

# INSTITUT PASTEUR

## Report on sterilization tests on the device Sterilite AF 455

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### Description

The device we received is a Sterilite® AF 455 equipped with four U.V.C. Germicidal lamps at 257 nanometer and a power of 55 Watts each.

The device has a nice design with a total cover of both the germicidal lamps and the tangential fan. The device has an inlet opening at the bottom and an outlet opening at the top. The equipment dimensions are 1100 x 400 x 95 mm. And its sterilization capacity is 120 m<sup>3</sup>/hr.

### Methods

A) We have installed the device Sterilite® in a totally closed room where germs' quantity has been measured before starting the device. Initially, the capsules stay opened all night long, for 18 hours, with no air movement inside the room. After that time, they have been incubated at 30°C for 48 hours.

Results are shown in column "A".

B) Two cages of living cavies have been placed in the room for 48 hours and during the last 18 hours some Petri's capsules have been place in the same positions of point "A". The capsules have been incubated for 48 hours at 30°C. After that time, the bacteria colonies have been counted.

Results are shown in column "B".

C) An identical experience has been carried on while Sterilite® was in operation during the last 12 hours of the capsules exposure. After this time, the capsules have been

closed and incubated at 30°C. After 48 hours the bacteria colonies have been counted.

Results are shown in column "C" and compared with "A" and "B" ones.

D) A second sieres of tests has been carried on by contaminating the room by means of an aerosol containing environmental bacacteria and by isolating, once again, the room. D1= *Escherichia coli*, D2= *Staphylococcus Aureus*, D3= *Pseudomonas Aeruginosa*, and after that combined: D1 + D2 + D3 = D4.

20 ml of every germ has been singularly diffused by means of the aerosol with concentrations of 1000 germs/ml. After that D1+D2+D3 have been diffused in combination by aerosol = D4. The capsules have been opened 30 minutes after the aerosol and closed again after 48 hours.

Results are shown as D1, D2, D3 and in combination as D4.

E) The Sterilite® device has been put in operation 30 minutes after the aerosol completion. The opened capsules have been closed after 18 hours.

Results are shown in columns E1, E2, E3 and E4.

### **Materials**

The room where the tests have been carried out is a totally closed room furnished with a germicidal U.V. device. The room has a length of 2,80 m, a width of 1,70 m and a height of 3 m (see the plant).

In this room have been placed several devices to reduce the cubic volume. The capsules layout is shown in the plant.

### **Capsule Position**

- |      |  |
|------|--|
| N. 1 | 1 meter from the device 80 cm on the left below the device outlet. |
| N. 2 | In front of the device, 80 cm below the outlet branch.             |
| N. 3 | 80 cm below the right outlet branch.                               |
| N. 4 | 80 cm on the right at the outlet branch level.                     |
| N. 5 | 120 cm on the right side of the device.                            |
| N. 6 | 50 cm far from the device, 20 cm from the air inlet branch.        |
| N. 7 | 80 cm on the right, 1 meter high behind the device                 |
| N. 8 | Behind the device, 1,5 m. far away.                                |

## Results

(In colonies per capsule)

	A	B	C	
Capsule 1	9 + 1 M	8 + 13 M	0	M = Mushroom
Capsule 2	13 + 1 M	3 + 1 M	0	
Capsule 3	9 + 1 M	7 + 2 M	1 M	
Capsule 4	14 + 2 M	15	0	
Capsule 5	28	42	4	
Capsule 6	19	23	0	
Capsule 7	7	9	0	
Capsule 8	22	25	0	

  

	1	D 2	3	4	E (1+2+3+4)	F
Capsule 1	7 + 1 M	17	52 + 1 M		0	2
Capsule 2	9 + 1 M	13	40 + 4 M		1	3
Capsule 3	9 + 2 M	15	33 + 3 M		1	3
Capsule 4	7 + 1 M	18 + 2 M	23		0	2
Capsule 5	27 + 1 M	23 + 3 M	22 + 5 M		5	4
Capsule 6	12 + 1 M	19	19		0	4
Capsule 7	13 + 1 M	21	31		0	0
Capsule 8	12 + 5 M	22	17		0	1

## Conclusions

In our experimental conditions of a 13 cubic meters room, a natural contamination (20 cavies in their cages) and a contamination by means of experimental aerosols of *Escherichia coli*, of *Staphylococcus aureus* and of *Pseudomonas Aeruginosa*, has been brought back close to bacteriological zero.