

IVD For *in Vitro* Diagnostic

# AmpliSens® *Chlamydia trachomatis* EPh PCR kit

## Instruction Manual

AmpliSens®

EC REP

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### 1. INTENDED USE

AmpliSens® *Chlamydia trachomatis*-EPh PCR kit is an *in vitro* nucleic acid amplification test for qualitative detection of *Chlamydia trachomatis* in the clinical material (cervical or urethral scrapes (swabs), urine sediment, secret of the prostate gland) by means of detection of the amplified products by agarose gel electrophoresis.

### 2. PRINCIPLE OF PCR ASSAY

*Chlamydia trachomatis* detection by the polymerase chain reaction (PCR) is based on the amplification of specific region of DNA of pathogen genome using specific *Chlamydia trachomatis* primers. After PCR the amplified product is detected in agarose gel. AmpliSens® *Chlamydia trachomatis* -EPh PCR kit is qualitative test and contains the IC which must be used in the isolation procedure in order to control the isolation process of each individual specimen and to identify possible reaction inhibition.

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit uses "hot-start", that is guaranteed by separation of nucleotides and Taq-polymerase by wax layer. Melting of wax and mix of reaction components occur only at 95°C, which greatly diminish frequency of nonspecifically primed reactions.

### 3. CONTENTS OF THE KIT

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit is produced in 3 forms:

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit variant 100 R (vials 0.5 ml), REF B1-100-R0,5.

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit variant 100 R (vials 0.2 ml), REF B1-100-R0,2.

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit variant 200, REF B1-200.

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit variant 100 R or variant 200 includes:

Reagent	Description	variant 100 R		variant 200	
		Volume (ml)	Amount	Volume (ml)	Amount
PCR-mix-1R <i>Chlamydia trachomatis</i> ready-to-use single-dose test tubes (under wax)	colorless, clear fluid	0.005	110 vials of 0.5 or 0.2 ml	---	---
PCR-mix-1 <i>Chlamydia trachomatis</i>	colorless, clear fluid	---	---	1.1	1 vial
PCR-mix-2 blue	clear fluid of blue color	1.2	1 vial	1.2	2 vials
Wax for PCR	hard white matter	---	---	1.7	2 vials
Mineral oil for PCR	colorless viscous fluid	4.0	1 vial	8.0	1 vial
Positive Control DNA <i>Chlamydia trachomatis</i> (C+)	colorless, clear fluid	0.2	1 vial	0.2	1 vial
DNA-buffer	colorless, clear fluid	0.5	1 vial	0.5	1 vial
Negative Control (C-)*	colorless, clear fluid	1.2	1 vial	1.2	1 vial
Internal Control complex IC** (only in kit with purification complex)	colorless, clear fluid	1.0	1 vial	1.0	1 vial

\* must be used in the isolation procedure as Negative Control of Extraction.

\*\* add 10 µl of Internal Control during the DNA isolation procedure directly to the sample/lysis mixture (see "DNA-sorb-AM", REF K1-7-100 or "DNA-sorb-B", REF K1-2-100 protocols).

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit variant 100 R is sufficient for 110 reactions, including controls.

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit variant 200 is sufficient for 220 reactions, including controls.

### 4. ADDITIONALLY REQUIRED MATERIALS, REAGENTS AND DEVICES

- Disposable powder-free gloves
- DNA isolation kit
- Detection agarose kit
- Pipettes (adjustable)
- Sterile pipette tips with aerosol filters (up to 200 µl)
- Vortex mixer
- Desktop centrifuge with rotor for 2 ml reaction tubes

- PCR box
- Personal thermocyclers
- Disposable polypropylene microtubes for PCR with 0.5 ml (0.2) capacity
- Refrigerator for 2–8 °C with deep-freezer with temperature no less than –16°C
- Reservoir for disposed tips

## 5. GENERAL PRECAUTIONS

The user should always pay attention to the following:

- Use sterile pipette tips with aerosol filters and put the new tip for every procedure.
- Store and handle amplicons separately from all other reagents.
- Thaw all components thoroughly at room temperature before starting an assay.
- When thawed, mix the components and centrifuge briefly.
- Wear disposable gloves, laboratory coats and eye protection when handling specimens and reagents. Thoroughly wash hands afterward.
- Do not eat, drink, smoke, apply cosmetics, or handle contact lenses in laboratory work areas.
- Do not use a kit after its expiration date.
- Dispose of all specimens and unused reagents in accordance with local regulations.
- Specimens should be considered potentially infectious and handled in biological cabinet in accordance with appropriate biosafety practices.
- Clean and disinfect all spills of specimens or reagents using a disinfectant such as 0,5% sodium hypochlorite, or other suitable disinfectant.
- Avoid contact of specimens and reagents with the skin, eyes and mucose membranes. If these solutions come into contact, rinse immediately with water and seek medical advice immediately.
- Material Safety Data Sheets (MSDS) are available on request.
- Use of this product should be limited to personnel trained in the techniques of DNA amplification.
- Workflow in the laboratory must proceed in a uni-directional manner, beginning in the Extraction Area and moving to the Amplification and Detection Area. Do not return samples, equipment and reagents in the area where you performed previous step.



Some components of this kit contain Sodium Azide as a preservative. Do not use metal tubing for reagent transfer.

## 6. SPECIMEN COLLECTION AND HANDLING

AmpliSens® *Chlamydia trachomatis* -EPh PCR kit is intended to analyze DNA extracted with DNA isolation kits from:

- *Cervical or urethral scrapes (swabs)*
- *Urine sediment (use the first part of the stream)*
- *Secret of the prostate gland*

Transportation of clinical specimens must comply with country, federal, state and local regulations for transport of etiologic agents.

**6.1. Cervical or urethral scrapes (swabs)**, obtained with universal probe or cervical brush should be placed into the tube with special transport media (the transport media of the manufacturer is recommended). Break the effective part of the probe with the sample off in the place of the scratch and leave it in the tube. Transfer 0.5 ml of the sample into microtube using the tip with aerosol filter. Spin the microtube for 5 min at 10,000 g. Discard 0.4 ml of supernatant and stir the pellet in the rest of liquid.

Storage of native and treated samples.

- at 2°C – 8°C for 2 weeks;
- at minus 16°C for 1 month;
- at minus 68°C for a long time.

**6.2. Urine sediment** (use the first part of the stream). The first part of the stream (15-25 ml) should be placed into special clean dry vial. Shake the vial and transfer 1 ml of urine into microtube using the tip with aerosol filter. Spin the microtube for 5 min at 10000 g. If there are a lot of salts in the sample, then only the upper part of the pellet has to be used. Resuspend it in 1 ml and then concentrate one more time. Discard the supernatant thoroughly. Add the needed volume of transport media to the pellet up to final volume of 0.2 ml. Stir the pellet.

Storage of native and treated samples.

- at 2°C – 8°C for 1 day;
- at minus 16°C for 1 week;
- at minus 68°C for a long time.

**6.3. Secret of the prostate gland** (0.5-1 ml) should be placed into special clean dry microtube. Close the cap and mark the sample.

Storage of native and treated samples.

- at 2°C – 8°C for 1 day;

- at minus 16°C for 1 week;
- at minus 68°C for a long time.



Only one freeze-thaw cycle of clinical material is allowed.

## 7. PROTOCOL

### 7.1. DNA Isolation

Different manufacturers offer DNA isolation kits. We recommend following nucleic acid extraction kits:

- “DNA-sorb-AM”, [REF](#) K1-7-100.
- “DNA-sorb-B” (for secret of the prostate gland), [REF](#) K1-2-100.



Please carry out the DNA isolation according to the manufacturer instruction.

### 7.2. Preparing the PCR

Total reaction volume - **25 µl**, volume of DNA sample - **10 µl**.

#### 7.2.1 Preparing tubes for PCR



When using AmpliSens® *Chlamydia trachomatis* -EPh PCR kit variant 100 R **steps 1 and 2 should be omitted**.

1. Place the tube with **Wax for PCR** into the heat block at 95 °C to melt the wax completely.
2. Prepare required quantity of the PCR tubes. Pipette 5 µl of **PCR-mix -1 Chlamydia trachomatis** into the bottom of each tube. Add a drop (about 10-15 µl) of melted wax above, so it covers completely the liquid, close the caps and mark each tube. The prepared tubes could be stored at 2 – 8 °C during 1 week.
3. Prepare the required quantity of tubes with **PCR-mix-1 Chlamydia trachomatis** with wax for amplification of DNA of study and control samples.
4. Add **10 µl of PCR-mix-2 blue** to the surface of wax layer, so that it wouldn't fall under the wax and mix with **PCR-mix -1 Chlamydia trachomatis**.
5. Add above 1 drop of **mineral oil for PCR** (about 25 µl). When using thermocycler with heating cover this step could be omitted.

#### 7.2.2 Amplification

Use prepared tubes for PCR. Under or immediately above the level of oil, using tips with aerosol barrier, **add 10 µl of DNA samples**, obtained from clinical or control samples at the stage of DNA extraction.

Perform **control amplification reactions**:

NCA	Add 10 µl of <b>DNA-buffer</b> to the tube for <b>Negative Control of Amplification (NCA)</b> .
C+	Add 10 µl of <b>Positive Control DNA Chlamydia trachomatis</b> to the tube for <b>Positive Control of Amplification</b> .

Run the following program on the thermocycler (see table 1). When the temperature will reach 95°C (pause regimen), insert tubes to cells of amplifier and press button to continue.

It is recommended to sediment drops from walls of tubes by short centrifugation (1–3 sec) before their insertion in thermocycler.

Programming thermocyclers for DNA amplification of *Chlamydia trachomatis*

Table 1.

Step	Thermocyclers with active temperature adjustment:			Thermocyclers with block temperature adjustment:		
	"GeneAmp PCR System 2400" (ABI), "Gradient Palm Cycler" (Corbett Research)			"Biometra", "MiniCycler", "PTC-100" (MJ Research) ...		
Step	Temperature	Time	Cycles	Temperature	Time	Cycles
0	95 °C	pause		95 °C	pause	
1	95 °C	5 min	1	95 °C	5 min	1
2	95 °C	10 sec	42	95 °C	1 min	42
	65 °C	10 sec		65 °C	1 min	
	72 °C	10 sec		72 °C	1 min	
3	72 °C	1 min	1	72 °C	1 min	1
4	4 °C	storage		10 °C	storage	

Amplification in cycler with block temperature adjustment lasts 2:30, in cycler with active temperature adjustment 1:50.

After the reaction is finished PCR tubes must be collected and sent to the room for PCR products analysis.

Analysis of amplification products is performed by separation of DNA fragments in agarose gel.

The amplified samples can be stored for 16 h at RT, for 1 week at 2 – 8 °C and for a long time at minus 16 °C (be sure to warm the samples to room temperature before running electrophoresis).

## 8. DATA ANALYSIS

We recommend the following detection agarose kit:

- "EPh" variant 200, [REF](#) K5-200.

Analysis of results is based on the presence or absence of specific bands of amplified DNA in agarose gel (1.7%). The length of specific amplified DNA fragments is:

- ***Chlamydia trachomatis* 330 bp**
- **Internal Control 740 bp**



Put the protective mask or use the glass filter while watching and photographing the gel

### 8.1. Results interpretation

Table 2.

Results for controls

Control	Which step of test is controlled	Specific bands in the agarose gel 330 bp	Specific bands in the agarose gel 740 bp	Interpretation
C-	DNA isolation	No	Yes	Valid result
NCA	Amplification	No	No	Valid result
C+	Amplification	Yes	No	Valid result

- The sample is considered to be positive for *Chlamydia trachomatis* DNA if the band of 330 bp is present in agarose gel. The band of IC (740 bp) could be absent in the samples with high concentration of *Chlamydia trachomatis* DNA.

- The sample is considered to be negative for *Chlamydia trachomatis* DNA if the band of 330 bp is absent and the band of 740 bp is present.

Besides specific bands the indistinct washed-out bands of primer-dimers may be seen in lanes, they are situated lower than level 100 bp of nucleotide pairs.

## 9. TROUBLESHOOTING

Results of analysis are not being registered in the following cases:

- If results of control points analysis do not correspond to the listed above (Table 2), then the tests are to be re-installed. Discard any

reagents that may be suspect.

- If in lanes none of bands of 330 and 740 nucleotide pairs is observed, result of analysis for this sample is irrelevant and investigation of this sample must be repeated from the very beginning. It can be caused by mistake in clinical processing that provoked loss of RNA/DNA or inhibition of RT and/or PCR.
- If in lines nonspecific bands at different levels are presented, it may be caused by lack of "hot start" or false temperature regimen in thermocycler.
- If in lanes corresponding to negative control (NCA, C-) specific band of 330 bp appears, it means that reagents or samples contamination has taken place. In such cases results of analysis must be considered as irrelevant. Test analysis must be repeated and measures for detecting contamination source must be undertaken.

## 10. STABILITY AND STORAGE

The all components of the AmpliSens® *Chlamydia trachomatis* -EPh PCR kit should be stored from 2°C to 8°C and are stable until the expiry date stated on the label.

## 11. SPECIFICATIONS

### 11.1. Sensitivity

Analytical Sensitivity of AmpliSens® *Chlamydia trachomatis* -EPh PCR kit is no less than 5x10<sup>3</sup> colony-forming units in 1 ml of sample (CFU/ml).



Claimed analytical features of AmpliSens® *Chlamydia trachomatis* -EPh PCR kit are guaranteed only when additional sets of reagents "DNA-sorb-AM" or "DNA-sorb-B" (for secret of the prostate gland) and "EPh" are used.

### 11.2. Specificity

Specificity of AmpliSens® *Chlamydia trachomatis* -EPh PCR kit is ensured by selection of specific primers and strict reaction conditions as well as laboratory and clinical trials.

## 12. QUALITY CONTROL

In accordance with Federal State Institution of Science "Central Research Institute of Epidemiology" ISO 13485 –certified Total Quality Management System, each lot of AmpliSens® *Chlamydia trachomatis* -EPh PCR kit is tested against predetermined specifications to ensure consistent product quality.

## 13. EXPLANATION OF SYMBOLS



Manufacturer



Temperature limitation



Use by



Batch code



For *in Vitro* Diagnostic Use



Version



Catalogue number



Internal Control complex



Contains sufficient for <n> tests



Authorized representative in the European Community.



Consult instructions for use



Caution, consult accompanying documents



For working with Rotor-Gene™ 3000/6000



For working with iQ5, iQ iCycler



Positive control



Negative control