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|---|---|
| Work Order | 3109.6 |
| Setup-Code | 180612-10290-2801-03 |

# Test Report

# JIS Z 2801:2012 (Mod)

## Antimicrobial products – Test for antimicrobial activity and efficacy

## Test Object:

## Coated Leneta Foil vs. Listeria monocytogenes DSM 15675

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# Report on Findings

**Client:**
**Address:**
Nano-Care Deutschland AG
Alfred-Nobel-Straße 10
66793 Saarwellingen

**Work order no.:** 3109.6

**Test object:** Coated Leneta Foil vs. Listeria monocytogenes DSM 15675

**Sample description:** Coated Leneta Foil

**Date of receipt of sample:** 14.09.2018

**Type of test:** JIS Z 2801:2012 Antimicrobial products – Test for antimicrobial activity and Efficacy

**Test Germ:** Listeria monocytogenes DSM15675

**Test laboratory:** QualityLabs BT GmbH

**Address:** Neumeyerstrasse 46a
90411 Nuremberg, Germany

**Setup-Code:** 180612-10290-2801-03

**Sample material:** Leneta Foil

**No. of pages in report:** 7

**Report on findings to the client:**
**Place and date of preparation:** Nuremberg, 14.9.2018
**Recipient:** Nano-Care Deutschland AG

**Laboratory Director:** _____
Harald Gerauer, Laboratory Director
QualityLabs BT GmbH

**Released:** _____
Markus Zehe, Managing Director
QualityLabs BT GmbH

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## Declaration on Quality Assurance

This investigation was performed and supervised according to the standard operating procedure “SOP zu JIS Z 2801:2012 (Mod)" by QualityLabs BT GmbH. The laboratory and process are continually monitored by independent, external authorities, as well as by internal audits.

### Archiving

A copy of the test report, a protocol of the measurement as well as the accompanying correspondence and business records are archived by QualityLabs BT GmbH. The retention period is at least 10 years.

## Test description

Anti-bacterial activity is determined in accordance with a modified version of JIS Z 2801:2012.

During the test, a thin liquid-film containing the bacteria (1.25 x $10^4$ CFU / $cm^2$) is applied directly to the test sample (Standard: 5 cm x 5 cm). To avoid desiccation a foil (Standard: 4cm x 4cm, Stomacher Bags) is applied. Immediately after inoculation, the bacteria from the reference sample are separated from the sample and the enveloping foil surfaces using ultrasound and vortex devices and the number of viable germs (CFU – colony-forming units) is determined ($t_0$ value). A further set of reference samples and samples given anti-microbial treatment is incubated with bacteria in a liquid-film and the enveloping foil in a damp environment at 37°C. After 24 hours, the bacteria are separated from the sample surfaces using ultrasound and vortex devices and the number of viable germs is determined ($t_{24}$ value).

## Assessment of antimicrobial activity

A logarithmic germ reduction of **≥ 3 log scales** of the antimicrobial sample in comparison to the respective reference is used as assessment criterion to pass the antimicrobial test.

| Germ reduktion [log scales] | Antibacterial activity |
|---|---|
| < 3 | Not sufficient antimicrobial activity |
| ≥ 3 | Sufficient antimicrobial activity |

## References to Testconditions

| Testconditions | | |
|---|---|---|
| Sample size | 25 | $cm^2$ |
| Foil size | 16 | $cm^2$ |
| Volume Inoculum | 400 | µl |
| Sample cleaning | Isopropanol | - |

## References to deviations, preincubations, special test conditions

NONE

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## Test Results

| | Sample Name | Sample Code | $t_0$ (cells/cm$^2$) | | | $t_{24}$ (cells/cm$^2$) | | | Reduction [%] | Log Reduction |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Leneta-Folie P121-10 (Reference) | 102900806180001 | 1,3 x $10^5$ | 1,1 x $10^5$ | 1,4 x $10^5$ | 1,7 x $10^4$ | 2,9 x $10^4$ | 2,0 x $10^5$ | - | - |
| 2 | Liquid Guard clean + primer + wipe | 102900806180002 | | | | < 1,0 x $10^1$ | < 1,0 x $10^1$ | < 1,0 x $10^1$ | **> 99,99** | **> 4** |
| 3 | Liquid Guard pro +wipe | 102900806180003 | | | | < 1,0 x $10^1$ | < 1,0 x $10^1$ | < 1,0 x $10^1$ | **> 99,99** | **> 4** |

*see “Interpretation of Results”, page 6

| | |
|---|---|
| **Test strain** | *Listeria monocytogenes DSM15675* |
| **Initial cell count inoculum / cm$^2$** | **1.25 x $10^4$** |
| **Initials of the editor** | OS |
| **Measurement ended on** | 18.06.2018 |

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## Comments on test objects

NONE

## Interpretation of the results based on the measurements

NONE

**Editor:** Mr. Shendi ____ **Crosschecked:** Mr.Zehe ____

## References

JIS Z 2801:2012 Antimicrobial products – Test for antimicrobial activity and efficacy