



www.ect-radiantbarrier.com



ECT
P.O. Box 870
Albion, CA 95410-0870

TO: Department of Building Safety

2006

RE: ECT-RADIANT BARRIER SPECIFICATION SHEET

Enclosed, please find our Specification Sheet Number 111204. It reflects important requirements in Stucco and Foam Plastic ICC-ER Reports. We have supplied this industry since 1987.

1. ICC ES eliminated the need for an interior covering for foam plastics in 1999. Evaluation Report references to "no covering is required" addresses this.
2. The limitation regarding "no heat-producing appliances " in attics was also deleted following an ICC decision in the year 2000. Foam Plastic Evaluation Reports reflect this change, also.
3. A Class A weather barrier is required. The barrier must pass the ICC E84 Fire Test to prove compliance. It must also comply with ICC AC 38.

Our Specification Sheet also addresses the Energy Efficiency Credit that is now allowed for radiant barriers in the Model Energy Code and California's Title 24. It requires gable ends to be covered.

ECT Radiant Barrier does not require an ICC Report, but utilizes ICC designated test facilities for Code compliance, included here.

Sincerely,

Robert Pond

Robert Pond
President
ICC Member No. 1136913

Enclosures

(707)937-4005

(800)426-6200

The Star R Foam EPS insulation boards are permitted to be used in doors in accordance with Section 2602.5.4 of the UBC; Sections 2603.4.1.7 and 2603.4.1.8 of the IBC; or Section R318.2.4 of the IRC.

2.2.2 Special Uses—Crawl Spaces and Attics: Maximum 1-inch-thick (25.4 mm) Star R Foam insulation boards, manufactured from Huntsman or Styrochem EPS resins (evaluation reports ER-5703 and ER-5687, respectively), with tongue-and-groove edges, are permitted to be installed on the interior face of exterior walls of attics and crawl spaces without a thermal barrier separating the attic or crawl space from the foam plastic, provided the following conditions are met:

1. Entry to the attic or crawl space is only for the servicing of utilities.
2. There are no interconnected basement or attic areas.
3. Air in the attic or crawl space is not circulated to other parts of the building.
4. The foam plastic does not exceed a 1-inch (25.4 mm) thickness.
5. Attic ventilation is provided in accordance with Section 1505.3 of the UBC; Section 1202.2 of the IBC; or Section R806 of the IRC.
6. Underfloor air is provided in accordance with Section 2306.7 of the UBC, Section 1202.4 of the IBC or Section R406 of the IRC.
7. Combustion air complying with Sections 701 and 703.1 of the 1997 ICBO *Uniform Mechanical Code*, or Sections 701 and 703.1 of the *International Mechanical Code*[®], is provided.
8. Installation is limited to combustible construction.
9. Insulation boards are labeled as noted in Section 2.5, item 2, of this report.

2.3 Installation:

The interior of the building must be separated from the insulation boards recognized in this evaluation report with an approved thermal barrier as required in Section 2602.4 of the UBC, Section 2603.4 of the IBC, or Section R318.2 of the IRC, except as described in Sections 2.2.2 of this evaluation report. The building official may require a vapor barrier.

Fasteners used to attach conventional wood, metal or plastic siding through insulation not exceeding a 1½-inch thickness, must have sufficient length to penetrate 1 inch (25.4 mm) into structural wood framing or protrude through structural sheathing or structural steel framing beneath. Attachment must comply with a current evaluation report for proprietary wall covering materials, or with the UBC, IBC, or IRC for conventional wall-covering materials.

Wall covering over the insulation must be structurally adequate to resist the required horizontal forces perpendicular to the wall. All walls must be braced in accordance with Section 2320.11.3 or 2320.11.4 of the UBC; Section 2308.9.3 of the IBC; or Section R602.10 of the IRC.

When the insulation boards are applied over open framing, vertical butt joints must be over framing members. Vertical tongue-and-groove joints need not be over framing members, provided joints are staggered a minimum of one stud space from adjacent courses. For cementitious exterior wall coating systems, unbacked joints are permitted only when specified

in the evaluation report on the cementitious exterior wall coating system.

2.4 Identification:

The insulation boards are packaged in bundles, and the packaging is labeled with the name Star R Foam Manufacturing, Inc., and the address of the manufacturer (Fort Worth, Texas; Anthony, Texas; North Las Vegas, Nevada); the date of manufacture; the evaluation report number (ER-5315); the density; the name of the quality control agency (RADCO); the flame spread rating; and the thermal-resistance rating.

In addition to the labeling noted above, the following additional labeling is required:

1. Type II tongue-and-groove insulation boards are individually identified with the board type and density, the Star R Foam name, the evaluation report number (ER-5315) and the name of the quality control agency (RADCO).
2. Labeling on insulation boards to be used in attics and crawl spaces in accordance with Section 2.2.2 must also bear the name "Huntsman" or "StyroChem."
3. Star R Foam EIFS Grade (SWG) insulation boards intended for use on walls required to be of noncombustible construction are further identified along one edge, and on both faces of one board from each insulation package, with the name of the exterior coating (EIFS) company and the EIFS company's ICC-ES evaluation report number.

3.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Interim Criteria for Foam Plastic Insulation (AC12), dated July 2002; reports of room-corner fire tests in accordance with UBC Standard 26-3; reports on ASTM C 578-01; and a quality control manual.

4.0 FINDINGS

That the Star R Foam EPS Insulation Boards described in this report comply with the 1997 *Uniform Building Code*[™] (UBC), the 2000 *International Building Code*[®] (IBC) and the 2000 *International Residential Code*[®] (IRC), subject to the following conditions:

- 4.1 The boards are installed in accordance with the applicable code and this report.
- 4.2 The interior of the building must be separated from the insulation boards with an approved thermal barrier, such as ½-inch-thick (12.7 mm) regular gypsum wallboard installed in accordance with the applicable code, except as noted in Section 2.2.2.
- 4.3 A vapor barrier may be required by the building official.
- 4.4 The foam plastic boards are produced, under a quality control program with inspections by RADCO (AA-650), at one of the following locations:
 - Anthony, Texas
 - Fort Worth, Texas
 - North Las Vegas, Nevada

This report is subject to re-examination in two years.



April 11, 2000

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D W. DODGEN, C.P.A.

TO: PROPONENTS OF EVALUATION REPORTS ON FOAM PLASTIC INSULATION, TESTING LABORATORIES AND OTHER INTERESTED PARTIES

SUBJECT: Recognition of Use of Foam Plastic Insulation in Attics and Crawl Spaces, Subject MISC1-R2-0300 (MB/RK) (Previously MISC2-0799)

Dear Madam or Sir:

The purpose of this letter is to inform interested parties regarding requirements for ICBO ES evaluation reports on foam plastic insulation when the insulation is installed on the interior or exterior face of exterior walls of attics and crawl spaces without a thermal barrier or without one of the covering materials specified in Exception 4 of Section 2602.4 of the 1997 Uniform Building Code™ (UBC).

At the July 9, 1999, hearing, the Evaluation Committee agreed with the proposal to permit recognition, in ICBO ES evaluation reports, of foam plastic insulation without an interior covering on exterior walls of attics and crawl spaces under Section 6.7.5 of the ICBO ES Acceptance Criteria for Foam Plastic Insulation (AC12), based on successful completion of one of the following three tests:

1. Comparative crawl space tests where the performance of the foam plastic is compared with that of 3 $\frac{1}{2}$ -inch-thick kraft-faced fiberglass batt insulation. The time to flash over and the time to burn through the wood-framed floor/ceiling must be less for the foam plastic assembly than for the assembly with fiberglass insulation.
2. Tests conducted in accordance with UBC Standard 26-3. The tests must be conducted with the foam plastic installed over the gypsum wallboard or glass reinforced cement board as described in the standard.
3. Comparative room corner fire test conducted in accordance with the test procedures of UBC Standard 26-3. The control test assembly shall consist of $\frac{1}{4}$ -inch-thick interior CDX grade plywood applied to the interior face of wood framing (plywood is permitted by Section 2602.4, Exception 4, of the code as a

protective material for foam plastic located in attics or crawl spaces). The foam plastic insulation is applied to the exterior face of the framing, and in turn is covered on the foam plastic's exterior face with $\frac{3}{8}$ -inch-thick exterior plywood. The second test assembly is identical, but without plywood on the interior face of the wall. Conditions of acceptance consider the time-to-failure of the control test assembly, as evidenced by flashover, which is flame exiting the door opening. The second assembly with exposed foam plastic is tested for at least the same time. A successful comparison is based on no flashover of the second assembly within the time-to-failure of the control test assembly.

In all three cases, testing will be satisfactory to justify foam plastic installed, without covering, on walls of both attic and crawl spaces, either on the interior or exterior side of wall framing. Recognition in the evaluation report will include the following limitations:

- a. Entry to the attic or crawl space is only to service utilities, and ~~no heat-producing appliances are permitted.~~
- b. There are no interconnected basement or attic areas.
- c. Air in the attic or crawl space is not circulated to other parts of the building.
- d. The boards are limited to the maximum thickness, density and bead type (EPS only) tested.
- e. Attic ventilation complying with Section 1503.3 of the UBC, or under-floor ventilation complying with Section 2306.7 of the UBC, is provided.

At the March 30, 2000, meeting, the Evaluation Committee concurred with a second proposal to delete limitation (a), that entry to the attic or crawl space is only for service of utilities, and that heat-producing appliances are not permitted, provided that one of the two following conditions is met:

1. The foam plastic insulation has successfully passed a room corner fire test conducted in accordance with UBC Standard 26-3. The test must be conducted with the insulation installed over gypsum wallboard or GRC board, and exposed to the interior.
2. The foam plastic insulation has successfully passed a comparative crawl space test or a comparative room corner test, and a technical analysis is provided to substantiate this application. Hughes Associates, Inc., on behalf of Dow Chemical Company, provided a technical analysis at the meeting. The Hughes Associates, Inc., analysis is the minimum that any proponent submitting data under this condition should also submit.

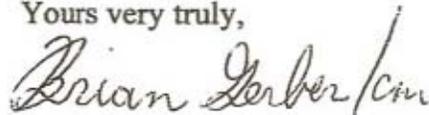
When limitation (a) is deleted, limitation (e) will be revised in the evaluation report as follows, to address the need for adequate combustion air for the appliance:

- e. Attic ventilation complying with Section 1503.3 of the UBC or under-floor ventilation complying with Section 2306.7 of the UBC, and combustion air complying with Sections 701 and 703.1 of the *Uniform Mechanical Code*, is provided.

Proponents wishing to revise their reports to address these issues should provide the necessary data in conjunction with re-examination of their evaluation reports.

If you have any questions, please contact Michael Beaton, P.E., senior staff engineer, at (562) 699-0543, extension 3289, or Russ Krivchuk, P.E., senior staff engineer, at extension 3204. You may also reach us by e-mail at es@icbo.org.

Yours very truly,



Brian Gerber, S.E.
Senior Structural Engineer

BG/MB/cm

cc: Evaluation Committee

ICC ES AC38 C-1371 ASTM D-779
NFPA CLASS A-ECT-RB



RADIANT BARRIER

ECT-RB complies with AC 38 and UBC Weather Standard 14-1. as a NFPA Class A UBC Class I, Grade A,B,C or D building paper under the UBC Standard.

ECT-RB receives energy efficiency credit as a radiant barrier under ASTM C1313-975 in the Dept. of Energy Model Energy Code, It obtains an E-Value of <.05 when tested in accordance with ASTM C-1371-98.

DESCRIPTION: ECT-RB consists of aluminum foil laminated to both sides of treated kraft building paper using a proprietary water resistant, non-flammable adhesive.

TECHNICAL DATA:	Vapor Transmission:	.02
	Tensile Strength MA:	53.68
	Tensile Strength CR:	28.82
	Flame Spread:	5
	Smoke Density:	0
	E-Value	.046

SGS U.S.Testing Nos.103321,111112 May 20,2004

GEOSCIENCE LTD January 6. 2005

INSTALLATION: When installing as a flame resistant weather barrier, the material should be applied to the exterior side of the studs in all areas that are not covered by Section 2602.4. The material shall be installed horizontally with the upper layer lapped over the lower layer by not less than 2 inches. Where vertical joints occur, the material shall be lapped by not less than 6 inches.



CLIENT: C & S INSULATION INC.
9709 Alpaca Street
South El Monte, CA 91733
Atten: Carlos Carrillo

Test Report No: 111112

Date: July 16, 2004

SAMPLE ID: The client submitted one roll of a metal foil faced-paper-laminate identified by client as E.C.T.-Radiant Barrier.

DATE OF RECEIPT: Entered into the SGS USTC tracking system on June 2, 2004 and was assigned tracking number 37980.

TESTING PERIOD: June 16, 2004 through July 16, 2004.

AUTHORIZATION: SGS USTC confirmation was signed on June 6, 2004.

TEST(S) REQUESTED: The following tests were conducted in accordance with the ICC Acceptance Criteria for Weather Resistive Barriers (AC38), dated July 2000. These procedures are equivalent to the methods in UBC Standard 14-1 (1997) for kraft paper materials. Tensile Strength per ASTM D 828, Water Vapor Transmission per ASTM 96, Water Resistance per ASTM D 779, and Mandrel Bend.

SUMMARY:

Testing was conducted in accordance with the ICC-ES Acceptance Criteria for Weather-Resistive Barriers (AC 38), dated July 2000.

Results

Test Description	Result	Requirement	Complies
Tensile Strength	Machine Direction: 28.82 lb/in Cross-Machine Direction: 53.68 lb/in	20 lb/in Both Directions (For Grades A, B, C, and D)	Complies For Grades A, B, C, and D
Water Vapor Transmission	0.198 g/m ² 24 hr	Grade A: 4 g/m ² 24 hr (Maximum) Grade B: 6 g/m ² 24 hr (Maximum) Grade C: Not Specified Grade D: 35 g/m ² 24 hr (Minimum)	Complies For Grades A, B, and C
Water Resistance	No Water Permeation Observed after 24 Hours	Grade A: 24 hr (Minimum) Grade B: 16 hr (Minimum) Grade C: 8 hr (Minimum) Grade D: 10 min (Minimum)	Complies For Grades A, B, C, and D
Mandrel Bend	No Surface Damage Observed	No Cracks	Complies

CONCLUSION:

The tested product complies with the requirements of AC38 and UBC Standard 14-1 as a Grade A, B, or C material.



CLIENT: C & S INSULATION, INC.
9709 Alpaca Street
South El Monte, CA 91733
Carlos Carrillo

Test Report No: 103321	Date: May 20, 2004
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SAMPLE ID: The Client submitted and identified the following test material as Reflective Foil Insulation, Foil/Kraft/Foil.

DATE OF RECEIPT: Entered into SGS USTC sample tracking system on May 10, 2004 as STN 38215.

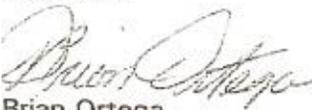
TESTING PERIOD: May 19, 2004.

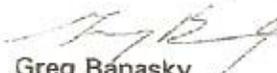
AUTHORIZATION: Testing authorized by Carlos Carrillo.

TEST REQUESTED: Perform standard flame spread and smoke density developed classification tests on the sample supplied by the Client in accordance with ASTM Designation E84-03, "Standard Method of Test for Surface Burning Characteristics of Building Materials". The foregoing test procedure is comparable to UL 723, ANSI/NFPA No. 255, and UBC No. 8-1.

TEST RESULTS:	<u>Flame Spread</u>	<u>Smoke Density</u>
	5	0

For detailed results see page 3.

Tested by

Brian Ortega
Test Technician

Signed for and on behalf of
SGS U.S. Testing Company Inc.

Greg Banasky
Supervisor Fire Technology

This report is issued by SGS U.S. Testing Company Inc. under its General Conditions for Testing Services (copy available on request). SGS U.S. Testing's responsibility under this report is limited to proven negligence and will in no case be more than the amount of the testing fees. Except by special arrangement, samples are not retained by SGS U.S. Testing for more than 30 days. The results shown on this test report refer only to the sample(s) tested unless otherwise stated, under the conditions agreed upon. Anyone relying on this report should understand all of the details of the engagement. Neither the name, seals, marks nor insignia of SGS U.S. Testing may be used in any advertising or promotional materials without the prior written approval of SGS U.S. Testing. The test report cannot be reproduced, except in full, without prior written permission of SGS U.S. Testing Company Inc.



geoscience LTD
LABORATORY TESTING DIVISION

6260-B Marindustry Drive

San Diego, CA 92121

PROPERTY CERTIFICATION

CLIENT: ECT
P.O. Box 870
Albion, CA 95410

DATE: January 6, 2005

MATERIAL INVESTIGATED:

A smooth, bright Al Foil (submitted by ECT), Label I. D. ECT,
manufactured by C & S Insulation, Inc., 9709 Alpaca Street,
So. El Monte, CA 91733

P.O.: Authorisation from Carlos Carrillo for Robert Pond

PROPERTY MEASURED:

Infrared Emissivity

MEASUREMENT METHOD:

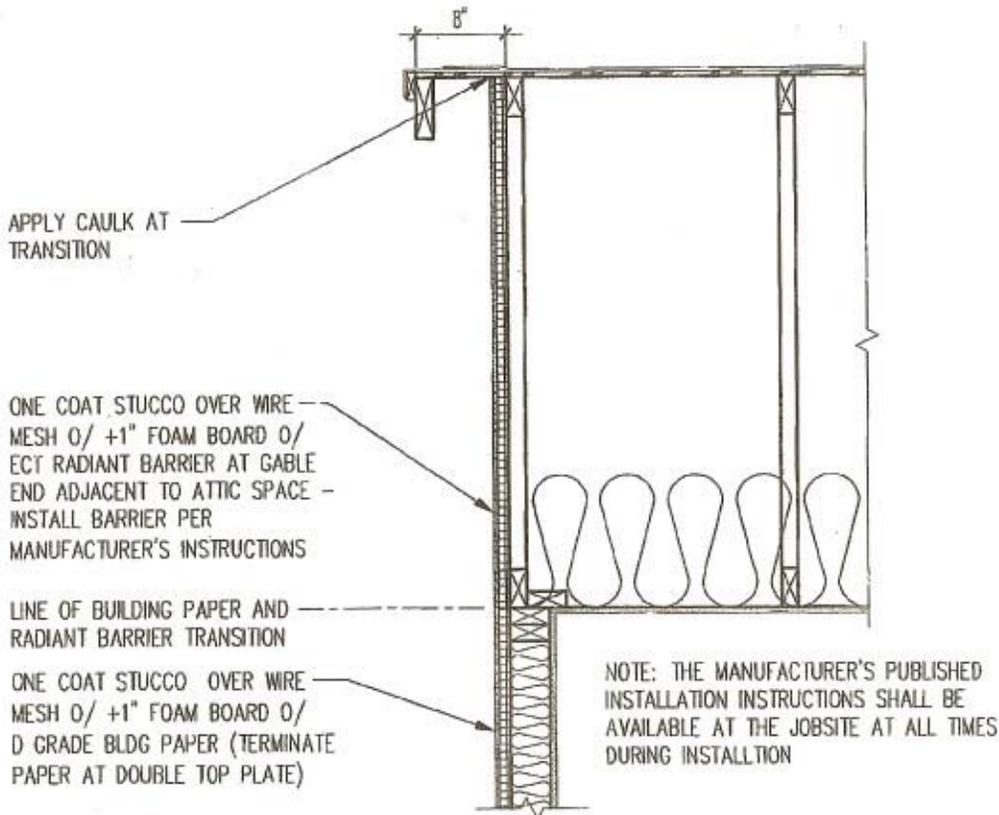
ASTM E-408 (C-1371)

RESULTS:

Emissivity = 0.046

* Details of the investigation are not included in this Property Certification; the results presented here apply only to the samples tested.

R.F. Poppendorf
CERTIFYING OFFICER R.F. Poppendorf



ECT RADIANT BARRIER AT GABLE END

SCALE: 3/4" = 1'-0"

REFER TO STRUCTURAL PLANS FOR ADDITIONAL INFO



FINISHES TYPICAL DETAILS

ISSUED BY	DATE
△	05-23-08
△	DATE
△	
△	



ACCEPTANCE CRITERIA FOR WATER-RESISTIVE BARRIERS

AC38

Approved June 2004

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

PREFACE

Evaluation reports issued by ICC Evaluation Service, Inc. (ICC-ES), are based upon performance features of the International family of codes and other widely adopted code families, including the Uniform Codes, the BOCA National Codes, and the SBCCI Standard Codes. Section 104.11 of the *International Building Code*[®] reads as follows:

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

Similar provisions are contained in the Uniform Codes, the National Codes, and the Standard Codes.

This acceptance criteria has been issued to provide all interested parties with guidelines for demonstrating compliance with performance features of the applicable code(s) referenced in the acceptance criteria. The criteria was developed and adopted following public hearings conducted by the ICC-ES Evaluation Committee, and is effective on the date shown above. All reports issued or reissued on or after the effective date must comply with this criteria, while reports issued prior to this date may be in compliance with this criteria or with the previous edition. If the criteria is an updated version from the previous edition, a solid vertical line (|) in the margin within the criteria indicates a technical change, addition, or deletion from the previous edition. A deletion indicator (→) is provided in the margin where a paragraph has been deleted if the deletion involved a technical change. This criteria may be further revised as the need dictates.

ICC-ES may consider alternate criteria, provided the report applicant submits valid data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria set forth in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria in this document and otherwise demonstrate compliance with the performance features of the codes, ICC-ES retains the right to refuse to issue or renew an evaluation report, if the product, material, or type or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use of the product, material, or type or method of construction.

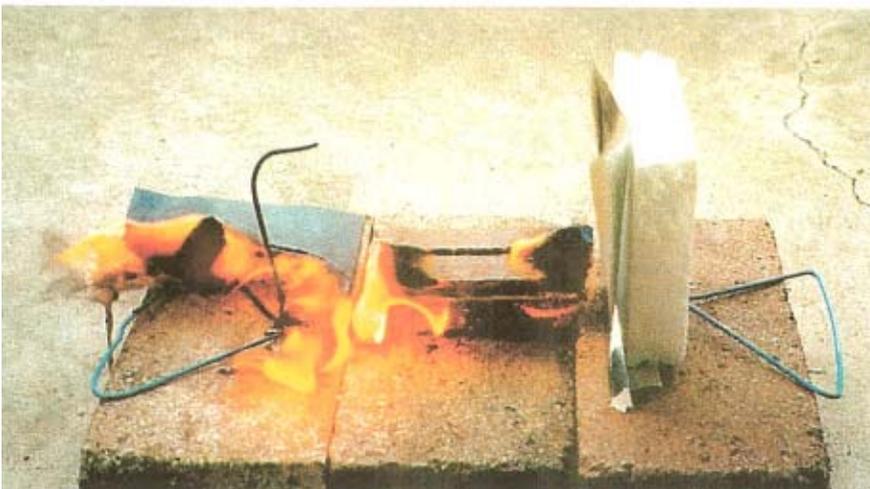
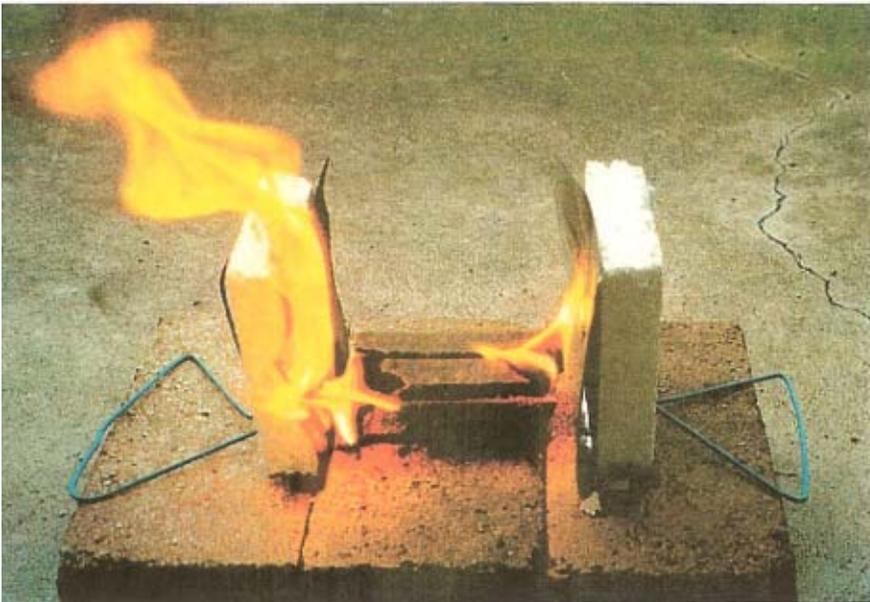
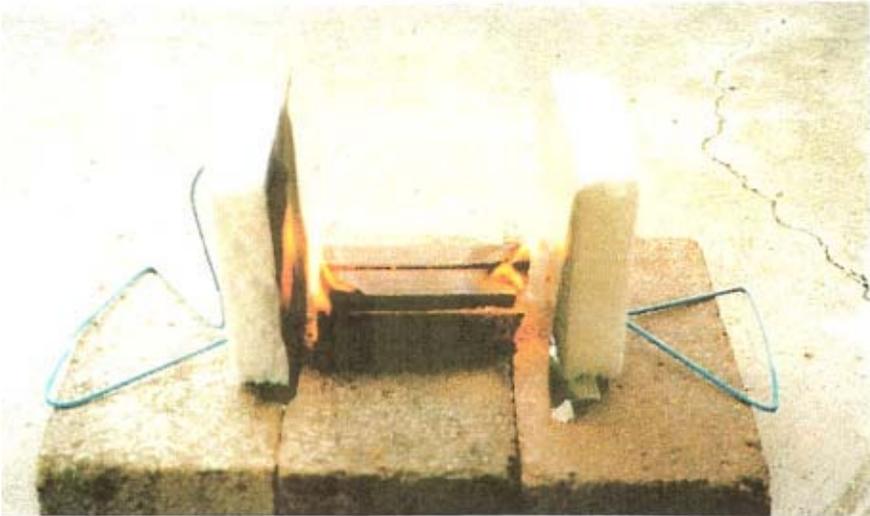
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PRODUCT FIRE TEST

Left: standard building paper. Right: ect-radiant barrier



PRODUCT FIRE TEST

Left: building paper covering
Right: no covering





Maricopa County
Planning and Development

May 5, 1994

Label Change: 9/1/2002
new designation
ECT Radiant Barrier

Mr. Bob Pond
8095 South Lake Circle
Loomis, CA 95650-9119

Subject: Radiant Barrier

Dear Mr. Pond:

Maricopa County Building Safety Division has reviewed the above captioned product and determined that it meets the requirements for separation from foam plastic insulation and the interior of the attic area as per Sec. 1713-D exception (D) of the 1991 Edition of the Uniform Building Code and has no objection to its use.

I am available to answer any questions at 602-506-3694.

Sincerely,

Leo Zabella
Chief Building Official

LZ:gb

xc: Derek Horn, Inspections Manager
Robert Brittain, Customer Service Manager

COPY



Label Change: 9/1/2002
new designation
ECT Radiant Barrier

March 15, 1994

Mr. Robert W. Pond
ECT
8095 South Lake Circle
Loomis, CA 95650-9119

SUBJECT: SUPERIOR RADIANT BARRIER

Dear Mr. Pond:

Based upon the product literature you have provided, the City of Scottsdale is recognizing the "Superior Radiant Barrier" as meeting the thermal barrier attic requirements of Section 1713(d), Exception D of the Uniform Building Code.

If you have any questions, please call me at 994-7068.

Sincerely,

A handwritten signature in cursive script, appearing to read "Anthony Floyd".

Anthony Floyd, AIA, C.B.O.
Building Official

COPY

c: Phil Linovitz, Building Inspection Manager
Dave Potter, Building Plans Review Supervisor



THE CITY OF SURPRISE, ARIZO

COMMUNITY DEVELOPMENT DEPARTM

12425 WEST BELL R

SUITE D

SURPRISE, AZ 8

OFFICE 583-1088 FAX 583-

January 30, 1998

Label Change: 9/1/2002
new designation
ECT Radiant Barrier

Mr. Robert W. Pond
ECT
8095 S. Lake Circle
Loomis, CA 95650-9119

SUBJECT: SUPERIOR RADIANT BARRIER

Dear Mr. Pond,

Based upon the product literature you have provided, the City of Surprise is recognizing the "Superior Radiant Barrier" as meeting the thermal barrier attic requirements of Section 2602.4, Exception D of the 1997 Uniform Building Code.

If you have any questions, please call me at 583-1089.

Sincerely,

B.W. Miller
Plans Examiner

cc: Shirley Berg, Community Development Director
J.R. Peterson, Chief Building Inspector

COPY