

# Test Report

Client RAYCOP JAPAN INC.

General Incorporated Foundation,  
Japan Food Research Laboratories  
52-1, Motoyoyogi-cho, Shibuya-ku,  
Tokyo, JAPAN

Specimen VCEN-100

A company seal

Title Sterilization effect test

Here is a report on test results of the above specimen that was submitted to our center on March 22, 2017.

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General Incorporated Foundation, Japan Food Research Laboratories

## Sterilization effect test

### 1. Client

RAYCOP JAPAN INC.

### 2. Specimen

VCEN-100

A bed pad [outer fabric: polyester 80%, cotton 20%; inner cotton: polyester 100%] and a sheet [an attached white cotton for test (unbleached muslin No. 3), JIS Test Fabric-Cotton] were provided by the client.

### 3. Test summary

Samples were prepared by dropping bacterial suspension for a test on the location of the sheet that the client specified with or without incubation for 5 or 10 minutes at room temperature. The number of living bacteria in the sample was measured after applying the specimen to the sample under the condition specified by the client.

### 4. Test results

Results are indicated in Table 1.

Plates for measuring the number of living bacteria after culture are shown in pictures 1 to 42.

Table 1-1 Results of the measurement of the number of living bacteria in samples

Test Bacteria	Sample	Classification	Application duration	The number of living bacteria (/cells)
<i>E. coli</i>	No incubation	Before application		$2.4 \times 10^5$
			about 2 seconds	$2.0 \times 10^5$
		After specimen application*	about 5 seconds	$5.0 \times 10^5$
			about 10 seconds	$2.1 \times 10^5$
	5 minutes incubation	Before application		$3.2 \times 10^9$
			about 2 seconds	$3.0 \times 10^5$
		After specimen application *	about 5 seconds	$1.5 \times 10^5$
			about 10 seconds	$1.3 \times 10^5$
	10 minutes incubation	Before application		$1.7 \times 10^9$
			about 2 seconds	$7.6 \times 10^4$
		After specimen application*	about 5 seconds	$6.4 \times 10^4$
			about 10 seconds	$1.2 \times 10^5$
<i>S. aureus</i>	No incubation	Before application		$5.5 \times 10^9$
			about 2 seconds	$8.9 \times 10^5$
		After specimen application*	about 5 seconds	$5.7 \times 10^5$
			about 10 seconds	$7.6 \times 10^5$
	5 minutes incubation	Before application		$7.2 \times 10^9$
			about 2 seconds	$5.1 \times 10^5$
		After specimen application*	about 5 seconds	$5.5 \times 10^5$
			about 10 seconds	$3.5 \times 10^5$
	10 minutes incubation	Before application		$6.5 \times 10^9$
			about 2 seconds	$2.3 \times 10^5$
		After specimen application*	about 5 seconds	$5.1 \times 10^5$
			about 10 seconds	$4.3 \times 10^5$

Sample: Samples were prepared by covering a bed pad with a sheet and dropping 80  $\mu$ l (10  $\mu$ l x 8 drops) of bacterial suspension for a test on the location of the sheet that the client specified with or without incubation for 5 or 10 minutes at room temperature.

Operating condition: only aspiration

\*The application was performed so that a suction nozzle on the specimen was located just above the location where the bacterial suspension on the sample was inoculated.

Table 1-2 Results of the measurement of the number of living bacteria in samples

Test Bacteria	Sample	Classification	Application condition	The number of living bacteria (/cells)
<i>E. coli</i>	No incubation	Before application		$4.0 \times 10^9$
			2 round trips	20
		After specimen application*	5 round trips	<10
	5 minutes incubation	Before application		$3.9 \times 10^9$
			2 round trips	$1.1 \times 10^2$
		After specimen application*	5 round trips	<10
	10 minutes incubation	Before application		$1.6 \times 10^9$
			2 round trips	10
		After specimen application*	5 round trips	<10
	No incubation	Before application		$5.5 \times 10^9$
			2 round trips	$5.1 \times 10^3$
		After specimen application*	5 round trips	<10
<i>S. aureus</i>	5 minutes incubation	Before application		$3.9 \times 10^9$
			2 round trips	$3.5 \times 10^2$
		After specimen application*	5 round trips	<10
	10 minutes incubation	Before application		$4.5 \times 10^9$
			2 round trips	<10
		After specimen application*	5 round trips	<10

Sample: Samples were prepared by covering a bed pad with a sheet and dropping 80  $\mu$ l (10  $\mu$ l x 8 drops) of bacterial suspension for a test on the location of the sheet that the client specified with or without incubation for 5 or 10 minutes at room temperature.

Operating condition: aspiration + UV lamp

<10: not detected

\*Specimen was placed on a sample and a speed specified by the client (about 8 cm/second) was used for the movement.

## 5. Test method

### 1) Test bacteria

*Escherichia coli* NBRC3972 (*E. coli*)

*Staphylococcus aureus* subsp. *aureus* NBRC12732 (*S. aureus*)

### 2) Medium for measuring the number of bacteria and culture condition

Standard agar medium [Eiken chemical Co., Ltd.], 35°C ±1°C, for 2 days

### 3) Preparation of the test bacterial suspension

After test bacteria were cultured on a normal agar medium [Eiken chemical Co., Ltd.] at 35°C ±1°C for 18 to 24 hours, the number of bacteria was adjusted to about 10<sup>6</sup> cells/ml by floating in purified water.

### 4) Sample preparation

Samples were prepared by covering a bed pad [outer fabric: polyester 80%, cotton 20%; inner cotton: polyester 100%] with a sheet [an attached white cotton for a test (unbleached muslin No. 3), JIS Test Fabric-Cotton] which was high-pressure steam sterilized (121°C for 15 minutes), and by dropping 80 µl (10 µl x 8 drops) of bacterial suspension for a test on the location of the sheet that the client specified with or without incubation for 5 or 10 minutes at room temperature.

### 5) Testing operation

After applying the specimen to the sample under the condition specified by the client, a region of about 15 cm x 15 cm of the sample, that included a spot where the bacterial suspension for the test was dropped, was cut out and washed out with 10 mL of SCDLP medium [Nihon Pharmaceutical Co., Ltd.]. The number of living bacteria in this washout fluid was measured by the pour plate culture method using a medium for measuring the number of bacteria and it was converted to a number per sample

Samples where a specimen was not applied were also tested in the same manner, and they were called “before application.”



Picture 1 *E. coli* No incubation

Before application: only aspiration  
(Washout fluid 1 mL)



Picture 2 *E. coli* No incubation

After specimen application: only aspiration, for about 2 seconds  
(Washout fluid 1 mL)



Picture 3 *E. coli* No incubation

After specimen application: only aspiration, for about 5 seconds  
(Washout fluid 1 mL)



Picture 4 *E. coli* No incubation

After specimen application: only aspiration, for about 10 seconds  
(Washout fluid 1 mL)



Picture 5 *E. coli* 5 minutes incubation

Before application: only aspiration  
(Washout fluid 1 mL)



Picture 6 *E. coli* 5 minutes incubation

After specimen application: only aspiration, for about 2 seconds  
(Washout fluid 1 mL)



Picture 7 *E. coli* 5 minutes incubation

After specimen application: only aspiration, for about 5 seconds  
(Washout fluid 1 mL)



Picture 8 *E. coli* 5 minutes incubation

After specimen application: only aspiration, for about 10 seconds  
(Washout fluid 1 mL)



Picture 9 *E. coli* 10 minutes incubation

Before application: only aspiration  
(Washout fluid 1 mL)



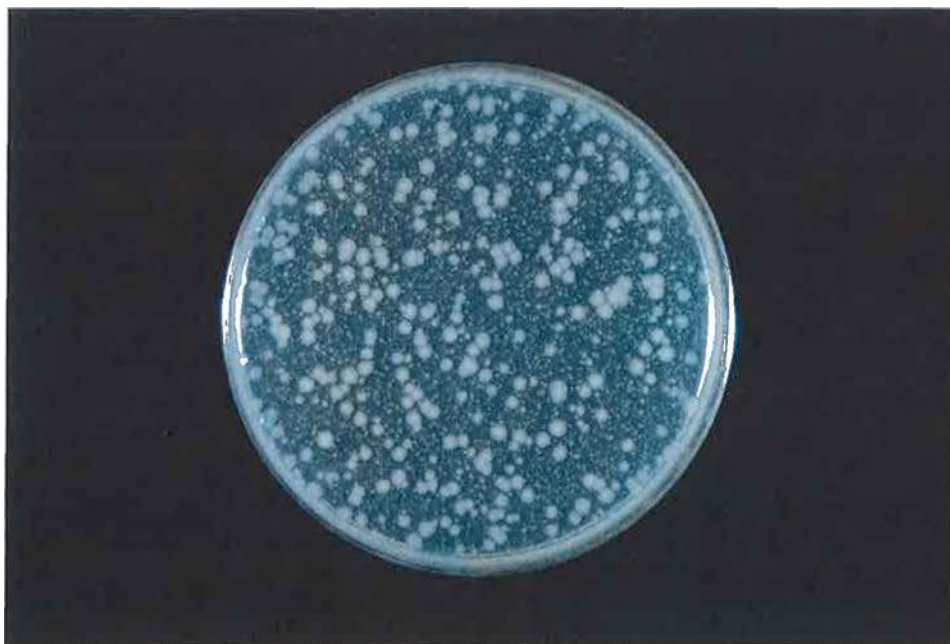
Picture 10 *E. coli* 10 minutes incubation

After specimen application: only aspiration, for about 2 seconds  
(Washout fluid 1 mL)



Picture 11 *E. coli* 10 minutes incubation

After specimen application: only aspiration, for about 5 seconds  
(Washout fluid 1 mL)



Picture 12 *E. coli* 10 minutes incubation

After specimen application: only aspiration, for about 10 seconds  
(Washout fluid 1 mL)



Picture 13 *S. aureus* No incubation  
Before application: only aspiration  
(Washout fluid 1 mL)



Picture 14 *S. aureus* No incubation  
After specimen application: only aspiration, for about 2 seconds  
(Washout fluid 1 mL)



Picture 15 *S. aureus* No incubation

After specimen application: only aspiration, for about 5 seconds  
(Washout fluid 1 mL)



Picture 16 *S. aureus* No incubation

After specimen application: only aspiration, for about 10 seconds  
(Washout fluid 1 mL)



Picture 17 *S. aureus* 5 minutes incubation

Before application: only aspiration

(Washout fluid 1 mL)



Picture 18 *S. aureus* 5 minutes incubation

After specimen application: only aspiration, for about 2 seconds

(Washout fluid 1 mL)



Picture 19 *S. aureus* 5 minutes incubation  
After specimen application: only aspiration, for about 5 seconds  
(Washout fluid 1 mL)



Picture 20 *S. aureus* 5 minutes incubation  
After specimen application: only aspiration, for about 10 seconds  
(Washout fluid 1 mL)



Picture 21 *S. aureus* 10 minutes incubation

Before application: only aspiration

(Washout fluid 1 mL)



Picture 22 *S. aureus* 10 minutes incubation

After specimen application: only aspiration, for about 2 seconds

(Washout fluid 1 mL)



Picture 23 *S. aureus* 10 minutes incubation

After specimen application: only aspiration, for about 5 seconds  
(Washout fluid 1 mL)



Picture 24 *S. aureus* 10 minutes incubation

After specimen application: only aspiration, for about 10 seconds  
(Washout fluid 1 mL)



Picture 25 *E. coli* No incubation

Before application: aspiration + UV lamp

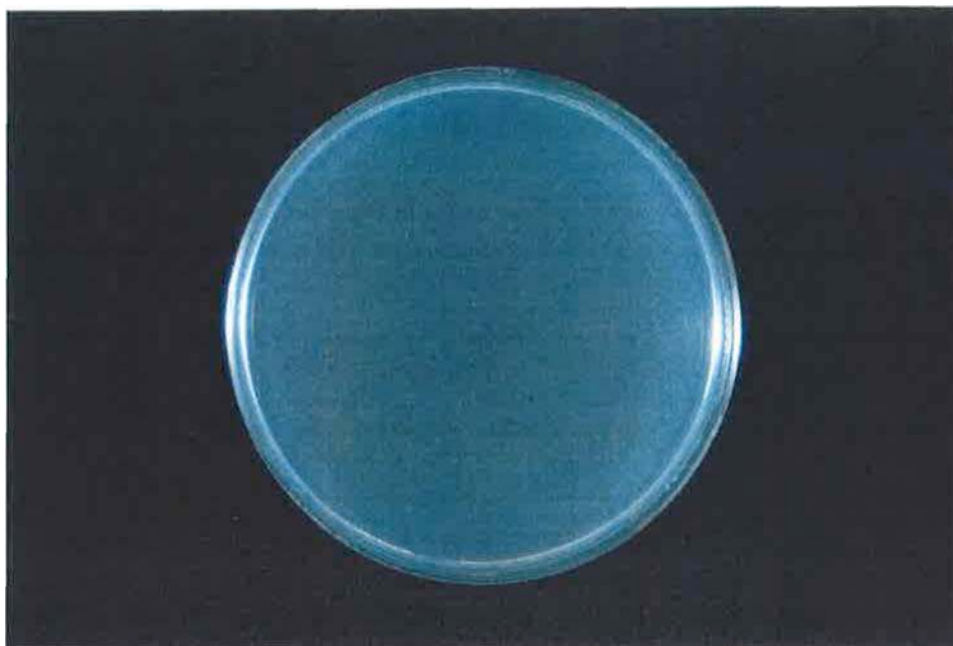
(Washout fluid 1 mL)



Picture 26 *E. coli* No incubation

After specimen application: aspiration + UV lamp, 2 round trips

(Washout fluid 1 mL)



Picture 27 *E. coli* No incubation

After specimen application: aspiration + UV lamp, 5 round trips  
(Washout fluid 1 mL)



Picture 28 *E. coli* 5 minutes incubation

Before application: aspiration + UV lamp  
(Washout fluid 1 mL)



Picture 29 *E. coli* 5 minutes incubation

After specimen application: aspiration + UV lamp, 2 round trips  
(Washout fluid 1 mL)



Picture 30 *E. coli* 5 minutes incubation

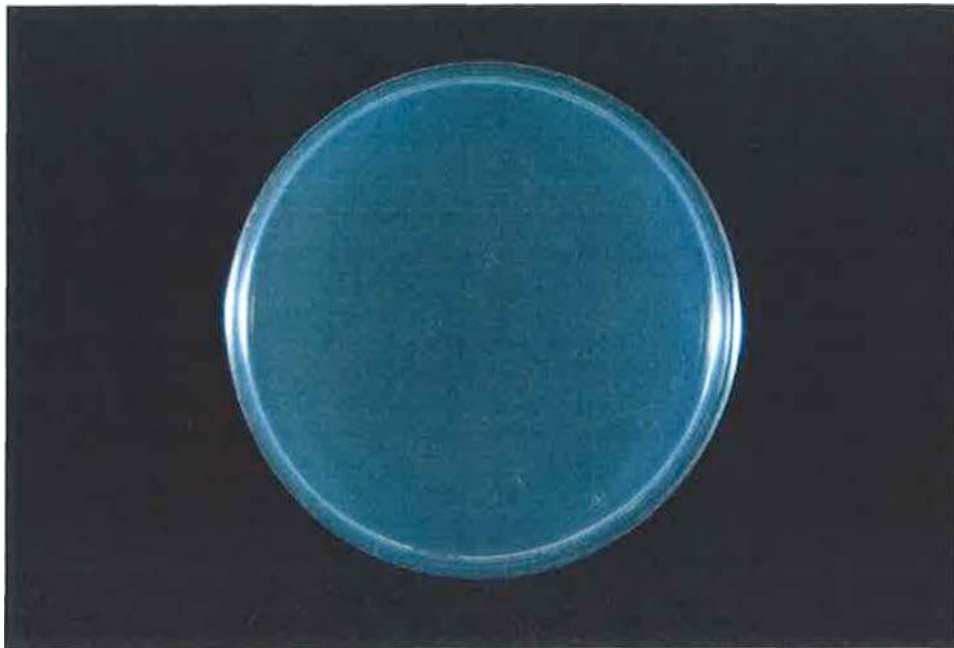
After specimen application: aspiration + UV lamp, 5 round trips  
(Washout fluid 1 mL)



Picture 31 *E. coli* 10 minutes incubation  
Before application: aspiration + UV lamp  
(Washout fluid 1 mL)



Picture 32 *E. coli* 10 minutes incubation  
After specimen application: aspiration + UV lamp, 2 round trips  
(Washout fluid 1 mL)



Picture 33 *E. coli* 10 minutes incubation

After specimen application: aspiration + UV lamp, 5 round trips  
(Washout fluid 1 mL)



Picture 34 *S. aureus* No incubation

Before application: aspiration + UV lamp  
(Washout fluid 1 mL)



Picture 35 *S. aureus* No incubation

After specimen application: aspiration + UV lamp, 2 round trips  
(Washout fluid 1 mL)



Picture 36 *S. aureus* No incubation

After specimen application: aspiration + UV lamp, 5 round trips  
(Washout fluid 1 mL)



Picture 37 *S. aureus* 5 minutes incubation  
Before application: aspiration + UV lamp  
(Washout fluid 1 mL)



Picture 38 *S. aureus* 5 minutes incubation  
After specimen application: aspiration + UV lamp, 2 round trips  
(Washout fluid 1 mL)



Picture 39 *S. aureus* 5 minutes incubation

After specimen application: aspiration + UV lamp, 5 round trips

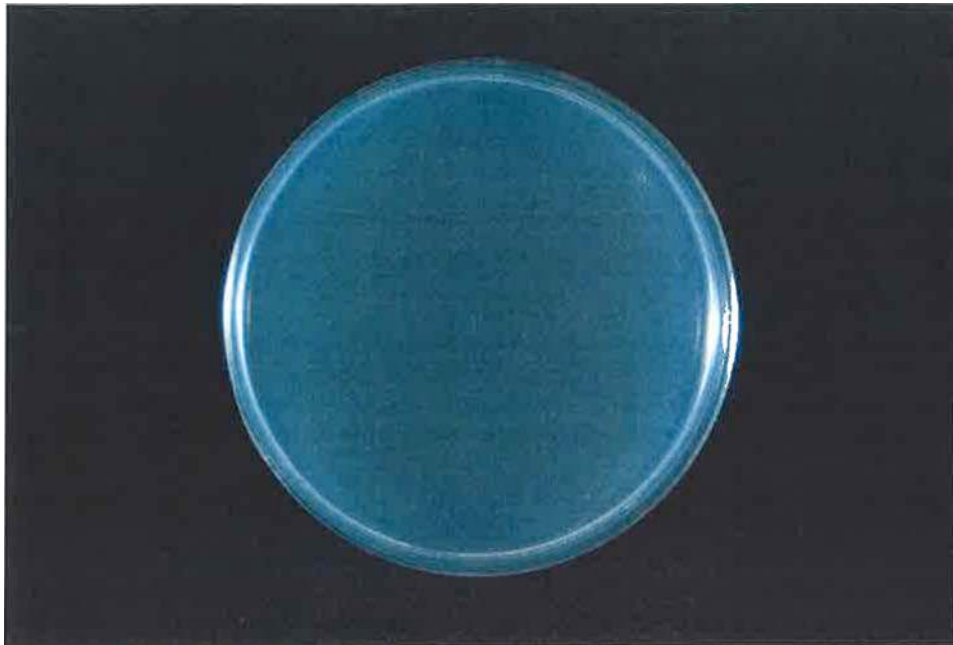
(Washout fluid 1 mL)



Picture 40 *S. aureus* 10 minutes incubation

Before application: aspiration + UV lamp

(Washout fluid 1 mL)



Picture 41 *S. aureus* 10 minutes incubation

After specimen application: aspiration + UV lamp, 2 round trips  
(Washout fluid 1 mL)



Picture 42 *S. aureus* 10 minutes incubation

After specimen application: aspiration + UV lamp, 5 round trips  
(Washout fluid 1 mL)

Concluded.