130 Erick Street

Crystal Lake, IL 60014

(815) 526-0954

Final Test Report for:

Mermet SAS

58 Chemin du Mont Maurin

F – 38630 Veyrins

Test Method:

ASTM G-21 – 09 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

MSL Project# R2013-394

Sample Received: 10/7/13

Testing Initiated: 10/10/13

Testing Completed: 11/7/13

Report Issued: 11/8/13

Performed By:	*Marcy Aaron*	Approved By:	*Debbie Koester*
Title:	Staff Scientist	Title:	Lab Supervisor

Objective:

To evaluate the mold resistance properties of two fabric samples as seen in the ASTM G-21 – 09 fungal resistance test.

Test Sample Description:

1. A = Screen Vision/Design/Thermic = Treated Fabric
2. REF = Reference = Untreated Fabric

Samples were suitable for ASTM G-21 testing and were tested as received.

Procedure:

ASTM G-21 utilizes a nutrient salts agar that provides all of the trace nutritional elements needed by fungi to support growth. However, to achieve a heavy growth, the fungi must use the test material as its primary carbon source. The fungi used in this test were:

Aspergillus niger[1]	ATCC 9642
Penicillium pinophilum[2]	ATCC 11797
Chaetomium globosum	ATCC 6205
Gliocladium virens[3]	ATCC 9645
Aureobasidium pullulans	ATCC 15233

[1]*Aspergillus niger* has been reclassified as *Aspergillus brasiliensis*.
[2] ATCC 11797 is identified by ATCC as *Penicillium funiculosum*
[3]*Gliocladium virens* has been reclassified *Trichoderma virens*.

All organisms were grown for 7-20 days and were aseptically harvested, washed and counted. Each spore solution was adjusted to 1,000,000 spores/mL $\pm$ 200,000 spores and equal aliquots of the suspensions combined to make the final inoculation suspension. The test pieces were placed on the surface of solidified G-21 nutrient salts agar before spraying the top surface with the spore suspension. Three pieces of sterile filter paper were placed on G-21 nutrient salts agar for inoculum viability controls and were inoculated in the same manner as the test pieces. The test items were then incubated at 28-30^{o} C and maintained at greater than or equal to humidity of 85% for 4 weeks with readings taken after 7, 14, 21 and 28 days according to the rating scale below.

Results:

After 4 weeks of incubation, the results for the test pieces can be found in the data table below. The control test pieces had copious fungal growth at Day 14 confirming the validity of the test. Temperature and relative humidity were maintained for the duration of the test. These results pertain only to the samples tested.

The rating scale for this test is as follows:

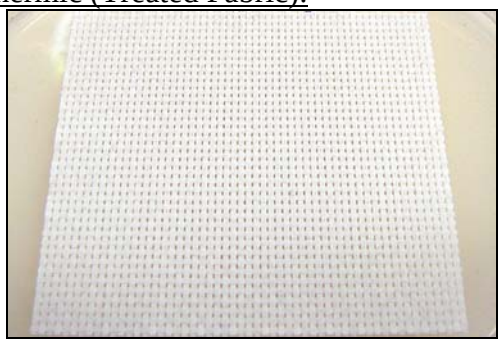
Observed Growth	Rating
No Growth	0
Trace of Growth (less than 10% coverage)	1
Light Growth (10-30% coverage)	2
Medium Growth (30-60% coverage)	3
Heavy Growth (60-100% coverage)	4

At week 4, samples rating a “0” or “1” were examined microscopically to confirm the ratings.

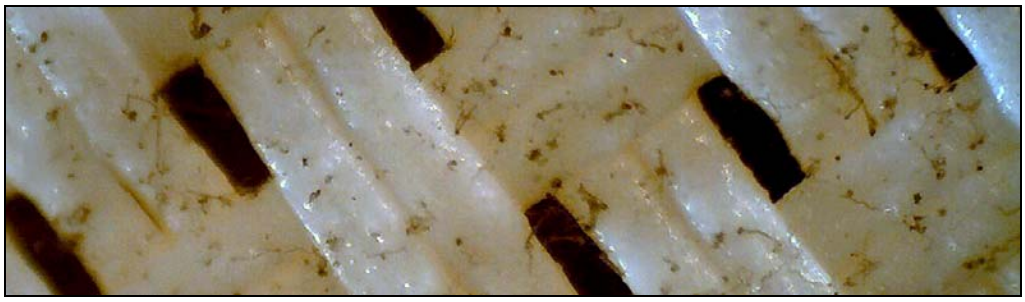
Sample Identification	Rep	Week 1 (10/17/13)	Week 2 (10/24/13)	Week 3 (10/31/13)	Week 4 (11/7/13)
		ASTM G-21 Rating			
A = Screen Vision/Design/Thermic (Treated Fabric)	1	1	1	1	1
	2	1	1	1	1
	3	1	1	1	1
REF = Reference (Untreated Fabric)	1	1	1	1	1
	2	1	1	1	1
	3	1	1	1	1

The photographs below were taken after the 28 day incubation period.

A = Screen Vision/Design/Thermic (Treated Fabric):

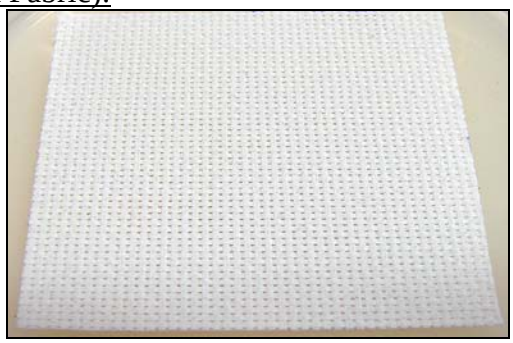


View of sample with the unaided eye – trace growth is not visible.

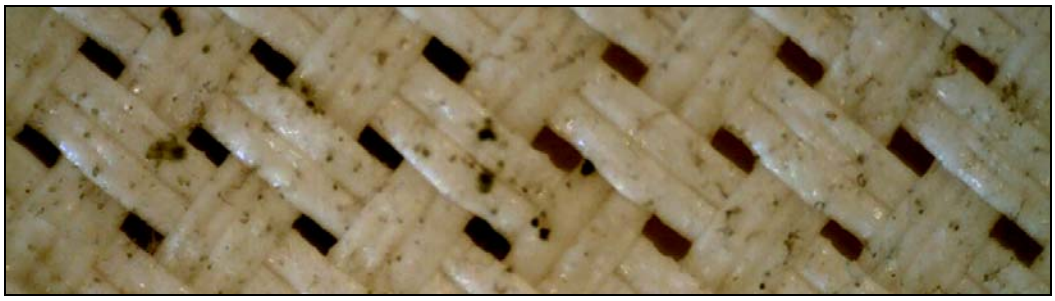


View of sample using the stereoscope – trace growth is visible.

REF = Reference (Untreated Fabric):



View of sample with the unaided eye – trace growth is not visible.



View of sample using the stereoscope – trace growth is visible.