Micro-B
LABORATORIO ANALISI CHIMICHE E MICROBIOLOGICHE

MICRO-B s.r.l.
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**Certificate n. 1704660-002** Asola, 23/11/2017

Client: BONASYSTEMS ITALIA SRL
Via Borgo S. Chiara, 29 – Torre di Mosto (VE)

**Sample:** 1704660-002
**Test run:** 17/11/2017
**Sample recording:** B ZERO PAVIMENTI
**Samples:** by customer
**Sampling method:** customer's care

**Sample arrival data:** 17/11/2017
**Test report:** 22/11/2017



# Measurement of antibacterial activity of antibacterial solution by bacterial strains contamination and superficial swab. Measurement of heavy metals.

## 1. TEST SCOPE

This method is applicable to many different materials that are supposed to have antibacterial activity and provides a quantitative measure of the effectiveness of such activities.

## 2. MICROORGANISM FOR INOCULATION

The microorganisms used for contaminations are:

✶ *Escherichia coli* ATCC 25922
✶ *Staphylococcus aureus* ATCC 6538

Standard lyophilized cultures of microorganism were used.
The bacterial inoculum size is about $10^6$ cfu / ml.

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## 3. CULTURE MEDIA

To perform the experimental test were used culture media, such as:

- sterile distilled water:
- Phosphate-buffered physiological saline (PBS) solution for the preparation of microbial suspensions of standard strains used and serial dilutions;
- Plate Count Agar (PCA) for the method of sowing in inclusion in the Petri dish.
- Specific neutralizing thinner for the final step of testing.
- Superficial swabs and 10x10cm sterile mask.

## 4. SAMPLE

- **1704660-002** B ZERO PAVIMENTI

## 5. TEST PERFORMANCE

Ten times surface treatment with B ZERO PAVIMENTI
as explained in the technical data sheet:

1- For better results, apply on dry surface.
2- Use it with a microfiber cloth.
3- Pour a volume of a cup of coffee every 5lt of water.
4- Finally allow the surface to dry.

↓

Surface contamination by bacterial strains

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B ZERO PAVIMENTI once surface treatment as explained in the technical data sheet.

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Swab the 10x10 cm surface 10 minutes after the treatment.

Inclusion in agar (PCA for bacterial cultures) by seeding the suspension buffer and subsequent decimal dilutions made in diluent.

Incubation of the plates at 30-35 ° C for 5 days.

Counting plate colonies.

**NB: each of the steps prior to inclusion in the agar was carried out in the dark.**

## 6. RESULTS

From the microbial count results obtained, the percentage of reduction with respect to the inoculum is calculated, and the related logarithmic reductions. Table 1 shows the values of the inoculations carried out at time T0. Table 2 shows the results obtained in the sample under analysis and the relative reduction percentages with respect to the inoculum. Table 3 instead shows the results obtained in the sample under analysis and the related logarithmic reductions with respect to the inoculum. The analytical results are intended to refer exclusively to the analysed samples received at the laboratory. This document cannot be reproduced even in partial form unless written approval by the Laboratory.

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**Table 1. TEST BLANK**

| Microrganism | Inoculoum (CFU/ml) |
|---|---|
| **S.aureus** | $6.7 \times 10^6$ Log = 6.83 |
| **E. coli** | $4.4 \times 10^6$ Log = 6.64 |

**• REDUCTION PERCENTAGE TABLE:**

**Table 2. SAMPLE 1704660-002** B ZERO PAVIMENTI

| Microrganism | CFU/ml | REDUCTION (%) |
|---|---|---|
| **S.aureus** | 0 | 100 |
| **E.coli** | 0 | 100 |

**• RELATED LOGARITHMIC REDUCTION TABLE:**

**Table 3. SAMPLE 1704660-002** B ZERO PAVIMENTI

| Microrganism | CFU/ml | REDUCTION (Log) |
|---|---|---|
| **S.aureus** | 0 | >5 |
| **E.coli** | 0 | <5 |

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## 6. DETERMINATION OF HEAVY METALS

In addition to verifying the antibacterial activity, an analysis was carried out in order to search for heavy metals, as can be seen from the following table:

**Table 4. SAMPLE 1704660-002** B ZERO PAVIMENTI

| Test | Results | Unit of measure |
|---|---|---|
| Arsenic | <1 | mg/Kg |
| Cadmium | <0,1 | mg/Kg |
| Cobalt | 0,24 | mg/Kg |
| Chromium (total) | <0,1 | mg/Kg |
| Chromium VI | <0,1 | mg/Kg |
| Nickel | <0,2 | mg/Kg |
| Lead | <1,5 | mg/Kg |
| Copper | <0,2 | mg/Kg |
| Zinc | 4,8 | mg/Kg |

## 7. CONCLUSIONS

As can be seen from the results obtained, no pathogens were found in the swabs carried out on the surface treated for 10 consecutive times with the product under analysis. Consequently, the product can be considered as an effective bactericide suitable for health facility and food companies

The values found by the heavy metal analysis are lower than the limit of quantification foreseen by the method in use by our Laboratory, except as regards Zinc and Cobalt which is present in very low concentration.

Micro-b s.r.l.
Technical Manager
Dott. Matteo Sarzi Amade'