



Safe. Clean. ISO compliant.

Guide to microbiological testing of drinking water according to ISO standards

Simple and complete testing

As a food or beverage manufacturer, contract laboratory for testing drinking water or a hospital you know the importance of safeguarding the purity of the water you use in manufacturing processes and the products you deliver to your customers. Adherence to published standards is paramount. This Guide to microbiological testing of drinking water provides an overview of the standard procedures, and illustrates how our extensive range of microbiology products for the isolation, identification and enumeration of waterborne pathogens meets your testing needs.

Our range of products for water testing includes dehydrated and prepared media, membrane filters, quality control organisms and proficiency testing, as well as the equipment you need to deliver reliable results.

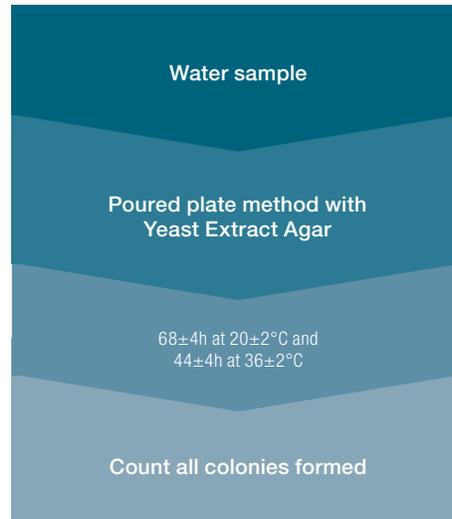
- **Safe**—media formulations that are compliant with ISO Standards for the testing of drinking water
- **Conform to ISO standard**—quality control testing methods are accredited in accordance with ISO 17025
- **Proven and certified**—all Certificates of Analysis (CoAs) confirm testing in accordance with the ISO 11133:2014 standard, including membrane filter testing
- **Support**—our team of microbiology experts is at hand to help with your technical queries

thermo scientific		OXOID Deutschland GmbH Am Lippeglacis 4-8 D-46883 Wesel	
CERTIFICATE OF ANALYSIS			
PRODUCT	PO8974A	LEGIONELLA GVPC SELECTIVE MEDIUM	
LOT NUMBER	2133625		
EXPIRY DATE	2017.06.28		
General Characteristics		Results	Specification
Colour		Conforms	Jet black - Traffic black
Appearance		Conforms	Opaque
pH		6.8	6.7 - 7.1
Packaging / Presentation		Conforms	Label & Print check
Stability @ 25 & 36 ± 1°C for 72 hours		Conforms	Within Limits
Membrane filter 1		Lot 1603173	Product Code GFS11
Membrane filter 2		Lot 1600693	Product Code GFS12
		Lot 1604003	Product Code GFS12
Membrane filter 3		Lot 1180983	Product Code NG147-0045
		Lot 1183847	Product Code NG147-0045
Membrane filter 4		Lot 16NA27518	Product Code NG02056045
Microbiological Performance		Control c.f.u	Test Result
Strains tested by membrane filtration method with above listed lots			
Legionella pneumophila ATCC®33152 WDCM 00107	50 - 120	Conforms	Recovery >= 50%, grey-blue colonies
Legionella anisa ATCC®35292 WDCM 00106	50 - 120	Conforms	Recovery >= 70%, grey-blue colonies
Strains tested by spread plate method			
Legionella pneumophila ATCC®33152 WDCM 00107	67	51	2-6mm, grey-blue colonies
Legionella anisa ATCC®35292 WDCM 00106	55	49	2-4mm, grey-blue colonies
Escherichia coli ATCC®8739 WDCM 00012	IE=04 - IE=05	Conforms	Total or partial inhibition
Pseudomonas aeruginosa ATCC®27853 WDCM 00025	IE=04 - IE=05	Conforms	Total or partial inhibition
Enterococcus faecalis ATCC®19433 WDCM 00009	IE=04 - IE=05	Conforms	Total inhibition
The quality control methods meet requirements of ISO 11133:2014.			
		The testing laboratory of Oxoid Deutschland GmbH is accredited by the German accreditation body DAkkS according to DIN EN ISO/IEC 17025 for the performance testing of media for microbiology to DIN EN ISO 11133:2014 and registered under D-PL-20190-01-00.	

Figure 1. Example of Certificate of Analysis (Legionella GVPC Selective Medium)

Detection of microorganisms – Colony counts at 22°C and 36°C

Method according to
EN ISO 6222

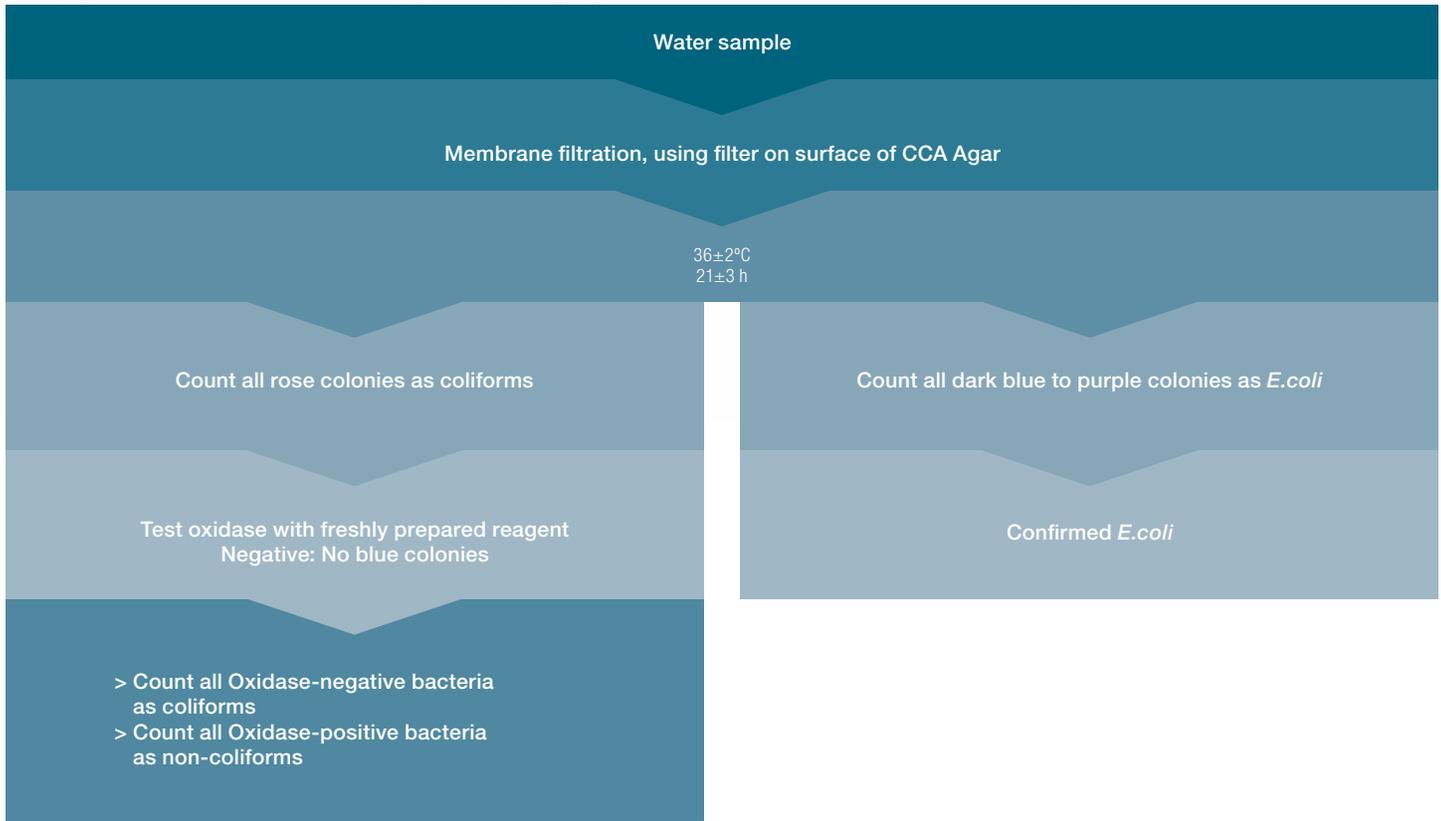


Detection of microorganisms – Colony count number at 22°C and 36°C

Regulation	Method	Media	Product	Dehydrated culture media		Prepared media	
				Product code	Format	Product code	Format
EN ISO 6222	Pour plate	Yeast Extract Agar	Plate Count Agar for water testing (ISO)	CM1012B	500 g		
			Plate Count Agar (ISO)			BO0055M	10 x 100 mL bottles
						BO0055R	10 x 200 mL bottles

Escherichia coli / Coliform bacteria

Method according to ISO 9308-1

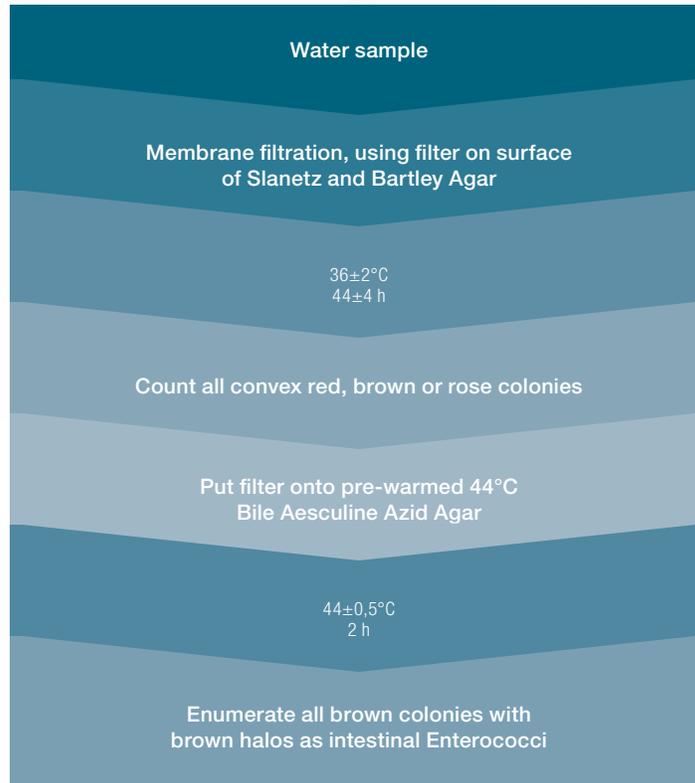


Escherichia coli and coliform

Regulation	Method	Media	Product	Dehydrated culture media		Prepared media	
				Product code	Format	Product code	Format
EN ISO 9308-1 Standard test	Membrane filtration	CCA Agar	Thermo Scientific™ Chromogenic Coliform Agar	CM1205B	500 g	PO5318A	10 x 90 mm plates
						PO5428J	10 x 55 mm plates
	Oxidase test	Tryptone Soya Agar (TSA)	CASO Agar (TSA)	CM0131B/T	500 g / 5 kg	PO5012A	10 x 90 mm plates
		Oxidase Reagent	Thermo Scientific™ BactiDrop™ Oxidase Reagent	R21540	50 vials	PO5321A	10 x 90 mm plates
			Thermo Scientific™ Microbact™ Oxidase Strips	MB0266A	50 strips		

Enterococci

Method according to ISO 7899-2



Enterococci							
Regulation	Method	Media	Product	Dehydrated culture media		Prepared media	
				Product code	Format	Product code	Format
EN ISO 7899-2	Membrane filtration	Slanetz Bartley Agar	Slanetz Bartley Agar	CM0377B	500 g	PO5018A	10 x 90 mm plates
						PO5410J*	10 x 55 mm plates
						PO5423J*	10 x 55 mm plates
	Confirmation	Bile Aesculine Azide Agar	Enterococcus Selective Medium (Bile Aesculine Azid Agar) ¹ or Kanamycin Aesculin Azide Agar Base ²	CM0591B	500 g	PO5062A	10 x 90 mm plates
						PO5059A	10 x 90 mm plates

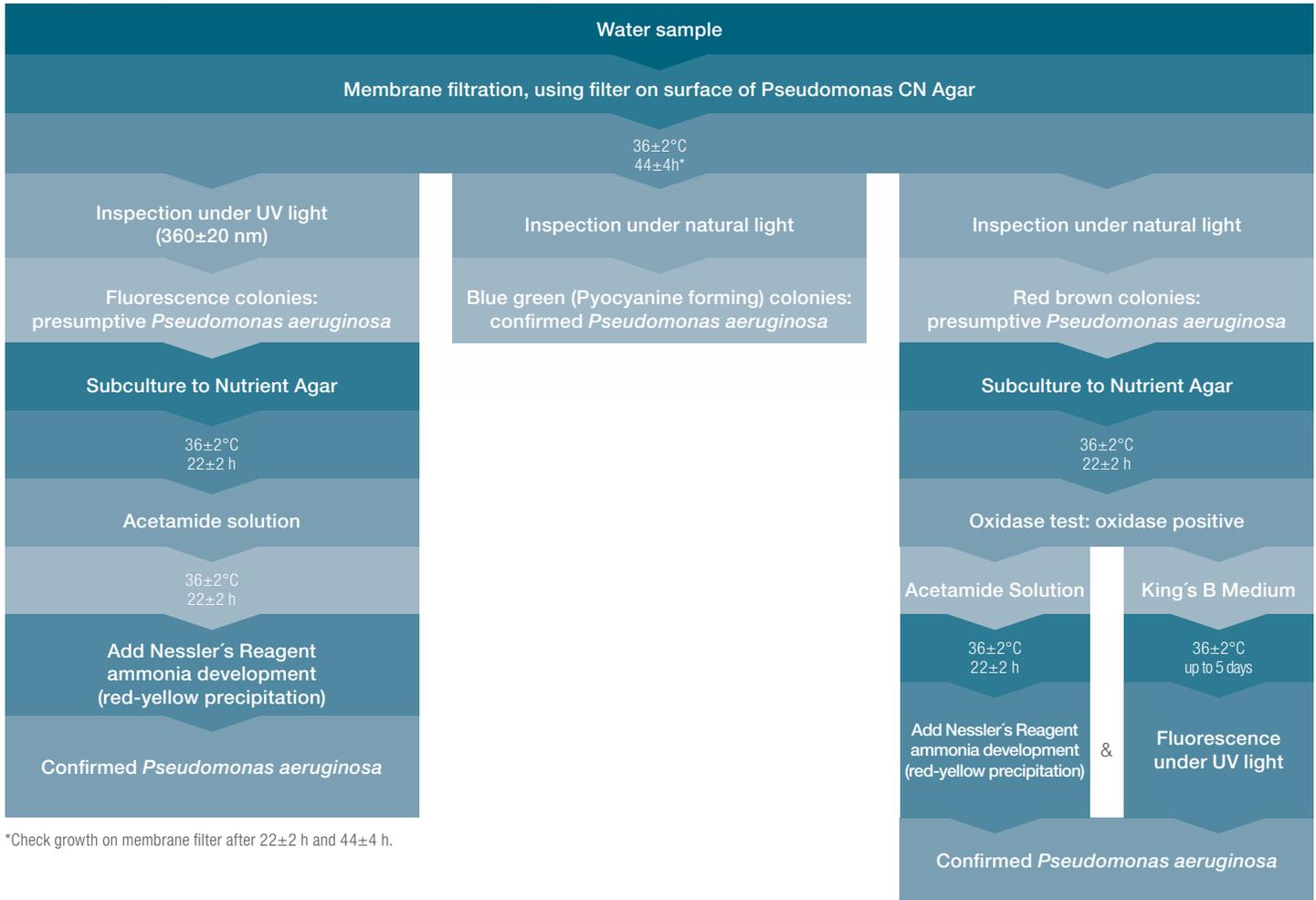
* Minimum order quantity required.

¹ This medium is slightly different to the media formulation according to ISO 7899-2. The medium has additional sodium citrate and 20g/l ox bile instead of 10g/l and 0.55 g/l sodium azide instead of 0.15 g/l.

² This medium is slightly different to the media formulation according to ISO 7899-2 ab. It contains sodium citrate instead of ox bile and Kanamycin.

Pseudomonas aeruginosa

Method according to ISO 16266



*Check growth on membrane filter after 22±2 h and 44±4 h.

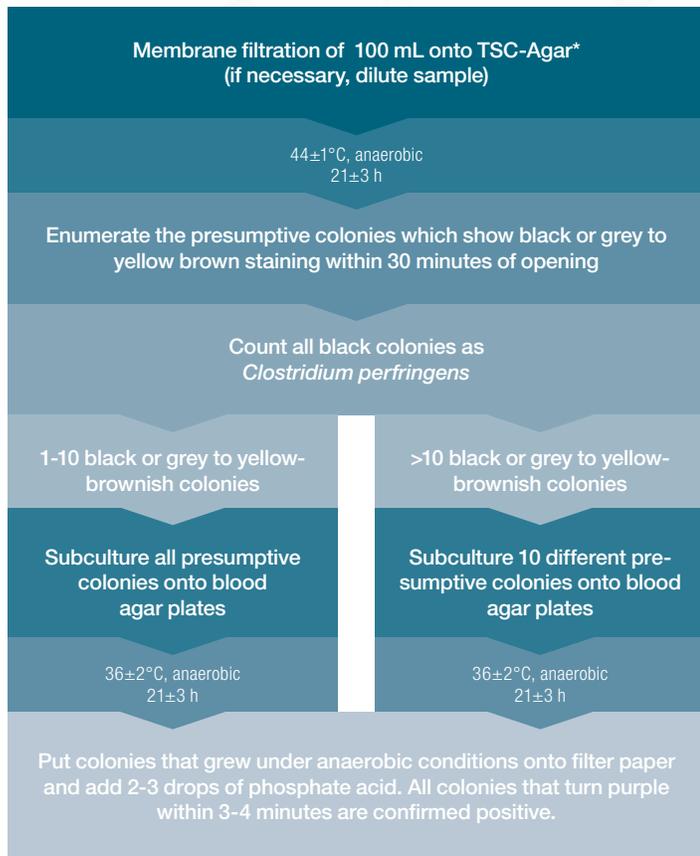
Pseudomonas aeruginosa

Regulation	Method	Media	Product	Dehydrated culture media		Prepared media	
				Product code	Format	Product code	Format
EN ISO 16266	Membrane filtration	Pseudomonas Selective Agar / CN Agar	Pseudomonas Centrimide Selective Agar			PO5076A	10 x 90 mm plates
			Pseudomonas Agar Base CN Selective Supplement	CM0559B SR0102E	500 g 10 tubes	PO5413J*	10 x 55 mm plates
	Confirmation						
	Fluorescence	King's B Media					
	Hydrolysis of acetamide to ammonia	Acetamide Solution Nessler Reagent					
Oxidase Test	Nutrient Agar	Nutrient Agar					
		Oxidase Reagent	BactiDrop Oxidase Reagent Microbact Oxidase Strips	R21540 MB0266A	50 vials 50 strips		

* Minimum order quantity required.

Clostridium perfringens (including spores)

Method according to ISO 14189:2013



*ATTENTION: Alternatively, a thin layer (approximately 5 mL to 10 mL) of molten TSC Agar (TV5204G TSC Agar Base), as an overlay on the filter can be used. Allow to solidify before anaerobic incubation. This method may enhance the blackening of the colonies. Medium without cycloserine; e.g. TV5204G TSC Agar Base, 20 mL.



Clostridium perfringens

Regulation	Method	Media	Product	Dehydrated culture media		Prepared media	
				Product code	Format	Product code	Format
ISO 14189	Membrane filtration	TSC Agar	TSC Selective Agar			PO5315A	10 x 90 mm plates
			TSC Agar Base +	CM0587B	500 g	TV5204G	50 tubes
TSC Selective Supplement			SR0088E	10 tubes	BO0634M	10 x 100 mL bottles	
	Anaerobic atmosphere					plus	
					SR0088E	10 tubes	
			Thermo Scientific™ AnaroGen™ System			AN0025A	10 sachet
			Thermo Scientific™ AnaroJar™ 2,5 L Anaerobic System			AG0025A	1 pot
			Thermo Scientific™ AnaeroBox™ Rectangular Anaerobic System			AB0025A	1 pot

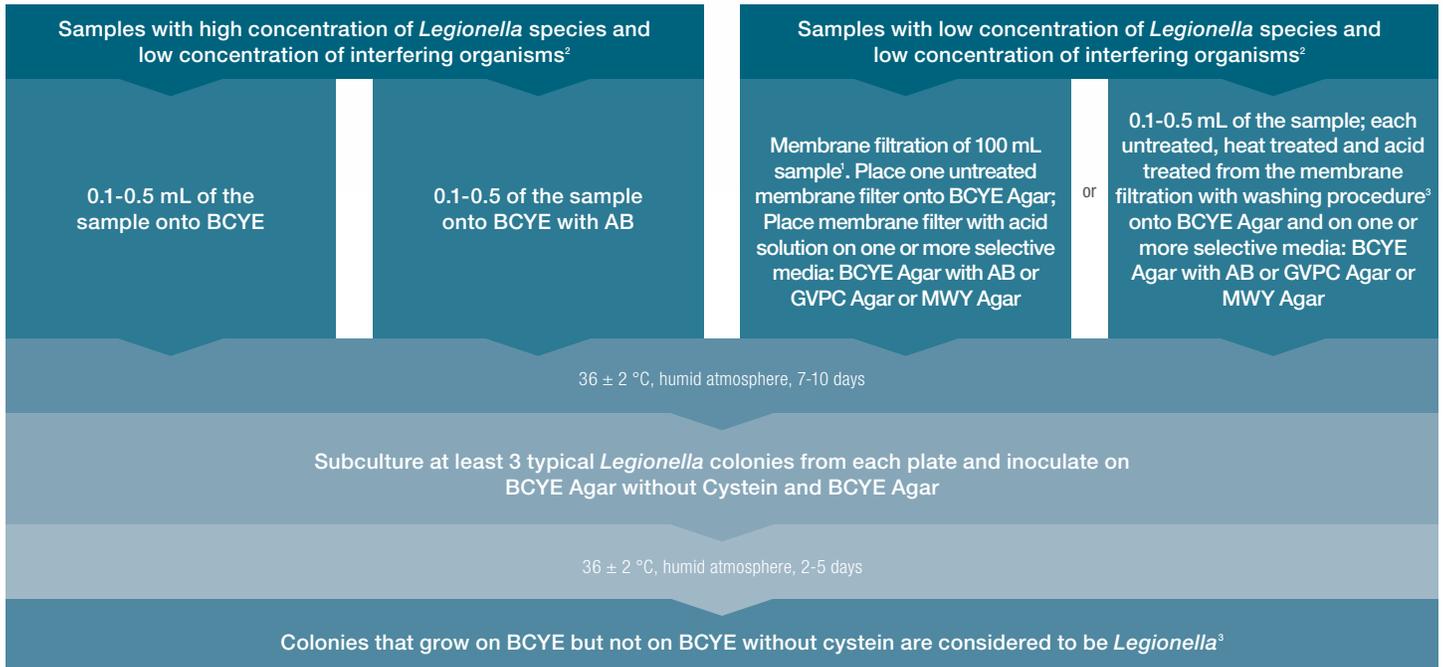
Methods according to ISO 11731:2017

Sample preparation

Heat treated—Put sample into water bath for 30+/-2 minutes at 50°C

Acid treated—1 part sample to 9 parts of acid buffer. Mix well and leave it for 5+/- 0.5 minutes.

Acid treated filter—Put 30 mL of acid solution onto the membrane filter. Leave it for 5 +/- 0.5 minutes and remove the solution by filtration. Wash with 20 mL of either sterile Aqua dest., Pages Saline, Ringer Solution or PBS.



¹ 10 – 1000 mL sample volume according to ISO 11731-2.

² The choice of the method for the enumeration of Legionella species depends on the origin/characteristics of the sample and the reason for sampling or investigation. A decision matrix can be found in the ISO 11731:2017, Annex J.

³ Further information, please see ISO ISO11731:2017.

Legionella

Regulation	Method	Media	Product	Dehydrated culture media		Prepared media	
				Product code	Format	Product code	Format
ISO 11731:2017 and EN ISO 111731-2	Sample preparation	Acid Buffer	Legionella Acid Buffer Solution			GFB01	10 x 6 L bottles
	Direct and membrane filtration	GVPC Agar	Legionella GVPC Selective Agar	CM0655B SR0110C SR0152E	500 g 10 tubes (500 mL) 10 tubes (500 mL)	PO5074A	10 x 90 mm plates
						PO0245A*	10 x 90 mm plates
		BCYE Agar with antibiotics	BCYE Agar with antibiotics			PO5325A	10 x 90 mm plates
		BCYE Agar	BCYE Agar			PO5072A	10 x 90 mm plates
	MWY Agar	MWY Agar			PO5071A	10 x 90 mm plates	
	Subculture	BCYE Agar without Cystein	BCYE Agar without Cystein			PO5028A	10 x 90 mm plates
PO0255A*						10 x 90 mm plates	
	BCYE Agar	BCYE Agar			PO5072A	10 x 90 mm plates	

* UK only

Legionella proficiency testing and QC organisms

Thermo Scientific™ Culti-Loops™ Reference Strains for the quality control testing of GVPC Agar according to ISO 11133:2014

Legionella Quality Control Organisms		
Product code	Product name	WDCM no.
R4603950	<i>Legionella pneumophila</i> ATCC® 33152™*	WDCM 00107
R4601990	<i>Enterococcus faecalis</i> ATCC® 19433™*	WDCM 00009
R4607030	<i>Enterococcus faecalis</i> ATCC® 29212™*	WDCM 00087
R4607060	<i>Pseudomonas aeruginosa</i> ATCC® 27853™*	WDCM 00025
R4605210	<i>Pseudomonas aeruginosa</i> ATCC® 9027™*	WDCM 00026
R4607085	<i>Escherichia coli</i> ATCC® 8739™*	WDCM 00012
R4607050	<i>Escherichia coli</i> ATCC® 25922™*	WDCM 00013

External quality assessment (EQA) of *Legionella* isolation for laboratories that examine waters for *Legionella* spp.

Detection, enumeration and identification of <i>Legionella</i> spp.		
Product code	Product name	Sample numbers
LEG01D01	<i>Legionella</i> isolation scheme LEG01 sample 1	2 each
LEG01D02	<i>Legionella</i> isolation scheme LEG01 sample 2	2 each
LEG01D03	<i>Legionella</i> isolation scheme LEG01 sample 3	2 each
LEG01D04	<i>Legionella</i> isolation scheme LEG01 sample 4	2 each
<i>Legionella</i> spp. by molecular methods only		
LM01D01	<i>Legionella</i> Molecular Scheme LM01 sample 1	2 each
LM01D02	<i>Legionella</i> Molecular Scheme LM01 sample 2	2 each

Not available in all EU countries. Please check availability with your local sales office.

Thermo Scientific Nalgene Analytical Test Filter Funnels and Membranes

Thermo Scientific™ Nalgene™ Membrane Filters are cellulose nitrate membranes that are certified for microbiological QC testing and analysis of water.

Nalgene Disposable Analytical Funnels equipped with membrane filter		
Product code	Product name	Pack size
NG145-0045	Sterile Analytical Filter Units, 100 mL, 47 mm, 0.45 µm, white/black	50 pieces
NG145-2045	Sterile Analytical Filter Units, 250 mL, 47 mm, 0.45 µm, white/black	50 pieces
NG147-0045	Sterile Analytical Filter Units, 100 mL, 47 mm, 0.45 µm, grey/black	50 pieces
NG147-2045	Sterile Test Filter Funnel, 250 mL, 0.45 µL	50 pieces
Membrane filter		
NG0205-4045	Membrane Filter for water testing, sterile, CN, 47 mm, 0.45 µm, white/black	100 pieces
NG0210-6045	Membrane Filter for water testing, sterile, CN, 47 mm, 0.45 µm, grey/black	100 pieces
Accessories		
NG0345-0001	Vacuum Manifold	1 piece
NG0396-0080	Filter Stopper, non-sterile, no. 8 rubber	3 pieces
NG0399-0001	Filter Forceps, bent tip	1 piece
NG0399-0002	Filter Forceps, straight tip	1 piece
NG0397-0010	Filter Funnel Adapter, non-sterile	25 pieces
NG0395-0708	Vacuum Gasket, non-sterile thermoplastic elastomer	6 pieces

Nalgene Reusable Analytical Filters and accessories

Product code	Product name	Sample numbers
NG0315-0047	Filter Funnels with Clamp, 250 mL	1 piece
NG0300-4000	Filter Holders with Receiver, 500 mL, 500 mL	4 pieces
NG0300-4050	Filter Holders with Receiver, 250 mL, 250 mL	4 pieces
NG0300-4100	Filter Holders with Receiver, 500 mL, 1000 mL	4 pieces
NG0310-4000	Filter Holders with Funnel, 250 mL	1 piece
NG0310-4050	Filter Holders with Funnel, 500 mL	1 piece
NG0320-2545	Reusable Bottle Top Filters, 250 mL	1 piece
NG0320-5033	Reusable Bottle Top Filters, 500 mL	1 piece
NG0320-5045	Reusable Bottle Top Filters, 500 mL	1 piece

Culti-Loops QC Organisms

for quality control testing according to ISO 11133:2014

Escherichia coli QC Organisms for testing of CCA Agar

Product code	Product name	Sample numbers
R4607085	<i>Escherichia coli</i> ATCC® 8739™*	WDCM 00012
R4607050	<i>Escherichia coli</i> ATCC® 25922™*	WDCM 00013
R4607080	<i>Enterobacter aerogenes</i> ATCC® 13048™*	WDCM 00175
R40607060	<i>Pseudomonas aeruginosa</i> ATCC® 27853™*	WDCM 00025
R4607060	<i>Pseudomonas aeruginosa</i> ATCC® 9027™*	WDCM 00026
R4605210	<i>Enterococcus faecalis</i> ATCC® 19433™*	WDCM 00009
R4601990	<i>Enterococcus faecalis</i> ATCC® 29212™*	WDCM 00087

Enterococci QC Organisms for testing of Slanetz and Bartley Agar

R4607085	<i>Escherichia coli</i> ATCC® 8739™*	WDCM 00012
R4607050	<i>Escherichia coli</i> ATCC® 25922™*	WDCM 00013
R4607016	<i>Staphylococcus aureus</i> subsp. aureus ATCC® 6538™*	WDCM 00032
R4607010	<i>Staphylococcus aureus</i> subsp. aureus ATCC® 25923™*	WDCM 00034
R4607030	<i>Enterococcus faecalis</i> ATCC® 29212™*	WDCM 00087
R4601990	<i>Enterococcus faecalis</i> ATCC® 19433™*	WDCM 00009

Pseudomonas aeruginosa QC Organisms for testing of Pseudomonas CN Agar

R4607060	<i>Pseudomonas aeruginosa</i> ATCC® 27853™*	WDCM 00025
R4605210	<i>Pseudomonas aeruginosa</i> ATCC® 9027™*	WDCM 00026
R4607065	<i>Pseudomonas aeruginosa</i> ATCC® 10145™*	WDCM 00024
R4607085	<i>Escherichia coli</i> ATCC® 8739™*	WDCM 00012
R4607050	<i>Escherichia coli</i> ATCC® 25922™*	WDCM 00013
R4601990	<i>Enterococcus faecalis</i> ATCC® 19433™*	WDCM 00009
R4601990	<i>Enterococcus faecalis</i> ATCC® 29212™*	WDCM 00087

Clostridium perfringens QC Organisms for testing of TSC Agar

R4601221	<i>Bacillus subtilis</i> ATCC 6633	WDCM00003
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Prepared Media for the Quality Control testing according to ISO 11133:2014

PO5321A	CASO Agar (ISO 11133)
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