



## **DIVISION 7 Thermal and Moisture Protection**

### **SECTION 07220 –ROOF AND DECK INSULATION**

#### **Foam III HCFC-Free "Green" Polyiso Specification Closed-cell, polyiso core integrally laminated to heavy black (non-asphaltic), fiber-reinforced felt facers. For hot or cold applications.**

##### **PART 1 GENERAL**

###### **1.1 SECTION INCLUDES**

- A. HCFC FREE “Green” Polyiso Rigid board type roof insulation(s) for thermal protection as part of roofing assemblies.
- B. Recover board HCFC FREE “Green” Polyiso roof insulation.
- C. Roofing crickets.

###### **1.2 RELATED SECTIONS**

- A. Section 05300 - Metal Deck.
- B. Section 06100 - Rough Carpentry: Wood roof blocking and nailers.

###### **1.3 REFERENCES**

***Specifier Note: (finish article heading number in sequential order)***

- A. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Insulation Board.
- B. ASTM D 312 - Standard Specification for Asphalt Used in Roofing.
- C. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
- D. ASTM E 119 - Standard Test Methods for Fire Tests of Building Constructions and Materials.
- E. FM 4450 - Approval Standard - Class I Insulated Steel Roof Decks.
- F. FM 4470 - Approval Standard - Class I Roof Covers.
- G. FS HH-I-1972/1 - Insulation Board, Thermal, Polyurethane or Polyisocyanurate, Faced with Aluminum Foil on Both Sides of the Foam.
- H. FS HH-I-1972/2 - Insulation Board, Thermal, Polyurethane or Polyisocyanurate, Faced with Asphalt/Organic Felt, Asphalt/Asbestos Felt, or Asphalt/Glass Fiber Felt on Both Sides of the Foam.
- I. FS HH-I-1972/3 - Insulation Board, Thermal, Polyurethane or Polyisocyanurate, Faced with Perlite

Insulation Board on One Side and Asphalt/Organic Felt or Asphalt/Glass Fiber Felt on the Other.

*Specifiers Note: The above mentioned FS references are no longer applicable but may still be in some house master specs – it is recommended to remove these*

**J.** LTTR – Long Term Thermal Resistance, using techniques from CAN/ULC S770 based on ASTM C1303

**K.** UL 263 - Fire Tests of Building Construction and Materials.

**L.** UL 790 - Tests for Fire Resistance of Roof Covering Materials.

**M.** UL 1256 - Fire Test of Roof Deck Constructions.

**N.** ASTM E 2114-01 – Standard Terminology for Sustainability Relative to the Performance of Buildings

**O.** ASTM 2129 –01 – Standard Practice for Data Collection for Sustainability Assessment of Building Product

#### **1.4 DEFINITIONS**

*Specifier Note: Define unusual terms not explained in the Contract Documents but are used in unique ways not included in standard references. This article is rarely used BUT these are new terms as of 2002/2003*

**A.** HCFC FREE “Green” Polyiso Roof Board Insulation is defined as environmentally friendly, with Zero Global Warming, Zero Ozone Depletion (ODP) as in compliance with the US EPA requirements of January 1, 2003 requirement to eliminate production of HCFC 141b.

**B.** LTTR (Long Term Thermal Resistance) is defined as using techniques from ASTM C1303, CAN/ULC S770 predicting a foam’s R-Value that has been shown to be equivalent to the average performance of a permeably faced foam insulation product over 15 years. In Canada this method is used as the Design R-Value. This applies to ALL foam insulation products with blowing agents other than air, such as Polyiso, “Green” Polyiso, extruded polystyrene and polyurethane. The new method is based on consensus standards in the US and Canada. PIMA has reported this method as providing a better understanding of the thermal performance of foam.

#### **1.5 SUBMITTALS**

**A.** Submit under provisions of Section 01300 and 01600.

**B.** Product Data:

1. Manufacturer’s HCFC FREE “Green” Polyiso specifications
2. Installation instructions for HCFC FREE “Green” Polyiso insulation board and fasteners
3. Product Data as per ASTM 2129 – 01 Standard for Data Collection for Sustainability Assessment of Building Products

**C.** Samples:

1. Submit 6 by 6 inch (152 by 152 mm) samples of each board type required.
2. Submit samples of each fastener type required.

**D.** Shop Drawings: Roof plan showing layout of boards, and fastening patterns, and ventilation and roof edge details.

E. Certificates: System Manufacturer's or insulation manufacturer's certification that HCFC FREE "Green" Polyiso materials meet Zero ODP (Ozone Depletion Potential) and Zero GWP (Global Warming Potential) specification requirements.

F. Thermal Warranty: Submit sample warranty indicating conditions and limitations.

## 1.6 QUALITY ASSURANCE

A. HCFC FREE "Green" Polyiso Manufacturer Qualifications:

1. Show evidence of ability to manufacturer products specified with sufficient manufacturing facilities.

a. List dates of HCFC FREE "Green" Polyiso plant conversion and/or full production operation

b. List HCFC chemistry alternative/replacement.

2. Provide past project HCFC FREE "Green" Polyiso installation performance histories

*Specifier Note: A recommended option in evidence of ability to manufacture HCFC FREE "Green" products includes request for 5 years of past project installation performance history and a billion sq. ft. of installed product.*

B. Regulatory Requirements:

**\*\*\* VERIFY WITH APPLICABLE GOVERNING AGENCIES THE SPECIFIC STANDARDS TO BE COMPLIED WITH AND RETAIN, DELETE OR ADD ADDITIONAL REQUIREMENTS BELOW. \*\*\***

1. American Society for Testing and Materials (ASTM).

2. Federal Specifications (FS).

*Specifiers Note: The above mentioned FS references are no longer applicable but may still be in some house master specs – it is recommended to remove these*

3. Factory Mutual (FM).

4. Underwriters Laboratories Inc. (UL) Classification.

5. Metro-Dade County, Florida Product Control.

6. California State Insulation Quality Standards and Title 25 Foam Flammability Criteria.

7. IBC, BOCA, ICBO and SBCCI Sections on Foam Insulation.

8. Canadian Compliance: CAN/ULC, CGSB.

## 1.7 DELIVERY, STORAGE AND HANDLING

A. Comply with general requirements specified in Section 01650.

B. Deliver insulation in packages labeled with material name, thermal value and product code.

C. When stored outdoors, stack insulation on pallets above ground or roof deck and cover with tarpaulin or other suitable waterproof coverings. Slit or remove manufacturer's packaging before covering with waterproof covering.

## 1.8 PROJECT CONDITIONS

- A. Comply with insurance underwriter's requirements applicable for products of this Section.
- B. Do not install insulation on roof deck when water of any type is present. Do not apply roofing materials when substrate is damp or wet.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Atlas Roofing Corporation, as distributed by:  
Dyplast Products, LLC  
12501 38<sup>th</sup> Avenue NW  
Miami, FL 33504  
Ph. (800) 433-5551  
Fax (305) 687-8013  
[info@dyplastproducts.com](mailto:info@dyplastproducts.com)  
[www.dyplastproducts.com](http://www.dyplastproducts.com)
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- C. Substitutions: Not permitted.
- D. Provide all HCFC FREE "Green" Polyiso roof board insulation from a single manufacturer.

### 2.2 MATERIALS

- A. HCFC FREE "Green" Polyiso Roof Board Insulation: Provide products that comply with the following:
  - 1. ASTM standards specified.
  - 2. Factory Mutual (FM) approvals specified.
  - 3. Underwriters Laboratories Inc. (UL) classifications specified.
  - 4. Metro-Dade County, Florida Product Control.
  - 5. California State Insulation Quality Standards and Title 25 Foam Flammability Criteria.
  - 6. BOCA National Building Code Sections on Foam Insulation
  - 7. ICBO Uniform Building Code Sections on Foam Insulation.
  - 8. SBCCI Standard Building Code Sections on Foam Insulation.
  - 9. Canadian Compliance: CAN/ULC, CGSB, and CCMC.
  - 10. Montreal Protocol requirements to eliminate HCFC 141b from production by January 1, 2003
- B. **dPFoam-II:** Closed-cell HCFC FREE "Green" polyisocyanurate foam core manufactured using Montreal Protocol compliance blowing agent and integrally laminated to heavy non- asphaltic fiber-reinforced felt facers; FM [1-60] [1-90] wind uplift classification; compressive strength - [20 psi] [25 psi].

\* Federal Specification HH-I-1972/GEN and HH-I-1972/2, Class 1. This federal specification has been

cancelled.

\* ASTM C 1289, Type II, Class 1.

\* Metro-Dade County, Florida Product Control No. 00-0208.04.

\* NYC MEA #107-01-M.

\* California State Insulation Quality Standards and Title 25 Foam Flammability Criteria (License #TC 1231).

\* IBC, BOCA, ICBO and SBCCI Sections on Foam Insulation.

\* CCMC No. 12464-L.

\* Meets CAN/CGSB-51.26-M86.

\* Meets CAN/ULC-S704.

#### **FM Standard 4450/4470 Approval**

dP-Foam-II is approved for Class 1 insulated steel, wood, concrete and gypsum roof deck construction for both 1-60 and 1-90 Windstorm Classifications (may be mopped or mechanically fastened to concrete roof deck). Refer to FM Approval Guide for details on specific systems.

#### **UL Standard 1256 Classification**

Insulated metal deck construction assemblies - Construction #120 and #123.

#### **UL Standard 790 (ASTM E 108) Classification**

Class A with most roof membrane systems. See UL Roofing Materials & Systems Directory.

#### **UL Standard 263 Fire Resistance Classification (ASTM E 119)**

Some classifications for fire resistance are P225, P230, P259, P508, P510, P514, P519, P701, P710, P713, P717, P718, P719, P720, P722, P723, P724, P725, P727, P728, P729, P730, P732, P801, P814, P815, P818, P819, and P828. See UL Fire Resistance Directory for updated listings.

#### **UL Standard 1897 Uplift Resistance**

120 PSF, 150 PSF, 165 PSF, 245 PSF.

#### **UL Certified for Canada**

##### **UL of Canada**

Insulated Roof Deck Assemblies - Construction #C34.

Meets CAN/ULC-S126-M86, CAN/ULC-S101-M89, CAN/ULC-S107-M87

**\*\*\* INSERT REQUIRED "R" VALUE BELOW. \*\*\***

**C. LTTR - Insulation "R" Value:**\* Long-term thermal resistance values of the foam were determined in accordance with CAN/ULC-S770. All test samples were third-party selected and tested by an accredited materials testing laboratory.

#### **D. Related Materials:**

**1. Fasteners:** Factory Mutual approved.

**2. Base Ply:** As recommended by membrane manufacturer.

**3. Fasteners:** For Nail Base and Vented-R: Atlas Nail Base Fasteners.

**4. Asphalt Bitumen:** Comply with ASTM D 312, Type III (steep) or Type IV. USE ONLY ON APPROVED BOARD INSULATION TYPES.

**a.** Provide with labels indicating flash point, softening point, finished blowing temperature, and equi-viscous temperature.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A.** Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean and free of foreign material that will damage insulation or impede installation.
- B.** Verify that roof drains, scuppers, roof curbs, nailers, equipment supports, vents and other roof accessories are secured properly and installed in conformance with Contract Drawings and submittals.
- C.** Verify that deck is structurally sound to support installers, materials and equipment without damaging or deforming work.
  - 1.** Start of installation indicates installer accepts conditions of existing deck surfaces.

### **3.2 APPLICATION / INSTALLATION**

**\*\*\* VERIFY NEED FOR A VAPOR RETARDER WITH DESIGNER IN ACCORDANCE WITH CURRENT VAPOR RETARDER THEORY AND ENGINEERING FORMULAS. WHEN REQUIRED, INSERT INSTALLATION REQUIREMENTS OF VAPOR RETARDER MANUFACTURER. \*\*\***

- A.** Install specified insulation using approved [mechanical fasteners] [hot asphalt] [adhesives] in accordance with manufacturer's latest written instructions and as required by governing codes and Owner's insurance carrier.
- B.** Install with end joints staggered to avoid having insulation joints coinciding with joints in deck. In multi-layer installations, stagger joints in top and bottom layers.

**\*\*\* NOTE TO SPECIFIER: ATLAS SUPPORTS NRCA AND OTHER INDUSTRY AUTHORITIES IN RECOMMENDING MULTI-LAYER INSULATION APPLICATIONS. (SEE ATLAS ROOFING TECHNICAL BULLETIN #00-01) \*\*\***

### **3.3 CLEANING / PROTECTION**

- A.** Remove trash and construction debris from insulation surface prior to application of roofing membrane.
- B.** Do not leave installed insulation exposed to weather. Cover and waterproof with completed roof system immediately after installation.
  - 1.** Temporarily seal exposed insulation edges at the end of each day.
  - 2.** Remove and replace installed insulation that has become wet or damaged with new insulation.
- C.** Protect installed insulation and roof cover from traffic by use of protective covering materials during and after installation

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