NOT to be distributed outside the FACTORY MUTUAL SYSTEM, except by CLIENT.

APPROVAL TESTING OF
ETERNA-SEAL LIQUID RUBBER COATING
FOR
APPLICATION OVER APPROVED
PROTECTED METAL PANEL SYSTEMS

from

TRUCO, INC.
COATINGS & SEALANT DIVISION
4301 TRAIN AVENUE
CLEVELAND, OHIO 44113

J.I. 1Y4A2.AM
(4470)

JANUARY 6,1995

Factory Mutual Research

1151 Boston-Providence Turnpike
P.O. Box 9102
Norwood, Massachusetts 02062

Factory Mutual Research

1151 Boston-Providence Turnpike
P.O. Box 9102
Norwood, Massachusetts 02062

1Y4A2.AM
(4470)

JANUARY 6, 1995

APPROVAL TESTING OF ETERNA-SEAL LIQUID RUBBER COATING FOR APPLICATION OVER APPROVED PROTECTED METAL PANEL SYSTEMS

from

TRUCO, INC.
COATINGS & SEALINGS DIVISION
4301 TRAIN STREET
CLEVELAND, OHIO 44113

I INTRODUCTION

1.1 Truco, Inc. submitted to Factory Mutual Research Corporation (FMRC) samples of their JUST SUPER ETERNA-SEAL liquid rubber Roof Coating to be applied over FMRC Approved Protected Metal Deck panels, to determine if the coatings would qualify for FMRC Approval when applied over FMRC Approved Protected Metal Roof Deck panels.

1.2 Examination included fire testing for exposure from above the roof deck, simulated hail damage and water leakage testing.

1.3 Tests show that Truco's Just Super Eterna-Seal liquid rubber roof Coating System meets FMRC Standard 4470 requirements as a roof membrane over Approved Protected Metal Roof Deck Panel Systems and is Approved as such when applied as described in the Conclusion of this report.

II MATERIAL TESTED

2.1 Truco, Inc. manufactures Just Super Eterna-Seal #7140 liquid rubber roof coating for use as a protective and waterproof membrane for pitched roof surfaces.

2.1.1 The coating is applied at a minimum total 14 mil (5 year system) dry thickness or 21 mil (10 year system) dry thickness in two coats of 1 gal/100 sq ft (0.4ℓ/m²) for the five year system or 1.5 gal/100 sq ft (0.6ℓ/m²) for the ten year system.

2.2 The preparation of the coating used to prepare the test test samples was witnessed by a representative of FMRC during a Quality Assurance Inspection at the manufacturing facilities located in Cleveland, Ohio.

2.3 The test panels were prepared at Factory Mutual Research's Norwood, MA facilities.

2.4 Material formulation and manufacturing procedures are on file at FMRC.

III TESTS AND PROCEDURES

3.1 Tests were required by FMRC Standard 4470 for Class 1 Roof Covers.

3.2 ASTM E108 (91a) Fire Spread of Flame Tests

3.2.1 The exterior fire tests were conducted in accordance with the ASTM E108 (91a) Fire Tests of Roof Coverings for Class A noncombustible deck test procedures. The wind velocity over the top of each sample was adjusted to 12 ± 0.5 mph (5.4 ± 0.2 m/s).

3.2.2 The flame was adjusted to 1400° ± 50°F (760° - 10°C) for the Class A tests. The temperature was determined by a thermocouple located 1 in. (25 mm) above the surface and 1/2 in. (13 mm) toward the source of the flame from the lower edge of the panel. Sample size was 3-1/3 ft x 10 ft (1.0 m x 3.0 m). The flame and air current were applied continuously for a period of 10 minutes for the Class A test. During and after the application of the flame, the panel was observed for distance of maximum flame spread, glowing brands and other damage.

3.3 FMRC Simulated Hail Damage Test

3.3.1 The simulated hail damage test was conducted using the FMRC simulated hail damage test apparatus to evaluate the ability of the roof covering to withstand a hailstorm without damage to the membrane. The test criteria states that there must be no evidence of splitting or rupture of the roof cover.

3.3.2 A 1-3/4 in. (44 mm) diameter steel ball weighing 0.78 lbs (0.3 kg) was dropped from a 17 ft 9-1/2 in. (5.4 m) height through a 2 in. (51 mm) ID PVC tube. This procedure was repeated several times on various sections of the sample. After each drop the sample was inspected for cracks in the weatherproof membrane.

3.3.3 A sample is further conditioned (weathered) for 1000 hrs in a fluorescent ultraviolet condensation type weathering apparatus and the impact test procedure is repeated.

3.4 Susceptibility to Leakage Test

3.4.1 The FMRC Susceptibility to Leakage test is designed to assess the potential for water migration when the cover is fabricated with a typical lap seam or perimeter detail.

3.4.2 A 2 x 2 ft (0.6 x 0.6 m) coated steel sample with a centrally located seam is covered by 6 in (152 mm) of water for a period of seven days.

3.4.3 There shall be no signs of water leakage during the 7 day period.

IV TEST SAMPLES

4.1 ASTM E108 Spread of Flame Test Samples. Two 3-1/3 ft x 10 ft (1.0 m x 3.0 m) panels were tested. Truco, Inc's Just Super Eterna-Seal #7140 liquid rubber coating was applied to 26 guage Approved steel deck in two coats with a nominal 21 mil total dry thickness (10 year system). The coated steel panels were fastened over 1/2 in gypsum wallboard to plywood to minimize warping during the tests.

4.2 FMRC Simulated Hail Damage Test Samples. Samples of the coating system were applied to steel deck in two-coat applications of minimum 21 mil thickness.

4.3 FMRC Susceptibility to Leakage test sample. Samples of the coating system were applied over a 2 x 2 ft (0.6 x 0.6 m) steel deck sample with a caulked seam which was screwed to a plywood substrate.

V TEST RESULTS

5.1 ASTM E108 (91a) Spread of Flame

Sample No.	Class Tested	Slope Tested	Max. Flame Spread
Truco's Just Super Eterna-Seam #7140 liquid rubber Coating			
Test 1	A	4 in.:12	62 in. (1.57m)
Test 2	A	4 in.:12	61 in. (1.55m)

5.2 FMRC Simulated Hail Damage - ten (10) drops of the simulated hail impactor showed no signs of splitting, cracking or rupture of the coatings before and after weathering.

5.3 FMRC Susceptibility to Leakage Testing- there was no sign of water leakage during the seven day exposure

VI CONCLUSIONS

6.1 Test results show that the Truco Inc. Just Super Eterna-Seal #7140 liquid rubber Roof Coating System has met FMRC Approval requirements for application over FMRC Approved Insulated Metal Roof Deck Panel Systems as a maintenance and repair surface at the following maximum slope: 4 in./ft (33 cm/ m).

6.1.1 The Truco Inc. Just Super Eterna-Seal #7140 liquid rubber roof coating System is applied by spray gun, roller or brush in two separate coats with a minimum application rate of 1 gal/100 sq ft (0.4ℓ / m²) for a total minimum dry film thickness of 14 mil (5 year system). The coats should be applied per the manufacturer's instructions on the containers.

6.2 The tested roof membrane, when installed as described above, meets the Factory Mutual Research Corporation Approval requirements for roof covers and when Approval is effective, will be listed in the Factory Mutual Research Corporation Approval Guide, Roof Coverings section.

6.3 Approval will become effective when the Manufacturer's Agreement is signed and received by FMRC.

6.4 Continued Approval will depend upon satisfactory field experience and periodic Quality Audit Inspections.

VII MARKING

7.1 The manufacturer shall mark each packing container with the manufacturer's name and product trade name. In addition, the container must be marked with the FMRC Approval Mark and the words "Subject to the conditions of approval as a Roof Coating when installed as described in the current edition of the FMRC Approval Guide".

7.2 Markings denoting FMRC Approval shall by applied by the manufacturer only within and on the premises of manufacturing locations that are under the FMRC Facilities and Procedures Audit Program.

7.3 The manufacturer agrees that use of the FMRC name or Approval Mark is subject to the conditions and limitations of the FMRC approval. Such conditions and limitations must be included in all references to FMRC approval.

VIII MANUFACTURER'S RESPONSIBILITIES

8.1 To assure compliance with his procedures in the field, the manufacturer shall supply to the roofer all necessary instructions and assistance required to produce the desired performance achieved in the tests.

8.2 The manufacturer shall notify FMRC of any planned change in the Approved product (Form 797, Approved Product-Revision Report) prior to general sale or distribution.

IX QUALITY AUDIT INSPECTION AND REEXAMINATION

A reexamination and manufacturing inspection shall be conducted periodically on the Approved products at the Cleveland, Ohio facility to determine that the quality and uniformity of the products have been maintained and will provide the same level of performance as originally Approved.

TESTS SUPERVISED AND REPORT BY:

T. M. Chestnut
Engineer

REPORT APPROVAL BY:

G. A. Smith
Manager-Materials Section

TMC/emh