

# TEXAS DEPARTMENT OF INSURANCE

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## PRODUCT EVALUATION

Effective Date: September 1, 2012

RC-349

*The following product has been evaluated for compliance with the wind loads specified in the **International Residential Code (IRC)** and the **International Building Code (IBC)**. This product shall be subject to reevaluation **June 2016**.*

*This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.*

*This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code, and the Texas Engineering Practice Act.*

**Duro-Last Adhered PVC Roofing Systems Using SB IV Adhesive and Mechanically Attached PVC Roofing Systems Using Rhinobond Insulation Plates, Both Installed Over Steel Decks,** manufactured by

**Duro-Last Roofing, Inc.**  
**525 Morley Drive**  
**Saginaw, Michigan 48601**  
**Telephone: (800) 248-0280**

will be accepted in designated catastrophe zones along the Texas Gulf Coast when installed in accordance with the manufacturer's installation instructions and this product evaluation.

## PRODUCT DESCRIPTION

**Duro-Last Membrane:** A nominal 40-mil, 50-mil, or 60-mil single ply roofing membrane. The membrane is composed of PVC film laminated to both sides of a weft insertion knotted scrim.

**Duro-Last SB IV Adhesive:** A low VOC solvent-based adhesive used to bond the Duro-Last roofing membrane to a variety of substrates.

**Insulation:** A polyisocyanurate foam insulation or a polystyrene rigid cellular foam insulation. Insulation shall comply with ASTM C 1289 or ASTM C 578.

**Rhinobond Insulation Plates:** Plates are 3" round, specially coated Galvalume. Plates have a recessed center and a raised flat bonding area.

**Duro-Last #14 HD Fasteners:** Fasteners are No. 14 diameter, threaded screws with drill points and truss heads.

**Duro-Last #15 Fasteners:** Fasteners are No. 15 diameter, threaded screws with drill points and truss heads.

**Duro-Last 3 inch Metal Plate:** A 3 inch square, 0.24 inch thick galvalume plate with a 0.25 inch diameter hole located at the center.

## LIMITATIONS and INSTALLATION

**Roof Framing:** Roof framing shall be as specified in each assembly listed in this evaluation report.

**Roof Deck:** The roof deck shall be secured to the roof framing to resist the required uplift loads as specified in each assembly listed in this evaluation report.

**Positive Drainage of Roof Deck:** Roof decks, in which this product is to be installed upon, shall be provided with positive drainage. A minimum roof slope after construction of  $\frac{1}{4}$  inch per foot is recommended.

**Design Wind Pressures:** The design wind uplift pressures shall be as specified in the assemblies listed in this evaluation report.

## INSTALLATION INSTRUCTIONS

**General Installation Requirements:** International Residential Code (IRC) and International Building Code (IBC) requirements shall be satisfied and the manufacturer's installation instructions followed, unless otherwise specified by this product evaluation report.

**Fasteners:** Fasteners shall be of sufficient length to penetrate into and through the steel deck a minimum of  $\frac{3}{4}$  inch.

**Installation:** Installation shall be in accordance with the following assemblies. Refer to the manufacturer's specifications for additional installation requirements.

### Assembly No. 1

Design Pressure: -45 psf  
Purlins: Minimum  $\frac{1}{4}$  inch thick steel  
Deck: Minimum 22 gauge, Type B, Grade 80 steel  
Attachment: Attached to steel supports spaced a maximum of 72 inches on center with TRAXX/5 screws spaced a maximum of 6 inches on center. Deck sidelaps are secured 24 inches on center with TRAXX/1 screws.  
Insulation: Minimum  $1\frac{1}{2}$  inches thick ENRGY 3, ISO-95+GL, Multi-Max FA-3, ACFoam-II or Duro-Guard ISO-II-A, ACFoam-III or Duro-Guard ISO-III-A, or minimum 2 inch thick ACFoam IV or Duro-Guard ISO-III-A. Secured with Rhinobond Insulation Plates with Duro-Last #15 extra heavy duty drill point fasteners installed at 1 per 5.33 sf.  
Membrane: Duro-Last, minimum 40-mil thick. Induction welded to the Rhinobond Insulation Plate with the Rhinobond Insulation Plate bonding tool at 6 seconds per plate so the tools reaches 400 degrees F. Laps sealed with a minimum  $1\frac{1}{2}$  inch wide heat weld.

### Assembly No. 2

Design Pressure: -45 psf  
Purlins: Minimum  $\frac{1}{4}$  inch thick steel  
Deck: Minimum 22 gauge, Type B, Grade 80 steel  
Attachment: Attached to steel supports spaced a maximum of 72 inches on center with TRAXX/5 screws spaced a maximum of 6 inches on center. Deck sidelaps are secured 24 inches on center with TRAXX/1 screws.

### Assembly No. 2 (continued)

Insulation: Minimum 1 ½ inches thick ENRGY 3, ISO-95+GL, Multi-Max FA-3, ACFoam-II or Duro-Guard ISO-II-A, ACFoam-III or Duro-Guard ISO-III-A, or minimum 2 inch thick ACFoam IV or Duro-Guard ISO-IV-A. Secured with Duro-Last 3" metal plates with Duro-Last #14 fasteners installed at 1 per 2 sf.

Adhesive: Duro-Last SB IV Adhesive applied at 60 sf/gal.

Membrane: Duro-Last, minimum 40-mil thick. Laps sealed with a minimum 1 ½ inch wide heat weld.

### Assembly No. 3

Design Pressure: -45 psf

Purlins: Minimum ¼ inch thick steel

Deck: Minimum 22 gauge, Type B, Grade 80 steel  
Attachment: Attached to steel supports spaced a maximum of 72 inches on center with TRAXX/5 screws spaced a maximum of 6 inches on center. Deck sidelaps are secured 24 inches on center with TRAXX/1 screws.

Insulation: Minimum 1 ½ inches thick ENRGY 3, ISO-95+GL, Multi-Max FA-3, ACFoam-II or Duro-Guard ISO-II-A, ACFoam-III or Duro-Guard-III-A, or minimum 2 inch thick ACFoam IV or Duro-Guard ISO-IV-A. Installed loose.

Roof Board: Minimum ¼ inch thick Invinsa Roof Board. Secured with Duro-Last 3" metal plates with Duro-Last #15 extra heavy duty drill point fasteners installed at 1 per 2 sf. Fasteners penetrate through the insulation and into the steel deck.

Adhesive: Duro-Last SB IV Adhesive applied at 60 sf/gal.

Membrane: Duro-Last, minimum 40-mil thick. Laps sealed with a minimum 1 ½ inch wide heat weld.

### Assembly No. 4

Design Pressure: -67.5 psf

Purlins: Minimum ¼ inch thick steel

Deck: Minimum 22 gauge, Type B, Grade 80 steel  
Attachment: Attached to steel supports spaced a maximum of 72 inches on center with TRAXX/5 screws spaced a maximum of 6 inches on center. Deck sidelaps are secured 24 inches on center with TRAXX/1 screws.

Insulation: Minimum 1 ½ inches thick ENRGY 3, ISO-95+GL, Multi-Max FA-3, ACFoam-II or Duro-Guard ISO-II-A, ACFoam-III or Duro-Guard-III-A, or minimum 2 inch thick ACFoam IV or Duro-Guard ISO-IV-A. Installed loose.

Roof Board: Minimum ¼ inch thick Securock. Secured with Duro-Last 3" metal plates with Duro-Last #14 fasteners installed at 1 per 1.33 sf. Fasteners penetrate through the insulation and into the steel deck.

Adhesive: Duro-Last SB IV Adhesive applied at 60 sf/gal.

Membrane: Duro-Last, minimum 40-mil thick. Laps sealed with a minimum 1 ½ inch wide heat weld.

### Assembly No. 5

Design Pressure: -67.5 psf

Purlins: Minimum ¼ inch thick steel

**Assembly No. 5 (continued)**

Deck:	Minimum 22 gauge, Type B, Grade 80 steel <u>Attachment:</u> Attached to steel supports spaced a maximum of 72 inches on center with TRAXX/5 screws spaced a maximum of 6 inches on center. Deck sidelaps are secured 24 inches on center with TRAXX/1 screws.
Insulation:	Minimum 1 ½ inches thick ENRGY 3, ISO-95+GL, Multi-Max FA-3, ACFoam-II or Duro-Guard ISO-II-A, ACFoam-III or Duro-Guard ISO-III-A, or minimum 2 inch thick ACFoam IV or Duro-Guard ISO-IV-A. Installed loose.
Roof Board:	Minimum ¼ inch thick Securock. Secured with Duro-Last 3" metal plates with Duro-Last #15 extra heavy duty drill point fasteners installed at 1 per 1.6 sf. Fasteners penetrate through the insulation and into the steel deck.
Adhesive:	Duro-Last SB IV Adhesive applied at 60 sf/gal.
Membrane:	Duro-Last, minimum 40-mil thick. Laps sealed with a minimum 1 ½ inch wide heat weld.

**Note:** The manufacturer's installation instructions shall be on the job site during the installation. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC), the International Building Code (IBC), and the Texas Revisions.