

SOUTHWESTERN LABORATORIES

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Attention: -D. COLLINS

LFF SYSTEMS

11302 Memorial

Houston, TX 77024

P: 713-784-5513 / F: 713/784-5001

W/O. No.: LFF001-01-08-48733-1

P.O. No.:

Report Date: 1/15/2004

Comparative Hot Mop and Rupture Tests at 475° F to 500° F

Samples: Fast Felt™, manufactured and supplied for testing by LFF Systems, Inc. consists of an ASTM D 226, Type II organic felt ("30 # felt") to which 1-5/8" diameter plastic discs greater than or equal to 0.010" thick are incorporated into the 30# felt in a predetermined pattern. The integral tabs are imprinted on the top side with a target symbol indicating where the nail is to be placed.

"Nails" are a minimum 12 gauge annular ring shank, hot dipped galvanized nails with minimum 3/8" diameter heads, as defined in Section 1517.5.1 of the Florida Building Code. The nails were obtained from a Home Depot in Florida.

Asphalt hot mopped was from 100 lb. kegs of Type III and Type IV asphalt manufactured by the Trumbull Asphalt Refining Subsidiary of Owens-Corning.

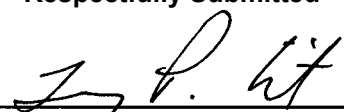
The maximum equiviscous temperature ("EVT") recommended by Trumbull, per the kegs' labels, and confirmed by telephone call to Trumbull (1-800-323-8301), was 475° F (Type III) and 500° F (Type IV). These were the approximate temperatures of the asphalt at the time of its hot mopping onto the 30# felt samples.

The equipment utilized to heat the asphalt in a 1 pint clean steel can was a Cress Electric Furnace, Model No. C-1228 / 920.

Test Dates: Tuesday, January 6, 2004 (Hot Mopping Tests and Preparation of the Hot Mop samples for the Rupture Tests) and Friday, January 9, 2004 (Rupture Tests).

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Stork SWL, is an operating unit of Stork Materials Technology B.V., Amsterdam, The Netherlands, which is a member of the Stork group

Respectfully Submitted
Terry Wilt
Manager, Product Evaluation

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Technician: Terry Wilt, STORK Southwestern Laboratories, Product Evaluation Manager

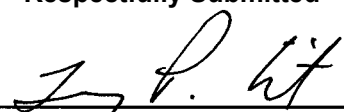
Standards: For the Rupture Performance, Miami-Dade TAS 117(B), "Test Procedure for Dynamic Pull-Through Performance of Roofing Membranes Over Fastener Heads or Fasteners with Metal Bearing Plates, (C) Miami-Dade Building Code Compliance Office.

Specimens: Hot Mop Tests: The Type III asphalt was heated in the electric furnace and maintained at a temperature of 475° F for ten minutes prior to the hot mop application. The asphalt was removed from the furnace and the hot mopping was immediately begun. The 1-5/8" diameter Fast Felt™ tabs incorporated into the ASTM D226 organic felt were subjected to 30 seconds of continuous vigorous mopping with a cotton Hot Mop fully saturated with Type III asphalt, at a beginning minimum operating temperature of 475° F. The Type IV asphalt was heated in the electric furnace and maintained at a temperature of 500° F for ten minutes prior to the hot mop application. The asphalt was removed from the furnace and the hot mopping was immediately begun. The 1-5/8" diameter Fast Felt™ tabs incorporated into the ASTM D226 organic felt were subjected to 30 seconds of continuous vigorous mopping with a cotton Hot Mop fully saturated with Type IV asphalt, at a beginning minimum operating temperature of 500° F.

The 30 # felt specimen was approximately 4-6" wide by 8-10" long and contained one Fast Felt™ tab imprinted upon it. This was the single tab vigorously hot mopped for 30 seconds.

Rupture Tests: A set of specimens consisting of Fast Felt™ tabs was cut into 18" by 18" squares with an integral Fast Felt™ disc in the center with a nail installed in the center of the tab. The Type III asphalt was heated in the electric furnace and maintained at a

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temperature of 475° F for ten minutes prior to the hot mop application. The asphalt was removed from the furnace and hot mopping was immediately begun over the disc with the nail through it with Type III Asphalt heated to 475° F and Type IV Asphalt heated to 500° F asphalts. Immediately upon the completion of a full hot mop covering of the tab, with each asphalt type, the specimen was covered with a granulated cap sheet and was set aside until the rupture tests were performed.

Results: Hot Mop Tests: Immediately after the 30 second vigorous hot mopping of the Fast Felt™ tab and while the asphalt remained hot, the applied asphalt was scraped off the tab with a steel scraper. Inspection of the Fast Felt™ tabs revealed no visual distortion of the Fast Felt™ tabs.

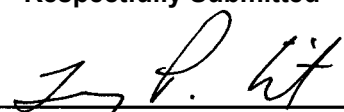
Rupture Tests: Rupture Performance, Miami-Dade TAS 117(B), “Test Procedure for Dynamic Pull-Through Performance of Roofing Membranes Over Fastener Heads or Fasteners with Metal Bearing Plates, (C) Miami-Dade Building Code Compliance Office were performed on two samples, representing one each of the heated asphalts hot mopped: one at 480° F (Type III) and one at 500° F (Type IV). The Type III (475° F) specimen’s peak force at rupture was 51.880 lbf and the Type IV (500° F) specimen’s peak force at rupture was 52.010 lbf. These results compare favorably to the average 51.8 lbf Base Sheet Pull-Through Resistance Data reported for the Fast Felt™ specimens in the ERD Laboratory Report #01460.06.03 issued on June 26, 2003.

Recording: The customer captured a video record of each of the 4 tests described herein, including the preparation of the rupture test samples utilizing the hot mop and the granulated cap sheet.

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