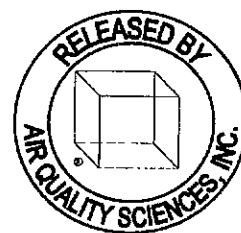


GREENGUARD MICROBIAL RESISTANCE
LISTING TEST FOR
K-FLEX SHEET AND TUBULAR FOAM

prepared for

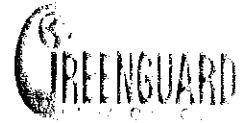
K-FLEX USA, LLC.



March 20, 2009

Date

AQS Report No. 815-06



Authorization Form for Listing of Microbial Resistant Products

Name of Manufacturer K-Flex USA, LLC 100 Nomaco Drive Youngsville, NC 27596	Product Name of Exact Product Tested (Provide market name and details of primary construction including composition, thickness, treatments etc.) <p style="text-align: center;"><i>K-Flex Sheet and Tubular Foam</i></p> <p style="text-align: right;">(50 characters or less)</p>
---	---

The product tested and qualified for GREENGUARD Environmental Institute's (GEI) Microbial Resistant Listing Program is eligible for listing on the GEI website. Under this program, this product will be listed on GEI's website (<http://www.greenguard.org>) for one year; it will need to be retested to continue to be listed after one year. Your participation in this program allows you to communicate your product's performance with customers in the marketplace. In order to avoid any miscommunication or confusion on this performance, use the following guidelines in your marketing materials:

GEI MARKETING GUIDELINES
Tag Line: "GREENGUARD Listed for Microbial Resistance"
Complete Description: "Listed by GREENGUARD Environmental Institute as complying with GREENGUARD Test Method, 'Method For Measuring Microbial Resistance From Various Sources Using Static Environmental Chambers,' developed according to ASTM Standard D 6329-98."
This complete description need not be used in every communication but should be minimally used in some appropriate public format such as an MSDS sheet or on your website. Alternatively, you can link to the appropriate page on the GEI website for more detailed information.

Product Description	K-Flex Sheet and Tubular Foam	
	Ranking	Product Measurement
1	Highly Susceptible to Mold Growth	
2	Susceptible to Mold Growth	
3	Resistant to Mold Growth	
4	Highly Resistant to Mold Growth	✓

For AQS Use Only:	For GEI Use Only:
MRT approved: <u>03/20/09</u>	Date Received: _____
AQS Code: <u>MTKf15-06</u>	Website Updated: _____
AQS Report #: <u>815-06</u>	GEI Invoiced: _____
AQS Report Date: <u>03/20/09</u>	

TABLE OF CONTENTS

	Page Number
Executive Summary	
Project Description	1
Results	1
Product Ranking.....	1
Figure 1	
Three Week Mold Counts as a Function of Product Type.....	2
References	3
Appendix 1	

EXECUTIVE SUMMARY

PROJECT DESCRIPTION

Air Quality Sciences, Inc. (AQS) is pleased to present the results of a microbial resistance evaluation of K-Flex USA, LLC.'s "K-Flex Sheet and Tubular Foam" insulation. AQS conducted this study using a GREENGUARD product evaluation test protocol (1), which employs a specified method based on ASTM D 6329, "Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers" (2). The material was delivered to AQS by the manufacturer as presented in the Chain of Custody description in Appendix 1. Samples were tested and the data analyzed to obtain a microbial resistance rating.

The material was tested as supplied, without any pre-conditioning. Representative samples of the material were inoculated with spores of *Penicillium brevicompactum* and transferred to a static environmental chamber maintained at 95% relative humidity and 25°C. The inoculated samples were incubated for three weeks to determine the susceptibility to mold growth.

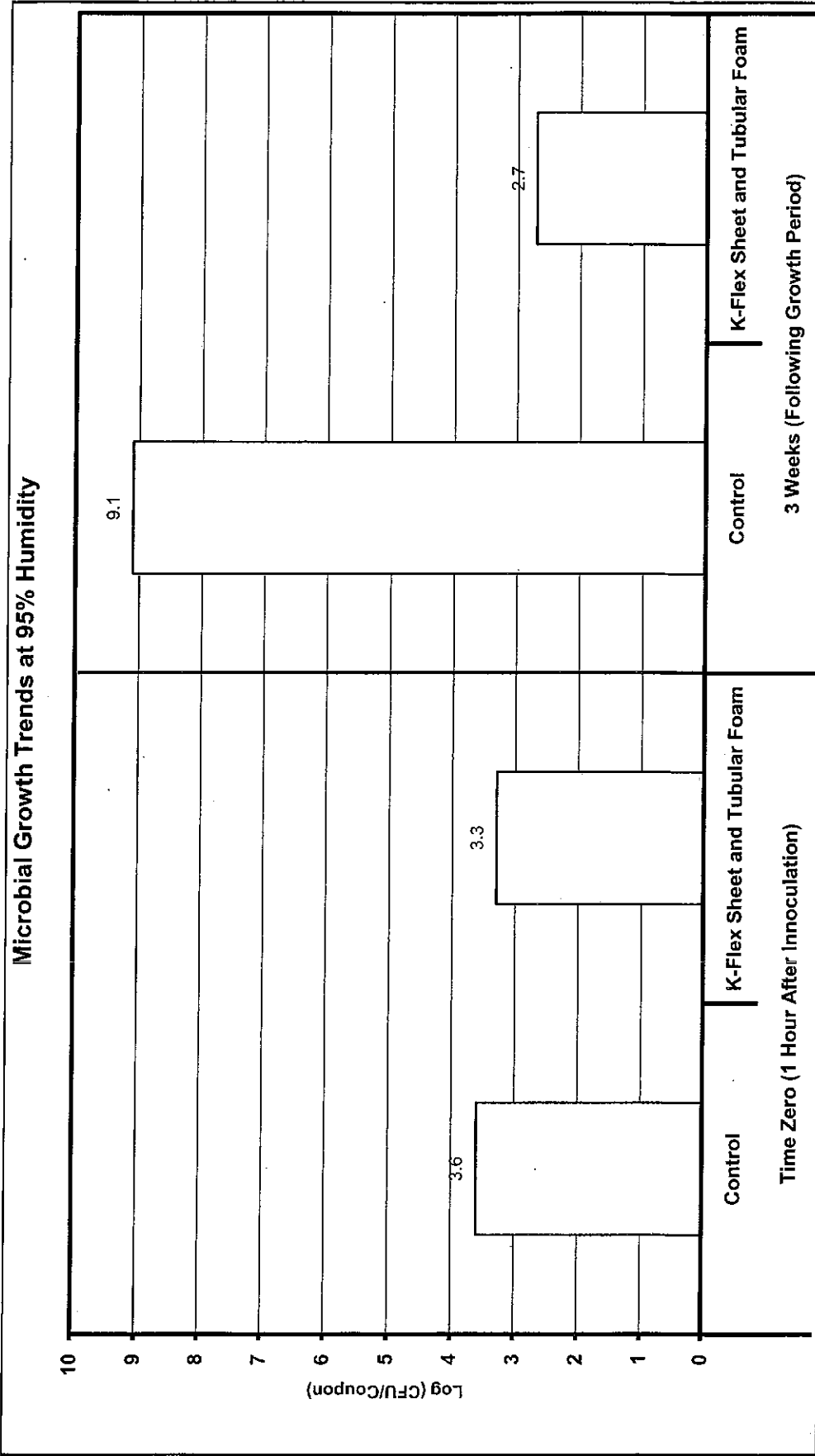
RESULTS

The results are presented in Figure 1. For reference, the CFU levels recovered from highly susceptible control samples at 3 weeks are also included. The sample tested (K-Flex Sheet and Tubular Foam) is resistant to mold colonization under the method test conditions. The concentration of mold recovered from the sample after 3 weeks was 5.0E+02 CFU/coupon. The log of this is 2.7, with a decrease of at least 0.5 Log(CFU) after 3 weeks, giving the product a rating of 4, highly resistant.

PRODUCT RANKING

Product		K-Flex Sheet and Tubular Foam	
Ranking		Product Measurement	Definition
1	Highly Susceptible to Mold Growth		Growth comparable to highly susceptible materials. Log(CFU) > 7.5 at 3 weeks.
2	Susceptible to Mold Growth		Growth comparable to susceptible materials. Log(CFU) ≤ 7.5 and > 5.5 at 3 weeks.
3	Resistant to Mold Growth		Growth comparable to resistant materials. Log(CFU) ≤ 5.5 and > 2.5 at 3 weeks.
4	Highly Resistant to Mold Growth	✓	Growth comparable with highly resistant materials. Log(CFU) ≤ 2.5 at 3 weeks, or Log(CFU) < 5.5 with a decrease of at least 0.5 Log(CFU) after 3 weeks.

FIGURE 1



REFERENCES

1. GREENGUARD Environmental Institute, "Method For Measuring Microbial Resistance From Various Sources Using Static Environmental Chambers" 2008.
<http://www.greenguard.org>
2. ASTM D 6329 "Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers." American Society for Testing and Materials, West Conshohocken, PA, 2003.

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AQS Project #: 815
AQS Report #: 815-06
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APPENDIX 1

For AQS Internal Use Only

Project #: 815

Product #: 060AA



**General Material Test
Product Documentation/Chain of Custody**

**TO BE COMPLETED BY CUSTOMER AND RETURNED WITH PRODUCT
(CONFIDENTIAL INFORMATION)**

I. TESTING INFORMATION (Please check) Chemical Microbiological

II. IDENTIFICATION INFORMATION

Manufacturer K-Flex USA, LLC Telephone number (919) 435-5561
 Manufacturer's representative Dan James
 Website _____
 Address 100 Nomaco Dr. Fax number (919) 569-4001
 City, State Youngsville, NC Email dan.james@kflexusa.com
 Contact person Dan James Zip 27596
 Contact number (919) 435-5561

III. PRODUCT TYPE AND CATEGORY - (CHOOSE ONLY ONE)

CATEGORY A (Wet):

Name _____

CATEGORY B (Dry):

Name 1" K-Flex Sheet and Tubular Foam

IV. PRODUCT INFORMATION

CATEGORY A (Wet):

Model designation _____ Packing list included _____
 Brand/Trade name _____ Date of manufacture _____
 Lot number _____
 Application/Usage Rate _____
 Curing Recommendations _____
 Primary use of product _____

General Material Test Product Documentation/Chain of Custody

Product description including primary composition/ treatments/ finish/ thickness

Antimicrobial used? Yes No

CATEGORY B (Dry):

Model designation K-Flex Brand/Trade name Sheet/Tubular Foam

Date of Manufacture _____ Lot number _____

Product size/weight width (cm) 2.54 height (cm) 2.54 depth (cm) 2.54 weight(kg) _____

Primary use of product INSULATION

Product description including primary composition/ treatments/ finish/ thickness

Antimicrobial used? Yes No

V. MANUFACTURING PLANT INFORMATION

Plant name _____ Plant contact _____

Address _____ Telephone number (____) _____

_____ Fax number (____) _____

City, State _____ Zip _____

VI. CERTIFICATION

I hereby certify that the information provided is accurate and complete.

Signature Dan James Date 2/5/09

Typed or printed name Dan James

Position/Title EHS ENGINEER

Company K-Flex USA, LLC

Phone (AIA) 435-5561 Fax number (AIA) 569-4001

General Material Test
Product Documentation/Chain of Custody

VII. RETURN INSTRUCTIONS

Insert completed form in an envelope marked "CONFIDENTIAL" and attach to product before shipping.

Please include a detailed packing list with product shipment.

Or, you may fax or mail the original(s) to:

PE/GREENGUARD Coordinator
Air Quality Sciences, Inc.
2211 Newmarket Parkway, Suite 106
Marietta, Georgia 30067
Fax: (770) 933-0641

AQS USE ONLY

Receive date 2.10.09 Receive time 8:30 Project number _____
Receiver name Smith Receiver signature [Signature]
Is packing list included? _____ Is product description complete? _____

Comments:

