



January 30, 2012

Dow Building Solutions
The Dow Chemical Company
2859 Central Street
Evanston, IL 60201

Re: Various NFPA 285 Complying Exterior Wall Constructions
HAI Project No.: 1JJB05306.008

To Whom It May Concern:

This analysis provides a summary of various exterior wall constructions that incorporate one or more of the following Dow Chemical products and that will meet the requirements of NFPA 285:

- Thermax™ Brand Rigid Insulation;
- STYROFOAM™ Brand Spray Polyurethane Foam CM 2030, STYROFOAM™ Brand Spray Polyurethane Foam CM 2045 or STYROFOAM™ Brand Spray Polyurethane Foam CM 2060. These products are closed cell, nominal 2.0 lb/ft³ density, spray polyurethane foam plastic insulation.

Section 2603.5.5 of the 2006 Edition of the International Building Code (IBC) requires that exterior walls systems that incorporate foam plastic insulation shall meet the requirements of NFPA 285 “Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.”

Dow Chemical has performed several NFPA 285 fire tests on various exterior wall systems that have incorporated Dow Thermax™ Brand Rigid Insulation. These tests include:

1. Brick exterior wall construction – Reported in Southwest Research Institute Final Report No. 01.05805.01.001, dated November, 2002.
2. Brick exterior wall construction – Reported in Southwest Research Institute Final Report No. 01.13104.01.001c, dated September 5, 2008.
3. Metal Composite Panel exterior wall construction – Reported in Southwest Research Institute Final Report No. 01.13104.01.001d, dated September 5, 2008.

4. Brick exterior wall construction – Reported in Southwest Research Institute Final Report No. 01.15210.01.607a [1], dated May 24, 2010.
5. Brick exterior wall construction - Reported in Southwest Research Institute Final Report No. 01.15822.01.001, dated September 9, 2010

Based on the results of these tests and my experience with the NFPA 285 fire test, it is my judgment that the various configurations of exterior walls described in the attached Tables will meet the performance requirements of NFPA 285.

I hope that this information is of assistance and if you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Beitel', with a stylized flourish at the end.

Jesse J. Beitel
Senior Scientist/Principal

Table I. Base Wall Assemblies – See Tables II and III For Additional Wall Components

Wall Component	Materials
Base wall system – Use either 1, 2, 3, 4 or 5	1 – Concrete wall 2 – Concrete Masonry wall 3 – Standard clay brick wall 4 – Adobe block wall 5 – Steel studs: minimum 3 ⁵ / ₈ -inch depth, minimum 20-gauge at a maximum of 24-inch OC with lateral bracing every 4 ft. vertically with: <ul style="list-style-type: none"> a) 1 layer – ⁵/₈-inch thick Type X or ¹/₂-inch thick Type X Gypsum wallboard on interior face of studs, or b) W.R. Grace’s Monokote Z-3306 installed at a minimum of 3/8 inch thickness over cavity insulation (Item 2) or Thermax™, or c) Isolatek International’s CAFCO – TB 415 installed at a minimum of 3/8 inch thickness over cavity insulation (Item 2) or Thermax™, or d) International Cellulose Corporation’s Ure-K Thermal Barrier System installed at a minimum of 1.25 inch thickness over cavity insulation (Item 2) or Thermax™. e) Specialty Products, Inc. Flame Seal-TB coating applied at a wet mil thickness of 25 mils (18 mils dry, 65 ft²/gal) over cavity insulation (Item 2) f) International Fireproof Technology, Inc. DC 315 applied at an application rate of 18 wet mils applied over 4 mils of primer which is applied over cavity insulation (Item 2)
Floorline Firestopping	4 lb/cu ft. mineral wool (e.g. Thermafiber) in each stud cavity and at each floorline – attached with Z-clips or equivalent
Cavity Insulation – Use either 1, 2, or 3 or combination of 2 & 3	1 – None 2 – Full stud depth or less thickness of DOW STYROFOAM™ Brand Spray Polyurethane CM 2060 or CM 2045 or CM 2030 applied using sheathing or insulation as substrate and covering the width of the cavity and inside the stud flange 3 – Fiberglass batt insulation (faced or unfaced)
Exterior sheathing – Use either 1, 2 or 3	1 – None 2 – ¹ / ₂ -inch thick, exterior type gypsum sheathing 3 – ⁵ / ₈ -inch thick, exterior type gypsum sheathing
Weather-resistive barrier applied to exterior sheathing – Use either 1 or 2	1 – None 2 – Any shown in Table IV
Remainder of wall assembly	See Table II or Table III

Table II. Walls With A Maximum Of 4.25-inch Thick Thermax™

Wall Component	Materials
Exterior insulation – Use either 1, 2, 3 or 4	1 – None (Exterior sheathing must be Item 2 or 3 listed in Table I. 2 – Dow Thermax™ Brand Rigid Insulation – Total thickness to be a minimum of 5/8 inch to maximum of 4.25 inches. 3 – DOW STYROFOAM™ Brand Spray Polyurethane CM 2060 or CM 2045 or CM 2030 – to a maximum of 3.5 inches thick. 4 – Combination of Item 2 and Item 3 – Total thickness of combination not to exceed 4.25 inches and thickness of Item 3 not to exceed 3.5 inches.
Weather-resistive barrier applied to exterior insulation – Use either 1 or 2	1 – None 2 – WeatherMate™ or WeatherMate™Plus – Dow Chemical
Flashing	Flash all exterior insulation joints and veneer tie penetrations with one of the following: 1 – Dow WeatherMate™ Flashing – max. 4-inch width 2 – Asphalt or Butyl-based flashing tape – max. 4-inch width Note: With either 1 or 2, a small amount of spray primer may be used to aid in adhesion; maximum 5-inch width.
Exterior Veneer – Use either 1, 2, 3 or 4	1 – Brick – Brick veneer anchors – standard types – installed maximum 24 inches OC vertically on each stud – Maximum 2-inch air gap between exterior insulation and brick – Standard nominal 4-inch thick, clay brick 2 – Stucco – Minimum 3/4-inch thick, exterior cement plaster and lath. A secondary water-resistive barrier can be installed between the exterior insulation and the lath. The secondary water-resistive barrier shall not be full-coverage asphalt or butyl-based self-adhered membranes. 3 – Minimum 2-inch thick, Limestone or natural stone veneer or minimum 1-1/2 inch thick cast artificial stone veneer. Any standard non-open-joint installation technique such as ship-lap, etc. can be used. 4 – Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 1-1/4 inch thick. Any non-open-joint installation technique such as ship-lap, etc. can be used.

Table III. Walls With A Maximum Of 3-inch Thick Thermax™

Wall Component	Materials
Exterior insulation – Use either 1 or 2	1 – None (Exterior sheathing must be either 1 or 2 listed in Table I) 2 – Dow Thermax™ Brand Rigid Insulation – Total thickness to be a minimum of 5/8 inch to maximum of 3 inches.
Flashing	Flash all exterior insulation joints and veneer tie penetrations with one of the following: 1 – Dow WeatherMate™ Flashing – max. 4-inch width 2 – Asphalt or Butyl-based flashing tape – max. 4-inch width Note: With either 1 or 2, a small amount of spray primer may be used to aid in adhesion; maximum 5-inch width.
Exterior Veneer – Use either 1, 2, 3, 4, 5, 6 or 7	1 - MCM System - Use any Metal Composite Material system that has been successfully tested by the panel manufacturer via the NFPA 285 test method. Any standard installation technique can be used. 2 - Terracotta cladding – Use any terracotta cladding system in which terracotta is minimum 1-1/4 inch thick. Any standard installation technique can be used. 3 - Metal exterior wall coverings such as steel, aluminum, copper, etc. Any standard installation technique can be used. 4 - Cement board siding – Any standard installation technique can be used. 5 – StoneLite natural stone wall panels by Stone Panels, Inc. 6 – Glen-Gery Thin Tech Elite Series – Masonry veneer 7 – Knight Wall Systems to include: <ul style="list-style-type: none"> • Knight™ Series Metal Panels (Aluminum or steel) • Thin Brick Panels • Stucco • Terracotta • Concrete panels

Table IV. Allowed Weather-resistive Barriers

Weather-resistive Barrier – Over Sheathing
WeatherMate™ or WeatherMate™Plus – Dow Chemical
Barritech™ VP – Carlisle
CCW-705FR with CCW-702WB water-based adhesive - Carlisle
Fire-Resist Barritech™ NP - Carlisle

Note: all barriers to be installed at recommended application rates and per manufacturer’s installation instructions.