

Study 12d

The *ActiveGuard*® Mattress Liner, is an Active Liner impregnated with 1.64% permethrin on a polyester fabric, and is labeled to kill bed bugs for up to 2 years. The Active Liner is typically installed inverted on the mattress and/or box spring once the bed bugs are largely cleared from the structure. Any missed bed bugs or nymphs from newly hatched eggs are killed thus preventing the start of new infestations.

This study consists of a field evaluation of *ActiveGuard* used to prevent bed bug infestation in 4 hotels, and a lab study to determine the efficacy against bed bugs of 5, Liners removed from beds from hotel number 4 where the Liners were in service for 19 months.

Field Summary

ActiveGuard Mattress Liners were installed on mattresses and/or box springs in rooms with either a history of bed bug activity or in all of the rooms of the hotel. These rooms were found to be clear of bed bugs at the beginning of the evaluation. This was a preventive use of the product.

Hotel 1 (153 room) had 2 bed bug incidents per year and Liners were installed on all 153 rooms (200 beds). No bed bug incidents occurred in 15-17 months.

Hotel 2 (1600 rooms) had 2 bed bug incidents per week and Liners were installed in 45 rooms (75 beds). There were no bed bug incidents in the 9 months of this trial. This hotel has since installed *ActiveGuard* in all of its rooms and the Liners have all been replaced one-time (at the 2-year point). This hotel has realized a huge savings in bed bug treatment costs.

Hotel 3 (122 rooms) had 2 bed bug incidents per week and installed Liners in all 122 rooms (216 beds). This hotel has had no bed bug incidents in the 6-7 months of the trial.

Hotel 4 (194 rooms) had 3 bed bug incidents per year and installed Liners in 12 rooms (30 beds). This hotel has had no bed bug incidents in the 19 months of the trial.

Laboratory Summary

Active Liners used in hotel number 4 above were stored in commercial packaging for 11-12 months prior to their installation on mattresses in the hotel. After 19 months of use, 5 Liners were removed from the beds and sent to a laboratory for bioassay against the Cooper 2 field strain of bed bugs which were 49 times resistant to the pyrethroid deltamethrin. The exposure time for the bed bugs on the aged *ActiveGuard* fabric was only 6 hours to represent 6 hours of sleep time of humans on the Liner when bed bugs would be actively searching a blood meal.

The average percent mortality of the 5 Liners was 77% at day 5 though 66% mortality was achieved within the first 24 hours after exposure. The mortality of mobile, actively searching bed bugs on the Liner would have been higher than that achieved from bed bug exposure to fabric pieces in a petri dish.