



## TEST REPORT

Rendered to:

NATIONAL NAIL CORPORATION  
2964 Clydon S.W.  
Grand Rapids, Michigan 49519

Report No: A4627.01-119-19  
Test Date: 10/08/10  
Through: 10/25/10  
Report Date: 11/08/10

### **1.0 General Information**

#### **1.1 Product**

CAMO Screw Proprietary Fastening System

#### **1.2 Project Description**

Architectural Testing was contracted by National Nail Corporation to perform thermal cycling testing on various deck boards as installed on wood decks with their CAMO screw proprietary fastening system. Details of the testing performed and photographic documentation are included herein.

#### **1.3 Qualifications**

Architectural Testing has demonstrated compliance with ANS/ISO/IEC Standard 17025 and is consequently accredited as a Testing Laboratory (TL-144) by International Accreditation Service, Inc. Architectural Testing is accredited to perform all testing reported herein.

#### **1.4 Product Sampling**

National Nail Corporation supplied pre-fabricated test specimens, which consisted of various deck boards installed on Architectural Testing-specified mock wood decks using the CAMO screw proprietary fastening system.

#### **1.5 Witnessing**

Roger Vandenberg of National Nail Corporation was present on 10/25/10 to inspect the specimens after they were removed from the thermal chamber.

## 1.6 Product Description

National Nail Corporation's proprietary fastening system consists of the DIY (Do It Yourself) Pro Tool and #9 by 1-7/8 in CAMO screws. The DIY Pro Tool is placed over the deck board at the joist, and the tool automatically creates a 3/16 in gap between deck boards. The CAMO screws are inserted into the guides at each end of the DIY Pro Tool; the guides are set at a 55° angle. The CAMO screws are then screwed in using a 2-in T15 star-head screw bit until the screws disengage from the bit. See drawing in Appendix A for dimensional details.

## 2.0 Thermal Cycling Exposure Testing

### 2.1 General

The purpose of this testing was to determine whether or not thermal cycling would affect the engagement of the CAMO screws when installed with various deck boards.

### 2.2 Test Specimens

Seven pre-fabricated test specimens were supplied for testing. Seven types of deck boards were installed using the CAMO screw proprietary fastening system over a three-span application using three 2x8 preservative treated Southern Yellow Pine support joists on 16.0 in centers. The seven types of deck boards included: 1) preservative treated red pine 5/4 board; 2) non-treated cedar 5/4 board; 3) TAMKO EverGrain® wood-plastic composite deck board; 4) VERANDA® wood-plastic composite deck board; 5) Ipe Brazilian hardwood deck board; 6) Trex Accents® wood-plastic composite deck board; and 7) AZEK® Deck cellular PVC (CPVC) deck board. See photographs in Appendix B for details.

### 2.3 Test Conditions

Each entire mock wood deck assembly was placed in a thermal chamber originally designed and built for testing to ASTM E 2188, *Standard Test Method for Insulating Glass Unit Performance*. The thermal chamber was set to operate with the following cycles:

- 1 hour ramping up from laboratory ambient conditions to 140°F
- 1 hour maintaining 140°F
- 1 hour ramping down to laboratory ambient conditions
- 1 hour ramping down to -20°F
- 1 hour maintaining -20°F
- 1 hour ramping up to laboratory ambient conditions

### 2.3 Test Conditions (Continued)

This six-hour cycle provided four high temperature cycles and four low temperature cycles in one twenty-four hour period. Other conditions existing during thermal cycling were introduction of steam to create high humidity during the rise to 140°F and indirect ultraviolet (UV) light exposure on the top surface of the deck boards during the rise to 140°F, the hold at 140°F, and the return to ambient. The test specimens were subjected to the thermal cycling for a period of approximately two weeks for a total of sixty-seven cycles.

## 2.4 Test Procedure

Each fastener was inspected prior to placing the mock wood deck assemblies in the thermal chamber, and each mock wood deck assembly was inspected prior to testing to verify size and general condition of the materials, assembly, and installation. No potentially compromising defects were observed. Visual observations performed by Architectural Testing are reported herein.

## 2.5 Test Results

For all deck boards, there was no significant change in the gap between the deck board and the joist after thermal cycling exposure. There was no other visual evidence that any of the CAMO screws exhibited signs of withdrawal from the joist. Also, there was no screw breakage or splitting of the deck material after thermal cycling exposure.

## 3.0 Closing Statement

Drawings, data sheets, representative samples of test specimens, and a copy of this test report will be retained by Architectural Testing for a period of four years from the original test date. At the end of this retention period such materials shall be discarded without notice and the service life of this report by Architectural Testing will expire. Results obtained are tested values and were secured using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimens tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING:



Digitally Signed by: Justin M. Mann

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Justin M. Mann  
Evaluation Specialist  
Code Compliance



Digitally Signed by: Travis Hoover

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Travis A. Hoover  
Program Manager,  
Structural Systems Testing

JMM:jmm\drm

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix A - Drawings (1)
- Appendix B - Photographs (5)