

# DURO-GUARD<sup>®</sup> ISO HD Composite

**Description:**

Duro-Guard<sup>®</sup> ISO HD Composite is comprised of ½ inch high density polyisocyanurate (ISO) cover board laminated during the manufacturing process to Duro-Guard ISO III rigid roof insulation. R-value is optimized with a thinner profile.

- Eliminates the need for a cover board while saving on inter-ply adhesive and labor.
- Manufactured with a blowing agent that has zero ozone depletion potential (ODP) and virtually no global warming potential (GWP).
- Recycled content of cover board > 8%.
- Approved for direct application to steel and other deck types.
- Top layer of ½ inch high density ISO provides 80 – 110 psi compressive strength.
- The bottom layer of Duro-Guard ISO III is available in two grades of compressive strength per ASTM C 1289:
  - Type II, Class 1, Grade 2 (20 psi).
  - Type II, Class 1, Grade 3 (25 psi).
- Passes ASTM Resistance to Mold Test.
- Refer to Tables 2 and 3 for physical properties.

**Recommended Uses:**

- Mechanically attached Duro-Last<sup>®</sup> roof systems.
- Adhered/Fully Bonded Duro-Last roof systems.
- Duro-Bond<sup>®</sup> roof systems.
- Metal retrofit roof systems.

**Underwriters Laboratories, Inc. Classifications:**

- In some cases, use of this product may result in a Class A or B fire rating over a combustible deck without the use of a fire rated slip sheet or board. Refer to Duro-Last's UL Listings (TGFU.R10128) for assembly details.
- UL 1256.
- Insulated Metal Deck Constructions.
  - No. 120, 123, 292.
- UL 790.
- UL 263 Hourly Rated P Series Roof Assemblies.
- UL Classified for use in Canada.

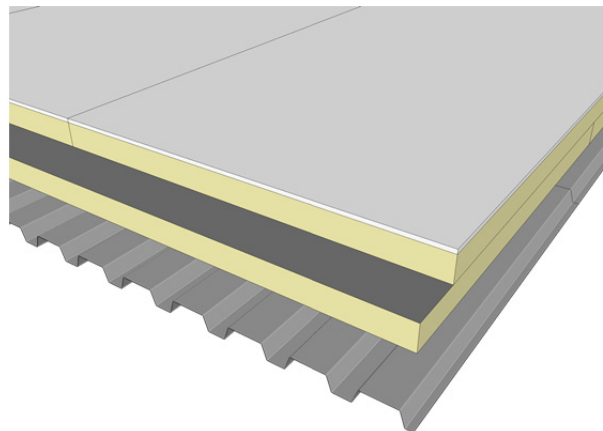


Figure 1. Duro-Guard ISO HD Composite (Top Layer)

**Factory Mutual Approvals:**

- FM 4450, FM 4470.
- Approved for Class 1 insulated steel, wood, concrete and gypsum roof deck construction.
- Refer to FM Approval's RoofNav for details on FM Approved systems ([www.roofnav.com](http://www.roofnav.com)).

**Flat Panels:**

- Available sizes:
  - 4 ft. x 4 ft.
  - 4 ft. x 8 ft.
- Thicknesses: 2 to 4.5 inches.
- Refer to Table 1 for R-value and flute spanability.

TABLE 1. THERMAL VALUES				
THICKNESS		L TTR R-VALUE*	FLUTE SPANABILITY	
inches	mm		inches	mm
2.00	51	11.00	4.375	111
2.25	57	12.10	4.375	111
2.50	64	13.90	4.375	111
3.00	76	16.90	4.375	111
3.25	83	18.10	4.375	111
3.50	89	19.90	4.375	111
4.00	102	23.00	4.375	111
4.25	108	24.20	4.375	111
4.50	114	26.10	4.375	111

\* R-Value is calculated by adding the R-value of the cover board and the R-value of Duro-Guard ISO III together.

**Installation:**

- Panels must be kept dry before, during and after installation. Install only as much insulation as can be covered the same day with completed roofing.
- The use of multiple layers of insulation with joints staggered a minimum of 6 inches between layers is recommended to eliminate thermal bridging.
- Abut panel edges together and stagger joints of adjacent panels.
- Boards must be neatly fitted to roof deck and around penetrations with no gaps greater than ¼ inch.
- Refer to the appropriate Duro-Last roof system specification and detail drawings for deck preparation and attachment requirements.
- Precautions must be taken to ensure that new concrete decks have fully hydrated and do not continue to release moisture.

**Panel Attachment:**

- Panels may be attached to the roof deck using mechanical fasteners, insulation adhesive or hot bitumen. It is acceptable to use these products in combination.

*Mechanical Attachment*

- When installing multiple layers (which may include insulation, cover boards and thermal barriers) it is acceptable to mechanically secure through all layers.
- Use fasteners and plates supplied by or approved by Duro-Last, Inc.

*Adhesive Attachment*

- Insulation adhesive must be supplied by Duro-Last, Inc. Refer to the adhesive's product data sheet for application guidelines. Acceptable products:
  - Duro-Grip® Insta-Stik™.
  - Duro-Grip Olybond®.
  - Duro-Grip Millenium Weather-Tite®.
  - Duro-Grip CR-20.
- Subsequent layers of insulation and approved cover boards may be attached with insulation adhesive.
- Maximum panel dimensions are 4 ft. x 4 ft.

*Hot Bitumen Attachment*

- When using hot bitumen on concrete decks, priming is necessary.
- Temperature of the bitumen shall be approximately 50° F below the inter-ply hand mopping EVT.

Property	ASTM Standard	Value
<b>Compressive Strength</b>	ASTM D 1621	80 – 110 PSI
<b>Dimensional Stability</b>	ASTM D 2126	< .5 % linear change (7 days)
<b>Water Absorption</b>	ASTM C 209	< 1% volume
<b>Resistance to Mold</b>	ASTM D 3273	Passed (10)
<b>Service Temperature</b>		260° F (126° C) or less

Property	ASTM Standard	Grade	Value
<b>Compressive Strength</b>	ASTM D 1621	Grade 2	20 psi (138 kPa)
	ASTM C 1289	Grade 3	25 psi (172 kPa)
<b>Dimensional Stability</b>	ASTM D 2126		2% linear change (7 days)
<b>Moisture Vapor Transmission</b>	ASTM E 96		< 1 perm (85.0 ng/Pa·s·m <sup>2</sup> )
<b>Water Absorption</b>	ASTM C 209		< 1% volume
<b>Service Temperature</b>			-100° to 250° F (-73° to 122° C)

- The deck shall be dry and care must be taken to apply the bitumen in sufficient quantity to totally cover the available deck surface.
- To ensure embedment, the board shall also be “stepped in” at several points while the bitumen is still hot enough to allow positive attachment.
- Maximum panel dimensions are 4 ft. x 4 ft.
- Any roof membrane contaminated with bitumen must be replaced.

**Storage:**

- Insulation must be protected from open flame and kept dry at all times.
- Factory applied packaging is intended only for protection during transit. Slit or remove the packaging to prevent accumulation of condensation.
- Store elevated (at least 3 inches) and completely covered with a weatherproof covering such as a tarpaulin.
- Do not use panels which are wet or damaged.
- Refer to PIMA Technical Bulletin No. 109: *Storage and Handling Recommendations for Polyiso Roof Insulation* for additional guidelines ([www.pima.org](http://www.pima.org)).

**Limitations:**

- Duro-Last, Inc. will not be responsible or liable for any defects or problems related to building or roof design by others, to deficiencies in construction, to dangerous conditions on the job site, or to improper storage, handling or installation by others.