

Work Order	2942.1
Setup-Code	170927-10279-2801-01



Test Report

JIS Z 2801:2012 (Mod)

Antimicrobial products – Test for antimicrobial activity and efficacy

Test Object:

Unicoil coated metal plates against S. aureus DSM 799

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Report on Findings

Client: Unicoil Universal Metal Coating Company Limited
Address: PO Box 11606
 31961 Al-Jubail Industrial City

Work order no.: 2942.1

Test object: Unicoil coated metal plates against S. aureus DSM 799

Sample description: Coated metal plates

Date of receipt of sample: Sep-21-2017

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

Test Germ: Staphylococcus aureus DSM799 ATCC6538

Test laboratory: QualityLabs BT GmbH

Address: Neumeyerstrasse 46a
 90411 Nuremberg, Germany

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Sample material: n.d.

No. of pages in report: 7

Report on findings to the client: Limited
Place and date of preparation: Nuremberg, Oct-04-2017
Recipient: Unicoil Universal Metal Coating Company

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

Released: _____
 Dr. Jörg Brünke, 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 (1.25×10^4 CFU / cm²) 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).

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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

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References to Testconditions

Testconditions		
Sample size	25	cm ²
Foil size	16	cm ²
Volume Inoculum	400	μl
Sample cleaning	-	-

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	391 Cloud White (Regular)	102792609170001	1.5 x 10 ⁴	1.4 x 10 ⁴	1.6 x 10 ⁴	1.6 x 10 ⁴	2.7 x 10 ⁴	2.6 x 10 ⁴	-	-
2	1326 Antibacterial Cloud White	102792609170002				<1 x 10 ¹	<1 x 10 ¹	<1 x 10 ¹	>99.99	>4
3	HDG Antibacterial (metallic silver)	102792609170003	8.6 x 10 ³	9.4 x 10 ³	8.6 x 10 ³	<1 x 10 ¹	<1 x 10 ¹	<1 x 10 ¹	-	-
4	HDG Antibacterial (metallic blue)	102792609170004				<1 x 10 ¹	<1 x 10 ¹	<1 x 10 ¹	-	_*

*see "Interpretation of Results", page 6

Test strain	<i>Staphylococcus aureus</i> DSM799 ATCC6538
Initial cell count inoculum / cm ²	1.25 x 10 ⁴
Initials of the editor	HG
Measurement ended on	Sep-29-2017

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Comments on test objects

NONE

Interpretation of the results based on the measurements

Because there are no vital cells to the time t_{24} at sample 3 **HDG Antibacterial (metallic silver) (102792609170003)**, sample 4 **HDG Antibacterial (metallic blue) (102792609170004)** could not be evaluated.

Editor: Mr. Gerauer _____

Crosschecked: Mrs. Vu-Dinh _____

References

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