Factory Mutual System

Factory Mutual Research

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May 4, 1995

Mr. Harold Boyer
International Cellulose Corporation
12315 Robin Road
P.O. Box 45006
Houston, TX 77245-5006

Subject: FMRC Approval of K-13 and Ure-K Spray-On Insulation

Dear Mr. Boyer:

This letter shall summarize the current status of FMRC Approval for the above subject materials, and has been prepared to satisfy building code requirements.

The K-13 Spray-On Insulation has been Approved since 5/8/71 and the Ure-K Spray-On Insulation has been Approved since 12/16/74. In addition, periodic reexamination of both the K-13 Spray-On Insulation and the Ure-K Spray-On Insulation has been conducted and additional testing has been completed over the years since they were initially Approved.

As a requirement for continued Approval, a Facility and Procedures Quality Audit has been conducted on a yearly basis at each of the product manufacturing location(s). This has been conducted since the initial Approvals without any lapses. These audits continue to be conducted yearly.

In addition, Factory Mutual Research Corporation has demonstrated compliance with ICBO, BOCA, and SBCCI model codes.

Please let me know if I can be of any other assistance.

Very truly yours,

G. A. Smith, P.E.
Manager, Materials Section
Approvals Division

VI CONCLUSIONS

6.1 Category I - Fire tests show that K-13 Spray-On insulation submitted by International Cellulose Corporation is a product of low fire hazard (Class I Building Material) not requiring automatic sprinkler protection in and of itself and is approved by Factory Mutual for use as an interior finish material over noncombustible surfaces when applied as outlined in the attached K-13 Factory Mutual Procedures Bulletin.

Category II - Fire tests show that the K-13 Spray-On insulation is effective as a protective coating to delay the ignition and reduce the surface burning rate of combustible wood and cellulosic fiber building materials and is approved for such use by Factory Mutual when applied as outlined in the attached K-13 Factory Mutual Procedures Bulletin.

Category III - Fire tests show that the K-13 Spray-On insulation is effective as a protective coating to delay the ignition and reduce the surface burning rate of cellular plastic building materials and to protect their dimensional stability for a brief period (10-15 min.). It is approved for such use by Factory Mutual when applied as outlined in the attached K-13 Factory Mutual Procedure Bulletin.

Category IV - Fire tests show that the K-13 Spray-On insulation is effective as a protective coating for building structural steel, supplementing automatic sprinkler protection while maintaining structural steel temperatures below 1000°F for 15 min. in high fire hazard occupancies. It is approved for such use by Factory Mutual when applied as outlined in the attached K-13 Factory Mutual Procedures Bulletin.

6.2 The approved product will be listed in the Factory Mutual Approval Guide under the section Building Construction Materials.

6.3 Approval is effective when the Manufacturer's Agreement is signed and returned to Factory Mutual.

VII MARKING

7.1 The Factory Mutual Approval Mark must appear on all wrapping or shipping containers with the words, "Approved as a fire retardant coating subject to the conditions described in Factory Mutual Report J.I. OP5A0.AM.

7.2 The manufacturer agrees that the use of the Factory Mutual name or approval mark is subject to the conditions and limitations of the Factory Mutual approval. Such conditions and limitations must be included in all references to Factory Mutual approval.

VIII MANUFACTURER'S RESPONSIBILITIES

8.1 The manufacturer shall submit for review a copy of his advertising literature and recommended application procedures for achieving the level of performance established by the fire and related tests. To assure compliance with his procedures in the field, the manufacturer shall supply to the applicator such necessary instructions or other assistance required to produce the desired performance.

B. Steel Members

I. Steel Beam: The K-13 Spray-On insulation was applied 1 in. thick to all contact surfaces of the steel beam.

II. Steel Joist: A metal lath was first attached to one side of the web portion of the joist. Next, the K-13 Spray-On insulation was applied 1 in. thick on both sides of the web, adhering itself to the metal lath.

V TEST RESULTS

A. Calorimeter Tests

Panel 1: The maximum one-minute Fuel Contribution Rate was recorded as 91 Btu/ft^2/min. The total fuel contributed by the product during the 10 minute test was 812 Btu/ft^2. These values are converted below to a Fire Hazard Classification in accordance with the FM Approval Standard for Class I Building Materials:

FIRE HAZARD CLASSIFICATION

	Flame Spread Index	Fuel Contributed Index
1 in. K-13 Spray-On Insulation on 1/2 in. thick asbestos millboard	10	40
Factory Mutual Approval Standard	25	100

Panels 2-5 inc.: At the end of the standard 10 min. fire exposure, the panels were examined for evidence of damage to the underlying substrates.

Panel 2: Only slight amount of surface scorching of the DF matched boards.

Panel 3: Only slight amount of surface scorching of the DF plywood.

Panel 4: Damage was limited to two areas of decomposition (approximately 1-1/2 ft in diameter and 3/4 in. - 1 in. deep) near the leading edge (nearest the exposure) of the foamed polystyrene board.

Panel 5: No damage to the polyurethane material was evident.

B. High Temperature Furnace Tests (See attached Appendix Sheets for temperature plots).

Steel Beam: The highest average steel temperature recorded during the 15 minute exposure period was 300°F. (Maximum allowable temperature: 1,000°F)

Steel Joist: The highest average steel temperature recorded during the 15 minute exposure period was 640°F. (Maximum allowable temperature: 1,000°F)

1.4 Fire Tests show the K-13 Spray-On insulation to be an interior finish material of low fire hazard (Class I Building Material) and an effective fire protective agent in the 2nd, 3rd and 4th categories above and is approved by Factory Mutual when used and applied as outlined in the Conclusions of this report.

II MATERIALS TESTED

2.1 K-13 Spray-On insulation is a fire retardant cellulosic fiber material, specially formulated, whose insulative properties are derived from minute air pockets formed through interlacing of the spray-applied fibers.

2.2 Two adhesives are used in the K-13 Spray-On process. One is dry and impregnated into the fiber during manufacture. The other (SK-13-1A emulsion) is a liquid which is used during the spray-on application. The fibrous material (containing the dry adhesive) and the emulsion are applied to the surfaces simultaneously in separate streams by a specially designed nozzle. The spray material dries to a carpet-like finish. Its formulation is on file.

III TESTS

3.1 Tests for Categories I-III inclusive were performed in the FM Construction Materials Calorimeter. (See attached reprint for a description.)

3.2 Tests for Category IV were performed in the FM High Temperature Furnace. (See attached reprint for a description.)

IV TEST SAMPLES

A. Calorimeter Panels

All panels measured 4-1/2 ft x 5 ft.

Panel 1: 1 in. thick K-13 Spray-On insulation applied on 1/2 in. thick noncombustible asbestos millboard.

Panel 2: 3/4 in. thick K-13 Spray-On insulation applied on Douglas fir matched boards, nominal 1 in. x 4 in.

Panel 3: 3/4 in. thick K-13 Spray-On insulation applied on Douglas fir plywood, 5/8 in. thick, interior Grade A-C.

Panel 4: 1-1/4 in. thick K-13 Spray-On insulation applied on 1 in. thick foamed polystyrene platic rigid boards.

Panel 5: 1-1/4 in. thick K-13 Spray-On insulation applied on 1 in. thick foamed polyurethane plastic rigid boards.

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OP5A0.AM
(4975)

July 28, 1987

K-13 SPRAY-ON
INSULATION

from

INTERNATIONAL CELLULOSE CORPORATION
P. O. BOX 45006
12315 ROBIN BOULEVARD
HOUSTON, TEXAS 77245

I INTRODUCTION

1.1 International Cellulose Corporation acquired all production and marketing rights for K-13 fire retardant spray-on coating from National Cellulose Corporation. They are the sole manufacturer of this fire retardant spray-on coating.

1.2 The approval testing for this coating was conducted for National Cellulose Corporation under Factory Mutual J.I. 19678 dated May 8, 1970. The complete test details for that program are included in this report.

1.3 International Cellulose Corporation submitted their K-13 fire retardant spray-on coating for fire tests to determine if it would qualify for Factory Mutual approval:

Category I - As an interior finish material of low fire hazard (Class I Building Material) over noncombustible surfaces, not requiring automatic sprinkler protection in and of itself.

Category II - As a protective coating to delay the ignition and reduce the surface burning rate of combustible wood and cellulosic fiber building materials.

Category III - As a protective coating to delay the ignition and reduce the surface burning rate of low melting, combustible cellular plastic building materials and to protect their dimensional stability for a brief period.

Category IV - As a protective coating for building structural steel to supplement automatic sprinkler protection in preventing structural failure temperatures of the steel in high fire hazard occupancies.

K-13 SPRAY-ON

INSULATION

from

INTERNATIONAL CELLULOSE CORPORATION

P. O. BOX 45006

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8.2 The manufacturer shall notify the Factory Mutual Research Corporation of any change in the approved product prior to general sale and distribution.

IX RE-EXAMINATION

9.1 A re-examination and manufacturing inspection will be conducted periodically on the approved product to determine that the quality and uniformity of the product has been maintained and will provide the level of performance as originally approved.

Notebook No. 280

ATTACHED: Appendix Sheets 1-4
Reprints (2)

TESTS AND REPORT BY:

P. E. Huber

REPORT APPROVED BY:

B. J. Callahan
Assistant Manager
Materials Section - Approvals

PEH/hn