APPLIED RESEARCH LABORATORIES OF SOUTH FLORIDA, LLC
5371 N.W. 161st Street • Miami, Florida 33014-6223
www.arl-test.com • info@arl-test.com
Tel: 305.624.4800 • Fax: 305.624.3652

PERFORMANCE REPORT

ARL Lab Number:
50134

Dade County Notification Number:
ARL 13003

Client:
Distek N.A. LLC
1800 Touhy Ave.
Elk Grove Village, IL 60007

Test Method:
Miami-Dade County Protocol TAS 114, Appendix E (1995)

Products:
Roofing and Sheathing Nails

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REPORT OF TEST

1 INTRODUCTION

1.1 Distek N.A. LLC, of Elk Grove Village, IL, retained Applied Research Laboratories (ARL) to conduct a performance testing according to Miami-Dade County Protocol TAS 114, Appendix E, Test Procedure for Corrosion Resistance of Fasteners, Batten Bars and Stress Distribution Plates, on samples of Roofing and Sheathing Nails.

1.2 A performance test was performed by ARL Engineer E. John Lanager from Monday, August 5, 2013, thru Saturday, August 17, 2013.

1.3 The testing program was authorized by an ARL Work Authorization Form (Form WAF-00) received from Mr. Moshe Moked, President of Distek N.A. LLC, on Wednesday, July 3, 2013.

2 PRODUCT DESCRIPTION

2.1 Batch runs of the Roofing and Sheathing Nail were supplied by the client.

2.2 The purpose of these Roofing and Sheathing Nails is to attach single-ply membranes, insulation boards and/or base sheets to a substrate or deck.

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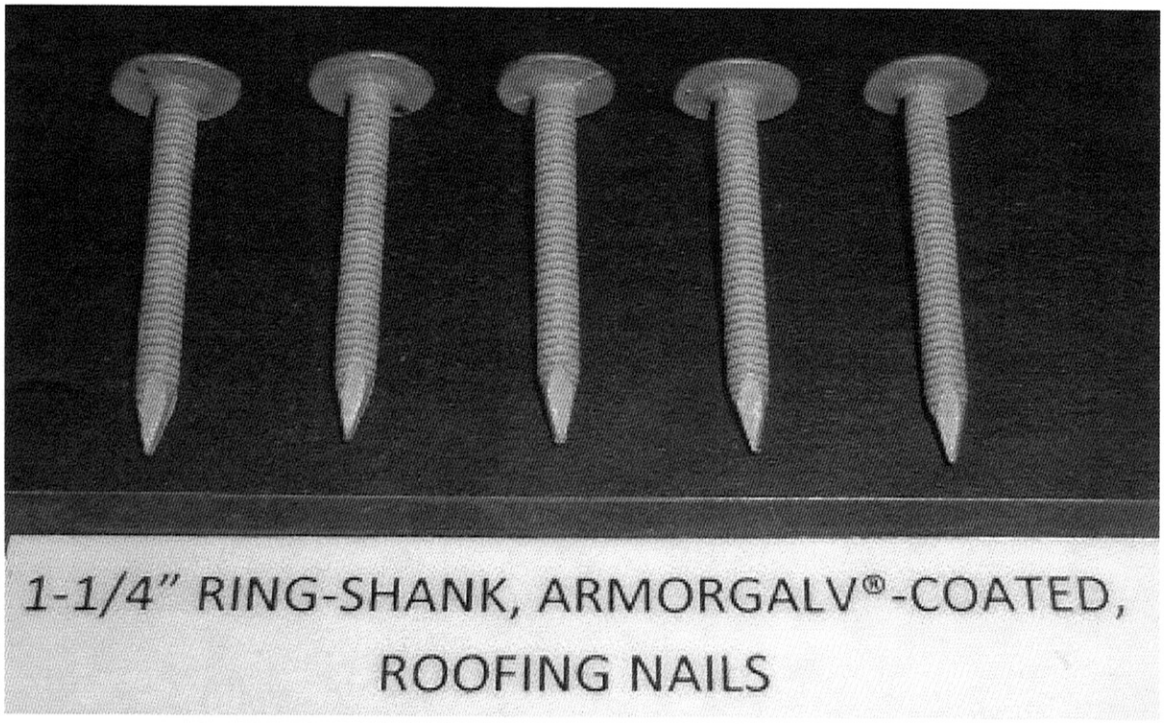
2.3 The following Nails were provided:

a. 1-1/4" Ring-Shank, ArmorGalv®-Coated, Roofing Nails
Manufacturer: Distek N.A. LLC
Manufacturer Address: 1800 Touhy Ave.
Elk Grove Village, IL 60007

b. 2-1/2" x 0.131" Ring-Shank, ArmorGalv®-Coated, Sheathing Nails
Manufacturer: Distek N.A. LLC
Manufacturer Address: 1800 Touhy Ave.
Elk Grove Village, IL 60007

2.4 Photographs of the untested specimens are shown below.



Photograph 1
1-1/4" Ring-Shank, ArmorGalv®-Coated, Roofing Nails (Before)

Dade County Notification Number: ARL 13003

Photograph 2
2-1/2" x 0.131" Ring-Shank, ArmorGalv®-Coated, Sheathing Nails (Before)

3 TEST METHOD

3.1 Cyclic Corrosion Test Chamber – The ARL Cyclic Corrosion Test Chamber was utilized to accommodate the parameters of TAS 114, Appendix E, for the purpose of testing the nails and tin tabs. The Chamber, Model CCT10-MB-8AD, was manufactured by Singleton Corporation. The sample space volume is 21 ft^3. The inside dimensions are 48 x 33 x 24 inches. The Chamber has a temperature range of ambient - 140°F and a humidity range of ambient - 100%.

Photograph 3
Cyclic Corrosion Test Chamber

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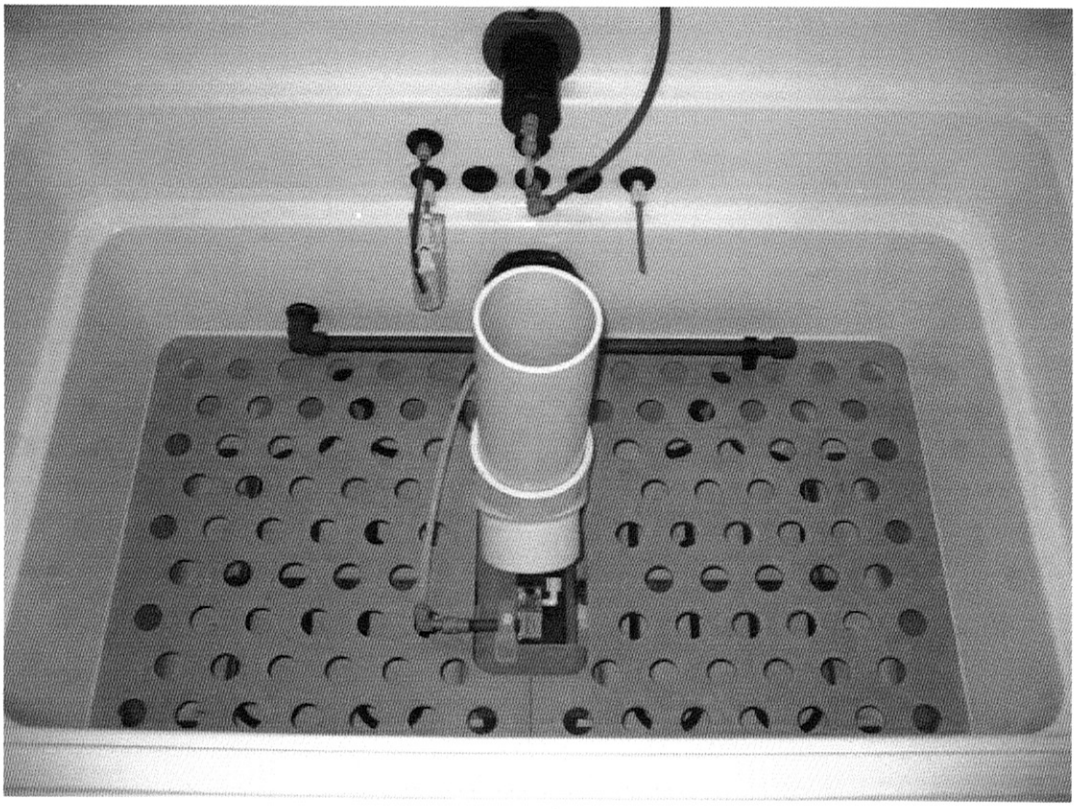

Photograph 4
Cyclic Corrosion Test Chamber

3.2 For this test the Chamber must expose the Nails to 140 cycles consisting of one (1) hour of spray and one (1) hour of drying. Each cycle is two (2) hours. Total test time is 280 hours (approximately 11 days, 16 hours).

3.3 For the spray cycle, the temperature inside the chamber was maintained at 75 ± 6°F. The fogging was achieved by using a single nozzle connected to an air supply. The solution was drawn out of the main reservoir to a secondary reservoir inside the sample space and then atomized by the nozzle and released into the chamber, thus exposing the Nails to the salt fog.

3.4 During the drying cycle, the temperature inside the chamber was maintained at 95 ± 3°F. The Chamber is capable of reaching the required temperature within 45 minutes as required by TAS 114, Appendix E. The drying was aided by evacuating the chamber of all sprayed solution and then beginning the heating process. The evacuation lasts approximately 5 minutes. All visible moisture was removed from the samples. Heating is accomplished by two (2) heater elements located in the bottom of the Chamber.

3.5 Solution – The solution used in the testing was an electrolyte solution containing 0.05% sodium chloride and 0.35% ammonium sulphate by mass. The pH of the solution was between 5.0 and 5.4. The salinity was 0.05%. Water used to manufacture the solution conformed to ASTM G85-09, Section 6 and was substantially free of nickel and copper and did not contain, on a dry basis, more than 1% sodium iodide and not more than 0.3% total impurities. ARL obtained the solution from National Exposure Testing, Inc., of Sylvania, OH, which has the above solution available and labelled as "Certified Dade County Salt Spray Solution." A certificate of conformance was furnished with the solution. The lot number of the solution used is DC021413.1, manufactured on 2/14/13. The Certificate of Compliance provided by the solution manufacturer is maintained at ARL.

3.6 Temperature – The Chamber monitored and adjusted all temperatures automatically to pre-programmed values.

3.7 Quantity of Fog – The quantity of fog was controlled by adjusting the position of the spray nozzle.

4 TEST PROCEDURE

4.1 Before samples were mounted in the Chamber, the collection rate of the Chamber was determined. Two (2) glass, 100mL graduated cylinders, each fitted with a glass funnel having an area of 80 cm^2 mounted in a rubber stopper, were placed in the Chamber and positioned according to ASTM B117-09, Figure 1. The Chamber was programmed to produce a continuous spray for 16 hours with a samples space temperature of 75°F. After 16 hours, the collected solution was measured and the collection rate calculated. The collection rate was calculated to be 1.797 mL/hr. TAS 114, Appendix E specifies a collection rate between 1-2 mL/hr.

4.2 Five (5) test samples were chosen at random from each batch run of samples supplied by the client. Each sample was placed in the Chamber.

4.3 The Chamber was then programmed for the TAS 114, Appendix E test. All samples underwent 140 cycles of testing. The samples were then removed from the chamber and cleaned using deionized water.

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5 AFTER EXPOSURE PHOTOGRAPHS

Photograph 5
1-1/4" Ring-Shank, ArmorGalv®-Coated, Roofing Nails (After)

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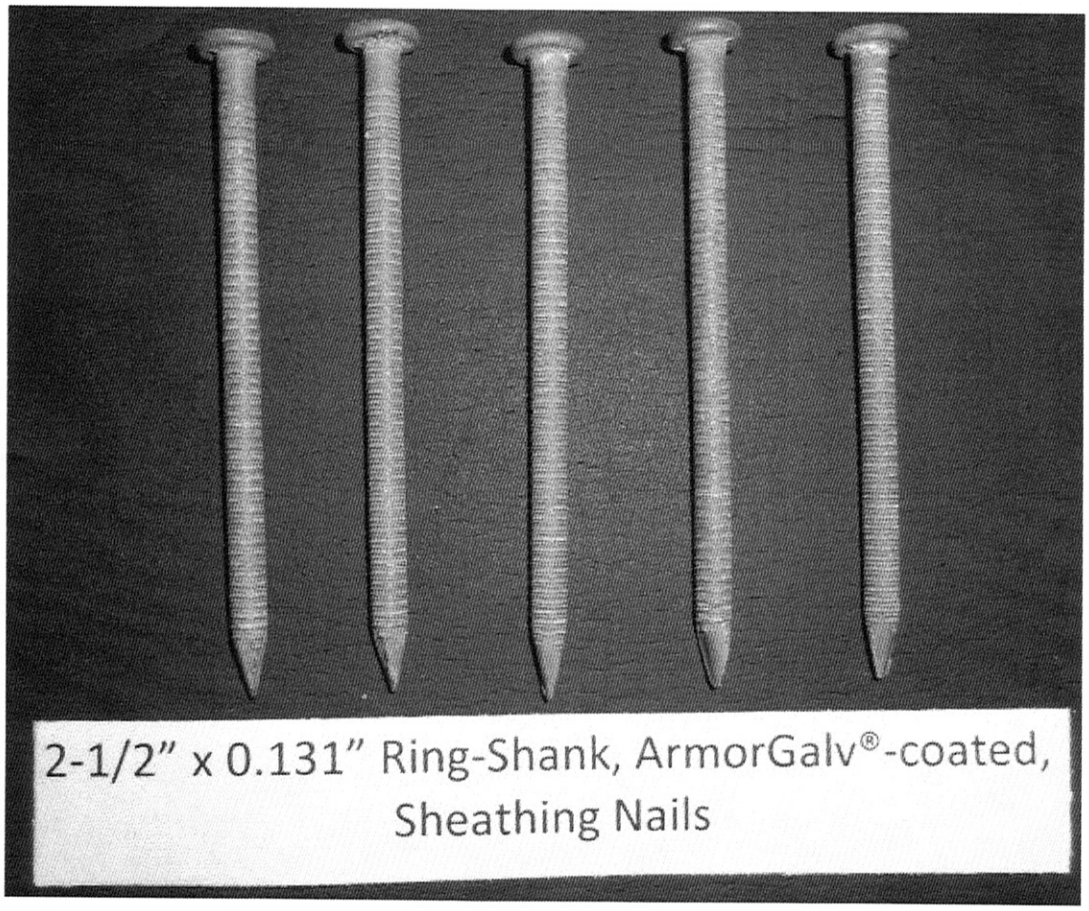

Photograph 6
2-1/2" x 0.131" Ring-Shank, ArmorGalv®-Coated, Sheathing Nails (After)

6 CONCLUSION

6.1 An objective visual examination was conducted on each specimen according to the guidelines of TAS 114, Appendix E, Section 2.6.1.1.

6.2 The acceptance criteria is defined as any test specimen that exhibits corrosion on an area in excess of 5% of its total surface area shall be considered as failing this test.

6.3 Based on the acceptance criteria the following conclusions were made:

Product	Status
1-1/4" Ring-Shanked, ArmorGalv®-Coated, Roofing Nails	PASS
2-1/2" x 0.131" Ring-Shanked. ArmorGalv®-Coated, Sheathing Nails	PASS

7 EQUIPMENT

7.1

Equipment Used	ARL ID #	Calibration Due Date
Cyclic Corrosion Test Chamber	1967	7/26/16
Digital Caliper	1999	1/14/14
100mL Graduated Cylinder	2020	6/10/14
100mL Graduated Cylinder	2021	6/26/14

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8 REMARKS

8.1 These test results pertain only to the specimens tested and may not be representative of on-going production.

8.2 Tested values obtained represent actual results of tested specimens and do not constitute opinion, certification or endorsement.

8.3 These products are not covered by the ARL Listing, Labelling and Follow-up Service Program and are not considered to be ARL Listed.

8.4 Samples tested will be retained by ARL for a minimum of six (6) months.

8.5 This report was reissued on 01/19/15 to correct two (2) errors in the report.

8.5.1 The caption of Photograph 2 on Page 5 incorrectly identified the nails as "Electrogalvanized." The caption was corrected to identify the nails as "ArmorGalv®-Coated."

8.5.2 The caption of Photograph 6 on Page 10 incorrectly identified the nails as "Electrogalvanized." The caption was corrected to identify the nails as "ArmorGalv®-Coated."

END OF REPORT

Report by:	Reviewed by:	Reviewed by:
E. John Lanager, Project Engineer	Joanne Hoefling, Director of Quality Assurance	Hervé Cantave, PE Director of Engineering
Date: 1/19/15	Date: 01/20/15	Date: 01/20/15

NOTE

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