

ABSTRACT

Findings of (Septefx 6D-840), (Septefx 7D-11)

Carol Smith, Microbiologist, Biolenia Laboratories
October 17, 2001

SUMMARY

Tests of (SEPTFX 6D-840), (SEPTFX 7D-11) were conducted on safety masks at the request of Super Safety located in Thunder Bay, Ontario. The masks tested are used in emergency situations such as fire fighting, disaster response and biohazard situations. The purpose of the testing was two fold: First, to test the solutions for their effectiveness against bacteria on the masks; second to assess a physical damage the masks may incur after extended exposure to the solution through repeated soaking and drying.

Bacterial effectiveness testing

The organisms used for the testing were *Salmonella choleraesuis*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus*. Oral areas of the masks were contaminated with the organisms and then soaked in the solutions for periods ranging from one minute to 14 days. Following exposure to the product, swabs were taken of the contaminated areas to determine how effective the solution was in killing bacteria.

Physical effects

The safety masks tested contained aero elastomers, silicone, latex, neoprene and hycar. Each mask was completely covered with a solution and detailed notes were made regarding changes in composition, color, or apparent breakdown of any plastic, metal or rubber component.

RESULTS AND CONCLUSION

Findings indicate that contaminated masks soaked in each of the three solutions had no bacterial growth with the exception of a *Pseudomonas aeruginosa* growth found on one mask used for the one minute Septefx 6D-840 exposure test.

There were no obvious physical or structural changes (i.e. expansion, cracking) to any of the masks tested.

Based on these findings, (Septefx 6D-840, (Septefx 7D-11) appears to be an affective disinfectant for use on the type of safety masks tested; after repetitive soaking and drying of these same masks in the disinfectant solutions, the physical integrity of the masks were not compromised.

Purpose: To determine the effects of Septefx products on safety masks for their effectiveness as a disinfectant as well as for the physical damage they may do to the masks.

Materials:

Solutions:

1. (Septefx 6D-840)
2. (Septefx 7D-11)

Bacterial Cultures:

Salmonella choleraesuis, Pseudomonas aeruginosa, Staphylococcus aureus

Masks:

- 2 green, Aero Elastomer R6600
- 1 Blue Silicone/Latex S 6500
- 1 Gray Neoprene
- 2 Black *Hycar rubber masks with polycarbonate clear front window
- *Hycar-natural rubber blend

Table 1: Description of Masks

Mask	Description
1	Silicone/Lates S 6500, blue, no window, in perfect condition. Initial strap measurement: 18cm
2	Hycar, black, polycarbonate window, slightly dirty, scratches. Initial strap measurement: 19cm
3	Hycar, black, polycarbonate window, dismantled, scratches. Initial strap measurement: 19cm
4	Aero Elastomer R6600, green, in perfect condition (brand new) Initial strap measurement: 14cm
A	Gray, #r4500, Neoprene Half-Mask
B	Green, #R6600, Natural Rubber

Containers:

- 4 White plastic containers for soaking

Procedure:

1. Designated areas of the oral sections masks 1 through 5 were swabbed with cultures of *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Salmonella cholerasuis*.
2. The masks were then incubated for 30 minutes at 37°C.
3. Septefx 6D-840, Septefx 7D-11 and water were poured into separate white containers.
4. Masks 1, 2, 3, A and B were completely covered in Septefx 6D-840 solution for a specified time period. Mask 4 was completely covered in Septefx 6D-840. See table 2 for soaking times.
5. Daily observations were made and documented of masks 3, 4, A, and B over the two week soaking period. Observations included noting any changes in composition, color, breakdown of plastic, metal or rubber materials. The mask straps were also measured for stretching. Mask 3 was dismantled so extensive observation on the interior of the mask could be examined of any breakdown.
6. Following the soaking period, the areas on mask 1 through 4 were contaminated with the bacteria were swabbed. The swabs were placed in TSB test tubes and incubated for 48 hours. The test tubes were examined for any bacterial growth.
7. Following the two week soaking period, masks 4 and B were further tested for cracking potential by soaking each mask for a one day period and then hanging each mask to dry for 2 days. This process was completed over a 15-day period. Mask 4 was soaked in Septefx 7D-11; mask B in Septefx 6D-840.

Table 2: Product Soaked In and Soaking Time

Mask	Product Soaked In	Length of Time
1	Septefx 6D-840	1 minute
2	Septefx 6D-840	10 minute
3	Septefx 6D-840	2 weeks
4	Septefx 7D-11	2 weeks
A	Septefx 6D-840	2 weeks
B	Septefx 6D-840	2 weeks

Results:

Table 3: Results of efficacy testing

Mask	Product Soaked In	Description of Mask after Soaking for 2 weeks
3	Septefx 6D-840	No obvious physical changes.
4	Septefx 7D-11	No obvious physical changes.
A	Septefx 6D-840	No obvious physical changes.
B	Septefx 6D-840	No obvious physical changes.

Note: the measurement of the straps on masks 1 and 2 did not change after hanging for 14 days.

Table 5: The results of repetitive soaking and drying over a 15-day period

<u>Mask</u>	<u>Observations</u>
4 in Septefx 7D-11	No obvious physical changes
B in Septefx 6D-840	No obvious physical changes

Conclusion:

Based on these findings, (Septefx 6D-840 and Septefx 7D-11) appears to be an effective disinfectant for use on the type of safety mask tested. After repetitive soaking and drying of these same masks in disinfectant solutions, the physical integrity was not compromised.