

# Water Testing



## AquaScreen®

DNA-based system for quantitative detection of water pathogens.

AquaScreen® combines water filtration, lysis of the collected microorganisms, DNA extraction and elution of the DNA in minimal volumes ready for PCR analysis.

# 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: PCR Application

Currently AquaScreen® qPCR kits are available for quantitative detection of *Legionella pneumophila*, *Legionella species*, *Pseudomonas aeruginosa* and *Escherichia coli* in water samples. Kits for additional parameter are in preparation. The test is based on quantitative real-time PCR (qPCR) which allows for highest specificity and sensitivity. The PCR mix contains a primer/probe set specific for the microorganism to be detected and emits a fluorescent light at ~520 nm. The kit includes an internal control that is detected by another probe emitting light at ~560 nm. The internal control is constructed as a homologous control containing primer binding sites identical to the target but with a unique internal sequence. By using the supplied internal control, false negative results (e.g. due to inhibition of the reaction by the sample matrix) can be excluded individually for each sample.



## AquaScreen® FastExtract

Features		Features	
<b>Description</b>	Rapid DNA extraction from water samples	<b>Package Sizes</b>	Cat.-No. 32-1010 10 extractions Cat.-No. 32-1050 50 extractions
<b>Recommended Use / Scope</b>	AquaScreen® FastExtract can be used with your established suction device (47 mm frit) for the extraction of legionella and other microbial contaminations. AquaScreen® FastExtract is optimized for high flow and throughput and provides high quality DNA for subsequent PCR analysis.	<b>Required lab devices &amp; reagents</b>	Vacuum pump Micro centrifuge Filtration system, 47 mm frit Pipetting equipment and filtered tips Incubator (37 °C for petri dishes, 56 °C for reaction tubes) Ethanol (96-100 %)
<b>Kit Components</b>	Membrane filters Incubation dishes Incubation, collection and sample storage tubes Lysis, wash and elution buffers	<b>Shelf Life and Storage</b>	Components are maintainable at room temperature for at least 6 months.
		<b>Compliance</b>	AFNOR XP T90-471 and ISO/TS 12869:2012 in combination with AquaScreen® qPCR kits



## AquaScreen® Legionella pneumophila

Features		Features	
<b>Type of PCR</b>	Quantitative real-time PCR (qPCR)	<b>Package Sizes</b>	Cat.-No. 34-2025 25 reactions Cat.-No. 34-2100 100 reactions Cat.-No. 34-2250 250 reactions Primer sets and nucleotides are prepared in aliquots of 25 tests.
<b>Description</b>	The AquaScreen® Legionella pneumophila qPCR Detection Kit is used for DNA samples prepared with the AquaScreen® FastExtract procedure for quantification of <i>Legionella pneumophila</i> in waters samples. The supplied primer set is specific for a segment of the mip region of the <i>Legionella pneumophila</i> genome.	<b>Required Consumables</b>	PCR reaction tubes Optional: For calibration we recommend our <i>Legionella pneumophila</i> DNA Calibration Reagent (Cat.-No. 52-0101).
<b>Recommended Use / Scope</b>	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.	<b>Required lab devices</b>	Pipetting equipment qPCR cycler with filter sets for FAM™ and ROX™
<b>Kit Components</b>	Freeze-dried primer, probes, nucleotides and polymerase Rehydration Buffer Freeze-dried Positive Control DNA Freeze-dried Internal Amplification Control	<b>Shelf Life and Storage</b>	Components are maintainable at +2 to +8 °C for at least 6 months. After rehydratisation the reagents must be stored at -18 °C
		<b>Compliance</b>	AFNOR XP T90-471 and ISO/TS 12869:2012

## AquaScreen® Legionella species

Features		Features	
<b>Type of PCR</b>	Quantitative real-time PCR (qPCR)	<b>Package Sizes</b>	Cat.-No. 33-2025 25 reactions Cat.-No. 33-2100 100 reactions Cat.-No. 33-2250 250 reactions Primer sets and nucleotides are prepared in aliquots of 25 tests.
<b>Description</b>	The AquaScreen® Legionella species qPCR Detection Kit is used for DNA samples prepared with the AquaScreen® Fast Extract procedure for quantification of <i>Legionella</i> in waters samples. The supplied primer set is specific for a broad range of legionella species, but does not detect other water born bacteria as required by ISO/TS 12869:2012.	<b>Required Consumables</b>	PCR reaction tubes Optional: For calibration we recommend our <i>Legionella pneumophila</i> DNA Calibration Reagent (Cat.-No. 52-0101).
<b>Recommended Use / Scope</b>	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.	<b>Required lab devices</b>	Pipetting equipment qPCR cycler with filter sets for FAM™ and ROX™
<b>Kit Components</b>	Freeze-dried primer, probes, nucleotides and polymerase Rehydration Buffer Freeze-dried Positive Control DNA Freeze-dried Internal Amplification Control	<b>Shelf Life and Storage</b>	Components are maintainable at +2 to +8 °C for at least 6 months. After rehydratisation the reagents must be stored at -18 °C
		<b>Compliance</b>	AFNOR XP T90-471 and ISO/TS 12869:2012

# Water Testing

## AquaScreen® *Pseudomonas aeruginosa*



Features		Features	
<b>Type of PCR</b>	Quantitative real-time PCR (qPCR)	<b>Package Sizes</b>	Cat.-No. 34-6025 25 reactions Cat.-No. 34-6100 100 reactions Cat.-No. 34-6250 250 reactions Primer sets and nucleotides are prepared in aliquots of 25 tests.
<b>Description</b>	The AquaScreen® <i>Pseudomonas aeruginosa</i> qPCR Detection Kit is used for DNA samples prepared with the AquaScreen® FastExtract procedure for quantification of <i>Pseudomonas aeruginosa</i> in waters samples.	<b>Required Consumables</b>	PCR reaction tubes Optional: For calibration we recommend our <i>Pseudomonas aeruginosa</i> DNA Calibration Reagent (Cat.-No. 52-0071).
<b>Recommended Use / Scope</b>	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.	<b>Required lab devices</b>	Pipetting equipment qPCR cycler with filter sets for FAM™ and ROX™
<b>Kit Components</b>	Freeze-dried primer, probes, nucleotides and polymerase Rehydration Buffer Freeze-dried Positive Control DNA Freeze-dried Internal Amplification Control	<b>Shelf Life and Storage</b>	Components are maintainable at +2 to +8 °C for at least 6 months. After rehydratisation the reagents must be stored at -18 °C.
		<b>Compliance</b>	No guidelines are available for molecular testing of water samples for <i>Pseudomonas aeruginosa</i> .

## AquaScreen® *Escherichia coli*

Features		Features	
<b>Type of PCR</b>	Quantitative real-time PCR (qPCR)	<b>Package Sizes</b>	Cat.-No. 34-7025 25 reactions Cat.-No. 34-7100 100 reactions Cat.-No. 34-7250 250 reactions Primer sets and nucleotides are prepared in aliquots of 25 tests.
<b>Description</b>	The AquaScreen® <i>Escherichia coli</i> qPCR Detection Kit is used for DNA samples prepared with the AquaScreen® FastExtract procedure for quantification of <i>Escherichia coli</i> in waters samples.	<b>Required Consumables</b>	PCR reaction tubes Optional: For calibration we recommend our <i>Escherichia coli</i> DNA Calibration Reagent (Cat.-No. 52-0083).
<b>Recommended Use / Scope</b>	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.	<b>Required lab devices</b>	Pipetting equipment qPCR cycler with filter sets for FAM™ and ROX™
<b>Kit Components</b>	Freeze-dried primer, probes, nucleotides and polymerase Rehydration Buffer Freeze-dried Positive Control DNA Freeze-dried Internal Amplification Control	<b>Shelf Life and Storage</b>	Components are maintainable at +2 to +8 °C for at least 6 months. After rehydratisation the reagents must be stored at -18 °C.
		<b>Compliance</b>	No guidelines are available for molecular testing of water samples for <i>Escherichia coli</i> .