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|---------------------------|--|------------------------|---|
| Customer Name | Ludvig Svensson | | |
| Customer Address | Bangatan 8 511 82 Kinna Sweden | | |
| Contact | Caroline Hultberg | | |
| Test Requested | Determination of antibacterial activity of textile products according to ISO 20743:2021 (Absorption method) | | |
| Sample Description | | Number Received | |
| | Trevira CS treated with NordShield BioLayr | Treated | 1 |
| | Untreated control | Non-treated | 1 |
| Date of Receipt | 21 June 2023 | | |
| ASC Code | ASC004407 | | |
| Commencement Date | 04 July 2023 | | |
| Report Number | C567 | | |
| Report Date | 07 July 2023 | | |

1. Purpose

To determine, as per the standard ISO 20743:2021 [1], the antibacterial activity of a textile product against *Staphylococcus aureus* after 24 h incubation.

2. Sample Description

| Table 2.1. Description of samples | | |
|-----------------------------------|---|--|
| | Test (treated) specimens | Control (non-treated) fabric |
| Type | Trevira CS treated with NordShield BioLayr Supplied by Ludvig Svensson | Untreated control Supplied by Ludvig Svensson |
| Weight | 0.4 g ± 0.05g | 0.4 g ± 0.05g |
| Shape | Square | Square |

3. Procedure

The procedure was performed according to ISO 20743:2021 [1] and under the conditions summarised in Table 3.1.

| Table 3.1. Test set-up details | | |
|--------------------------------|---------------------------------|--|
| ISO 20743 methods used | Inoculation method | absorption method <i>(test bacterial suspension inoculated directly onto specimens)</i> |
| | Quantitative measurement method | colony plate count method |
| Test bacteria suspension | Name of test bacteria | <i>Staphylococcus aureus</i> |
| | Strain number | ATCC 6538 |
| | Quantity inoculated | 0.2 ml |
| | Concentration of inoculum | 1.62×10^5 CFU/ml |
| Incubation time | | 24 h |
| Volume of sample plated | | 1 ml |

4. Results

4.1. Antibacterial activity (A) calculation

The logarithmic values of the number of viable bacteria (colony forming units per millilitre) recovered from the specimens immediately after inoculation and after 24 hours of incubation are summarised in Table 4.1. All calculations were performed according to the formulae in ISO 20743:2021 [1].

| Table 4.1. Summary of Results for 24 h <i>S. aureus</i> | | |
|--|--|--------------------------|
| Sample | | Log ₁₀ values |
| the common logarithm of arithmetic average of the numbers of bacteria obtained from three control specimens after incubation | $\lg C_t$ | 8.6 |
| the common logarithm of arithmetic average of the numbers of bacteria obtained from three control specimens immediately after inoculation | $\lg C_0$ | 4.8 |
| the common logarithm of arithmetic average of the numbers of bacteria obtained from three antibacterial test specimens after incubation | $\lg T_t$ | 4.6 |
| the common logarithm of arithmetic average of the numbers of bacteria obtained from three antibacterial test specimens immediately after inoculation | $\lg T_0$ | 4.0 |
| F | <i>the growth value on the control fabric</i> $(\lg C_t - \lg C_0)$ | = 3.8 |
| G | <i>the growth value on the test fabric</i> $(\lg T_t - \lg T_0)$ | = 0.6 |
| A | <i>the antibacterial activity value</i> $(F-G)$ | = 3.2 |

The **antibacterial activity (A)** refers to the activity of an antibacterial finish used to prevent or mitigate the growth of bacteria, to reduce the number of bacteria, or to kill bacteria. It is calculated as the difference, after inoculation and incubation, in the log number of viable bacteria recovered from the antibacterial-treated product versus the number recovered from the untreated control fabric.

According to ISO 20743:2021 [1], the efficacy of antibacterial property of the test fabric can be considered as shown in Table 4.2.

| Table 4.2 Efficacy of antibacterial property | |
|--|--------------------------|
| Efficacy of antibacterial property | Antibacterial activity A |
| Significant | ≥2 to <3 |
| Strong | ≥3 |

4.2. Judgement of test effectiveness

When the conditions specified in ISO 20743:2021 [1] and summarised in Table 4.3 are satisfied, the test is judged to be effective. When the test is judged to be ineffective, a retest shall be carried out.

| Table 4.3. Judgement of ISO 20743 test effectiveness | | | |
|--|----------------|---------------|--------------|
| Condition | Requirement | Result | Criteria Met |
| Test inoculum concentration | 1E+05 to 3E+05 | 1.62E+05 | Yes |
| The difference (in common logarithm) in extremes of the number of bacteria for the three <i>control specimens</i> immediately after inoculation and after incubation | <1 | 0.60 and 0.11 | Yes |
| The growth value obtained in the plate count method | ≥1 | 3.82 | Yes |
| The difference (in common logarithm) in extremes of the number of bacteria for the three <i>test specimens</i> immediately after inoculation and after incubation | <2 | 0.09 and 0.26 | Yes |

5. References

- [1]. BS ISO 20743:2021 Textiles – Determination of antibacterial activity of textile products.

