

LEGIONELLA Water Test

1 TEST REFILL

VIDEO OF THE PROTOCOL ONLINE!

<https://lwt.c4hydro.com/instructions>



Thank you for choosing the Legionella Water Test from C4Hydro. The Legionella Water Test has been devised to specifically detect legionella bacteria liable to cause severe respiratory infections if present in excessive quantities in your water supply. This test is based on the culturing of bacteria, which is the same method as that used by professional laboratories to detect legionella. The scientific method used by this test has been redesigned and adapted for domestic use to allow an individual to test his/her water. The patented method used by this C4Hydro test allows a result to be obtained in 48 hours instead of 10 to 14 days in the laboratory.

IMPORTANT: THINGS TO KNOW BEFORE GETTING STARTED

- The C4Hydro Mini-Lab is required in addition to the Legionella Water Test in order to test your water.
- The test takes place in two steps with 48h to 52h of waiting time between each step.
- Only start this test if you are available 48h to 52h later to terminate it.

Please read the entire leaflet.



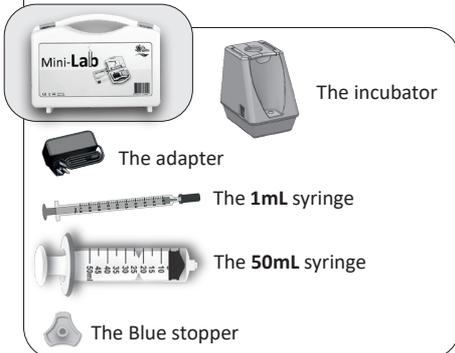
CONTENTS OF THE LEGIONELLA WATER TEST:

- 5 vials: A, B, C, D, E
- 1 filter
- 2 ampoules of sterile water
- 1 strip in a protective pouch
- 1 "TERUMO" syringe (10mL)

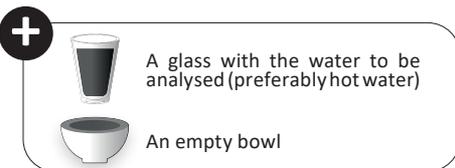
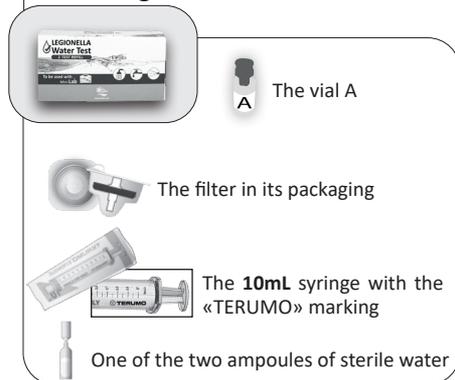
If you do not have Internet access, please carefully follow the present instructions:

Day 1 Required equipment

In the Mini-Lab:

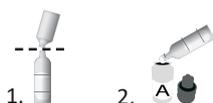


In the Legionella Water Test:



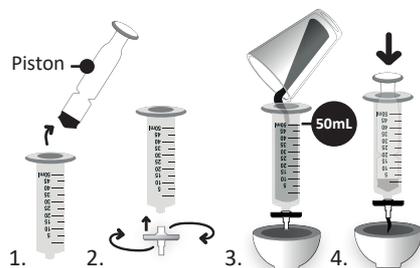
1. PREPARATION OF THE CULTURE MEDIUM

- Prepare the equipment mentioned above.
- Plug in the incubator. **It will have to remain plugged in for at least 48h without interruption.** Please choose a suitable location.
- Pour the contents of an ampoule of sterile water into **vial A**, then recap it and set the vial aside.



2. FILTRATION OF THE WATER SAMPLE

- Take the **50mL** syringe, remove its piston and screw the filter onto the end of the syringe.



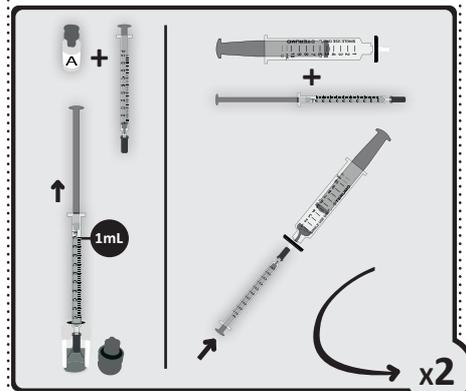
- Above the empty bowl, pour **50mL** of the water to be analysed into the **50mL** syringe, then put the piston back in place.
- Empty the syringe into the empty bowl in the following manner: push the piston until there is no more liquid coming out of the syringe (the resistance is normal).

3. EXPOSURE TO THE CULTURE MEDIUM

- Remove the **10mL** syringe with the «TERUMO» marking from its packet and fill it with air up to the **graduation 5**.
- Unscrew the filter from the large **50mL** syringe and screw it onto the syringe **10mL** with the «TERUMO» marking. **The filter will remain on the 10mL syringe until the end of the analysis.**
- If the contents of **vial A** have not dissolved, turn the bottle once.
- Transfer the **entire contents** of **vial A** into the **10mL-syringe/filter** assembly with the «TERUMO» marking in the following manner:
 - Sample the liquid from **vial A** with the small **1mL** syringe and transfer the liquid into

the **10mL-syringe/filter** assembly with the "TERUMO" marking by fitting the small syringe, which is equipped with a connector, onto the tip of the filter, then pushing the piston.

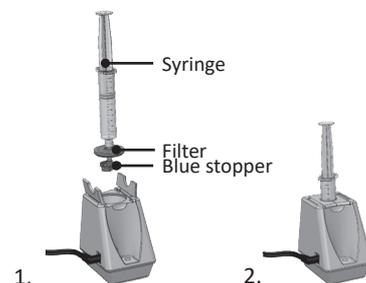
- Repeat to transfer the entire contents of **vial A**.



- Remove the small **1mL** syringe

4. INCUBATION

- Take the blue stopper and fit it onto the end of the filter.
- Arrange the **10mL-syringe/filter** assembly with the "TERUMO" marking in the incubator in the following manner:
 - Open the flaps on the upper part of the incubator.
 - Insert the syringe into the incubator with its filter at the bottom, and then close the flaps.



- The light on the incubator must be green and constant. Otherwise, refer to the equipment leaflet in the Mini-Lab.
- The incubation period must last for between **48h** and **52h**.
- Set an alarm on your phone for between **48** and **52h** depending on your availability, in order to continue the test while respecting the incubation time frame.

5. CLEANING THE EQUIPMENT

- Rinse the **1mL** syringe in the following manner:
 - Fully fill it with tap water and eject it into the bowl. **Repeat this procedure 3 times.**
- Store the **1mL** and **50mL** syringes in the Mini-Lab.
- Dispose of **vial A**, the used ampoule of sterile water and the content of your bowl.

6. DATE & TIME END-OF-INCUBATION

Indicate here below the end date and time of incubation (between 48 and 52 hours):

On: / /

Between : : and : :

End of the first step.

Day 2 INCUBATION

You don't have to do anything. Under no circumstances should the incubator be unplugged.

During this stage, and thanks to the incubator provided with your Mini-Lab, the bacteria present in the filter will be placed in a medium (nutrients and temperature) conducive to their development.

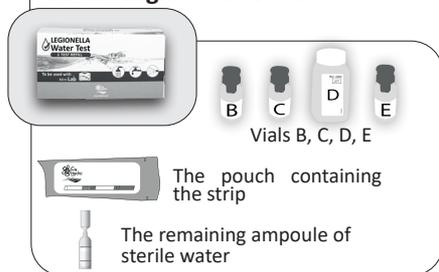
Day 3 Required equipment

During this last stage, the bacteria will be exposed to a revealing reagent, then washed, killed and cut up. Their potential toxicity will be thus deactivated, they will be able to pass through the filter... and reveal their possible presence on the strip.

In the Mini-Lab:



In the Legionella Water Test:



Vials B, C, D, E

The pouch containing the strip

The remaining ampoule of sterile water



A glass of water and an empty bowl

1. PREPARATION AND EXPOSURE OF THE REVEALING REAGENT

- Prepare the equipment mentioned above.
- Open the ampoule of sterile water and pour only **half** of its contents (indicated by the line) into vial **B**. Close the vial tightly and turn it 3 times. Set the vial aside.



- Retrieve the **10mL** syringe/filter assembly with the "TERUMO" marking from the incubator.

ATTENTION !
Do not switch off the incubator

- Remove the blue stopper from the end of the filter.
- **Without straining**, push the piston to empty the contents of the syringe into the bowl. Leave the remaining air in the syringe.
- Using the **1mL** syringe, transfer **the entire contents** of vial **B** into the **10mL** syringe/filter assembly with the "TERUMO" marking (as in step 3 on Day 1, see drawing on the front of this leaflet).
- Remove the small **1mL** syringe.

2. INCUBATION WITH THE REVEALING REAGENT

- Take the blue stopper and fit it onto the end of the filter.
- Arrange the **10mL** syringe/filter assembly with the "TERUMO" marking in the incubator in the following manner:
 - Open the flaps on the upper part of the incubator.
 - Insert the syringe into the incubator with its filter at the bottom, and then close the flaps.
- The light on the incubator must be green and constant. Otherwise, refer to the equipment leaflet in the Mini-Lab.
- Set an alarm on your phone for a period of **10 minutes**.
- During this time, rinse the **1mL** syringe in the following manner:
 - Fully fill it with tap water and eject it into the bowl. Repeat this procedure 3 times.
- Retain this syringe

3. DEACTIVATION OF THE TOXICITY OF BACTERIA

- After **10 minutes of incubation**, retrieve the syringe/filter assembly from the incubator.

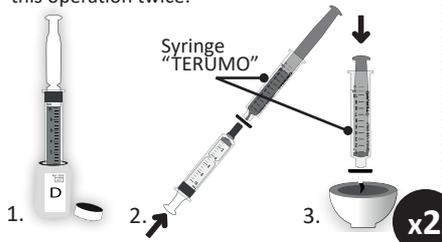
ATTENTION!
Do not switch off the incubator

- Remove the blue stopper from the end of the filter.
- **Without straining**, push the piston to empty the contents of the syringe into the empty bowl. Leave the remaining air in the syringe.
- Using the **1mL** syringe, transfer **the entire contents** of vial **C** into the **10mL** syringe/filter assembly with the "TERUMO" marking (as in step 3 on Day 1, see drawing on the front of this leaflet).
- Remove the small **1mL** syringe. Push the piston to empty the contents of the **10mL** syringe into the bowl.

This time, the piston must be fully pushed so that no air is left in the syringe.

4. CLEANING THE FILTER

- Using the **10mL** syringe with the green marking, transfer **10mL** from vial **D** into the **10mL** syringe/filter assembly with the "TERUMO" marking. Then empty its contents into the bowl. Repeat this operation twice:



x2

- Rinse the **10mL** syringe with the green marking in the following manner:

- Fully fill it with tap water and eject it into the bowl. Repeat this procedure 3 times.

5. BACTERIA CUTTING

- Using the **1mL** syringe, transfer the entire contents of vial **E** into the **10mL** syringe/filter assembly with "TERUMO" marking (as in step 3 on Day 1, see drawing on the front of this leaflet).

Retain vial **E** for the next stage

- Remove the small **1mL** syringe.

6. VERIFICATION OF THE PRESENCE OF BACTERIA

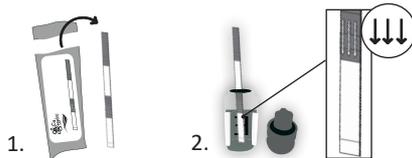
- Take the blue stopper and fit it onto the end of the filter.
- Deposit the syringe/filter assembly in the incubator in the following manner:
 - Open the flaps on the upper part of the incubator.
 - Insert the syringe into the incubator with its filter at the bottom, and then close the flaps.
- The light on the incubator must be green and constant. Otherwise, refer to the equipment leaflet in the Mini-Lab.
- Set an alarm on your phone for a period of **5 minutes**.
- Following **5 minutes** of incubation, take the empty vial **E** and then empty the contents

of the **10mL** syringe/filter assembly with the "TERUMO" marking into the vial by pressing on the piston.

- Make sure your hands are dry (**the strip must not be handled with damp hands**).

- Take the pouch containing the strip, open it by tearing it horizontally, (without using scissors) and remove the strip.

- Dip the strip into the vial **E**, the arrows on the strip must point towards the bottom of the vial:



- Unplug the incubator and leave it to cool before storing it.
- Set an alarm on your phone for a period of **20 minutes**.
- Make sure to wait for **20 minutes** before reading the analysis result on the strip. It is normal for the strip to turn red in the first few minutes.

7. READING AND INTERPRETATION OF THE RESULT

ATTENTION!
The result must be read between **20 and 30 minutes** after dipping the strip into the vial **E**.

- Carefully remove the strip from Vial **E**.

READING OF THE RESULT:



1 line = negative
(no legionella detected)



2 lines = positive
(legionella detected)

The analysis of your water sample is concluded!

Results interpreted after more than 30 minutes may be inaccurate. If no line appears on the strip after 20 minutes, it has not been possible to interpret the result.

8. CLEANING OF THE EQUIPMENT

Clean your equipment as follows:

- Retain the blue stopper, the small syringe (**1mL**) and the **10mL** syringe with green marking.
- Clean the two syringes 3 times before leaving them to dry (remove the pistons for optimal drying). Store the 2 syringes, in the Mini-Lab case.
- Check that all the components of the Mini-Lab are in the case for use in the next analysis.
- Dispose of the remaining components (including the **10mL** syringe/filter assembly with the "TERUMO" marking).

CONDITIONS FOR CARRYING OUT THE TEST

- Ambient temperature between 15°C and 30°C (59 - 86°F)
- Humidity level <= 80%

STORAGE

Store the test between 15°C and 30°C (59-86°F) away from humidity, light and heat. Do not store in a refrigerator. The Legionella Water Test must be used before the expiry date stated on the packaging.

SAFETY NOTICE

DO NOT INGEST.
KEEP OUT OF REACH OF CHILDREN.

Do not eat, drink or smoke in areas in which reagents are handled.
If a reagent comes into contact with the skin, rinse immediately with water.

If a reagent gets into an eye, rinse immediately with the eyelid open for a sufficient time.

If you inhale a reagent, breathe fresh air.
If the respiratory paths become irritated, consult a doctor.

If a reagent is ingested, do not induce vomiting, rinse the mouth abundantly and with a large volume and consult a doctor.

Once the test is terminated, dispose of all the vials, together with their lids and the "TERUMO" syringe, in a bin. Wash your hands with soap and hot water.

FREQUENTLY ASKED QUESTIONS

What is legionella?

Legionella is a bacterium that proliferates in hot water. All sanitary or potable hot water supplies (showers, taps, spas, pools, humidifiers, sprayers...) may potentially contain legionellae and are thus affected by this health hazard. Among the different species of legionella,

Legionella pneumophila is implicated in a large majority of the cases of legionellosis (98% of cases on average).

Once inhaled via micro-droplets of contaminated water, *Legionella pneumophila* becomes lodged in the lungs and multiplies until it produces a fatal infection in 10 to 50% of cases: legionellosis.

What type of legionella is detected by the Legionella Water Test?

The C4Hydro Legionella Water Test specifically detects *Legionella pneumophila* (of all serogroups), from 10CFU/mL (colony-forming units per millilitre of water) in your water sample.

Why test for the presence of legionellae?

If your water contains a large concentration of *Legionella pneumophila*, there is a risk of contracting legionellosis. The most common symptoms are: coughing, breathing difficulty or shortness of breath, fever, muscular pain and headaches.

What does the result mean?

If the result is positive (2 lines on the strip), this indicates a strong contamination of your water with *Legionella pneumophila*. The risk of inhaling the bacteria is high.

What should I do if my test is positive?

If the result indicates a bacterial contamination (2 lines on the strip), your sample contains a concentration of bacteria which represents a risk to health. A chlorine or high-temperature treatment is recommended in order to eliminate the presence of legionellae in your water. Contact your water manager (property manager, maintenance contract agent) or a water treatment professional immediately. Notify your Regional Health Agency, and your town hygiene services about this contamination.

For more information on the product:

<https://shop.c4hydro.com>

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