

DURO-GUARD[®] HD ISO + EPS

FLAT AND TAPERED PANELS

Description:

Duro-Guard[®] HD ISO + EPS is a premium insulation consisting of a superior closed-cell, lightweight and resilient expanded polystyrene (EPS) bonded to a high-density polyisocyanurate cover board. It meets or exceeds the requirements of ASTM C 578, *Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation*.

- Top layer of ½ inch high density polyisocyanurate provides 80 – 110 psi compressive strength.
- Bottom layer consists of Duro-Guard EPS Type VIII, 1.25 pcf, per ASTM C 578.
- Available in both flat and tapered panels in order to meet thermal insulation needs as well as provide slope for proper roof drainage.
- High thermal efficiency and maximum durability.
- Reduces inter-ply adhesive and saves labor.
- Provides long-term thermal insulation value.
- Does not contain CFCs or HCFCs.
- Superior moisture resistance.
- 100% recyclable.
- Refer to Table 3 for physical properties.

Recommended Uses:

- Mechanically attached Duro-Last roof systems.
- Adhered/Fully Bonded Duro-Last roof systems.
- Duro-Bond[®] roof systems.
- Metal retrofit roof systems.

Underwriters Laboratories Inc.:

- Refer to Duro-Last's UL Listings (TGFU.R10128) for assembly details (www.ul.com).

Factory Mutual Global:

- Refer to FM Approval's RoofNav for details on FM Approved systems (www.roofnav.com).

Flat Panels:

- Typical sizes:
 - 4 ft. x 4 ft. (1220 mm x 1220 mm).
 - 4 ft. x 8 ft. (1220 mm x 2440 mm).
 - Thickness: 1.5 to 6 inch (38 to 152 mm).

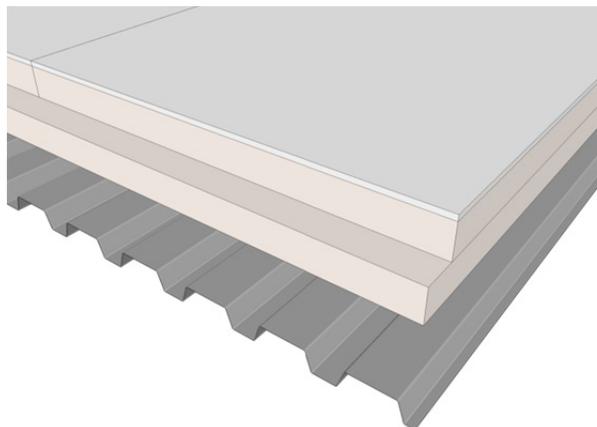


Figure 1. Duro-Guard HD ISO + EPS Flat (Top Layer)

Tapered Panels:

- Typical sizes:
 - 4 ft. x 4 ft. (1220 mm x 1220 mm).
 - 4 ft. x 8 ft. (1220 mm x 2440 mm).
 - Thickness: ½ to 6.5 inch (13 to 152 mm).
- Precut cricket and saddle systems are available.
- Taper designs and shop drawings are available.
- Custom sizes are available.

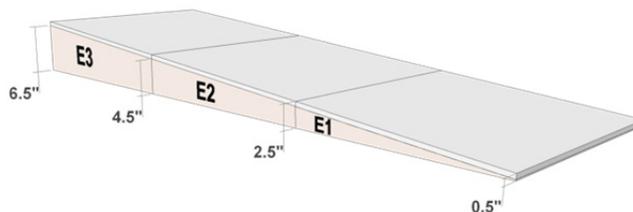


Figure 2. Duro-Guard HD ISO + EPS Taper

TABLE 1. TYPICAL TAPER PANEL DIMENSIONS			
ID	SLOPE*		Thickness
A1	1/8" per 12"	1%	Panels can be formed up to 6.5" thick.
A2	1/8" per 12"	1%	
A3	1/8" per 12"	1%	
A4	1/8" per 12"	1%	
C1	1/4" per 12"	2%	The starting thickness of the tapered panels can be custom ordered based on project requirements.
C2	1/4" per 12"	2%	
C3	1/4" per 12"	2%	
C4	1/4" per 12"	2%	
E1	1/2" per 12"	4%	
E2	1/2" per 12"	4%	
E3	1/2" per 12"	4%	
E4	1/2" per 12"	4%	

* Contact Duro-Last for additional slope options.

Installation:

- Duro-Guard HD ISO + EPS may be used directly under the Duro-Last membrane. Care should be taken to ensure that “bare” EPS is never in direct contact with the membrane. Refer to the appropriate Duro-Last specification for slip sheet and cover board requirements.
- 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.
- Butt 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 or insulation adhesive. 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 also be attached with insulation adhesive.
- Maximum panel dimensions are 4ft. x 4ft.

THICKNESS		R-Value*
(inches)	(mm)	TYPE VIII
1.50	38	8.8
2.00	51	10.9
2.50	64	13.0
3.00	76	15.1
3.50	89	17.2
4.00	102	19.3
4.50	114	21.4
5.00	127	23.5
5.50	140	25.6
6.00	152	27.7

* R-Value is calculated by adding the R-value of the cover board and the R-value of Duro-Guard EPS Type VIII together.

Property	Test Method	Type VIII
Density (nominal)	ASTM C 303	1.25 pcf
R-Value (per inch) @25°F @40°F @75°F	ASTM C 518 or C 177	4.55 4.25 3.92
Compressive Strength (10% deformation)	ASTM D 1621	13 – 18 psi
Flexural Strength	ASTM C 203	≥ 30 psi
Dimensional Stability	ASTM D 2126	≤ 2.0%
Water Vapor Permeance	ASTM E 96	≤ 3.5 perm
Water Absorption	ASTM C 272	≤ 3.0%
Flame Spread	ASTM E 84	20
Smoke Developed	ASTM E 84	150 - 300

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”) and completely covered with a weatherproof covering such as a tarpaulin.
- Do not use panels which are wet or damaged.

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.