Accugen Laboratories, Inc.

FINAL REPORT
ASTM G22

ASTM Designation: G22-76(1996) "Standard Practice for determining Resistance of Plastics to Bacteria (Withdrawn 2002)"

TEST AGENT
Coulisse Screens

TESTING LABORATORY
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DATE RECEIVED
11-30-12

DATE REPORTED
01-04-13

TABLE OF CONTENT

TEST: ASTM G22-76(1996) "Standard Practice for determining Resistance of Plastics to Bacteria (Withdrawn 2002)"

METHOD REFERENCE: ASTM Designation: G22-76(1996) "Standard Practice for determining Resistance of Plastics to Bacteria (Withdrawn 2002)"

INTRODUCTION: The purpose of this study is to assess the potential for bacterial growth on products. This test method is designed for the qualitative determination of bacteria resistance of synthetic polymeric materials, particularly those types which have been given a bacterial resistant treatment.

TEST MATERIALS: Coulisse Screens

SAMPLE SIZE: 2 x 2 inches

TEST CONDITIONS:

Challenge Organisms: Pseudomonas aeruginosa ATCC # 13388
Organism Concentration About 50,000 cfu/ml to 1.50 x 10^5

Contact temperature: 35℃-37℃
Humidity 85% +

Test Duration: 28 days

Apparatus/Equipment: Glassware
Petri dishes
Incubator 35 to 37°C Relative Humidity 85%
Sterilizer

Media and reagents:

- Nutrient Salt agar (Carbon free culture medium)
- 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 11/30/12.The study completion date is the date the study director signed the final report which is 01/04/13.

RECORDS TO BE MAINTAINED:

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

TEST PROCEDURE:

Testing was carried out in triplicate. About 2 x 2 inches square pieces were prepared to test.The sample material was placed in Petri dishes. Test bacteria was added to Nutrient Salt Agar to make microbial concentration of about 50,000 to 150,000 cfu/ml of microorganisms.

Method A: Pour Nutrient salt agar into petri dishes and let them solidify.Each sample piece was placed on solidified agar according to Method A.

Method B: Pour some Nutrient salt agar into petri dishes, let them solidify. Place the samples in petri dishes and each sample was then overlayed with nutrient salts agar to which the test organism had been added according to method B.
The samples were incubated at 35-37℃ for 4 weeks and examined weekly for the growth of the test organism.

Negative Control:

- Three plates of Nutrient salt agar were placed along the test as media negative control.

Viability Control:

Three TSA agar plates were inoculated by adding 1 ml of bacterial suspension.
There was copious growth on all three of the growth media plates to confirm the viability of the inoculums.

INCUBATION CONDITIONS:

Incubation—The inoculated test specimens and controls were covered and incubated at 35-37℃ and 85% relative humidity for 28 days.

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

Evaluation of Results:

For the evaluation of the relative resistance of synthetic polymeric materials, the following rating system was used:

Observation	Results Recorded
Visual growth on the surface of the test specimen (Growth)	+ve
No visual growth on the surface of the test specimen (No Growth)	-ve

TEST RESULTS: See Table 1 and figures.

Sample was tested in triplicate. All three replicates of the sample showed no growth in 28 days.

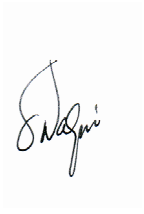
Table 1: Visual Rating of Fungal growth Observed

Sample	Method	7 days			14 days			21 days			28 days		
Coupon 1	A	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Coupon 2	A	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Coupon 3	A	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Coupon 1	B	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Coupon 2	B	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Coupon 3	B	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Negative Control		-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Viability Control		+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve

Controls were satisfactory. Viability control showed heavy growth.

CONCLUSION:

Sample Id Coulisse Screens showed bacterial resistance in the ASTM G 22 Test. No growth of Pseudomonas aeruginosa was observed on the triplicate samples. Test sample have Passed the ASTM G22 Resistance to Bacteria test conditions. The sample coated coupons have PASSED the ASTM G22 test conditions yielding excellent results.



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

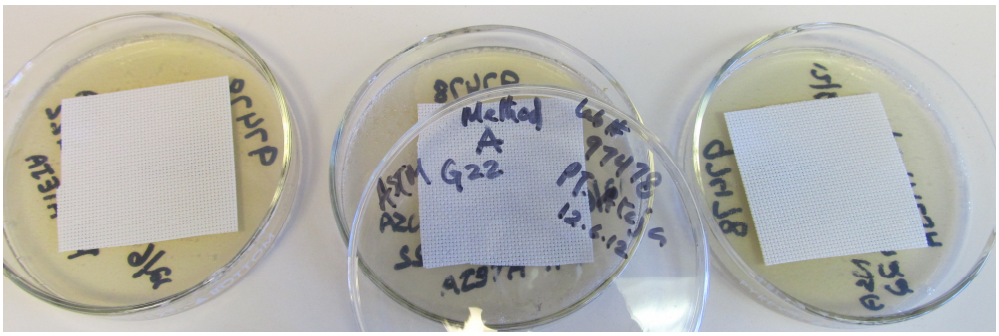

Fig1: Lab# 97478-2 at Nutrient Salt agar inoculated with bacterial spores at 28 days in triplicate per Method A.
Test sample did not support any bacterial growth. © Accugen labs

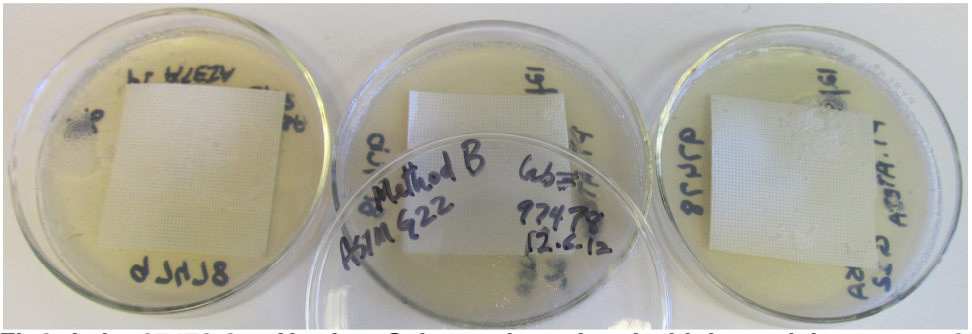

Fig2: Lab# 97478-2 at Nutrient Salt agar inoculated with bacterial spores at 28 days in triplicate per Method B.
Test sample did not support any bacterial growth. © Accugen labs

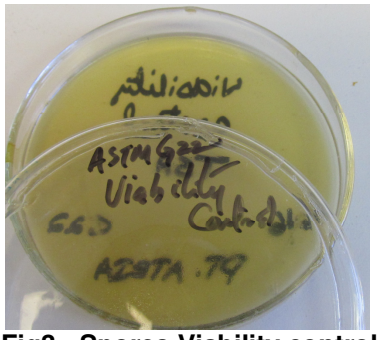

Fig3: Spores Viability control - heavy bacterial growth © Accugen labs