

|             |                       |
|-------------|-----------------------|
| Order       | 3485.2                |
| Measurement | 191203-10313-22196-02 |



## Test Report

### ISO 22196 (Mod)

Measurement of antibacterial activity on plastic surfaces

#### **Test object:**

*Thermalife Interior Anti-Microbial  
against Escherichia coli DSM 1576*

|             |                       |
|-------------|-----------------------|
| Order       | 3485.2                |
| Measurement | 191203-10313-22196-02 |

## Test Report ISO 22196 (Mod)

**Client:** Thermalife mbH

**Address:** Am Grarock 3  
33154 Salzkotten

**Order number:** 3485.2

**Test object:** Thermalife Interior Anti-Microbial against *Escherichia coli* DSM 1576

**Sample description:** Wall paint

**Sample receipt date:** 02.12.2019

**Type of test:** ISO 22196-2007: Measurement of antibacterial activity on Plastic surfaces

**Test germ:** *Escherichia coli* DSM1576 ATCC8739 ISML CC 02/023

**Test laboratory:** QualityLabs BT GmbH

**Address:** Neumeyerstraße 46a  
90411 Nürnberg

**Measurement:** 191203-10313-22196-02

**Sample material:** n.b.

**Number of pages:** 7

**Test report to the client:** **Place and date of completion:** Nuremberg, 06.12.2019  
**Recipient:** MIG mbH

**Laboratory management:** \_\_\_\_\_  
Harald Gerauer  
Laboratory Manager  
QualityLabs BT GmbH

**Released:** \_\_\_\_\_  
Markus Zehe  
Managing Director  
QualityLabs BT GmbH

|             |                       |
|-------------|-----------------------|
| Order       | 3485.2                |
| Measurement | 191203-10313-22196-02 |

---

## Declaration on quality assurance

This test was conducted and monitored in accordance with the standard operating protocol "SOP to ISO 22196 (Mod)" of QualityLabs BT GmbH. Laboratory and process are continuously monitored by independent external bodies and by internal audits.

## Archiving

A copy of the test report, a protocol of the measurement and related correspondence and commercial documents are archived by QualityLabs BT GmbH. The retention period is at least 10 years.

## Test description

The antibacterial activity is determined according to a modified version of ISO 22196.

When carrying out the test, a thin liquid film containing the bacteria ( $1.25 \times 10^4$  / cm<sup>2</sup>) is applied directly to the test specimen (5 cm x 5 cm). A film (4 cm x 4 cm) is then applied (Stomacher-Bags) to prevent drying out. Immediately after inoculation, the bacteria are removed from the test specimen surfaces and the covering film by means of ultrasound and vortexing from the zero sample and the bacterial count (CFU), colony-forming unit) is determined (t<sub>0</sub> value). A further set of zero specimens and antimicrobially equipped specimens are incubated with bacteria in the liquid film (with covering foil) in a moist environment at 37°C. After at least 24h, surviving bacteria are removed from the specimen surfaces and the covering film by means of ultrasound and vortexing and the bacterial count is determined (t<sub>24</sub> value).

|             |                       |
|-------------|-----------------------|
| Order       | 3485.2                |
| Measurement | 191203-10313-22196-02 |

## Evaluation of antimicrobial activity

The evaluation criterion for passing the antimicrobial test is a logarithmic reduction of the antimicrobial sample in comparison to the corresponding reference sample of **≥ 3 log levels**.

| Germ reduction [log levels] | Evaluation                           |
|-----------------------------|--------------------------------------|
| < 3                         | No sufficient antimicrobial activity |
| ≥ 3                         | Sufficient antimicrobial activity    |

|             |                       |
|-------------|-----------------------|
| Order       | 3485.2                |
| Measurement | 191203-10313-22196-02 |

### Information on test conditions

| Test conditions    |     |                 |
|--------------------|-----|-----------------|
| Specimen size      | 25  | cm <sup>2</sup> |
| Film size          | 16  | cm <sup>2</sup> |
| Volume of inoculum | 400 | μl              |
| Specimen cleanup   | -   | -               |

### Information on deviations, pre-incubations, special test conditions

NONE

|             |                       |
|-------------|-----------------------|
| Order       | 3485.2                |
| Measurement | 191203-10313-22196-02 |

## Test results

|   | Specimen name                       | Specimen code   | $t_0$ [cells/cm <sup>2</sup> ] |                       |                       | $t_{24}$ [cells/cm <sup>2</sup> ] |                         |                         | Reduction [%] | Log reduction        |
|---|-------------------------------------|-----------------|--------------------------------|-----------------------|-----------------------|-----------------------------------|-------------------------|-------------------------|---------------|----------------------|
| 1 | Leneta film                         | 103130212190001 | 6.9 x 10 <sup>4</sup>          | 3.4 x 10 <sup>4</sup> | 7.6 x 10 <sup>4</sup> | 1.8 x 10 <sup>5</sup>             | 2.1 x 10 <sup>5</sup>   | 2.3 x 10 <sup>5</sup>   | -             | <b>Zero specimen</b> |
|   |                                     |                 |                                |                       |                       |                                   |                         |                         |               |                      |
| 2 | Thermalife Interior                 | 103130212190002 | 1.2 x 10 <sup>5</sup>          | 2.7 x 10 <sup>4</sup> | 8.0 x 10 <sup>4</sup> | < 1.0 x 10 <sup>1</sup>           | < 1.0 x 10 <sup>1</sup> | < 1.0 x 10 <sup>1</sup> | > 99.99       | > 4                  |
| 3 | Thermalife Interior Anti- Microbial | 103130212190003 |                                |                       |                       | < 1.0 x 10 <sup>1</sup>           | < 1.0 x 10 <sup>1</sup> | < 1.0 x 10 <sup>1</sup> | > 99.99       | > 4                  |

\*refer to „Metrological interpretation“ S. 6

|                                                           |                                                                           |
|-----------------------------------------------------------|---------------------------------------------------------------------------|
| Test strain                                               | <i>Escherichia coli</i> DSM1576 ATCC8739 ISML CC 02/023                   |
| Initial number of germs in the inoculum / cm <sup>2</sup> | <b>1.25 x 10<sup>4</sup></b> (corresponding to 5.0 x 10 <sup>5</sup> /ml) |
| Name abbreviation of the operator                         | JJ                                                                        |
| Measurement completed on                                  | 06.12.2019                                                                |

|             |                       |
|-------------|-----------------------|
| Order       | 3485.2                |
| Measurement | 191203-10313-22196-02 |

---

### Metrological interpretation of the results

The zero sample provided by the client (**Thermalife Interior, sample code: 103130212190002**) showed an antimicrobial effect, as did the sent active sample (**Thermalife Interior Anti-Microbial, sample code: 103130212190003**). As an additional antimicrobial control, Leneta film was tested, which as expected showed no effect.

**Test conducted by:** Ms. Jovanovic\_\_\_\_\_

**Verified by:** Mr. Zehe\_\_\_\_\_

### References

ISO 22196-07: Plastics — Measurement of antibacterial activity on plastics surfaces