

May 7, 2009

Ms. Debbi Lowder  
3G Mermet  
5970 N. Main St.  
Cowpens, SC. 29330

RE: ASTM G - 21 Test Report

- Project #2009- 120
- Date Samples Received: 4/9/09
- Date Testing Started: 4/9/09
- Date Testing Ended: 5/7/09
- Date Report Issued: 5/8/09

**Objective:**

To evaluate the mold resistance properties of one (1) mesh fabric sample as seen in the ASTM G-21 fungal resistance test.

**Test Sample Description:**

1. 7510 0202 Roll: 9060510202

**Customer Requested Modifications**

None

**Procedure:**

ASTM G-21 utilizes a mineral 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:

<i>Aspergillus niger</i>	ATCC 9642
<i>Penicillium funiculosum</i> <sup>1</sup>	ATCC 11797
<i>Chaetomium globosum</i>	ATCC 6205
<i>Gliocladium virens</i> <sup>1</sup>	ATCC 9645
<i>Aureobasidium pullulans</i>	ATCC 15233

<sup>1</sup> *P. funiculosum* has been reclassified as *P. pinophilium*. *Gliocladium virens* has been reclassified *Trichoderma virens*. Both organisms maintain their original ATCC numbers.

All organisms were grown on PDA for 7-20 days until mature. Spores 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 mineral salts agar before spraying the top surface with approximately 200  $\mu$ L of the spore suspension. The Petri dishes were then incubated at 29-30° 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. Viability controls produced heavy fungal growth within 7 days, confirming the viability of the spore suspension. The grading scale for this test is shown below.

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

Humidity and temperature are checked against a Vaisala Humidity and Temperature Probe HMP75, NIST Calibration Certificate H33-08210031.

### Results:

After 4 weeks of incubation, the results for the test pieces can be found in the data table below. The control test piece performed as expected, confirming the validity of the test. Viability controls produced heavy fungal growth within 7 days, confirming the viability of the spore suspension. These results pertain only to the samples tested. Ratings are reported with the G-21 scale listed first and percent surface coverage of fungal growth listed after the G-21 rating.

Sample Description		Week 1 (4/16)	Week 2 (4/23)	Week 3 (4/30)	Week 4 (5/7)
		G-21 Grading Scale/ percentage coverage			
75100202 Roll: 9060510202	1A	1/5	1/5	1/5	1/5
	1B	1/5	1/5	1/5	1/5
	1C	1/1	1/1	1/1	1/1
MSL Untreated Control		4	4	4	4
Temperature (28 to 30°C)		29.3	29.5	29.6	29.5
Relative Humidity ( $\geq$ 85%)		91.3	85.3	85.1	90.5



Notice: Customer is responsible for determining whether the information in this document is appropriate for Customer's use. Seller assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

Doc# ISO-R-108-01