Enzyme immunoassay for the qualitative determination of IgG antibodies to Legionella pneumophila in human serum or plasma.

REF RE58501

Σ 96

2-8°C

EU: IVD CE
1. INTRODUCTION

Legionellae are aerobic gram-negative facultative intracellular parasites of certain protozoa. They are found in freshwater environments worldwide and can cause respiratory disease (legionellosis) in humans. Legionella was first identified after an outbreak of pneumonia involving delegates of the 1976 American Legion Convention at a Philadelphia hotel.

The genus Legionella currently has at least 50 species comprising 70 distinct serogroups. One species of Legionella, L. pneumophila, is the aetiological agent of approximately 90% of legionellosis cases, and serogroup 1 (Sg1) accounts for about 84% of these cases.

L. pneumophila multiplies itself at temperatures between 25 and 42 °C, with an optimal growth temperature of 35 °C. Legionella thrives in warm, stagnant water in the environment and in artificial systems such as cooling towers, evaporative condensers, hot and cold water systems and spa pools that mimic the natural environment in which the organism thrives. These systems also provide the means by which aerosols/droplets are generated and the organism dispersed into the atmosphere.

Legionellosis can be acquired by the inhalation of aerosols containing Legionella bacteria or by microaspiration of ingested water contaminated with Legionella. Person-to-person transmission is not thought to be a risk.

The likelihood of contracting Legionnaires' disease depends on the level of contamination in the water source, the susceptibility of the person exposed, and the intensity of exposure. Legionnaires' disease is characterized as an "opportunistic" disease that attacks individuals who have an underlying illness or a weakened immune system. Predisposing risks include increasing age, being male, heavy smoking, alcohol abuse, chronic lung disease, immunosuppressive therapy, cancer chemotherapy, organ or bone marrow transplant, and corticosteroid therapy.

Legionellosis can appear in two distinct clinical presentations: Legionella pneumonia (Legionnaires' disease) with an incubation period of approx. 2-10 days (may extend up to 16-20 days) and Pontiac fever (incubation period: normally 12-48 hours).

Legionella pneumonia (Legionnaires' disease) is a serious form of pneumonia that carries with it a case-fatality ratio of 10-15%. Legionnaires' disease patients initially present with cough, fever and nonspecific symptoms including malaise, myalgia and headache. Some patients develop shaking chills, chest pain, diarrhea, delirium or other neurologic symptoms. Extra pulmonary involvement is rare.

Pontiac fever is a milder form of the disease without manifestations of pneumonia and presents as an influenza-like illness. Symptoms may include headache, chills, muscle aches, a dry cough and fever. It is usually self-limiting and typically does not require treatment. The attack rate is much higher than for Legionnaires' disease (up to 95% of those exposed).

<table>
<thead>
<tr>
<th>Species</th>
<th>Disease</th>
<th>Symptoms</th>
<th>Mechanism of Infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legionella pneumophila</td>
<td>Legionella pneumonia (Legionnaires' disease)</td>
<td>Cough, fever and nonspecific symptoms (malaise, myalgia, headache). Some patients develop shaking chills, chest pain, diarrhea, delirium or other neurologic symptoms</td>
<td>inhalation of aerosols containing Legionella bacteria or micro-aspiration of ingested water contaminated with Legionella</td>
</tr>
<tr>
<td></td>
<td>Pontiac fever</td>
<td>Influenza-like illness (headache, chills, muscle aches, a dry cough and fever) without manifestations of pneumonia</td>
<td></td>
</tr>
</tbody>
</table>

The presence of bacteria resp. infection may be identified by

- Culture
- Urinary antigen detection
- PCR
- Serology: Detection of antibodies by IF, ELISA

2. INTENDED USE

The Legionella pneumophila IgG-ELISA is intended for the qualitative determination of IgG class antibodies against Legionella pneumophila in human serum or plasma (citrate).
3. PRINCIPLE OF THE ASSAY

The qualitative immunoenzymatic determination of IgG-class antibodies against Legionella pneumophila is based on the ELISA (Enzyme-linked Immunosorbent Assay) technique. Microtiter strip wells are coated with Legionella pneumophila antigens to bind corresponding antibodies of the specimen. After washing the wells to remove all unbound sample material horseradish peroxidase (HRP) labelled anti-human IgG conjugate is added. This conjugate binds to the captured Legionella-specific antibodies. The immune complex formed by the bound conjugate is visualized by adding Tetramethylbenzidine (TMB) substrate which gives a blue reaction product. The intensity of this product is proportional to the amount of Legionella-specific IgG antibodies in the specimen. Sulphuric acid is added to stop the reaction. This produces a yellow endpoint colour. Absorbance at 450 nm is read using an ELISA microwell plate reader. The qualitative immunoenzymatic determination of IgG-class antibodies to Legionella pneumophila is based on the ELISA (Enzyme-linked Immunosorbent Assay) technique.

4. MATERIALS

4.1. Reagents supplied

- **Legionella pneumophila Coated Wells (IgG):** 12 break-apart 8-well snap-off strips coated with Legionella pneumophila serogroup 1-7; in resealable aluminium foil.
- **IgG Sample Diluent:** 1 bottle containing 100 mL of phosphate buffer (10 mM) for sample dilution; pH 7.2 ± 0.2; coloured yellow; ready to use; white cap; < 0.1 % MIT; < 0.1 % CMIT; < 0.1 % NaN3.
- **Stop Solution:** 1 bottle containing 15 mL sulphuric acid, 0.2 mol/l; ready to use; red cap.
- **Washing Solution (20x conc.):** 1 bottle containing 50 mL of a 20-fold concentrated phosphate buffer (0.2 M), pH 7.2 ± 0.2, for washing the wells; white cap; < 1 % Ethanol; < 0.5 % Bromonitrodioxane.
- **Legionella pneumophila anti-IgG Conjugate:** 1 bottle containing 20 mL of peroxidase labelled antibody to human IgG in phosphate buffer (10 mM); coloured blue; ready to use; black cap; < 1 % Ethanol; < 0.5 % Bromonitrodioxane.
- **TMB Substrate Solution:** 1 bottle containing 15 ml 3,3',5,5'-tetramethylbenzidine (TMB), < 0.1 %; ready to use; yellow cap.
- **Legionella pneumophila IgG Positive Control:** 1 vial containing 2 mL control (human serum or plasma); coloured yellow; ready to use; red cap; < 0.1 % Bromonitrodioxan; < 0.1 % MIT.
- **Legionella pneumophila IgG Cut-off Control:** 1 vial containing 3 mL control (human serum or plasma); coloured yellow; ready to use; green cap; < 0.1 % Bromonitrodioxan, < 0.1 % MIT.
- **Legionella pneumophila IgG Negative Control:** 1 vial containing 2 mL control (human serum or plasma); coloured yellow; ready to use; blue cap; < 0.1 % MIT; < 0.1 % CMIT; < 0.1 % NaN3.

4.2. Materials supplied

- 1 Strip holder
- 1 Cover foil
- 1 Test protocol

4.3. Materials and Equipment needed

- ELISA microwell plate reader, equipped for the measurement of absorbance at 450/620 nm
- Incubator 37 °C
- Manual or automatic equipment for rinsing wells
- Pipettes to deliver volumes between 10 and 1000 µL
- Vortex tube mixer
- Deionised or (freshly) distilled water
- Disposable tubes

5. STABILITY AND STORAGE

Store the kit at 2...8 °C. The opened reagents are stable up to the expiry date stated on the label when stored at 2...8 °C.
6. REAGENT PREPARATION

It is very important to bring all reagents, samples and standards/controls to room temperature (20…25 °C) before starting the test run!

6.1. Coated snap-off strips

The ready to use break-apart snap-off strips are coated with Legionella pneumophila antigen. Immediately after removal of the strips, the remaining strips should be resealed in the aluminium foil along with the desiccant supplied and stored at 2… 8 °C.

6.2. Washing Solution (20x conc.)

Dilute Washing Solution 1 + 19; e.g. 10 mL Washing Solution + 190 mL fresh and germ free redistilled water. The diluted buffer is stable for 5 days at room temperature. Crystals in the concentrate disappear by warming up to 37 °C in a water bath.

6.3. TMB Substrate Solution

The reagent is ready to use and has to be stored at 2…8 °C, away from the light. The solution should be colourless or could have a slight blue tinge. If the substrate turns into blue, it may have become contaminated and should be thrown away.

7. SPECIMEN COLLECTION AND PREPARATION

Use human serum or plasma (citrate) samples with this assay. If the assay is performed within 5 days after sample collection, the specimens should be kept at 2…8 °C; otherwise they should be aliquoted and stored deep-frozen (-70…-20 °C). If samples are stored frozen, mix thawed samples well before testing. Avoid repeated freezing and thawing. Heat inactivation of samples is not recommended.

7.1. Sample Dilution

Before assaying, all samples should be diluted 1+100 with IgG Sample Diluent. Dispense 10 µL sample and 1 mL IgG Sample Diluent into tubes to obtain a 1+100 dilution and thoroughly mix with a Vortex.

8. ASSAY PROCEDURE

8.1. Test Preparation

Please read the test protocol carefully before performing the assay. Result reliability depends on strict adherence to the test protocol as described. If performing the test on ELISA automatic systems we recommend increasing the washing steps from three to five and the volume of Washing Solution from 300 µL to 350 µL to avoid washing effects. Pay attention to chapter 12. Prior to commencing the assay, the distribution and identification plan for all specimens and standards/controls should be carefully established on the result sheet supplied in the kit. Select the required number of microtiter strips or wells and insert them into the holder.

Please allocate at least:

1 well  (e. g. A1) for the Substrate Blank,
1 well (e. g. B1) for the Negative Control,
2 wells (e. g. C1+D1) for the Cut-off Control and
1 well (e. g. E1) for the Positive Control

It is recommended to determine standards/controls and patient samples in duplicate.

Perform all assay steps in the order given and without any appreciable delays between the steps.

A clean, disposable tip should be used for dispensing each standard/control and sample.

Adjust the incubator to 37 ± 1 °C.

1. Dispense 100 µL standards/controls and diluted samples into their respective wells. Leave well A1 for the Substrate Blank.
2. Cover wells with the foil supplied in the kit.
3. Incubate for 1 hour ± 5 min at 37 ± 1 °C.
4. When incubation has been completed, remove the foil, aspirate the content of the wells and wash each well three times with 300 µL of Washing Solution. Avoid overflows from the reaction wells. The soak time between each wash cycle should be > 5 sec. At the end carefully remove remaining fluid by tapping strips on tissue paper prior to the next step!

Note: Washing is critical! Insufficient washing results in poor precision and falsely elevated absorbance values.

5. Dispense 100 µL Legionella pneumophila anti-IgG Conjugate into all wells except for the Substrate Blank well (e. g. A1). Cover with foil.

6. **Incubate for 30 min at room temperature.** Do not expose to direct sunlight.

7. Repeat step 4.

8. Dispense 100 µL TMB Substrate Solution into all wells.

9. **Incubate for exactly 15 min at room temperature (20...25 °C) in the dark.**

10. Dispense 100 µL Stop Solution into all wells in the same order and at the same rate as for the TMB Substrate.

Any blue colour developed during the incubation turns into yellow.

11. Measure the absorbance of the specimen at 450/620 nm within 30 min after addition of the Stop Solution.

### 8.2. Measurement

Adjust the ELISA Microwell Plate Reader to zero using the Substrate Blank in well A1.

If - due to technical reasons - the ELISA reader cannot be adjusted to zero using the Substrate Blank in well A1, subtract the absorbance value of well A1 from all other absorbance values measured in order to obtain reliable results!

**Measure the absorbance** of all wells at 450 nm and record the absorbance values for each standard/control and patient sample in the distribution and identification plan.

Dual wavelength reading using 620 nm as reference wavelength is recommended.

Where applicable calculate the **mean absorbance values** of all duplicates.

### 9. RESULTS

#### 9.1. Run Validation Criteria

In order for an assay to be considered valid, the following criteria must be met:

- **Substrate Blank in A1:** Absorbance value < 0.100
- **Negative Control** in B1: Absorbance value < 0.200 and < Cut-off
- **Cut-off Control** in C1 and D1: Absorbance value 0.150 – 1.300
- **Positive Control** in E1: Absorbance value > Cut-off

If these criteria are not met, the test is not valid and must be repeated.

#### 9.2. Calculation of Results

The Cut-off is the mean absorbance value of the Cut-off Control determinations.

**Example:** Absorbance value Cut-off Control 0.44 + absorbance value Cut-off control 0.42 = 0.86 / 2 = 0.43

Cut-off = 0.43

#### 9.2.1. Results in Units [U]

\[
\text{Patient (mean) absorbance value} \times 10 \div \text{Cut-off} = \text{[Units = U]}
\]

**Example:** \(1.591 \times 10 \div 0.43 = 37\) U (Units)
9.3. Interpretation of Results

<table>
<thead>
<tr>
<th>Cut-off</th>
<th>10 U</th>
<th>Antibodies against the pathogen are present. There has been a contact with the antigen (pathogen resp. vaccine).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>&gt; 11 U</td>
<td>Antibodies against the pathogen could not be detected clearly. It is recommended to repeat the test with a fresh sample in 2 to 4 weeks. If the result is equivocal again the sample is judged as <strong>negative</strong>.</td>
</tr>
<tr>
<td>Equivocal</td>
<td>9 – 11 U</td>
<td>The sample contains no antibodies against the pathogen. A previous contact with the antigen (pathogen resp. vaccine) is unlikely.</td>
</tr>
<tr>
<td>Negative</td>
<td>&lt; 9 U</td>
<td>Diagnosis of an infectious disease should not be established on the basis of a single test result. A precise diagnosis should take into consideration clinical history, symptomatology as well as serological data. In immunocompromised patients and newborns serological data only have restricted value.</td>
</tr>
</tbody>
</table>

10. SPECIFIC PERFORMANCE CHARACTERISTICS

10.1. Precision

<table>
<thead>
<tr>
<th>Intraassay</th>
<th>n</th>
<th>Mean (OD)</th>
<th>CV (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum #1</td>
<td>23</td>
<td>0.494</td>
<td>3.5</td>
</tr>
<tr>
<td>Serum #2</td>
<td>24</td>
<td>1.801</td>
<td>1.9</td>
</tr>
<tr>
<td>Serum #3</td>
<td>24</td>
<td>1.340</td>
<td>4.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interassay</th>
<th>n</th>
<th>Mean (U)</th>
<th>CV (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum #1</td>
<td>12</td>
<td>37.45</td>
<td>3.8</td>
</tr>
<tr>
<td>Serum #2</td>
<td>12</td>
<td>23.65</td>
<td>5.9</td>
</tr>
</tbody>
</table>

10.2. Diagnostic Specificity

The diagnostic specificity is defined as the probability of the assay of scoring negative in the absence of the specific analyte. It is > 98 %.

10.3. Diagnostic Sensitivity

The diagnostic sensitivity is defined as the probability of the assay of scoring positive in the presence of the specific analyte. It is 90.0 %.

10.4. Interferences

Interferences with hemolytic, lipemic or icteric specimen are not observed up to a concentration of 10 mg/mL hemoglobin, 5 mg/mL triglycerides and 0.5 mg/mL bilirubin.

10.5. Cross Reactivity

Investigation of a specimen panel with antibody activities to potentially cross-reacting parameters (rheumatoid factors and antibodies to several respiratory pathogens) did not reveal evidence of false-positive results due to cross-reactions.

**Note:** The results refer to the groups of samples investigated; these are not guaranteed specifications.

11. LIMITATIONS OF THE PROCEDURE

Bacterial contamination or repeated freeze-thaw cycles of the specimen may affect the absorbance values.
12. PRECAUTIONS AND WARNINGS

- In compliance with article 1 paragraph 2b European directive 98/79/EC the use of the in vitro diagnostic medical devices is intended by the manufacturer to secure suitability, performances and safety of the product. Therefore the test procedure, the information, the precautions and warnings in the instructions for use have to be strictly followed. The test procedure, the information, the precautions and warnings in the instructions for use have to be strictly followed. The use of the testkits with analyzers and similar equipment has to be validated. Any change in design, composition and test procedure as well as for any use in combination with other products not approved by the manufacturer is not authorized; the user himself is responsible for such changes. The manufacturer is not liable for false results and incidents for these reasons. The manufacturer is not liable for any results by visual analysis of the patient samples.
- Only for in-vitro diagnostic use.
- All materials should be regarded and handled as potentially infectious.
- All components of human origin used for the production of these reagents have been tested for anti-HIV antibodies, anti-HCV antibodies and HBsAg and have been found to be non-reactive.
- Do not interchange reagents or strips of different production lots.
- No reagents of other manufacturers should be used along with reagents of this test kit.
- Do not use reagents after expiry date stated on the label.
- Use only clean pipette tips, dispensers, and lab ware.
- Do not interchange screw caps of reagent vials to avoid cross-contamination.
- Close reagent vials tightly immediately after use to avoid evaporation and microbial contamination.
- After first opening and subsequent storage check conjugate and standard/control vials for microbial contamination prior to further use.
- To avoid cross-contamination and falsely elevated results pipette patient samples and dispense reagents accurately to the bottom of wells.
- The ELISA is only designed for qualified personnel who are familiar with good laboratory practice.
- The concentrations of the hazardous materials mentioned in point 4.1. are very low. Therefore there is hardly any toxicological risk. Nevertheless rinse with plenty of water upon contact with eyes, skin or mucous membranes and consult a doctor in case of irritations. All solutions should be handled with adequate care.

12.1. Disposal Considerations
Residues of chemicals and preparations are generally considered as hazardous waste. The disposal of this kind of waste is regulated through national and regional laws and regulations. Contact your local authorities or waste management companies which will give advice on how to dispose hazardous waste.

13. BIBLIOGRAPHY

http://www.rki.de/DE/Content/Infekt/EpidBull/Merkblaetter/Ratgeber_Mbl_Legionellose.html
www.legionella.org
14. ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIT</td>
<td>2-Methyl-2H-isothiazol-3-one</td>
</tr>
<tr>
<td>CMIT</td>
<td>5-Chloro-2-methyl-2H-isothiazol-3-one</td>
</tr>
<tr>
<td>NaN₃</td>
<td>Sodium azide / Natriumazid</td>
</tr>
<tr>
<td>H₂O₂</td>
<td>Hydrogen peroxide / Wasserstoffperoxid</td>
</tr>
</tbody>
</table>

15. SUMMARY OF TEST PROCEDURE

SCHEME OF THE ASSAY
Legionella pneumophila IgG ELISA

Test Preparation

Prepare reagents and samples as described. Establish the distribution and identification plan for all specimens and controls on the result sheet. Select the required number of microtiter strips or wells and insert them into the holder.

Assay Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Substrate Blank (e.g. A1)</th>
<th>Negative Control</th>
<th>Cut-off Control</th>
<th>Positive Control</th>
<th>Sample (diluted 1+100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Control</td>
<td>-</td>
<td>100 µL</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cut-off Control</td>
<td>-</td>
<td>-</td>
<td>100 µL</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Positive Control</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100 µL</td>
<td>-</td>
</tr>
<tr>
<td>Sample (diluted 1+100)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100 µL</td>
</tr>
</tbody>
</table>

Cover wells with foil supplied in the kit
**Incubate for 1 h at 37 °C**
Wash each well three times with 300 µL of Washing Solution

<table>
<thead>
<tr>
<th>Step</th>
<th>Substrate Blank (e.g. A1)</th>
<th>Negative Control</th>
<th>Cut-off Control</th>
<th>Positive Control</th>
<th>Sample (diluted 1+100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conjugate</td>
<td>-</td>
<td>100 µL</td>
<td>100 µL</td>
<td>100 µL</td>
<td>100 µL</td>
</tr>
</tbody>
</table>

Cover wells with foil supplied in the kit
**Incubate for 30 min at room temperature**
Wash each well three times with 300 µL of Washing Solution

<table>
<thead>
<tr>
<th>Step</th>
<th>Substrate Blank (e.g. A1)</th>
<th>Negative Control</th>
<th>Cut-off Control</th>
<th>Positive Control</th>
<th>Sample (diluted 1+100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMB Substrate</td>
<td>100 µL</td>
<td>100 µL</td>
<td>100 µL</td>
<td>100 µL</td>
<td>100 µL</td>
</tr>
</tbody>
</table>

**Incubate for exactly 15 min at room temperature in the dark**

<table>
<thead>
<tr>
<th>Step</th>
<th>Substrate Blank (e.g. A1)</th>
<th>Negative Control</th>
<th>Cut-off Control</th>
<th>Positive Control</th>
<th>Sample (diluted 1+100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop Solution</td>
<td>100 µL</td>
<td>100 µL</td>
<td>100 µL</td>
<td>100 µL</td>
<td>100 µL</td>
</tr>
</tbody>
</table>

Photometric measurement at 450 nm
(reference wavelength: 620 nm)
<table>
<thead>
<tr>
<th>Symbols / Symbole / Symbôles / Símbolos / Σύμβολα</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REF</strong></td>
</tr>
<tr>
<td><strong>LOT</strong></td>
</tr>
<tr>
<td><strong>Use by</strong> / Verwendbar bis: / Utiliser à: / Usado por: / Usar até: / Da utilizzare entro: / Χρησιμοποιείται από:</td>
</tr>
<tr>
<td><strong>No. of Tests</strong> / Kitgröße: / Nb. de Tests: / No. de Determ.: / N.º de Testes: / Quantità dei tests: / Αριθμός εξετάσεων:</td>
</tr>
<tr>
<td><strong>CONC</strong></td>
</tr>
<tr>
<td><strong>LYO</strong></td>
</tr>
<tr>
<td><strong>IVD</strong></td>
</tr>
<tr>
<td><strong>Evaluation kit.</strong> / Nur für Leistungsbewertungszwecke. / Kit pour évaluation. / Juego de Reactivos para Evaluación. / Kit de avaliação. / Kit di evaluazione. / Κιτ Αξιολόγησης.</td>
</tr>
<tr>
<td><strong>Read instructions before use.</strong> / Arbeitsanleitung lesen. / Lire la fiche technique avant emploi. / Leer las instrucciones antes de usar. / Leggere le istruzioni prima dell’uso. / Διαβάστε τις οδηγίες πριν την χρήση.</td>
</tr>
<tr>
<td><strong>Keep away from heat or direct sun light.</strong> / Vor Hitze und direkter Sonneneinstrahlung schützen. / Garder à l’abri de la chaleur et de toute exposition lumineuse. / Manténgase alejado del calor o la luz solar directa. / Manter longe do calor ou luz solar directa. / Να φυλάσσεται μακριά από θερμότητα και άμεση επαφή με το φως του ηλίου.</td>
</tr>
<tr>
<td><strong>Store at:</strong> / Lagern bei: / Stocker à: / Almacene a: / Armazenar a: / Conservare a: / Αποθήκευση στους:</td>
</tr>
<tr>
<td><strong>Manufacturer:</strong> / Hersteller: / Fabricant: / Productor: / Fabricante: / Fabbricante: / Παραγωγός:</td>
</tr>
<tr>
<td><strong>Caution!</strong> / Vorsicht! / Attention! / ¡Precaución! / Cuidado! / Attenzione! / Προσοχή!</td>
</tr>
</tbody>
</table>

Symbols of the kit components see MATERIALS SUPPLIED.

Die Symbole der Komponenten sind im Kapitel KOMPONENTEN DES KITS beschrieben.

Voir MATERIEL FOURNI pour les symbôles des composants du kit.

Símbolos de los componentes del juego de reactivos, vea MATERIALES SUMINISTRADOS.

Para símbolos dos componentes do kit ver MATERIAIS FORNECIDOS.

Per i simboli dei componenti del kit si veda COMPONENTI DEL KIT.

Για τα σύμβολα των συστατικών του κιτ συμβουλευτείτε το ΠΑΡΕΧΟΜΕΝΑ ΥΛΙΚΑ.

COMPLAINTS: Complaints may be submitted initially written or vocal. Subsequently they need to be filed including the test performance and results in writing in case of analytical reasons.

WARRANTY: The product is warranted to be free from material defects within the specific shelf life and to comply with product specifications delivered with the product. The product must be used according to the Intended use, all instructions given in the instructions for use and within the product specific shelf life. Any modification of the test procedure or exchange or mixing of components of different lots could negatively affect the results. These cases invalidate any claim for replacement.

LIMITATION OF LIABILITY: IN ALL CIRCUMSTANCES THE EXTENT OF MANUFACTURER’S LIABILITY IS LIMITED TO THE PURCHASE PRICE OF THE KIT(S) IN QUESTION. IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING DAMAGES FOR LOST PROFITS, LOST SALES, INJURY TO PERSON OR PROPERTY OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL LOSS.