

# DURO-GUARD® ISO II

## FLAT AND TAPERED PANELS

### Description:

Duro-Guard® ISO II is a closed-cell polyisocyanurate foam core insulation board with an integrally laminated, fiber-reinforced facer which is compatible with Duro-Last® roof membranes.

- Available in both flat and tapered panels in order to meet thermal insulation needs as well as provide slope for proper roof drainage.
- Manufactured with a blowing agent that has zero ozone depletion potential (ODP) and virtually no global warming potential (GWP).
- Approved for direct application to steel and other deck types.
- 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).
- 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. Classifications:

- 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.

### 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)).

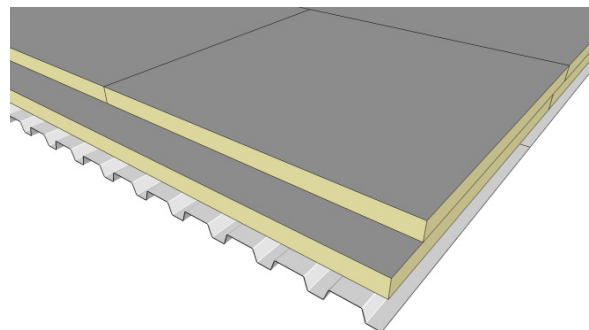


Figure 1. Duro-Guard ISO II Flat On Steel Deck

### Flat Panels:

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

### Tapered Panels:

- Available sizes:
  - 4 ft. x 4 ft.
  - Thicknesses: ½ to 4-½ inches.
- Precut miters and crickets are also available.
- Taper designs and shop drawings available.

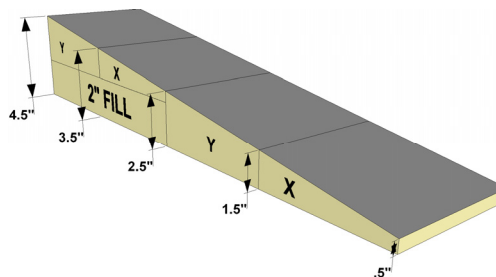


Figure 2. Duro-Guard ISO II Taper

TABLE 1. TYPICAL TAPER PANEL DIMENSIONS					
ID	SLOPE*		SIZE	MIN	MAX
Q	½" per ft.	4%	4 ft. x 4 ft.	½"	2-½"
QQ	½" per ft.	4%	4 ft. x 4 ft.	2-½"	4-½"
X	¼" per ft.	2%	4 ft. x 4 ft.	½"	1-½"
Y	¼" per ft.	2%	4 ft. x 4 ft.	1-½"	2-½"
Z	¼" per ft.	2%	4 ft. x 4 ft.	2-½"	3-½"
G	¼" per ft.	2%	4 ft. x 4 ft.	1"	2"
H	¼" per ft.	2%	4 ft. x 4 ft.	2"	3"
AA	⅛" per ft.	1%	4 ft. x 4 ft.	½"	1"
A	⅛" per ft.	1%	4 ft. x 4 ft.	1"	1-½"
B	⅛" per ft.	1%	4 ft. x 4 ft.	1-½"	2"
C	⅛" per ft.	1%	4 ft. x 4 ft.	2"	2-½"

\* Contact Duro-Last for additional slope options.

**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.
- The deck shall be dry and care must be taken to apply the bitumen in sufficient quantity to totally cover the available deck surface.

**TABLE 2. THERMAL VALUES**

THICKNESS*		LTTR R-VALUE	FLUTE SPANABILITY	
inches	mm		inches	mm
1.00	25	5.70	2.625	67
1.50	38	8.60	4.375	111
1.60	41	9.10	4.375	111
1.70	43	9.70	4.375	111
2.00	51	11.40	4.375	111
2.50	64	14.40	4.375	111
2.60	66	15.00	4.375	111
2.70	69	15.60	4.375	111
3.00	76	17.40	4.375	111
3.30	84	19.20	4.375	111
3.50	89	20.50	4.375	111
3.60	91	21.10	4.375	111
4.00	102	23.60	4.375	111

\* Contact Duro-Last for additional thickness options.

**TABLE 3. TYPICAL PHYSICAL PROPERTIES**

Compressive Strength	ASTM D 1621 ASTM C 1289	Grade 2	20 psi (138 kPa)
		Grade 3	25 psi (172 kPa)
Dimensional Stability	ASTM D 2126	2% linear change (7 days)	
Moisture Vapor Transmission	ASTM E 96	< 1 perm (85.0 ng/Pa·s·m <sup>2</sup> )	
Water Absorption	ASTM C 209	< 1% volume	
Service Temperature		-40° to 200° F (-40° to 93° C)	

- 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.