Accugen Laboratories, Inc.

FINAL REPORT
ASTM G21
ASTM Designation: G21-09 "Standard Practice for determining Resistance of Synthetic polymeric materials to Fungi"

TEST AGENT
197027A
197028A

TESTING LABORATORY
Accugen Laboratories, Inc.
50 West 75th street, Ste 209
Willowbrook, IL 60527
Tel: 630-789-8105
Toll free: 800-282-7102
Fax: 630-789-8104
Web address: www.accugenlabs.com
Email: info@accugenlabs.com

SPONSOR
FiberLock Technologies Inc.
150 Dascomb Rd,
Andovar, MA 01810
Contact: Angus Junkin
Phone: 800-342-3755
Fax: 978-475-6205
E-mail: ajunkin@fiberlock.com

DATE RECEIVED
01-21-14

DATE REPORTED
02-28-14

TABLE OF CONTENT

TEST: Fungus resistance test as per ASTM G21-09

METHOD REFERENCE: ASTM Designation: G21-09 "Standard Practice for determining Resistance of Synthetic polymeric materials to Fungi"

INTRODUCTION: The purpose of this study is to assess the potential for mold growth on products and to evaluate that the products do not provide a food source to support the mold growth.

SUMMARY: Test samples were inoculated with composite of five different mold suspensions and were incubated under conditions favorable to mold growth. Samples were examined and rated for visual growth.

TEST MATERIALS: 197027A, 197028A

TEST CONDITIONS:

Challenge Organisms:	Aspergillus niger	ATCC # 9642
	Penicillium pinophilum	ATCC # 11797
	Chaetomium globosum	ATCC # 6205
	Trichoderma virens	ATCC # 9645
	Aureobasidium pullulans	ATCC # 15233
Contact temperature:	Room temperature (28 to 30℃)	
	Humidity 85% +	

Media and reagents:

- Sabauroud's dextrose agar
- Nutrient Salt solutions and agar
- Sterile deionized water

STUDY DATES AND FACILITIES:

The laboratory phase of this test was performed at ACCUGEN LABORATORIES, INC, 50 West 75th Street, Willowbrook, Il 60527 from. Study was initiated on 01/21/14.The study completion date is the date the study director signed the final report which is 02/28/14.

RECORDS TO BE MAINTAINED:

All testing data, test material records, the final report, and correspondence will be stored in the archives.

TEST PROCEDURE:

Nutrient-salts agar was poured into suitable sterile dishes to provide a solidified agar layer. 2x2 inches pieces of test samples were placed on the surface of nutrient salts agar (pH 6.5). Testing was carried out in triplicate. The surface, including the surface of the test specimens, were inoculated with the composite spore suspension by spraying the suspension so that the entire surface is moistened with the spore suspension. Fungal suspension was composed of equal volume of five mold suspensions at a concentration of 1,000,000 spores ± 200,000 per ml

Negative Control:

- Three pieces of test sample were placed on Nutrient salt agar without inoculating any fungal suspension.
- Three plates of Nutrient salt agar were placed along the test as media negative control.

Viability Control:

Three Sabouraud dextrose agar plates were inoculated by spraying the suspension to cover the entire surface with the spore suspension.

There was copious growth on all three of the growth media plates to confirm the viability of the inoculums.

Positive Control:

Sterilized Wood Spatula,1 x 2 in were placed on hardened nutrient-salts agar in separate Petri dishes. Each of them was inoculated with the spore suspension by spraying the suspension to cover the entire surface with the spore suspension.

There was copious growth on control specimens.

INCUBATION CONDITIONS:

Incubation—The inoculated test specimens and controls were covered and incubated at 28 to 30°C and 85% relative humidity for 28 days.

Observation for Visible Effects—Visible effects were recorded and rated.

Growth observed was scored by amount of growth on Specimens as follows:

Observation	Rating
None	0
Traces of growth (less than 10 %)	1
Light growth (10 to 30 %)	2
Medium growth (30 to 60 %)	3
Heavy growth (60 % to complete overage)	4

TEST RESULTS: See Table 1 and figures.

Sample was tested in triplicate.

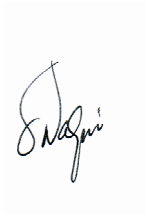
Table 1: Visual Rating of Fungal growth Observed

Sample	7 days			14 days			21 days			28 days		
Lab# 101382 197027A	0	0	0	0	0	0	0	0	0	0	0	0
Lab# 101383 197028A	0	0	0	0	0	0	0	0	0	0	0	0
Negative Control	0	0	0	0	0	0	0	0	0	0	0	0
Viability Control	4	4	4	4	4	4	4	4	4	4	4	4
Positive Control (Wood Spatula)	2	2	2	3	3	3	4	4	4	4	4	4

Controls were satisfactory. Positive control and Viability control showed heavy growth. No unusual changes in the physical appearance of the sample were observed.

CONCLUSION:

Test sample do not provide food source that support mold growth. The sample showed no growth of fungi inoculated .The product was found resistant to fungi tested when inoculated at nutrient salt agar medium.



_____

T. Naqvi M.S Microbiology, M (ASCP). Study Director

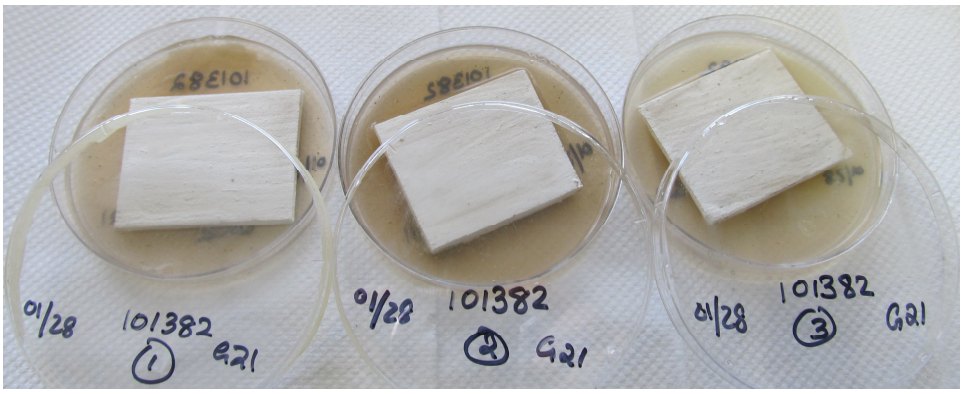


Fig1: Lab# 101382 at Nutrient Salt agar inoculated with fungal spores at 28 days in triplicate. Test sample did not support any fungal growth. © Accugen labs

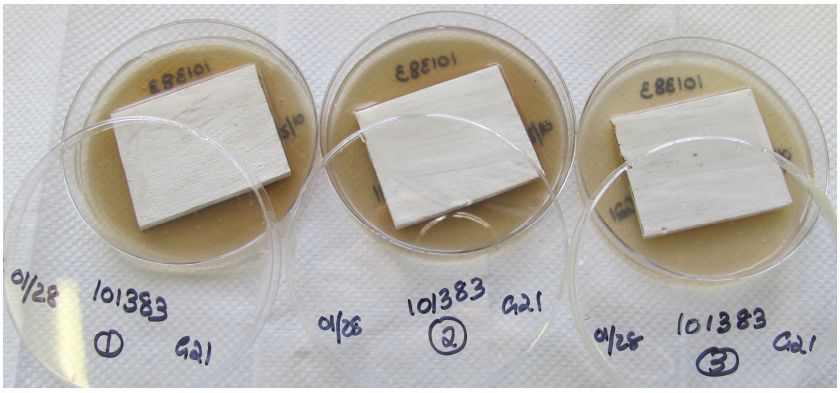


Fig2: Lab# 101383 at Nutrient Salt agar inoculated with fungal spores at 28 days in triplicate. Test sample did not support any fungal growth. © Accugen labs

Fig3: Spores Viability control - heavy fungal growth © Accugen labs

Fig4: Positive control - heavy fungal growth © Accugen labs