# Microbe Investigations AG

# LS20-03086

Report date: November 12, 2020

Customer: [redacted]

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SWISS TECH INSIDE

**Microbe Investigations AG (MIS) is a spin-off company of ETH Zürich**

MIS provides microbiological testing services primarily for industrial customers assessing the characteristics of developmental products. MIS also provides a depth of expertise in fundamental aspects of microbiology gained throughout many years of world-leading research. Target customers are primarily companies working with antimicrobial treatments on textiles, plastics, and coatings.

More information: www.microbe-investigations.com

spinoff ETH Zürich

# Test report overview

| General Info | Name | Contact | Key Account Manager |
|---|---|---|---|
| Customer | [redacted] | [redacted] | R. Mundinger |
| Distributor | - | - | - |
| Brand owner | - | - | - |
| Brand label | - | Application at | Client |
| Reason for testing | Quality validation | Application by | Not specified |
| Effects | HeiQ Viroblock | Scale | 4 - production |

| Test methods carried out in this report | | |
|---|---|---|
| Effect / Property | Testing standard | Test parameter |
| Domestic laundering | ISO 6330:2013 | 4G: 40°C, gentle setting (wool silk synthetics) |
| Quantitative antibacterial test on textiles | ISO 20743:2013 | Bacterium: Staphylococcus aureus (ATCC 6538P) |
| Quantitative antiviral test on textiles | ISO 18184:2019 | Betacoronavirus 1, strain OC43 (ATCC VR-1558) |

**Test results:** Excellent - Perfect application // no adjustment on recipe or application needed

**Test summary / comments:**

- **In the test ISO 20743**, all the samples showed excellent antibacterial activity against ***Staphylococcus aureus***, initially and after 30 home launderings.
- **In the test ISO 18184**, all the unwashed samples showed excellent antiviral activity and all the 30 washed samples showed good antiviral activity against ***Beta Coronavirus (Strain: OC43)***.

## Samples, finishing process and textile information

| Sample | Sample description |
|---|---|
| 1 | 4430; NPJ03 30% |
| 2 | 13715; NPJ03 75 g/l |
| 3 | 61015; NPJ03 75 g/l |

| Recipe | Sample number | | |
|---|---|---|---|
| Product | 1 | 2 | 3 |
| Viroblock NPJ03 [%] | 30 | 75 | 30 |
| Substrates | 1 | 2 | 3 |
| Polyester [%] | 65 | 100 | 100 |
| Cotton [%] | 35 | | |
| Textile information | 1 | 2 | 3 |
| Weight [g/m2] | - | - | - |
| Construction | WOV | WOV | WOV |
| Structure | - | - | - |

*Legend:*

| *Construction process* | *Textile structure* |
|---|---|
| *WOV = Woven* | |

# Antibacterial Testing

| Recipe | Sample number | | | | | |
|---|---|---|---|---|---|---|
| Product | 1 | | 2 | | 3 | |
| Viroblock NPJ03 [%] | 30 | | 75 | | 30 | |
| ISO 6330 parameters | 1-1 | 1-2 | 2-1 | 2-2 | 3-1 | 3-2 |
| ISO 6330 4G | | 30 | | 30 | | 30 |
| Drying conditions | | A | | A | | A |

**ISO 20743: Staphylococcus aureus (ATCC 6538P)**

| Control | Intial | After 18 h |
|---|---|---|
| Log cfu | 4.25 | 6.72 |

| Sub-Samples | 1-1 | 1-2 | 2-1 | 2-2 | 3-1 | 3-2 |
|---|---|---|---|---|---|---|
| Log cfu Sample (staph) | 2.56 | 3.67 | 2.70 | 4.00 | 2.56 | 4.00 |
| Percent reduction Sample (staph) [%] | 99.993 | 99.913 | 99.991 | 99.811 | 99.993 | 99.811 |
| Log reduction Sample (staph) | 4.20 | 3.10 | 4.00 | 2.70 | 4.20 | 2.70 |
| Activity Sample (staph) | ++ | ++ | ++ | + | ++ | + |

## Antiviral Testing

| Recipe | Sample number | | | |
|---|---|---|---|---|
| Product | 2 | | 3 | |
| Viroblock NPJ03 [g/l] | 75 | | 30 | |
| ISO 6330 parameters | 2-1 | 2-2 | 3-1 | 3-2 |
| ISO 6330 4G | | 30 | | 30 |
| Drying conditions | | A | | A |

**ISO 18184: Betacoronavirus 1 (ATCC VR-1558)**

| Sub-Samples | 2-1 | 2-2 | 3-1 | 3-2 |
|---|---|---|---|---|
| lg(Va) (control, immediately) Betacoronavirus 1 | 7.20 | 7.20 | 7.34 | 7.34 |
| lg(Vc) (sample, after 2 hours) Betacoronavirus 1 | 3.75 | 4.85 | 3.33 | 4.91 |
| Antiviral activity Value Mv Betacoronavirus 1 | 3.50 | 2.40 | 4.00 | 2.40 |
| Percent reduction Betacoronavirus 1 [%] | 99.965 | 99.557 | 99.990 | 99.631 |
| Activity Betacoronavirus 1 | Pass | Pass | Pass | Pass |

## Test costs information (Pro-Forma invoice)

| Item | Price per item | No item | Costs |
|---|---|---|---|
| LIMS license + reporting | 250 | 1 | 250 |
| ISO 20743: Staphylococcus aureus (ATCC 6538P) | 150 | 6 | 900 |
| ISO 6330 4G (delicate) | 8 | 33 | 264 |
| ISO 18184: Betacoronvirus 1 | 2000 | 6 | 12000 |

Total value of this report: USD 13414.-