Dr. Kreps

UNITED STATES MINERAL PRODUCTS COMPANY

SINCE 1875

General Office and Plant
STANHOPE, NEW JERSEY 07874

Tel. 347-1200 Area Code 201
Cable: CAFCOINSUL, New York

Future Discovery

December 18, 1967

Mr. Jack Shall
National Gypsum Company
1650 Military Road
Buffalo, New York 14217

Subject: Air Erosion Test Method

Dear Jack:

Enclosed is the test method used by the Kodaras Acoustical Laboratories to evaluate air erosion of sprayed fireproofing.

In this method, they used one filter cloth to collect the fines and another one as humidity control. This method has been changed and now only one filter cloth is used, and this is either put in a desiccator or a drying oven before and after each test, so that changes of humidity in the atmosphere do not affect the end results.

I'd like to wish you and all of the gang at the lab a Very Merry Christmas and Happy New Year.

Sincerely yours,

Frank

Frank [illegible]
Vice President - Research

FMS/ec
Enclosures

cc: (with encl)
Mr. [illegible] Barron
Vermiculite Institute
Chicago

Mr. [illegible] Erwin
CPIA
Washington

Dr. [illegible] Lieff
Johns Manville
Linden

I. INTRODUCTION:

A series of experiments have been conducted to arrive at a detailed test method that will conform to the requirements outlined in the General Services Administration Interim Guide Specification for Sprayed Fire Protection consisting of that portion of the specification relating to "Dusting". The specification is identified by the number 224-3B (Int) April 1966.

A test apparatus was built and is described in this report. A number of "shake-down" tests were found to be required in order to determine how to eliminate the effect of non-specimen dust, and changes in humidity from the test data. These findings are reported.

A series of tests were conducted using two samples selected at random from six prepared for test purposes. The results of these tests are also reported.

II. TEST APPARATUS:

The following equipment was used to conduct the last two tests:

A - A sealed room 16' x 18' x 13'. This room is constructed with a sealed concrete floor on grade; 8" dense aggregate concrete block walls sealed with 3 heavy coats of latex paint; a 6" thick poured concrete roof slab (dense aggregate); a 3" thick door equipped with double sealing gaskets and a drop seal.

B - Electric motor, centrifugal fan, filters and duct system as shown on Figure 1 of this report consisting of:

Electric motor - 7½ H.P. - 1800 rpm

Fan - Class II; 7500 cfm; 2700 O.V.; 4" S.P.; 1650 rpm; centrifugal fan

Ductwork contains a filter upstream of the test specimen hereafter called the "System Filter" and a filter downstream of the test specimen hereafter called the "Collection Filter". These filters are as follows:

System Filter - High performance filter with reinforced non-woven treated cotton fabric media having 95% efficiency in filtering particles of 5 micron size and larger. The filter has a mean efficiency of 36.5% on NBS type tests.

Collection Filter and Humidity Control Filter - Black nylon fabric having the following characteristics:

<u>Thread Comb Per Inch</u>

Warp	102
Filling	82.3

<u>Calculated Denier</u>

Warp	33.3 (30)
Filling	31.5 (30)

The duct system has an opening wherein a sample 16" x 48" may be installed in such a manner that the face of the sample is flush or slightly protruding in relationship with the adjacent walls of the duct. The area of the sample that is exposed to the airflow inside the duct is 4.07 square feet.

C - Air velocity in the duct was measured by means of a standard 8 blade vane anemometer.

D - The Collection Filter and Humidity Control Filter were weighed before and after the test sequences by means of a Single Graduate Balance having a capacity of 100 gram in each pan and a sensitivity of 1 milligram.

III. TEST PROCEDURE:

A. - ROOM AIR PURGE - Before proceeding with the installation of a test specimen, the test room containing the test apparatus was sealed and the fan of the test apparatus was operated at maximum capacity for a period of at least 3 hours. During this period only the System Filter was in place and the recirculation of the air through the system filter provided an air purge that substantially reduced the dust content of the air in the sealed room. The room volume is 3744 cu. ft. At maximum capacity, the fan will move about twice the room volume each minute. The three hour air purge has been determined to be adequate to provide clean air for the test procedure.

B. - SAMPLE PURGE CYCLE - The Dust Collection Filter and the Humidity Control Filter are both vacuumed and weighed and then inserted in polyethylene bags for transportation to the test room. In the test room both filters are installed in rabbitted wood frames. The Dust Collection Filter is inserted in the duct system downstream of the test sample opening. The Humidity Control Filter and its frame is suspended in the test room away from the discharge end of the apparatus but exposed to air movement.

The test sample is installed in the test opening. The fan intake and air by-pass damper located upstream of the System Filter are adjusted to provide a start-up air flow of less than 800 feet per minute. When the fan is operating normally the air by-pass damper is adjusted to increase the air flow to approximately 800 feet per minute. Air flow is measured in the duct. When the required flow is obtained, the flow velocity and time are noted.

After the test sample purge cycle time is completed (usually six hours), both the Dust Collection Filter and the Humidity Control Filter are weighed. The Dust Collection Filter difference in weight is noted. The Humidity Control Filter is shaken to dislodge any loose dust before weighing. Any variation of weight in the Humidity Control Filter is attributed to a

change in relative humidity in the test room and is added or deducted from the change in weight of the Dust Collection Filter.

C. - TEST CYCLE - The same procedure is followed for the test cycle (usually 24 hours) as is described above for the Sample Purge Cycle.

IV. DATA:

The data is submitted in net gain in grams per square foot of test sample area exposed to the air flow. The tests conducted of the two samples were weighed at 3 hours, 6 hours, 24 hours and 48 hours. The data sheets and a graph showing dust collect versus time is included with this report. A copy of the manufacturer's description of the test samples is also enclosed

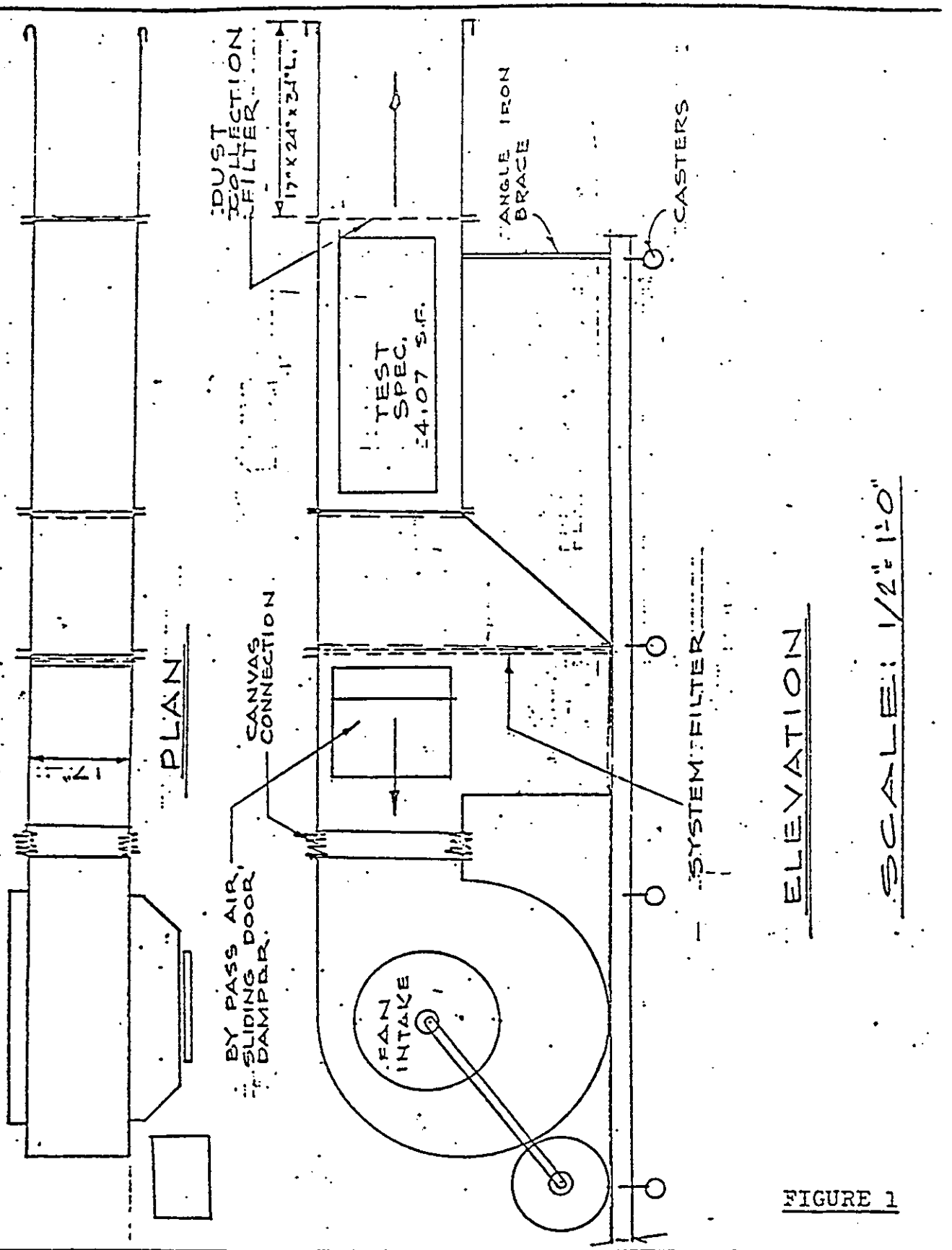


FIGURE 1

MICHAEL J. KODARAS INC.
ACCOUSTICAL CONSULTANTS

DUSTING TEST SET-UP

SCALE: 1/2" = 1'-0"

DWG. NO.

ESTABLISHED 1880

United States Testing Company, Inc.

HOBOKEN, N. J. 07030
201-792-2400

NUM
87C

REPORT

(Refer to thi
June 2

Client: Kodaras Acoustical Laboratories
75-02 - 51st. Avenue
Elmhurst, New York 11373

Subject: One small sample of black fabric sampled and identified by Client as "Black Nylon Chiffon". Client's letter dated June 20, 1967.

Tests Conducted	Average Test Results
Thread Count Per Inch	
Warp	102
Filling	82.3
Calculated Denier	
Warp	33.3 (30)
Filling	31.5 (30)

The above tests were conducted in accordance with Standard Laboratory conditions and procedures (70°F. and 65% R.H.)

* * * * * *

RECEIVED
JUN 26 1967
EXECUTIVE

United States Testing Compar

Supervised by,

BY J. J. Kirby

pk

Sprayed Mineral Fiber Manufacturers

MANUFACTURER: Association, Inc. DATE: 6/23/67

DUCT: Sample #5 JOB NO.: KAL-433

SPECS. GSA No. 224-3A (Int) 11/64

DUCT SIZE 17" x 24" DUST FILTER SIZE 17" x 24" EXP. SPEC. AREA 4.07 SF

Duration	Time & Date	Air Velocity FPM	Dust Filter Weight MG.	Dust Filter Wt. Chge MG.	Uncontrol Filter Weight MG.	Uncontrol Filter Wt. Chge MG.	Dust MG.	Dust Conc./SCF MG.
Room Air Purge 2 hrs.	2 PM to 5 PM 6/19/67	2000 fpm+	--	--	--	--	--	--
Specimen Purge 24 hrs.	3:30 PM to 6:30 PM 6/20/67	798 fpm	11.216 gr. 11.316 gr.	+.095	11.044 11.061	+.017	.078	.019 (.02)
Spec. Purge 24 hrs.	9:45 AM 12:45 AM 6/21/67	809 fpm	11.235 11.240	.005	11.067 11.067	0	.005	.001 (.00)
Test 24 hrs.	4:30 PM 6/21/67 10:30 AM 6/22/67	810 fpm	11.191 11.218	.027	11.020 11.020	0	.027	.007 (.01)
Post 24 hrs.	1:30 PM 6/23/67 1:30 PM 6/24/67	803 fpm	11.190 11.226	.036	11.016 11.039	.023	.013	.003 (.00)

MANUFACTURER: Sprayed Mineral Fiber Manufacturers Association, Inc. DATE: 6/26/67

PRODUCT: Sample #1 JOB NO.: KAL-433

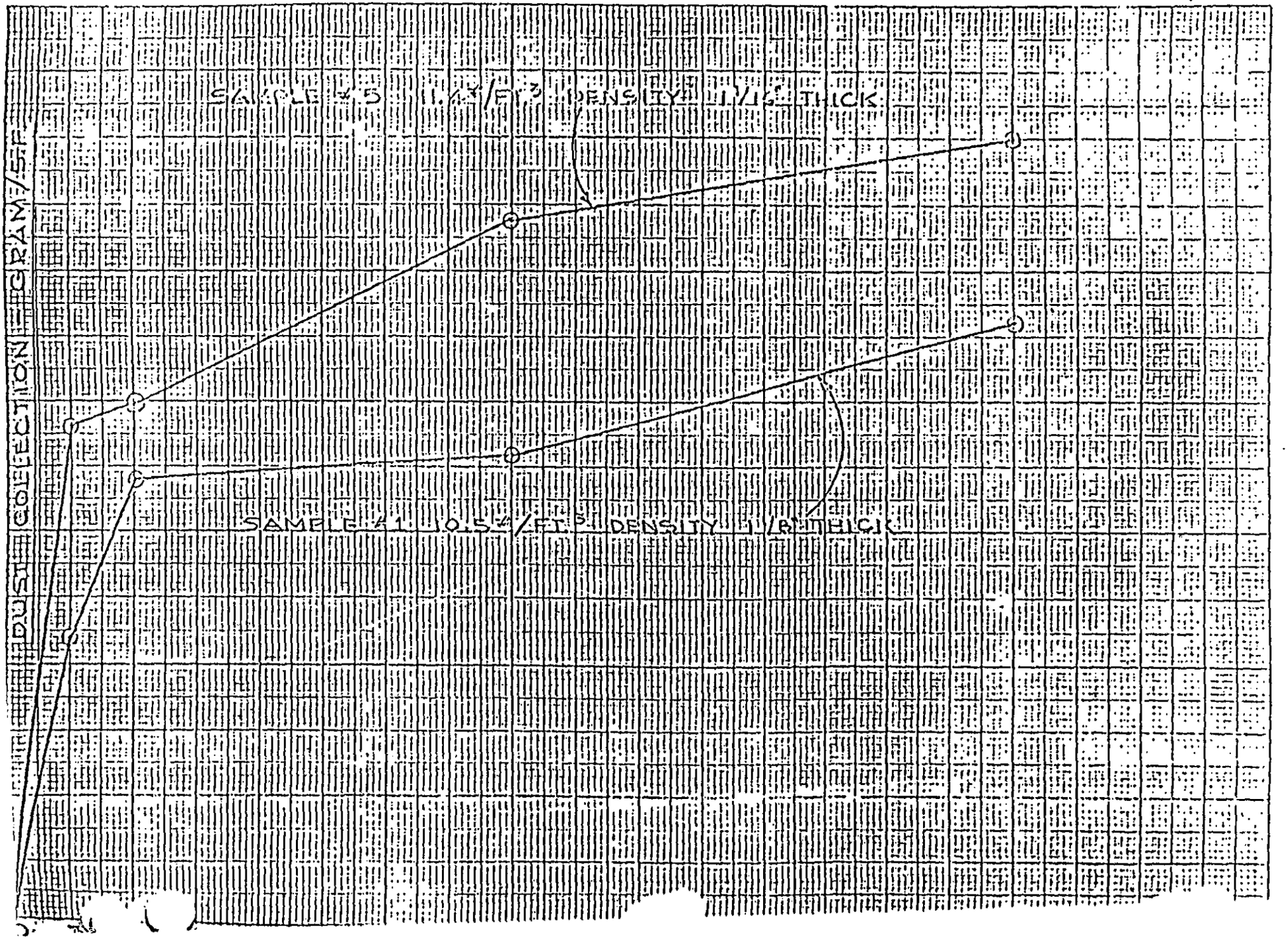
TEST SPECS. GSA No. 224-3A (Int) 11/64

SPECIMEN SIZE 17" x 24" OUTER SIZE 17" x 24" EXP. SURF. AREA 4.07 S.F.

Description	Time & Date	Air Velocity FPM	Duct Filter Weight GR.	Duct Filter Wt. Chge GR.	Control Filter Weight GR.	Control Filter Wt. Chge GR.	Net Catch GR.	Net Catch/SF GR.
Specimen Purge 2 hrs.	2 PM to 5 PM 6/26/67	806 fpm	11.168 11.227	+.059	11.016 11.029	+.013	.046	.011 (.01)
Specimen Purge 3 hrs.	10 AM to 1 PM 6/27/67	809 fpm	11.160 11.176	+.016	11.024 11.016	-.008	+.024	.006 (.01)
Test 3 hrs.	4 PM 6/27/67 10 AM 6/28/67	803	11.160 11.170	+.010	11.016 11.022	+.006	+.004	.001 (.00)
Test 3 hrs.	10 AM 7/5/67 10 AM 7/6/67	808	11.163 11.180	+.017	11.030 11.025	-.005	+.022	.005

July 10, 1967

SPRAYED MINERAL FIBER MANUFACTURERS ASSOCIATION, INC.



UNITED STATES MINERAL PRODUCTS COMPANY
SINCE 1875
STANHOPE, NEW JERSEY 07874
Tel. 347-1200 Area Code 2(
Cable: CAFCOINSUL, New Yo

June 12, 1967

Mr. Michael J. Kodaras, President
Kodaras Acoustical Laboratories
75-02 51st Avenue
Elmhurst, New York 11373

Dear Mike:

We will be delivering to you six specimens of sprayed mineral fiber applied approximately 1" thick to 16" x 48" gypsum lath. The fiber was sprayed in one application, after which it was given a light water overspray and left untamped. Each sample has a number and today's date on the back.

The data for these specimens are:

Sample No.	Tare Lbs.	Dry Gross Weight Lbs.	Thickness Inches	Density Lbs./Cu.Ft.
1	8.63	13.88	1-1/8	10.5
2	8.33	12.5	1-1/16	9.1
3	7.75	13.43	1-1/8	11.2
4	8.33	13.43	1	10.2
5	7.56	13.25	1-1/16	11.4
6	8.62	14.43	1-1/16	12.4

Sincerely yours,

Frank M. Stumpf
Vice President - Research

FMS/ec

cc:
Mr. H. Levine - Asbestospray
Mr. H. Wilson - Baldwin-Ehret-Hill
Dr. M. Lieff - Smith & Kanzler