CELLOFOAM® North America Inc.

TECHNICAL NOTE #106

EPS DIRECT TO METAL ROOF DECKS

EPS Type Specification Reference: ASTM C578

Cellofoam® expanded polystyrene (EPS) insulation provides a low-cost, durable, and energy efficient solution for roofing insulation. Our insulation can be applied directly atop typical metal roof decks without a thermal barrier per 2015 International Building Code (IBC). Such “direct-to-deck” metal roof applications are commonly used in commercial buildings and save both material and labor costs. Cellofoam’s EPS insulations generally have a lower cost per R-value and a more stable R-Value over time than competing Polyisocyanurate and Extruded Polystyrene alternatives. Containing no ozone depleting blowing agents, EPS is also environmentally friendly and is available with pre-consumer recycled content for use in LEED-certified and other green building projects.

Cellofoam EPS insulation has been granted recognition by Underwriters Laboratories LLC (UL) for use directly on a metal roof deck without the use of code specified thermal barrier as shown on Construction No. 458. This recognition is documented in Cellofoam's UL File No. R7260, category codes TGFU and BRYX, and our UL Evaluation Report ER-7260-01. As noted in paragraph 6.3 and Table 1 of our Evaluation Report, ER-7260-01, Cellofoam’s plain EPS and Poly Shield® laminated sheathing are recognized as acceptable roofing insulations by UL for the following cases:

- As part of a UL Classified Class A, B, or C roof-covering assembly in accordance with Test Standard UL 790, Category Code TGFU.
- As part of a UL Classified Roof Deck Construction in accordance with Test Standard UL 1256

The IBC’s Section 2603.4 Thermal barrier requires foam plastic insulation to be separated from the interior of a building by an approved thermal barrier, with two exceptions. One of these exceptions, Section 2603.4.1.5 Roofing notes that a thermal barrier is not required for foam plastic insulation that is part of a Class A, B, or C roof-covering assembly that is installed in accordance with the code and the manufacturer’s instructions and has satisfactorily passed NFPA 276 or UL 1256 testing with the insulation in place.[1]

Cellofoam North America Inc is proud to have helped sponsor industry testing of EPS insulated roofing assemblies for UL 1256 through the EPS Molders Association (now called the EPS Industry Alliance). Test reports on fire tests of EPS roofing systems applied directly to fluted metal deck, Roof Construction No. 458, were conducted by Underwriters Laboratories LLC, File R18302, Project 96NK14112. For reference, UL Construction No. 458, TGKX.458, Roof Deck Constructions is attached below.

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ONLINE CERTIFICATIONS DIRECTORY

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TGKX.458
Roof Deck Constructions

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Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

Roof Deck Constructions

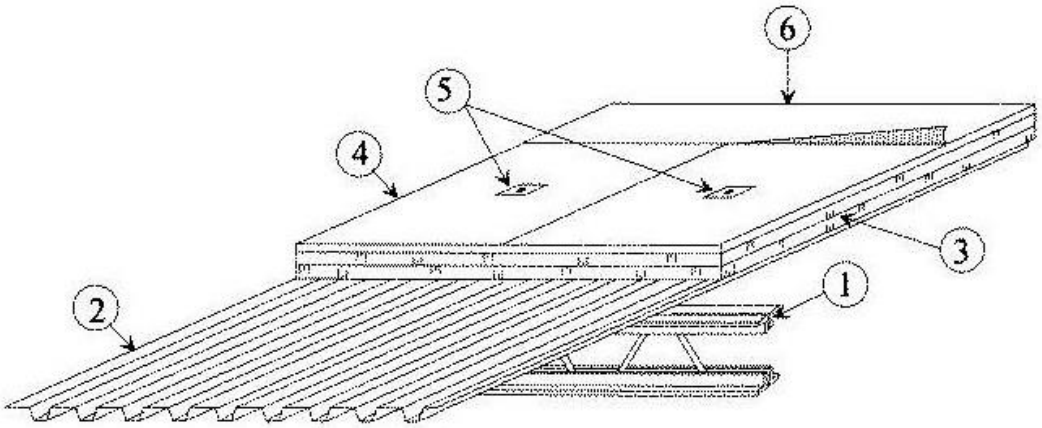
See General Information for Roof Deck Constructions

Construction No. 458

September 05, 2017

Uplift-Not Investigated

Fire-Classified



1. **Supports** — Structural steel or other materials acceptable to authorities having jurisdiction.

2. **Steel Deck** — No. 22 MSG min, 1-1/2 in. deep unperforated coated steel, fluted on 6 in. centers. Welded or mechanically fastened to supports in accordance with deck manufacturer's recommendations.

3. **Rigid polystyrene insulation,** — EPS, loose laid or mechanically fastened in one or more layers, Classified by UL, under the Roof Deck Construction category "Foamed Plastic" as an alternate, to any Classified polystyrene foamed plastic insulation board (EPS) can be used. See **Foamed Plastic (BRYX)** category in the Building Materials Directory or (TGFU) category in the Roofing Materials and Systems Directory. Total thickness and density of insulation not to exceed an equivalent of 10 in. at 1 PCF density. Example: an equivalent combination would be 8 in. at a 1.25 PCF density.

3A. **Building Unit*** — In lieu of Item 3, Rigid Foamed Plastic With Vented Roof Deck — Vented Nail-base roof deck products which are Classified by UL - Roofing Materials and Systems Directory, **Roof Deck Construction, Building Units (TIAR)**) intended to provide ventilation between the nailed decking and a foamed plastic insulated steel deck construction. The nail-base deck consists of 7/16-in. thick (min) oriented strand board (OSB) or 15/32-in. thick (min) plywood.

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ATLAS ROOFING CORP — "Vented-R", "ACFoam CrossVent" or "ACFoam III CrossVent"

4. **Barrier Board* (Optional) —** A min 3/4 in. perlite, 1/2 in. wood fiber, 1/2 in. gypsum board or G-P Gypsum 1/4 in. DensDeck ® cover board or min. 1/4 in. Owens Corning Specialty & Foam Products "Strataguard", minimum 1/4 in. thick United States Gypsum Co. SECUROCK® Roof Board (Type FRX-G) or minimum 1/4 in thick **SECUROCK® Glass-Mat Roof Board (Type SGMRX)** or minimum 1/4 in thick SECUROCK® Coated Glass-Mat Roof Board (Type SGMRX) or min. 1/4 in. thick CertainTeed Gypsum Inc "GlasRoc" or minimum 1/4 in. National Gypsum "DEXcell Glass Mat Roof Board" or "DEXcell FA Glass Mat Roof Board" placed over the insulation. Required when a single ply membrane is mechanically fastened or fully adhered without slip sheet or other cover product over EPS as a Classified roofing system under TGFU.

5. **Fasteners (Optional) —** Fasteners used to attach foamed plastic and cover board to steel deck. Fasteners are self-drilling, self-tapping roof insulation screws with insulation plates.

6. **Roof Covering* —** A max 0.08 in. thick loose laid (ballasted), mechanically fastened or adhered membrane roof covering Classified by UL as **Membrane for Roofing Systems (TGFU)** as described in the Roofing Materials and Systems Directory.

6A. **Metal Roof Deck Panels* —** (Not shown) — In addition to or in lieu of Item 6, the roof covering may consist of a mechanically fastened metal roof deck panel assembly. See **Metal Roof Deck Panels (TJPV)** as described in the Roofing Materials and Systems Directory.

6B. **Roof Covering* —** In lieu of Item 6, a modified bitumen membrane roof covering over Barrier Board (Item 4) Classified as **Membrane for Roofing Systems (TGFU)**. Foamed Plastic insulation (Item 3) limited to 6 in. thickness.

6C. **Roof Covering** —** In lieu of Item 6 and in combination with Item 3A; asphalt shingles, fiber-cement tile and metal (or wood) shingles or shakes; an underlayment (optional) and/or vapor barrier (optional) Classified as **Prepared Roofing Accessories (TGDY)**. Roof covering to be installed as specified by manufacturer.

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2017-09-05

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[1] *2015 IBC information downloaded from https://codes.iccsafe.org/content/IBC2015/chapter-26-plastic?site_type=public, Dec 26, 2018.*

WARNING: This product is combustible and if exposed to a fire of sufficient heat and intensity may burn rapidly. It should not be left exposed or inadequately protected. Consult specific instructions and applicable building codes for use of this product.

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EPS Industry Alliance Member

The performance data herein reflects Cellofoam North America Inc.'s expectation based on tests conducted in accordance with recognized standard methods. The sale of these products shall be subject to Terms and Conditions of Sale, including those limiting warranties as set forth in Cellofoam North America Inc.'s invoices. No agent, employee, or representative of Cellofoam North America Inc. or its subsidiary or affiliated companies is authorized to modify this disclaimer.