

## Water testing in the field

### Test-Kit for biological water quality testing in the field (Merck Envirocheck)

For biological water testing arche noVa uses a special portable testing kit from the German company Merck with the name “Envirocheck” (Figure 1). This kit makes it possible to get a first water check in the field, independent from any water laboratories.

Figure 1

Merck Environcheck test tube



The test kit is very simple to use. One test sequence needs 24 hours to get the results of the biological contamination of the tested water sample. The kit can be used for liquid- and surface-testing.

Figure 2 shows a copy of the user’s manual of the Merck Envirocheck.

Figure 2

User's manual of the Merck Envirocheck water testing kit

**1.02136.0001**

**Envirocheck® Contact C**

Usage in vitro

**Total Coliforms/E. coli**

**Instructions for use**

Envirocheck® Contact slides can be used for both, liquid and surface testing without any pre-treatment.

- Unscrew cap on the tube and remove the Envirocheck® slide from the tube taking care not to touch the agar surfaces. Check for any dehydration or contamination before use.

**Inoculation procedure**

**Surface testing**

- With two fingers hold the terminal end of the paddle against the surface to be tested. Press down on the spoke to bend the paddle still holding the slide by the cap.
- With a firm and even pressure press one medium against the surface to be tested. Take care not to smear the agar over the test area.
- Repeat the procedure with the other side of the paddle on an area adjacent to the initial test site.
- Replace the slide back into the tube and close tightly.

**Liquid testing**

- Dip the Envirocheck® slide for about 5–10 seconds into the test liquid. Both agar surfaces should become totally covered. In case of insufficient liquid, pour over both surfaces of the slide.
- Tip slide on clean absorbent paper to drain off excess fluid.
- Replace the slide back into the tube and close tightly.

**Labelling**

Enter the sample, source, date and time. **Indicate whether the sample has been taken before or after cleaning.**

- Incubation

Place the container in an upright position into an incubator, e.g. CUEUPAC mini-incubator 1.15311.0001 (235-V version) or CUEUPAC mini-incubator 1.15311.0002 (235-V version) for bacteria and for 2–7 days at 27–30 °C for yeasts and moulds. Incubation time, native times and temperatures for incubation may be used according to individual requirements.

- Reading of results

The counts with Envirocheck® Contact slides are a semi-quantitative result to the degree of contamination in the environment being tested.

**Surface testing**

Remove the slide from the tube and compare the density on each agar side with the model density chart on the front page of the insert sheet without actually counting the number of colonies (upper chart for bacteria/yeasts, lower chart for moulds). If the density exceeds 10<sup>7</sup> cfu/ml, or the viscosity is high, the sample should be diluted. The dilution factor has to be taken into account with the results.

**Liquid testing**

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**Disposal**

Infected slides should be handled with care! The slides should be autoclaved, incinerated or sealed with disinfectant (e.g. 1.07551, Extran® MA 04).

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**Envirocheck® Contact C**

Usage in vitro

**Schimmelpilze/Moulds/Moisissures/Mohos**

geringes slight faible ligero

10<sup>6</sup>

Flüssigkeiten, flüide, liquide, líquidos (KBE/ml, ctu/ml)

17

Oberflächen, surfaces, superficies (KBE/cm<sup>2</sup>, ctu/cm<sup>2</sup>)

geringes slight faible ligero

10<sup>6</sup>

Flüssigkeiten, flüide, liquide, líquidos (KBE/ml, ctu/ml)

0.6

Oberflächen, surfaces, superficies (KBE/cm<sup>2</sup>, ctu/cm<sup>2</sup>)

mäßiges moderate moyenne moderato

10<sup>7</sup>

Flüssigkeiten, flüide, liquide, líquidos (KBE/ml, ctu/ml)

58

Oberflächen, surfaces, superficies (KBE/cm<sup>2</sup>, ctu/cm<sup>2</sup>)

starkes heavy forte intenso

10<sup>8</sup>

Flüssigkeiten, flüide, liquide, líquidos (KBE/ml, ctu/ml)

140

Oberflächen, surfaces, superficies (KBE/cm<sup>2</sup>, ctu/cm<sup>2</sup>)

sehr starkes very heavy très forte muy intenso

10<sup>9</sup>

Flüssigkeiten, flüide, liquide, líquidos (KBE/ml, ctu/ml)

350

Oberflächen, surfaces, superficies (KBE/cm<sup>2</sup>, ctu/cm<sup>2</sup>)

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**Envirocheck® Contact C**

Usage in vitro

**Storage and shelf-life**

Store Envirocheck® Contact slides < 15 °C. The optimum storage temperature is 12–15 °C. **DO NOT FREEZE!** The expiry date is written on each box. Please check before use that there is no growth on the slides. Unused slides with growth have to be discarded.

**Envirocheck® Contact C.**

**Side 1:** Coated with Plate Count Agar to obtain the total viable (as count).

**Side 2:** Coated with Chromocult® Coliform Agar for the simultaneous detection of coliforms and E. coli in water and food-samples.

**Incubation**

Incubate in upright position at 35–37 °C for 24–48 hours.

**Results**

**Plate Count Agar:** count the number of colonies for obtaining the aerobic bacterial count (TVC).

**Chromocult® Coliform Agar:** count the number of dark-blue to violet colonies (E. coli) and the number of salmon to red colonies for other coliforms. Additionally E. coli can be confirmed by adding KOVAAC; (reagent directly onto the colony (positive nitrile reaction; red colour)).

**Typical cultural response**

Organism	Plate Count Agar	Chromocult® Coliform Agar
E. coli ATCC 11775	good growth	good growth; colonies dark blue to violet; indole positive
C. freundii ATCC 8050	good growth	good growth; colonies salmon to red.
E. coli 0157: H7 ATCC 35150	good growth	fair/good growth; colonies salmon to red;
S. enteritidis ATCC 13076	good growth	good growth; colourless colonies

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## Portable incubator (Hach) for water testing

For the testing period the water test kits have to be stored with an exact temperature of 35 – 37°C. To guarantee this temperature arche noVa uses a portable incubator for the transport of the water samples, produced by the German company Hach. This device has a size of 26cm x 20cm x 20cm and can be connected with a 12V cigarette lighter which is standard in the most cars. Also it can be installed with a separate 12V transformer. It is useful to wire a 12V car battery - working as a buffer in case of a power failure - between the transformer and the incubator like shown in Figure 3.

**Figure 3**

Hach portable incubator wired with a 12 transformer and a car battery as a power buffer



**Figure 4**

Interior view of the portable incubator



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