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## **HygieneChek™ PLUS Dip-Slides**

for  
Microbiological  
Hygiene Monitoring

Version: 2 (0520)

**Please read the manual thoroughly!**

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# HygieneChek™ PLUS Dip-Slides

## 1. Introduction

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EU-Regulation No. 852/2004 on hygiene of foodstuffs requires food business operators to assess cleaning practices and establish hygiene procedures according to HACCP principles. The main objective is to safeguard the quality of products and protect consumer health.

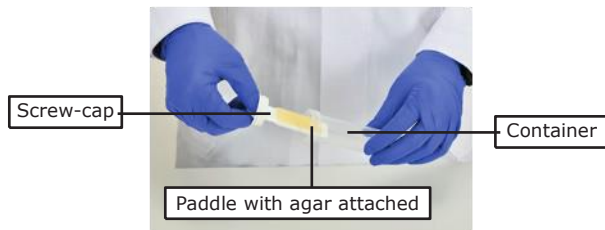
According to ISO 18593:2018-10, contact slides like HygieneChek™ PLUS Dip-Slides can be used by the food sector to estimate microorganisms on surfaces. Easy to handle, they can be used to grade microorganism counts and establish trends in microbiological contamination. Consequently, hygiene monitoring results are benchmarked in compliance with implemented hygiene guidelines.

In addition, the HygieneChek™ PLUS Dip-Slides system ensures that samples are transported safely under prevailing temperature conditions.

## 2. Test principle

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The HygieneChek™ PLUS Dip-Slides system consists of a container with screw-cap and a double-sided plastic paddle containing two agars of choice.



The sample is collected by pressing the paddle with the agar on a surface, or by dipping into a liquid or liquid emulsion. Alternatively, the agar can be inoculated with a swab. For air sampling, simply place the sample in an upright position on the screw-cap. With HygieneChek™ PLUS Dip-Slides, samples can also be sent to an external lab for further investigation.



## HygieneChek™ PLUS Dip-Slides

### 3. Specificity and test duration

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- The specificity of the media for HygieneChek™ PLUS Dip-Slides determines which microorganisms are assessed (see DIN 10113-3, Beuth-Verlag).
- For liquid-testing, the limit of detection is  $10^2$  colony forming units/ml (cfu/ml).
- The duration of the test depends on individual requirements for the microorganisms tested.

### 4. Kit contents

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HygieneChek™ PLUS Dip-Slides are shipped in boxes of 10 paddles each. Each paddle is coated on both sides with agar, for a total of 20 tests.

### 5. Additional equipment required

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- Incubator 25 – 37 °C
- Autoclave/Autoclave bags (optional)
- Sterile diluents (optional)

### 6. General remarks

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Please follow the storage instructions on the packaging.

Do not touch the agar surface! To remove the screw-cap from the paddle, please twist it slightly. To ventilate, open the cap by a 3/4 turn. The container should be tightly closed with the screw-cap before transporting. After obtaining the results, dispose of the paddles after autoclaving (121 °C, 2 bar, 30 min) or immersing in bleach over night.

We also recommend seeking help from a microbiological lab if HygieneChek™ PLUS Dip-Slides are to be used to monitor in-house hygiene.

### 7. Sample preparation

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Solid, semi-solid samples or highly viscous liquids must be diluted.

**Please note:** Always consider the dilution factors when calculating the results. For liquids with low viscosity, no dilution is required. The surfaces of meat and fish can also be tested directly.



# HygieneChek™ PLUS Dip-Slides

## 8. Test procedure

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### a) Surface sampling



Unscrew the container and take out the paddle. Don't touch the agar!



Kink the cap and press firmly **with both hands**, but take care not to put too much pressure on the surface.



Do not press the agar onto the surface with only one hand!



Place the paddle back into the container and close it tightly. Label the container showing the location, time and other sample data.



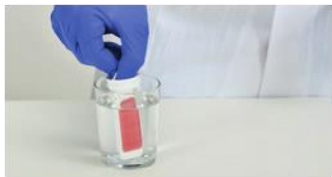
To avoid confusion when paddles with the same agar on both sides are used, the paddle tip is marked on one side with a dot.



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### b) Liquid testing

Unscrew the cap. Hold the paddle on the screw-cap and immerse the agar fully in the test liquid. The agar of the paddle has to be totally covered by the suspension or liquid. Drain off any excess liquid and remaining droplets on the terminal tip at the rim of the beaker glass or on absorbent paper.



### c) Staff hygiene

Hands should be tested frequently to ensure that they have been properly cleaned and disinfected by washing. For this, perform tests of the surfaces of fingers, skin and white coats.





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### d) Air sampling

To collect airborne bacteria, spores, molds and yeast, put the paddle on the magnetic clip provided by Romer Labs and attach the clip to any magnetic surface. The exposure time should be 30 min at minimum. To compare results, always sample at the same sampling sites for the same duration of time.



### e) Other options

The agar can be inoculated with swabs. The paddle can be used to spread colonies. Single colonies can also be picked from the agar for further differentiation.

## 9. Incubation

Open the screw-cap by a 3/4 turn to ventilate. Depending on the agar combination, the following incubation temperatures are recommended.

| Medium             | Incubation temp. | First reading of results after | Final results after |
|--------------------|------------------|--------------------------------|---------------------|
| TTC Total Count    | 30 – 35 °C       | 24 hours                       | 48 hours            |
| Coliforms          | 35 – 37 °C       | 24 hours                       | 48 hours            |
| Enterobacteriaceae | 35 – 37 °C       | 24 hours                       | 48 hours            |
| Yeasts and molds   | 20 – 30 °C       | 48 hours                       | 120 hours           |



## HygieneChek™ PLUS Dip-Slides

### 10. Results

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#### Total Count TTC (Agar is beige)

The medium does not contain any neutralizing agents and supports the growth of all bacteria, yeasts and molds. Most colonies appear red due to the addition of 0.01 % TTC (Triphenyl tetrazolium chloride).

#### Coliforms VRBL (Agar is red)

The medium is used for the selective detection of coliforms, including *E. coli*. Coliforms (*Escherichia*, *Enterobacter*, *Klebsiella*, and *Citrobacter*) can metabolize lactose in the medium. They appear as **red violet to mauve** colonies. All lactose-negative (which means non-coliform) Enterobacteriaceae appear **colorless**.

#### Enterobacteriaceae VRBD (Agar is red)

The medium is used for the selective detection of Enterobacteriaceae. Enterobacteriaceae metabolize glucose in the medium and appear as **pink, violet or violet-red** colonies. Colorless colonies are not members of the Enterobacteriaceae family.

#### Yeasts and Molds (Agar is creme)

The medium is used for the selective detection of yeasts and molds. Yeasts appear as small **white brown** colonies with a well defined outline. Molds grow in a filamentous shape. Colonies may be colored. They spread rapidly over the agar surface (looks like cotton flakes) and can occupy the whole container. In this case, do not open the container to avoid the spreading of fungal spores.





## HygieneChek™ PLUS Dip-Slides

### 11. Interpretation of results

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To better detect colorless transparent colonies, please also check the paddles laterally.

#### a) Colony counting from surface testing and air sampling

1. Assess the number of colonies (by counting or estimation)
2. There are several ways to record the results:
  - Divide the number of colonies by 10. This is the total number of microorganisms tested with regard to the surface of the paddle (10 cm<sup>2</sup>). The result is reported as cfu/cm<sup>2</sup>.
  - Report the total number of colonies per paddle.
  - We suggest the gradation of the cfu in the following categories:

| Number of colonies on the total count medium: cfu/cm <sup>2</sup> | Remarks  | Category |
|---|--|----------|
| 0 – 10  | Very slight to moderately contaminated, still acceptable | 1        |
| >10   | Not acceptable   | 2        |

| Number of colonies on the Enterobacteriaceae medium: cfu/cm <sup>2</sup> | Remark   | Category |
|--|--|----------|
| 0 – 1  | Very slight to moderately contaminated, still acceptable | 1        |
| >1   | Not acceptable   | 2        |



## HygieneChek™ PLUS Dip-Slides

### b) Colony counting for liquid sampling:

The limit of detection is  $10^2$  cfu/ml. This means that at least 100 microorganisms have to be present in 1 ml of an liquid sample before any colonies appear on the paddle. Please compare the paddle with the Result Interpretation Guide (on the back side of this package insert; also available as a separate sheet) to assess the microbiological status of the liquid.

| Item Number | HygieneChek™ PLUS Dip-Slides           | Agar Media Composition  | Color of Agar | Storage   |
|-------------|--|---|---------------|-----------|
| 10000232    | TOTAL COUNT TTC/<br>TOTAL COUNT TTC    | Tryptic Soy Agar + 0.01%<br>TTC/Tryptic Soy Agar +<br>0.01% TTC   | Beige/Beige   | 4 – 25 °C |
| 10000233    | TOTAL COUNT TTC/<br>COLIFORM           | Tryptic Soy Agar + 0.01%<br>TTC/Violet Red Bile Agar              | Beige/Red     | 4 – 25 °C |
| 10000234    | TOTAL COUNT TTC/<br>ENTEROBACTERIACEAE | Tryptic Soy Agar + 0.01%<br>TTC/Violet Red Bile<br>Glucose Agar   | Beige/Red     | 4 – 25 °C |
| 10000235    | TOTAL COUNT TTC/<br>YEAST and MOLD     | Tryptic Soy Agar +<br>0.01% TTC/Dichloran<br>Glycerin Agar (DG18) | Beige/Creme   | 4 – 25 °C |

## 12. Accessories for HygieneChek™ PLUS Dip-Slides

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**Thermocult**, mini-incubator.

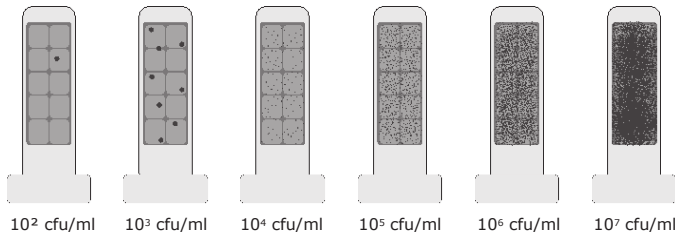
## 13. Disclaimer

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The contents of this package insert are correct to the best of our present knowledge. The package insert aims to inform about the product and its appropriate usage. It, however, does not guarantee certain properties or usage fields of application.

### Dipping into liquids

The limit of detection is  $10^2$  cfu/ml. This means that at least 100 microorganisms must be present in 1 ml of liquid sample before any colonies appear on the paddle. Compare your paddle with the pictures below for estimated values.



### Surface contact

For the evaluation of surface contact tests, count the colonies and divide the results by 10 to get the cfu/cm<sup>2</sup>, as the area of one paddle side is 10 cm<sup>2</sup>. Or just compare it with the pictures below. For selective agar HygieneChek™ PLUS Dip-Slides, count the colonies as specified in the package insert.

