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REPORT NO. 469526

RENDERED TO

**Fire Retardants Inc. 123 Columbia Court North, Suite 201,
Chaska Mn, 55318**

**TEST DETERMINE FRI MASTIC NO. 70
AND NO. 77 EFFECT ON WIRE AMPACITY**



SINCE 1896

ETL Testing Laboratories, Inc.

Industrial Park • Cortland New York • Telephone: (607) 753-6711



REPORT

ETL Testing Laboratories, Inc.

Industrial Park • Cortland New York • Telephone: (607) 753-6711

Order No. 35605-E-1

Date: August 19, 1985

REPORT NO. 469526

RENDERED TO

Fire Retardants Inc. 123 Columbia Court North, Suite 201, Chaska Mn, 55318

Test: To determine coatings effect on wire Ampacity.

Statement of Limitation: At the client's request, the purpose of this report was to determine the coatings effect on wire ampacity. It is not valid to use this report for any other purpose.

Standard Used: Verbal test procedure with Norman Oliver

Authorization: Purchase Order No. 3602 dated August 8, 1985.

Description of Sample:

1 gallon FRI Mastic No. 77

1 gallon FRI Mastic No. 70

Date of Test: Testing began on August 15, 1985 and concluded on August 19, 1985.

AN INDEPENDENT, EMPLOYEE-OWNED ORGANIZATION TESTING FOR SAFETY AND PERFORMANCE.

THIS REPORT IS SUBMITTED OR EXCLUSIVE USE OF THE CLIENT TO WHOM IT IS ADDRESSED ITS SIGNIFICANCE IS SUBJECT TO THE ADEQUACY AND REPRESENTATIVE CHARACTER OF HE SAMPLES AND TO THE COMPREHENSIVENESS OF THE TESTS. EXAMINATIONS OF SURVEYS MADE NO QUOTATIONS FROM THIS REPORT OR USE OF ETL'S NAME IS PERMITTED EXCEPT AS EXPRESSLY AUTHORIZED BY ETL IN WRITING



<u>Equipment Used</u>	<u>Model</u>	<u>I.D. No.</u>	<u>Cal. Date</u>
Fluke Temperature Logger	2240B	—	3-86
Keithley Multimeter	169	M020	7-86
Standard Resistor	—	Y096	10-87
Constant Current Transformer.	—	—	—

Test Method

Two eight foot lengths of No. AWG THWN wire cable supplied by ETL were used for test purposes. One cable was used for each of the two tests. The insulation was center stripped from each cable in three places approximately two feet apart and thermocouples attached to the bare conductors. Three more thermocouples were then attached to the cables insulation approximately two inches from each conduct or thermocouple. 125 amps was then applied to each cable, one at a time and temperature stability recorded. (*See note) The cables insulation was then coated with FRI Mastic by means of a cloth to assure a smooth even coat. A minimum film thickness of 1/16 inch for Mastic No. 70 and 5/64 inch for Mastic No. 77. Each cable was allowed to dry for a minimum of 24 hours. Thermocouples were then attached in identical places. Current was re-applied and brought up slowly until the same insulation temperature stability was achieved. The current was then monitored and recorded.

*National Electrical Code specifies 125 amps allowable ampacity for No.4 AWG THWN copper wire.



Test Results

125 Amps Applied To No. 4 AWG THWN Copper Cable

<u>Thermocouple No.</u>	<u>Stabilized Insulation Temperature °C</u>	<u>Stabilized Conductor Temperature °C</u>
1	48.0	52.1
2	45.3	50.8
3	46.3	49.2
Average	46.5	50.7

Same Cable Coated With FRI Mastic No. 77

<u>Thermocouple No.</u>	<u>Stabilized Insulation Temperature °C</u>	<u>Stabilized Conductor Temperature °C</u>
1	48.5	52.7
2	45.8	51.4
3	44.8	48.8
Average	46.4	51.0

Recorded Current at Temperature Stability 124 Amps% Current Reduction at Temperature Stability <1% Ambient Temperature at Time of Test: 21°C Ambient Relative Humidity at Time of Test: 75%



Test Results

125 Amps Applied To No. 4 AWG THWN Cable

<u>Thermocouple No.</u>	<u>Stabilized Insulation Temperature °C</u>	<u>Stabilized Conductor Temperature °C</u>
1	43.7	50.9
2	43.1	54.0
3	41.8	49.3
Average	42.9	52.0

Cable Coated With FRI Mastic No. 70

<u>Thermocouple No.</u>	<u>Stabilized Insulation Temperature °C</u>	<u>Stabilized Conductor Temperature °C</u>
1	43.6	49.6
2	44.1	50.5
3	41.1	54.3
Average	43.0	51.5

Recorded Current at Temperature Stability: 124 Amps% Current Reduction at Temperature Stability:
 <1% Ambient Temperature at Time of Test: 21°C Ambient Relative Humidity of Time of Test: 75%



Conclusion

The conclusion is to be made by the client.

Report Approved :

A handwritten signature in cursive script that reads "Anthony J. DiNiro".

Anthony J. DiNiro
Manager
Electrical Division

Report Written by:

A handwritten signature in cursive script that reads "Kevin B. Peck".

Kevin B. Peck
Technician
Electrical Division