

# Quantitative Detection of Water Pathogens



- DNA-based system for quantitative detection of water pathogens via qPCR
- Combines water filtration, lysis of collected microorganisms, optimized DNA extraction system and qPCR analysis
- Internal control DNA to verify the success of both DNA extraction and qPCR assay
- Temperature-stable components

# Water Testing

## Procedure

### Step 1: Preparation of the Sample Material

Drinking water, condensed water from cooling systems, bathing or pool water, and waste water released from suspended particles can be used as sample material. As intact microorganisms are needed for the filtration procedure thermal decontamination procedures can not be monitored immediately. With suspended particles or fixed volatile contents, contaminated water samples can be purified by prior filtration with a paper folded filter. The samples may not be centrifuged for purification. For the testing procedure, at least 100 ml is minimally required, however a sample volume of 1000 ml is recommended for highest sensitivity.

### Step 2: qPCR

Currently, AquaScreen® qPCR kits are available for quantitative detection of *Legionella pneumophila*, *Legionella* spp., *Pseudomonas aeruginosa* and *Escherichia coli* in water samples. Kits for additional contaminants/parameters are in preparation. The test is based on quantitative real-time PCR (qPCR) for highest precision, specificity, and sensitivity. The PCR mix contains a primer/probe set specific for the microorganism to be detected (fluorescence at ~520 nm, FAM™ channel). The kit includes also an internal control, which is detected by an additional probe (~560 nm, ROX™ channel). With a unique internal sequence, the internal control shares the primer binding sites with the target, thereby serving as a homologous control to identify and exclude false negative results (e.g. due to inhibition of the reaction by the sample matrix).



## AquaScreen® FastExtract

### Features

#### Description

Rapid DNA extraction from water samples

#### Recommended Use

AquaScreen® FastExtract can be used with your established filtration device (47 mm frit) for the extraction of legionella and other microorganisms from water samples. AquaScreen® FastExtract is optimized for high flow and throughput and provides high quality DNA for subsequent PCR analysis.

#### Kit Components

Membrane filters  
Incubation dishes  
Incubation, collection and sample storage tubes  
Lysis, binding, wash and elution buffers

#### Required Lab Devices & Consumables

Vacuum pump  
Microcentrifuge  
Filtration system, 47 mm frit  
Pipetting equipment, filtered tips  
Incubator (37 °C for petri dishes, 70 °C for reaction tubes)  
Ethanol (96 - 100 %)

#### Storage and Shelf Life

Components are stable for at least 6 months at room temperature.

#### Compliance

AFNOR XP T90-471 and ISO/TS 12869:2012 in combination with AquaScreen® qPCR kits

### Ordering Information

Cat. No. 32-1010 10 extractions  
Cat. No. 32-1050 50 extractions



## AquaScreen® Legionella pneumophila

### Features

#### Type of PCR

Quantitative real-time PCR (qPCR)

#### Description

The AquaScreen® Legionella pneumophila qPCR Detection kit is used for DNA samples extracted with the AquaScreen® FastExtract system for quantification of *Legionella pneumophila* in water samples. The supplied primer set is specific for a segment of the mip region of the *Legionella pneumophila* genome.

#### Recommended Use

Applicable in research and industry for QA testing of household and process water. Not recommended for clinical diagnostics, testing of human samples or pharmaceutical products.

#### Kit Components

Freeze-dried primers, probes, nucleotides and Taq polymerase  
Rehydration Buffer  
Freeze-dried Positive Control DNA  
Freeze-dried Internal Amplification Control

#### Required Consumables

PCR reaction tubes  
Optional: For calibration we recommend our *Legionella pneumophila* DNA Calibration Reagent (Cat. No. 52-0101).

#### Required Lab Devices

Pipetting equipment  
qPCR cycler with filter sets for FAM™ and ROX™

#### Storage and Shelf Life

Components are stable for at least 6 months if stored at +2 to +8 °C. After rehydration the reagents must be stored below -18 °C

#### Compliance

AFNOR XP T90-471 and ISO/TS 12869:2012

### Ordering Information

Cat. No. 34-2025 25 reactions  
Cat. No. 34-2100 100 reactions  
Cat. No. 34-2250 250 reactions  
Primer sets and nucleotides are provided in aliquots of 25 reactions each.

## AquaScreen® Legionella species

### Features

#### Type of PCR

Quantitative real-time PCR (qPCR)

#### Description

The AquaScreen® Legionella species qPCR Detection Kit is used for DNA samples extracted with the AquaScreen® FastExtract system for quantification of *Legionella* spp. in water samples. The supplied primer set is specific for a broad range of legionella species, but does not detect other waterborne bacteria as required by ISO/TS 12869:2012.

#### Recommended Use

Applicable for water testing as described in ISO/TS 12869:2012, in research and industry for QA testing of process water. Not recommended for clinical diagnostics, testing of human samples or pharmaceutical products.

#### Kit Components

Freeze-dried primers, probes, nucleotides and Taq polymerase  
Rehydration Buffer  
Freeze-dried Positive Control DNA  
Freeze-dried Internal Amplification Control

#### Required Consumables

PCR reaction tubes  
Optional: For calibration we recommend our *Legionella pneumophila* DNA Calibration Reagent (Cat. No. 52-0101).

#### Required Lab Devices

Pipetting equipment  
qPCR cycler with filter sets for FAM™ and ROX™

#### Storage and Shelf Life

Components are stable for at least 6 months if stored at +2 to +8 °C. After rehydration the reagents must be stored below -18 °C

#### Compliance

AFNOR XP T90-471 and ISO/TS 12869:2012

### Ordering Information

Cat. No. 33-2025 25 reactions  
Cat. No. 33-2100 100 reactions  
Cat. No. 33-2250 250 reactions  
Primer sets and nucleotides are provided in aliquots of 25 reactions each.



## AquaScreen® *Pseudomonas aeruginosa*

### Features

#### Type of PCR

Quantitative real-time PCR (qPCR)

#### Description

The AquaScreen® *Pseudomonas aeruginosa* qPCR Detection kit is used for DNA samples extracted with the AquaScreen® FastExtract system for quantification of *Pseudomonas aeruginosa* in water samples.

#### Recommended Use

Applicable in research and industry for QA testing of household and process water. Not recommended for clinical diagnostics, testing of human samples or pharmaceutical products.

#### Kit Components

Freeze-dried primers, probes, nucleotides and Taq polymerase  
Rehydration Buffer  
Freeze-dried Positive Control DNA  
Freeze-dried Internal Amplification Control

#### Required Consumables

PCR reaction tubes  
Optional: For calibration we recommend our *Pseudomonas aeruginosa* DNA Calibration Reagent (Cat. No. 52-0071).

#### Required Lab Devices

Pipetting equipment  
qPCR cyclers with filter sets for FAM™ and ROX™

#### Storage and Shelf Life

Components are stable for at least 6 months if stored at +2 to +8 °C. After rehydration the reagents must be stored below -18 °C.

#### Compliance

No guidelines are available for molecular testing of water samples for *Pseudomonas aeruginosa*.

### Ordering Information

Cat. No. 34-6025 25 reactions  
Cat. No. 34-6100 100 reactions  
Cat. No. 34-6250 250 reactions  
Primer sets and nucleotides are provided in aliquots of 25 reactions each.

## AquaScreen® *Escherichia coli*

### Features

#### Type of PCR

Quantitative real-time PCR (qPCR)

#### Description

The AquaScreen® *Escherichia coli* qPCR Detection kit is used for DNA samples extracted with the AquaScreen® FastExtract system for quantification of *Escherichia coli* in water samples.

#### Recommended Use

Applicable in research and industry for QA testing of household and process water. Not recommended for clinical diagnostics, testing of human samples or pharmaceutical products.

#### Kit Components

Freeze-dried primers, probes, nucleotides and Taq polymerase  
Rehydration Buffer  
Freeze-dried Positive Control DNA  
Freeze-dried Internal Amplification Control

#### Required Consumables

PCR reaction tubes  
Optional: For calibration we recommend our *Escherichia coli* DNA Calibration Reagent (Cat. No. 52-0083).

#### Required Lab Devices

Pipetting equipment  
qPCR cyclers with filter sets for FAM™ and ROX™

#### Storage and Shelf Life

Components are stable or at least 6 months if stored at +2 to +8 °C. After rehydration the reagents must be stored below -18 °C.

#### Compliance

No guidelines are available for molecular testing of water samples for *Escherichia coli*.

### Ordering Information

Cat. No. 34-7025 25 reactions  
Cat. No. 34-7100 100 reactions  
Cat. No. 34-7250 250 reactions  
Primer sets and nucleotides are provided in aliquots of 25 reactions each.

### How to order

Tel.: +49-30-2000437-0  
E-mail: [order@minerva-biolabs.com](mailto:order@minerva-biolabs.com)  
Internet: [www.minerva-biolabs.com](http://www.minerva-biolabs.com)