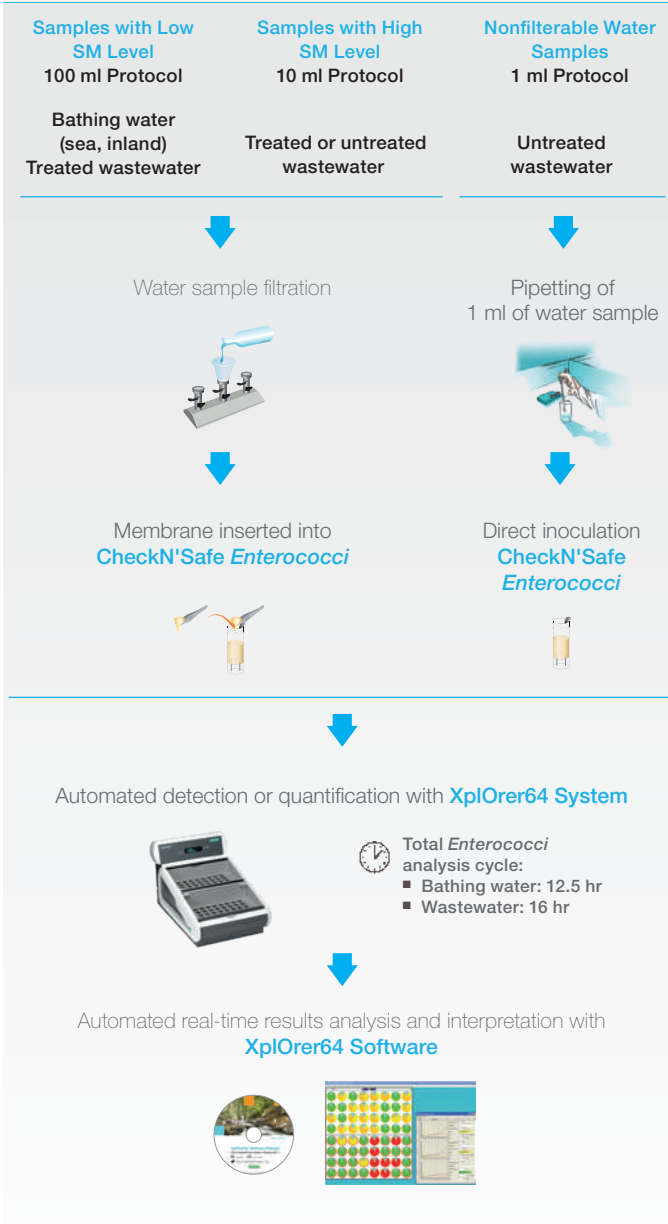
Key Benefits

- 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



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
3594721 9 ml x 60 tests

CheckN'Safe Screw Caps
3593457 Sterile caps
(1 bag of 30 units)

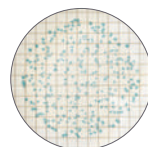
Key Benefits

- 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)



Meat-Liver Sulfite Iron



Anaerobic conditions



Reading

Anaerobic conditions



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)



Differential Reinforced Clostridial Medium (DCRM)



Interpretation



TSC without D-Cycloserine



Anaerobic conditions



Confirmation
Columbia Agar

Anaerobic conditions



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)



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)



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

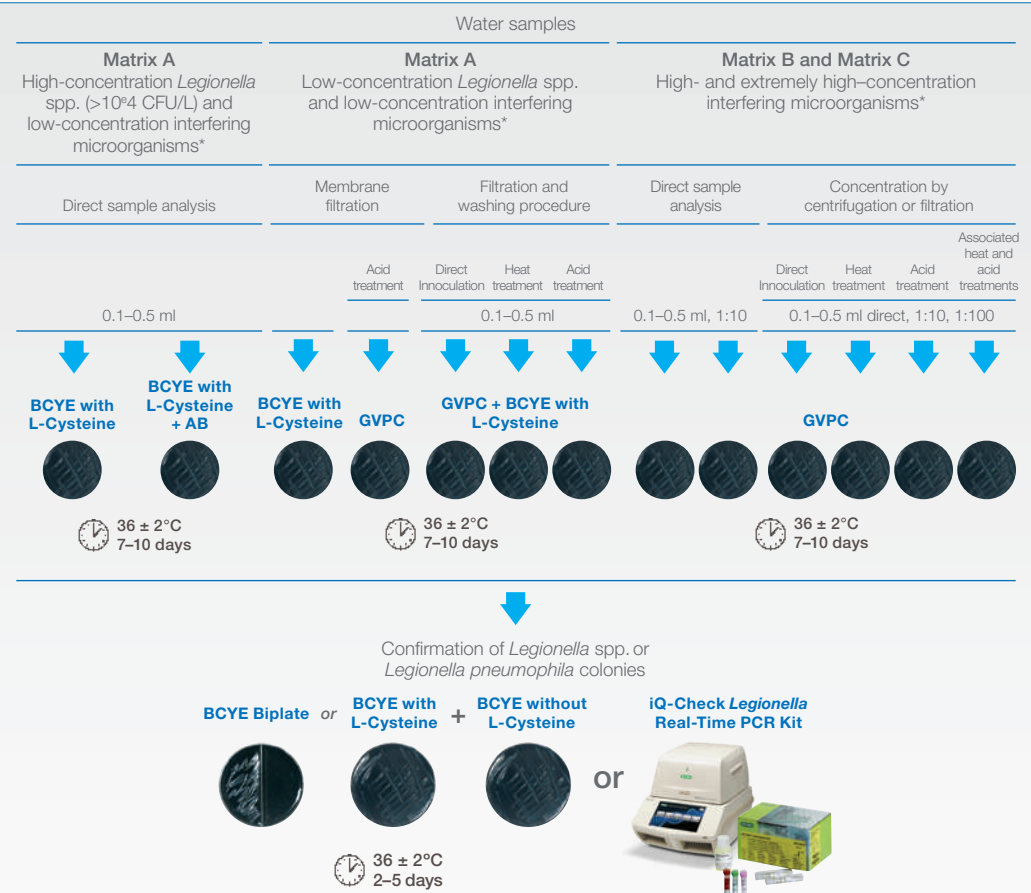
TSC without D-Cycloserine Agar, Base Medium

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.

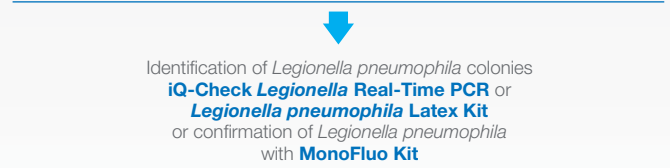
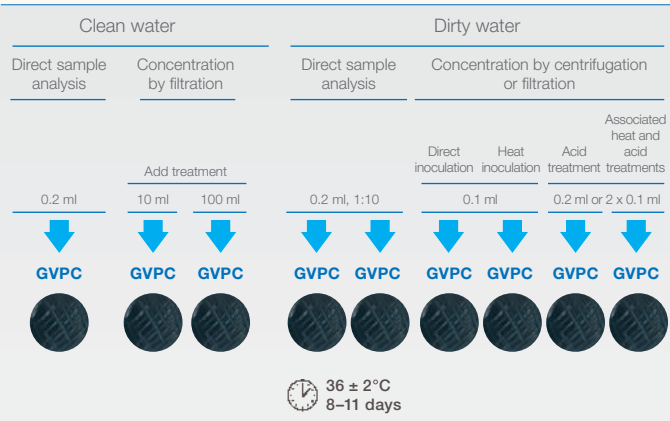
NF Standard

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



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

Short Protocol

Water sample filtration



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



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*

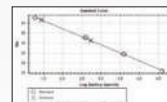
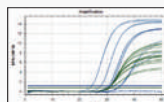


Quantification

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 ($\lambda = 366 \text{ nm}$ — 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

Oxidase test

36 ± 2°C
22 ± 2 hr

King B

36 ± 2°C
5 days

Reading at $\lambda = 366 \text{ nm}$

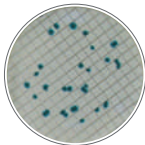
UV Lamp

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

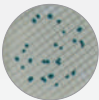


Membrane



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 <i>P. aeruginosa</i> 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

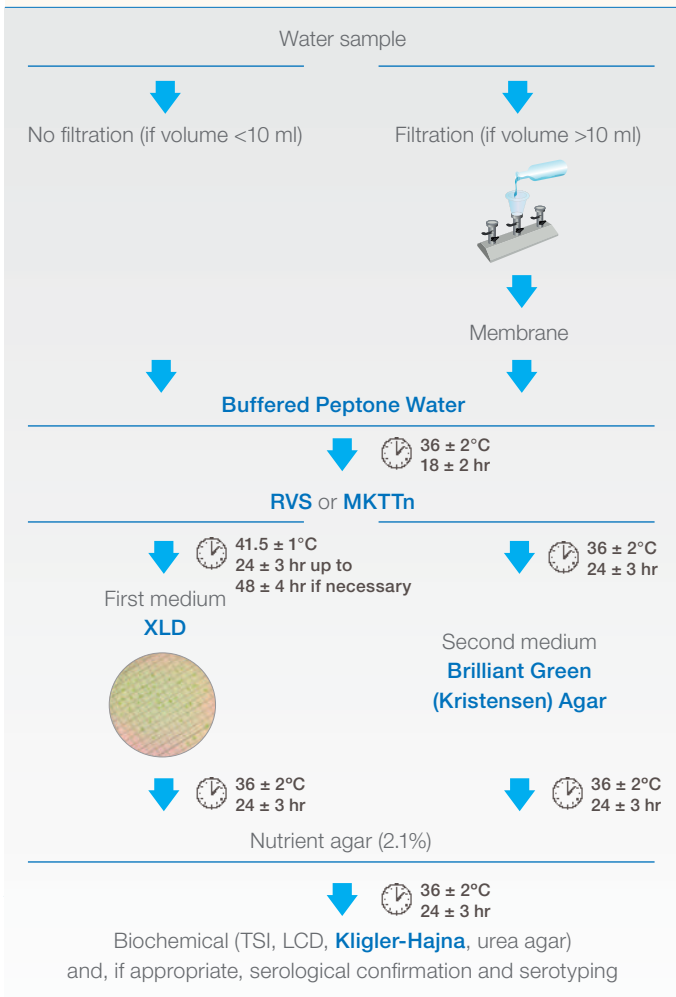
Salmonella spp.

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 x 6 bottles

3564684 500 g, dehydrated

Kligler-Hajna Agar

3555378 10 ml x 25

slanted tubes

LDC-ODC-ADH Broth

12017489 5 ml x 3 bottles

Muller-Kauffmann Tetrathionate

Novobiocin (MKTTn) Broth

3556140 10 ml x 50 tubes

3564714 500 g, dehydrated

Physiological Sterile Water (0.85%)

3554164 9 ml x 25 tubes

Rappaport Vassiliadis Soya (RVS) Broth

3555773 10 ml x 25 tubes

3564324 500 g, dehydrated

Xylose Lysine Desoxycholate (XLD) Agar

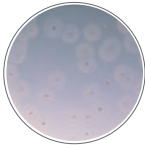
3541751 90 mm x 20 dishes

3569124 500 g, dehydrated

Staphylococcus aureus



S. aureus



S. aureus

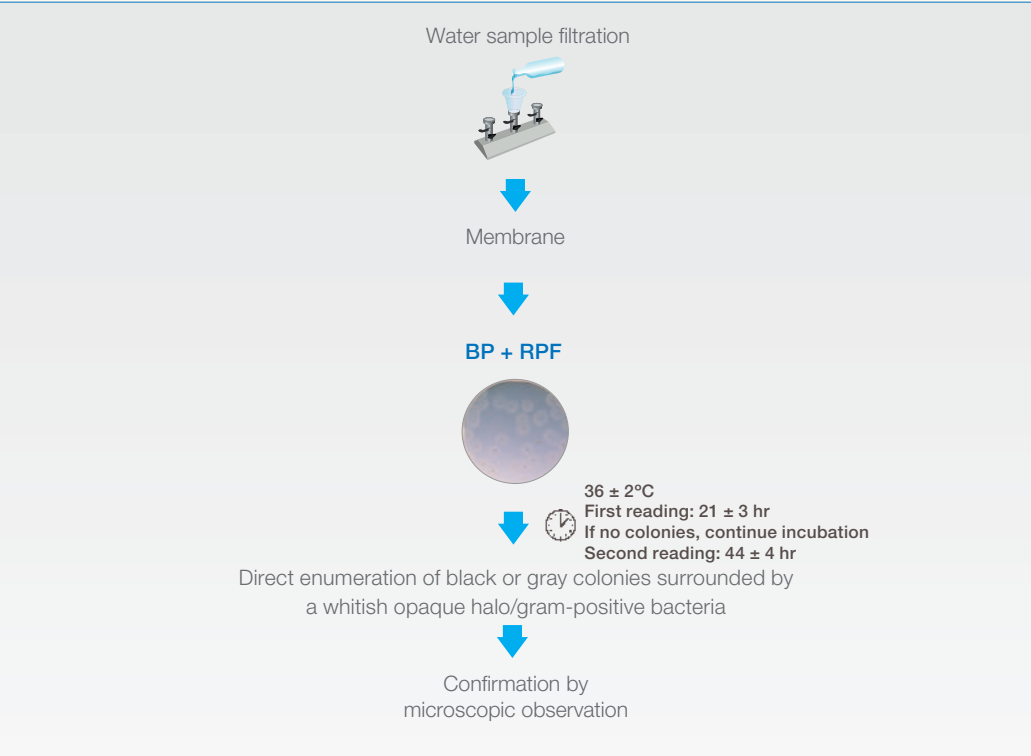
NF Standard

NF T90-412 (2016)

Water quality

Enumeration of pathogenic staphylococci

Membrane filtration method



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

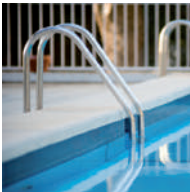
RPF Supplement

3564618 10 vials

**Sulfamethazine Solution (0.2%)
Supplement**

3562682 2.5 ml × 1 vial

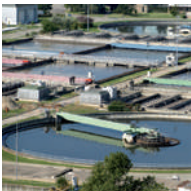
Microorganisms Detected According to Sample Origin and Method



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	Total flora	Total flora	Total flora Coliforms (<i>E. coli</i>)
	<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>	
	Coliforms	Coliforms	Coliforms	
	<i>Enterococcus</i>	<i>Enterococcus</i>	<i>Enterococcus</i>	
Typical pathogens	<i>Legionella</i>	<i>Legionella</i>	<i>Legionella</i>	<i>P. aeruginosa</i>
	<i>P. aeruginosa</i>	<i>P. aeruginosa</i>	<i>P. aeruginosa</i>	
	<i>Salmonella</i>	<i>Salmonella</i>	<i>S. aureus</i>	
	SRA	SRA	<i>Salmonella</i>	
			SRA	

+, 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](https://www.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	Total flora	Total flora	Total flora	Total flora
<i>E. coli</i>	<i>E. coli</i>	<i>E. coli</i>		
Coliforms	Coliforms	Coliforms		
<i>Enterococcus</i>	<i>Enterococcus</i>	<i>Enterococcus</i>		
<i>Salmonella</i> SRA	—	<i>Legionella</i> <i>Salmonella</i>	<i>Legionella</i>	<i>Legionella</i>

Validations



Kit or Agar Method	AFNOR NF VALIDATION*	EPA**
CheckN'Safe <i>Enterococci</i> Kit	BRD 07/19-11/09	
iQ-Check <i>Legionella</i> spp. Real-Time PCR Detection Kit	BRD 07/15-12/07	
iQ-Check <i>L. pneumophila</i> 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' <i>P.aeruginosa</i> 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 Accreditation

ISO/IEC 17025 accreditation allows solution manufacturers and user laboratories to demonstrate that they operate competently and use reliable and valid products for reliable and valid results. The Bio-Rad culture media quality control laboratory in Steenvoorde, France is ISO/IEC 17025 accredited (N° 1-6642 by COFRAC Essais). Scope of accreditation is available at cofrac.fr.

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

BIO-RAD is a trademark of Bio-Rad Laboratories, Inc. AQUADIEN, FLUOPLATE, IQ-CHECK, MONOFLUO, and XPLOER64 are trademarks of Bio-Rad Europe GmbH in certain jurisdictions. All trademarks used herein are the property of their respective owner. © 2023 Bio-Rad Laboratories, Inc.



**Bio-Rad
Laboratories, Inc.**

*Life Science
Group*

Website bio-rad.com **USA** 1 800 424 6723 **Australia** 61 2 9914 2800
Austria 00 800 00 24 67 23 **Belgium** 00 800 00 24 67 23 **Brazil** 4003 0399
Canada 1 905 364 3435 **China** 86 21 6169 8500 **Czech Republic** 00 800 00 24 67 23
Denmark 00 800 00 24 67 23 **Finland** 00 800 00 24 67 23 **France** 00 800 00 24 67 23
Germany 00 800 00 24 67 23 **Hong Kong** 852 2789 3300 **Hungary** 00 800 00 24 67 23
India 91 124 4029300 **Israel** 0 3 9636050 **Italy** 00 800 00 24 67 23
Japan 81 3 6361 7000 **Korea** 82 080 007 7373 **Luxembourg** 00 800 00 24 67 23
Mexico 52 555 488 7670 **The Netherlands** 00 800 00 24 67 23 **New Zealand** 64 9 415 2280
Norway 00 800 00 24 67 23 **Poland** 00 800 00 24 67 23 **Portugal** 00 800 00 24 67 23
Russian Federation 00 800 00 24 67 23 **Singapore** 65 6415 3188
South Africa 00 800 00 24 67 23 **Spain** 00 800 00 24 67 23 **Sweden** 00 800 00 24 67 23
Switzerland 00 800 00 24 67 23 **Taiwan** 886 2 2578 7189 **Thailand** 66 2 651 8311
United Arab Emirates 36 1 459 6150 **United Kingdom** 00 800 00 24 67 23

