

Evaluation of Bargoose # 9 Mattress Cover (Zippered M/C Stretch Polyester with Urethane) in  
Preventing Bed Bug (*Cimex lectularius*) Feeding

**Project Code:**  
BargooseBBfabric08

**Test Date(s):**  
September 12, 2008

**Report Date:**  
October 2008

**Authored by:**  
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## **Objectives:**

To determine the efficacy of Bargoose # 9 Mattress Cover (zippered m/c stretch polyester w/ urethane) in preventing Bed Bug (*Cimex lectularius*) feeding.

## **Treatments:**

1. Bargoose # 9 Mattress Cover (zippered m/c stretch polyester with urethane)

## **Materials and Methods:**

The following is the Snell Scientifics Standardized Testing Method for evaluating the efficacy of pesticides. Further details related to this specific test are described following the test method summary. Select action items and illustrations have been removed from this standardized test method in an effort to make the report more precise and accurate to the test conducted. Any details removed from this test method were deemed irrelevant to the test conducted in this report.

### 314.1 Materials:

- 314.1.1 Glass jars – pint size jars w/ screw on lids (Illustration 314.3.1)
- 314.1.2 Cardboard – harborage inserts inside jars (Illustration 314.3.1)
- 314.1.3 Fabrics- test fabrics or zipper enclosures
- 314.1.4 Construction paper- black surface to evaluate eggs or debris from shake through method
- 314.1.5 Microscope – used to evaluate eggs and/or debris from shake through method
- 314.1.6 Feeding attractant – Human subject and/or blood membranes to attract bed bugs
- 314.1.7 Heating pad – used to increase blood membrane temperature
- 314.1.8 CO2 and regulator – standard 20 pound cylinders and gas regulator is used for anesthetizing insects (as necessary, depending on species)
- 314.1.9 Chill Table – used for some bed bug stages to keep them asleep while sorting into glass jars.
- 314.1.10 Intermediate transfer/holding chambers – used for housing insects after they have been removed from their primary breeding housing. Intermediate chambers are used to anesthetize insects and sort them into jars.
- 314.1.11 Count down timer – used to accurately measure exposure times

### 314.2 Methods:

- 314.2.1 Pint size jars are equipped with the test fabrics by:
  - o Placing the fabric over the open end of the jar and securing the outer screw on lid over the fabric (Illustration 314.3.2)

- Removing a ¾" x 2" section from the inner lid and securing the zipper section into the opening with clear silicon (Illustrations 314.3.3 and 314.3.4)
- 314.2.2 Pint jars are equipped with cardboard inserts that provide harborage for the bed bugs and also allow access for the bed bugs to travel from the bottom of the jar to the lid/fabric area of the jar (Illustration 314.3.1)
- 314.2.3 Each jar contains approximately 20 – 200 (depending on test requirements) various size bed bugs (1<sup>st</sup> instars – adults), eggs, and debris
- 314.2.4 Various sized bed bugs allow for evaluating the possibility of different sized mouth parts feeding through the test fabrics
- 314.2.5 Bed bugs used for feed through tests are starved for at least 7 days prior to testing
- 314.2.6 To evaluate for feed through ability, the fabrics are held to human body parts or placed on blood membranes for at least 15 minutes (Illustration 314.3.5)
- 314.2.7 Following the 15 minute feeding exposure, the bed bugs can be removed from the pint jars and inspected for signs of feeding
- 314.2.8 For evaluating zipper or seam areas of an enclosures, various size bed bugs (1<sup>st</sup> instars – adults), eggs, and debris is placed inside the pint jars
- 314.2.9 Zipper or seam enclosures are held to human body parts or placed on a blood membrane to evaluate the ability of bed bugs to feed through the zippers
- 314.2.10 Following the zipper (or seam) feed-through method, the pint jars are inverted and shaken over a black surface (construction paper) for approximately 30 seconds
- 314.2.11 Debris collected on the black surface can be evaluated under a microscope to confirm if eggs were able to pass through.
- 314.2.12 If feeding through the zipper, or seam enclosure is suspected, the bed bugs can be removed from the jar and inspected under a microscope
- 314.2.13 Feeding through the test fabrics can be documented as yes/no or # fed during the 15 minute exposure
- 314.2.14 Zipper and seam enclosures are documented as the ability for bed bugs to feed through the zippers/seams (yes/no), # fed, and quantitative amounts of debris shaken through the zipper/seams enclosures (ex. # 1<sup>st</sup> instars, # eggs, ect.)
- 314.2.15 Repellency methods can be documented as repelled (yes/no), or the # of bed bugs on the fabric at different time intervals
- 314.2.16 Additional Testing Details Not Fully Described in Standard Protocols:

*Test Set-Up:* The evaluations in this test followed Illustrations 314.3.1 - 314.3.3

*Replicates:* Insect Stage Tested: Mixed Stages  
 # of Reps: 1  
 # of Insects/Rep: 200-300

*Source of Test Specimens:* Specimens were taken from lab raised colonies fed *in vitro*.

*Exposure of Test Specimens:* Test specimens were exposed to the human host for 10 -15 minutes.

Conditions in Test Room: Temperature: 80.3 deg F Humidity: 40.7 %

Arena details: Fabric feed Through Method:  
Size of arena: ½ pint Mason jar w/lid  
Arena material: clear glass  
Type of cover: metal lid with fabric insert  
Food/water: none provide

**Confirming Pest Condition:**

All bed bugs were confirmed 'alive' 2 times prior to treatment:

- 1) The bed bugs were removed from the lab colonies by transferring only live bed bugs into the pint jars.
- 2) After all bed bugs were transferred into the pint jars, they were confirmed to be alive prior to testing.

**Results / Discussion:**

Table 1 illustrates the efficacy of the Bargoose # 9 Mattress Cover, wherein the fabric was exposed to all life stages of bed bugs and presented with a human host on the opposite side of the fabric. No life stages tested were capable of feeding on the human host through the fabric. Therefore, Bargoose # 9 fabric can be considered an effective material in preventing bed bug feeding.

**Tables:**

**Table 1.**

Number of Bed Bugs ( <i>Cimex lectularius</i> ) of Each Life Stage Exhibiting Feeding Behavior in Test Arenas with Bargoose # 9 Mattress Cover Fabric Exposed to Host on Pint Jar (200~300 Mixed Stage Bed Bugs Per Arena)				
Rep	Time of Exposure	Stage of Bed Bug	Approx # of Stage Used	# Fed
A	15 min	1st - 2nd Instars	100	0
	15 min	3rd + Instars	50	0
	15 min	Adults	100	0



Sponsor: Bargoose Home Textiles      Date: March 2010  
Study: Bed Bug Prevention of Mattress Covers 2010  
Trial: Escape/Feed Through Prevention of Zipper/Closure Seals  
Test Method: 314-2.00

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**Report Title:**

Evaluation of Bargoose Zipper with Tape Seal in Preventing Bed Bug (*Cimex lectularius*)  
Penetrating and Feeding

**Study:**

Bed Bug Prevention of Mattress Covers 2010

**Trial:**

Escape/Feed Through Prevention of Zipper/Closure Seals

**Experimental Start Date:**

February 15, 2010

**Experimental Completion Date:**

February 15, 2010

**Report Date:**

March 2010

**Authored by:**

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**Objective(s):**

To determine the efficacy of Bargoose Zipper with Tape Seal in preventing bed bug (*Cimex lectularius*) penetrating and feeding.

**Test Substances:**

1. Bargoose Zipper w/ Tape Seal (Snell Code: 020210-1-D-BAR)

**Materials and Methods:**

The following is the Snell Scientifics Standardized Testing Method for evaluating the efficacy of fabric and closures as barriers to hematophagic arthropods. Further details related to this specific study are described following the test method summary. Select action items and illustrations have been removed from this standardized test method in an effort to make the report more precise and accurate to the study conducted. Any details removed from this test method were deemed irrelevant to the study conducted in this report.

314.1 Materials:

- 314.1.1 6" Dia. PVC Pipe end.
- 314.1.2 Fabrics- zipper enclosures.
- 314.1.3 Dark surface used to evaluate eggs or debris from the shake through method.
- 314.1.4 Feeding attractant – Human subject to attract bed bugs.
- 314.1.5 CO2 and regulator – standard 20 pound cylinders and gas regulator - used for anesthetizing insects (as necessary, depending on species).
- 314.1.6 Intermediate transfer/holding chambers – used for housing insects after they have been removed from their primary breeding housing. Intermediate chambers were used to anesthetize insects and sort them into jars.
- 314.1.7 Count down timer – used to accurately measure exposure times.

314.2 Methods:

- 314.2.1 6" PVC pipes were equipped with the test fabrics by:
  - o Zipper/Fabric inserts were sealed onto the pipe end with clear silicon and an outer PVC ring.
- 314.2.2 For evaluating zipper or seam areas of enclosures, 500 bed bugs (1<sup>st</sup> instars – adults), eggs, and debris were placed inside the PVC pipes.



Sponsor: Bargoose Home Textiles Date: March 2010  
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Test Method: 314-2.00

- 314.2.3 Various sized bed bugs allowed for evaluating the possibility of different sized mouth parts feeding through the test fabrics.
- 314.2.4 Bed bugs used for feed through tests were starved for at least 7 days prior to testing.
- 314.2.5 Zipper or seam enclosures were held to human body parts to evaluate the ability of the bed bugs to feed through the zippers.
- 314.2.6 Following the zipper feed-through method, the PVC pipes were inverted and shaken over a dark surface for approximately 30 seconds.
- 314.2.7 Debris collected on the dark surface was evaluated under a microscope to confirm if eggs were able to pass through.
- 314.2.8 If feeding through the zipper was suspected, the bed bugs were inspected under a microscope for visual signs of feeding.
- 314.2.9 Zipper enclosures were documented as the ability for bed bugs to feed through the zippers (yes/no), # fed, and quantitative amounts of debris shaken through the zipper enclosures (ex. # 1<sup>st</sup> instars, # eggs, ect.).

314.2.10 Additional Testing Details Not Fully Described in Standard Protocols:

*Test Set-Up:* The evaluations in this test followed Test Photographs 1-7.

*Replicates:* Specimen Stage: Mixed  
Strain: Susceptible  
# of Reps: 1  
# of Specimens/Rep: ~500

*Source of Test Specimens:* Test specimens were laboratory reared prior to testing.

*Conditions in Test Room:* Temperature: 78 ° F Humidity: 26%

*Confirming Test Systems Condition:*

All test specimens were confirmed 'alive' 2 times prior to treatment:

- 1) The specimens were removed from the lab colonies by transferring only live specimens into the transfer containers.
- 2) After all specimens were transferred into the 6" PVC pipe end; they were confirmed to be alive before continuing with the study.



Sponsor: Bargoose Home Textiles      Date: March 2010  
Study: Bed Bug Prevention of Mattress Covers 2010  
Trial: Escape/Feed Through Prevention of Zipper/Closure Seals  
Test Method: 314-2.00

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### **Results / Discussion:**

The results of this study are tabulated in Tables 1-2. Table 1 illustrates the results of the "Shake Through" method used to evaluate if the bed bugs (*Cimex lectularius*) and debris could be shaken through the Bargoose Zipper with Tape Seal. Table 2 illustrates the results from the "Feed Through" method, which was used to evaluate if the zipper with tape seal could prevent bed bugs from escaping or penetrating the zipper and feeding on the human host.

As is displayed in each of the tables, the Bargoose Zipper with Tape Seal passed both test methods. At no point during the 2 evaluations did bed bugs or debris pass through the zipper encasement and the zipper system was successful in preventing the bed bugs from penetrating and feeding through onto the human host during the 15 minute evaluation. Therefore, the Bargoose Zipper with Tape Seal can be considered a successful bed bug (*Cimex lectularius*) containment system.





Sponsor: Bargoose Home Textiles      Date: March 2010  
Study: Bed Bug Prevention of Mattress Covers 2010  
Trial: Escape/Feed Through Prevention of Zipper/Closure Seals  
Test Method: 314-2.00

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**Tables:**

**Table 1.**

<b>Zipper Shake Through Method: Zipper with tape seal</b>					
<b>Rep</b>	<b>Exposure Time</b>	<b>Bed Bug Stage</b>	<b>Approx # of Stage</b>	<b># Shaken Thru or (Yes/No)</b>	<b># Escaped</b>
A	30 second	Mixed	~ 500	0	0

**Table 2.**

<b>Zipper feed Through Method: Zipper with tape seal</b>					
<b>Rep</b>	<b>Exposure Time</b>	<b>Bed Bug Stage</b>	<b>Approx # of Stage</b>	<b># Fed</b>	<b># Escaped</b>
A	15 minute	Mixed	~ 500	0	0

## I.S.O. 17025 Certified Third Party Test Report

DATE: August 18, 2010

FILE: BARGOO.A081010A

CLIENT: Bargoose Home Textiles  
96 Atlantic Ave, 2nd Floor  
Lynbrook, NY 11563

ATTN: Adrian Trautmann

### SAMPLE IDENTIFIED BY CLIENT AS:

Mattress Cover Submitted  
Ref: 3A  
Color White

### TEST PROCEDURE:

### TEST RESULTS:

APPEARANCE AFTER MACHINE  
WASH 140°F TUMBLE DRY LOW,  
UNRESTORED (ASTM D3938):

- TAPE ONLY:  
- FIRST CYCLE:

Slight unraveling of edges. Slight puckering.  
Slight to negligible wear off of adhesive overall.  
No other noticeable change or deterioration.

- THIRD CYCLE:

Slight unraveling of edges. Slight puckering.  
Slight wear off of adhesive overall. No other  
noticeable change or deterioration.

### NOTE:

Only tape rated per client's request.

### KEY TO DEGREE OF ALTERATION IN SHADE AND STRENGTH:

Class 5, Negligible or no change  
Class 4, Slightly changed  
Class 3, Noticeably changed  
Class 2, Considerably changed  
Class 1, Much changed

Signed For The Company By

Adam R. Varley  
Technical Director

AC/08/85...AC/08



*Stacy Sadowy*  
Stacy Sadowy  
Quality Assurance Supervisor

**I.S.O. 17025 Certified Third Party Test Report**

DATE: October 6, 2010 FILE: BARGOO.A093010A  
PO #: 102571

CLIENT: Bargoose Home Tex. dba Priva ATTN: Adrian Trautmann  
96 Atlantic Ave 2nd Flr  
Lynbrook, NY 11563

**SAMPLE IDENTIFIED BY CLIENT AS:**

Mattress Cover Submitted  
Ref #: 95480Z, Polyester W/Urethane Lq Full Zip  
54 x 80 x 9  
Color Ivory

**TEST PROCEDURE:**

**TEST RESULTS:**

16 CFR PART 1632 STANDARD FOR THE  
FLAMMABILITY OF MATTRESSES PART 1632.5  
\*\*\*\*\*

- SAMPLE #1:	<u>BARE</u> PASS	<u>SHEETED</u> PASS
- SAMPLE #2:	<u>BARE</u> PASS	<u>SHEETED</u> PASS
- SAMPLE #3:	<u>BARE</u> PASS	<u>SHEETED</u> PASS
- SAMPLE #4:	<u>BARE</u> PASS	<u>SHEETED</u> PASS
- SAMPLE #5:	<u>BARE</u> PASS	<u>SHEETED</u> PASS
- SAMPLE #6:	<u>BARE</u> PASS	<u>SHEETED</u> PASS

**REQUIREMENTS:** Char length should not exceed 2 inches in any direction from the nearest point of the cigarette.

**EVALUATION OF THE TEST RESULTS:**

The mattress pads submitted for testing DOES pass the flame resistance requirements when tested in accordance with the procedures outlined in the Consumer Product Safety Commission Standard 16 CFR Part 1632.4.

Signed For the Company By

Adam R. Warley  
Technical Director

TT/09/390



*Stacy Sadowy*

Stacy Sadowy  
Quality Assurance Supervisor