

Exterior Research & Design, L.L.C.

Building Science and Envelope Consultants

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December 28, 2001

To: Commercial Roof Membrane Manufacturers

RE: ES Products, Factory Mutual Approved Systems

Gentlemen:

We are writing with regard to a relatively new fastener on the market produced by ES Products, Inc. – the Twin Loc-Nail. The Twin Loc-Nail is a specialty roofing fastener designed for base sheet or insulation attachment to cementitious wood fiber, gypsum and lightweight concrete decks. As outlined in the attached Specification Sheet, the Twin Loc-Nail consists of a metal sleeve fitted with an integral stress distribution plate and a locking staple. All components of the fastener are corrosion resistant, meeting FM 4470 requirements. Moreover, the fastener is pre-assembled, making for a quick, easy installation and providing for consistent withdrawal resistance performance.

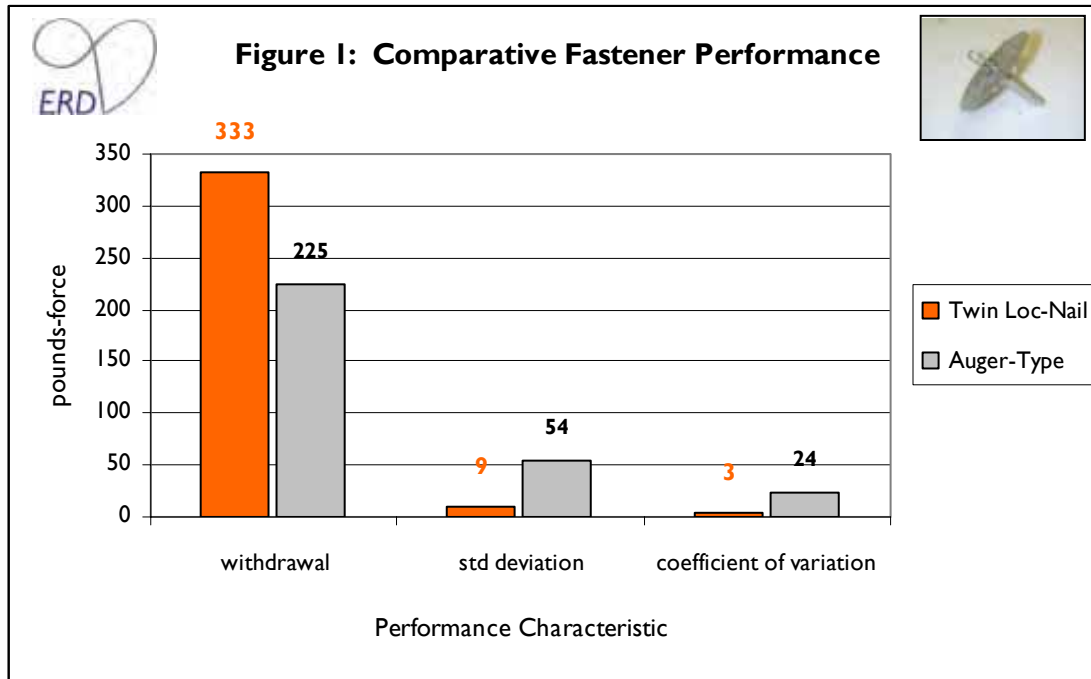
The ERD Laboratory has examined the Twin Loc-Nail for installation consistency, withdrawal resistance performance and base sheet rupture performance as compared to other fasteners designed for use in these deck types.

- Proper installation of the Twin Loc-Nail is very consistent, as installation involves no screw-guns and, therefore, no torsion load on the fastener. Proper installation is not contingent on proper pilot-hole sizing. This becomes particularly important with hard decks (e.g., aged gypsum or aged lightweight concrete decks), where screw-in, auger type fasteners tend to strip or break-off if the pilot-hole size is not large enough. The Twin Loc-Nail is simply driven into the substrate using the Twin Loc Driver. There is no 'balancing act' between pilot-hole size, installability and withdrawal performance.
- As with all deck types of this nature, fastener performance is highly dependent on the deck condition (e.g., compressive strength & integrity). The Twin Loc-Nail is designed such that two locking wires 'hook into' the deck material, providing for significant withdrawal resistance on a consistent basis. Therefore, the installation consistency described above plays into performance consistency. Consider the following Figure displaying withdrawal resistance performance of the Twin Loc-Nail as compared to auger-type fasteners installed into aged gypsum deck material having a compressive strength of 527 psi.



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Review of this data indicates higher withdrawal performance of the Twin Loc-Nail than for the auger-type fasteners. Moreover, and more importantly, the Twin Loc-Nail displays a lesser standard deviation and coefficient of variation, a condition indicative of a more consistent installation and more consistent performance.

- The Twin Loc-Nail is fitted with an integral stress distribution plate. While such plates are not uncommon for roofing fasteners, the Twin Loc-Nail plate is slightly thinner than standard stress plates, thereby allowing for greater flexibility and reducing the potential for any cutting action into the base sheet or insulation board being secured to the deck. As with all ES Products' specialty fastener plates, the Twin Loc-Nail stress plate includes a radial array of holes to allow asphalt to seep through the plate, bonding to the underlying material. Both of these design features promote increased rupture performance of the base sheet or insulation material.



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ES Products, Inc. holds substantial Factory Mutual Approvals for use of their fasteners in a variety of modified bitumen and built-up roof systems. On behalf of ES Products, Inc., ERD would like to invite you to take advantage of these FM Approvals within your own Factory Mutual listings – at no cost to you. If you are interested, please issue a letter to your Factory Mutual Engineer stating the following:

“ES Products owns data and hold FM Approvals for specific constructions that we wish to include in our own FM Approval Guide Listings. This letter authorizes you to work with ES Products and their consultant, Exterior Research & Design, in the establishment of these constructions in our FM Approval Guide Listings. A letter authorizing your review of ES Products’ owned FM data is forthcoming from ES Products.”

Please copy this office with your letter and feel free to contact me with any questions.

We look forward to hearing from you.

Sincerely,



Robert Mills
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Senior Consultant



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