OWENS CORNING INSULATING SYSTEMS CANADA LP

FOAMULAR CODEBORD EXTERIOR AIR BARRIER SYSTEM

07 27 23 – BOARD PRODUCT AIR BARRIERS

**INTRODUCTION - TECHNICAL SPECIFICATIONS**

This specification Section is used to describe an extruded polystyrene rigid (XPS) insulation board forming the primary exterior air barrier by sealing joints and as required connecting to interior air barriers, fabricated by **Owens Corning Insulating Systems Canada LP (Owens Corning Canada)** in its Valleyfield, Quebec; Rockford, Illinois; Tallmadge, Ohio; and Gresham Oregon manufacturing facilities and distributed under the following brand names:

**FOAMULAR® & FOAMULAR® NGX™ CodeBord® Exterior Air Barrier System**

**Filing, Organization and Formatting**

This Section has been classified and numbered in accordance with the MasterFormat™ classification system for the construction industry. Its number and title is:

**07 27 23 –BOARD PRODUCT AIR BARRIERS**

This Section is also organized into three Parts according to the SectionFormat™ standard (similar to National Master Specification (NMS) Sections) used by most specifications writers in Canada.

**Recommendations for the Use of Certain Tools**

The SPEC NOTES printed in italic are used as a checklist or guide to the specifications writer in order to help him make the right decisions. The SPEC NOTES must be suppressed before printing the document.

The brackets [ ], with or without text, help the writer choose materials, products, references and other possibilities at his disposal. The brackets must be suppressed, including all choices not retained, before printing the document.

**Professional Responsibility of the Specification Writer**

Owens Corning Canada LP publishes this document for information only and cannot in any way assume the role or the professional responsibility of the architect who must sign and seal his Drawings and Specifications.

This document, although written by experienced professionals, must not be copied in whole. It must be adapted or even modified to suit the needs of your Project. Our regional technical support representatives and our Engineering Services will be pleased and honored to assist you with this.

SPEC NOTE DESCRIPTION: This specification includes materials and installation procedures for FOAMULAR® & FOAMULAR® NGX™ CodeBord® Air Barrier System, a rigid insulation board forming the primary air barrier by sealing all joints, in accordance with the requirements of the NBC for the building envelope. FOAMULAR® or FOAMULAR® NGX™ C-200 is applied direct to sheathing, studs and ProPINK ComfortSeal֭™ Gasket, complete with JointSealR™ Foam Joint Tape, to provide water resistive barrier and an air and vapour-tight membrane. Penetration and termination sealant is used to seal around any openings, penetrations and at perimeter edge of insulation terminations at window and door frames. This specification should be adapted to suit the requirements of individual projects.

SPEC NOTE ENVIRONMENT: This Section specifies recycling and reuse options, and generally available disposal options. Increased RSI (R)-value insulation levels will provide improved energy efficiency. Improved energy efficiency reduces the use of nonrenewable energy sources and provides a lessened contribution to global warming.

# General

## SECTION INCLUDES

### Air barrier system:

#### Extruded polystyrene insulation boards fastened to exterior face of back-up wall (intermediate sheathing).

#### Joint sealers (bituminous membrane strips, trowel applied sealants and urethane foam air barrier) used to block and seal joints in the assembly itself, penetrations and voids between air barrier system and wall openings such as windows, doors, ventilation or decorative louvres and others.

#### Accessories used to fasten insulation boards.

## RELATED SECTIONS

SPEC NOTE: Certain related sections are essential to construct the air barrier system (e.g. gypsum board intermediate sheathing) or can substantially contribute to the wall's thermal performance (e.g. batt insulation in metal stud system cavities) and to control water vapour diffusion within it (e.g. vapour retarders).

### Section 04 05 00 - Common Work Results for Masonry: [connectors] [gaskets or flashings]

### Section 06 10 53 - Miscellaneous Rough Carpentry: Wood studs.

### Section 06 16 43 - Gypsum Sheathing

### Section 07 26 00 - Vapour Retarders

### Section 07 91 00 - Joint Sealers

### Section 09 21 16 - Gypsum Board Assemblies

## REFERENCES

SPEC NOTE: Edit list to suit standards specified in project specification.

### American Society for Testing and Materials International, (ASTM)

#### ASTM C177-19, Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus

#### ASTM C203 - 05a (2017), Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation

#### ASTM C518-17, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

#### ASTM C1338-19, Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings

#### ASTM D1621-16, Standard Test Method for Compressive Properties of Rigid Cellular Plastics

#### ASTM D2842-19, Standard Test Method for Water Absorption of Rigid Cellular Plastics

#### ASTM D3575-20, Standard Test Methods for Flexible Cellular Materials Made from Olefin Polymers

#### ASTM E84-20, Standard Test Method for Surface Burning Characteristics of Building Materials

#### ASTM E96-16, Test Methods for Water Vapor Transmission of Materials

#### ASTM E2178–13, Standard Test Method for Air Permeance of Building Materials

### Underwriters' Laboratories of Canada (ULC)

#### CAN/ULC-S102.2:2018, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies

#### CAN/ULC-S114:2018, Standard Method of Test For Determination of Non-Combustibility In Building Materials.

#### CAN/ULC-S701.1:2017, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering

Visit [www.owenscorning.ca](http://www.owenscorning.ca) for a current copy of the [Safe Use Instruction Sheet (SUIS) for FOAMULAR® and FOAMULAR® NGX™ Extruded Polystyrene Insulation.](https://sds.owenscorning.com/)

### Health Canada/Workplace Hazardous Materials Information System (WHMIS)

#### Safety Data Sheet (SDS)

## SUBMITTALS

### Section 01 33 00: Submittal procedures.

### Product data:

#### Submit product data sheet containing performance values of the materials, and system performance.

#### Submit details showing continuous plane of air barrier.

### Certifications:

Visit [www.owenscorning.ca](http://www.owenscorning.ca) for a current copy of the [Safe Use Instruction Sheet (SUIS) for FOAMULAR® and FOAMULAR® NGX™ Extruded Polystyrene Insulation.](https://sds.owenscorning.com/)

#### Submit WHMIS SDS - Safety Data Sheets. Indicate VOC content.

#### Submit manufacturer's CCMC Evaluation Reports.

### Sustainable design reporting:

#### Section 01 35 66: LEED documentation procedures.

#### Submit ecological certificates issued by independent agencies and the evaluation of the products' contribution towards obtaining LEED™ credits identified in article QUALITY ASSURANCE.

## QUALITY ASSURANCE

### Identification: Clearly label each insulation board with the information listed in manufacturer's Product Data Sheet.

SPEC NOTE: Owens Corning has two CCMC reports – CCMC 12935-R FOAMULAR CodeBord Exterior Air Barrier System (CABS), and CCMC 14003-R JointSealR Foam Joint Tape and FlashSealR Foam Flashing Tape.

### Insulation, Joint and Flashing Tape: Listed with Canadian Construction Materials Centre (CCMC) Product Evaluation, published by the Institute for Research in Construction (IRC) of the National Research Centre Canada (CNRC).

### Sustainability standards certification by an independent agency:

SPEC NOTE: GREENGUARD and GREENGUARD Gold Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit [spot.ul.com](https://spot.ul.com/main-app/products/catalog/) or contact Owens Corning [GET TECH](https://www.owenscorninglibrary.ca/leed/).

SPEC NOTE: SCS (Scientific Certification Systems) Global Services provides independent verification of recycled content in building materials and verifies recycled content claims made by manufacturers. For more information, visit [www.SCSglobalservices.com](http://www.scsglobalservices.com/).

#### Submit the certificate issued by the SCS Global Services certifying that the polystyrene board insulation meets the recycled materials content requirements in the tested product; internet site: [*www.SCSglobalservices.com*](http://www.scsglobalservices.com/). Include certificate number, duration of the certification and all restrictions for the products, as applicable.

SPEC NOTE: Canada Green Building Council (CaGBC) has promoted the application of the LEED Canada Rating System (LEED Canada NC and CS). LEED is the acronym of Leadership in Energy and Environmental Design.

SPEC NOTE: As a design guideline and a third-party certification tool, LEED aims to improve occupant comfort, environmental performance and economical efficiency of buildings by using proven and innovative procedures, standards and technologies. It furnishes a definition generally recognized in the industry of what constitutes a “green building”. LEED v4 rating system comprises a set of explicit performance criteria organized into nine (9) principal categories: Integrative Process, Location and Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality. Innovation, Regional Priority.

For each performance criteria, the LEED rating system states the fundamental objective and the necessary documentation to be submitted to meet each compulsory condition and to obtain each voluntary “credit”. Projects are awarded points for their certification by meeting or exceeding each credit’s technical requirements. All compulsory conditions must be met before the project may be admissible to the certification. The points are then accumulated into a final total corresponding to one of the possible LEED certification levels: CERTIFIED, SILVER, GOLD or PLATINUM.

Consider adding any credits anticipated from other specified products.

### Contribution of board insulation to the LEED v4 certification of the building Project:

#### Energy and Atmosphere (EA): credit EAp2 for minimum energy performance, and credit EAc2 for optimization of building energy performance.

#### Materials and Resources (MR): credits MRc1 for live cycle impact reduction, MFc2 for environmental product declaration, MRc3 for sourcing and raw materials, MRc5 for waste management.

#### Indoor Environmental Quality (EQ): credits EQc2 for low-emitting materials, EQc5 thermal comfort.

SPEC NOTE: Mock-ups establish quality of the work for the materials indicated in this Section. Delete the following paragraph if the scope of work is minimal and a mock-up is not required.

## MOCK-UPS

### Construct mock-ups in accordance with Section [01 43 39 – Mock-ups].

### Construct typical [exterior wall] panel, [2 m] long by [2 m] m wide, incorporating [window] [and] frame [and sill], insulation, [building corner condition,] [junction with roof system,] [and,] illustrating materials interface and seals.

### Locate [where directed].

### Mock-up [may] [may not] remain as part of the Work.

### Allow [24 hr] for inspection of mock-up by [Engineer] [Consultant] before proceeding with air barrier Work.

## DELIVERY, STORAGE AND HANDLING

### Section 01 66 00: Transport, handle, store, and protect products.

### Deliver, store and handle polystyrene boards in accordance with manufacturer's written instructions.

### Waste handling: Separate waste materials for [reuse] [and] [recycling] in accordance with Section [01 74 19 – Construction Waste Management and Disposal].

### Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of insulation materials.

## SITE CONDITIONS

### Maintain manufacturer’s recommended ambient conditions during installation.

# Products

## MATERIALS

SPEC NOTE ENVIRONMENT: Thermal insulation provides reduced environmental impacts through energy savings. Further reduced environmental impacts can be achieved through the specification of materials that contain a high portion of recycled content. In addition, plastic foam insulation must demonstrate a low impact on stratospheric ozone and global warming using appropriate blowing agents. Blowing agents used to fabricate FOAMULAR® extruded polystyrene insulation meet the Montreal Protocol requirements.

The **FOAMULAR® ozone depletion potential is ZERO** and has a **70% lower global warming** potential. All boards contain **20% recycled content**.

FOAMULAR NGX™ products have all the same properties as FOAMULAR plus the blowing agent formulation that delivers a 90% reduction to Global Warming Potential (100 year), including the complete elimination of HFC 134a

SPEC NOTE: The materials forming the air barrier system have different air permeances. The air barrier system has a measured air leakage rate of 0.025 L/s.m² when tested at a differential pressure of 75 Pa, which is lower than the ranges required/recommended by the NBC.

### Extruded rigid polystyrene board insulation to CAN/ULC-S701, Type 3:

#### Manufacturer - Acceptable Product: [FOAMULAR CODEBORD] [FOAMULAR NGX CODEBORD], manufactured by Owens Corning Canada.

SPEC NOTE: Square edge boards facilitate the installation of masonry veneer connectors or anchors and other types of exterior cladding (e.g. preformed metal, ceramic tiles on cement board, etc.). On the other hand, ship-lapped edges offer an additional barrier to the passage of air and water. Consult an Owens Corning regional technical support representative to select the best edge type according to required building envelope performances to attain.

Select from the following dimension options based on the selected product:

FOAMULAR® & FOAMULAR® NGX™ CodeBord®: 1220 mm x 2438 x [20] [25] [38] [51] mm

#### Dimensions: Thickness [20 mm] [25 mm] [38 mm] [51 mm] [64 mm] [76 mm] [102 mm] [as indicated], [ship lapped] [square] edges.

SPEC NOTE: Use RSI 0.70 for 20 mm thick FOAMULAR® & FOAMULAR® NGX™ CodeBord®: RSI 0.88 for all others.

#### Thermal: [RSI 0.88 / 25 mm (R-5/inch)], tested to ASTM C518 or ASTM C177.

#### Compressive strength: 140 kPa (20 psi), tested to ASTM D1621.

#### Water vapour permeance: 45-55 ng/Pa·s·m2 (0.79–0.96 Perm) tested to ASTM E96, Method A.

#### Water absorption: 0.70, tested to ASTM D2842.

#### Air permeability at 75 Pa: 0.001 L/s·m²

#### Flexural Strength: 483 kPa, tested to ASTM C203.

#### Recycled content: Minimum [20%], pre-consumer.

SPEC NOTE: Gaskets and sealers described in these clauses complement the air barrier system and are compatible with polystyrene boards manufactured by Owens Corning Canada. Any material substitution must be approved by Owens Corning Canada in order to respect the integrity of the system.

SPEC NOTE: Specify sill gaskets to provide a seal between the sill plate and the foundation.

### Gaskets: Polyethylene, flexible, durable and moisture resistant.

#### Manufacturer: ProPINK ComfortSeal™ manufactured by Owens Corning Canada.

#### Density: 16-19 kg/m³ tested to ASTM D3575.

#### Tear Resistance: 8.2 kg/m³ tested to ASTM D3575.

#### Dimensions: Rolls, 3.2 mm thick x [89 mm] [139 mm] width.

SPEC NOTE: Specify tape to seal joints between polystyrene boards and between air barrier system and adjacent building components such as windows, doors and other openings in the building envelope. JointSealR™ values have been validated by CCMC Report 14003-R.

### Joint and Flashing tape: Acrylic polyolefin, self-adhesive type with aggressive acrylic adhesive and release liner backing.

#### Manufacturer: JointSealR™ joint tape manufactured by Owens Corning Canada.

#### Dimensions: Rolls, 0.25 mm thick x 89 mm width x 27.4 m length.

#### Air permeability at 75 Pa: 0.00017 L/s.m2 tested to ASTM E2178.

#### Water vapour permeance: 11 ng / Pa·m2·s, tested to ASTM E2178.

#### Flame spread/smoke developed: 5/25 tested to ASTM E84.

### Foam Sealant: Low expansion polyurethane, to CAN/ULC-S710.1 and S-710.2.

#### Air permeability: ≤ 0.05 L/s.m² at 75 Pa

#### Initial thermal resistance: RSI 0.8 / 25 mm

SPEC NOTE: Specify blanket insulation in stud space if air barrier involves a stud wall. EcoTouch® PINK® Fiberglas® performance values have been validated by CCMC Report 05650-L.

### Blanket Insulation: Glass fibre, to CAN/ULC S702, Type 1, pre-formed, unfaced.

#### Manufacturer: EcoTouch® PINK® Fiberglas® Thermal Batt Insulation manufactured by Owens Corning Canada.

#### UL Greenguard Gold certified.

#### Formaldehyde free, validated by UL Environment.

#### Recycled content: 73% average certified by SCS Global Services.

#### Flame spread/smoke developed: 5/25 tested to CAN/ULC S102.2.

#### Non-combustible, tested to CAN/ULC S114.

#### Fungus resistant, tested to ASTM C1338.

### Fasteners: Spiral nails of sufficient length to penetrate substrate minimum 25 mm, with minimum 25 mm diameter metal or plastic washers.

# Execution

## EXAMINATION

SPEC NOTE: Ensure that thickness of extruded polystyrene board and insulation batts installed between studs meet the requirements of the applicable Building Code (refer to Section 9.25.1., General and Table 9.25.5.2). These requirements relate to the “minimum ratio between Total Thermal Resistance Outboard of Material's Inner Surface to Total Thermal Resistance Inboard of Material's Inner Surface” when required.

### Verify that surfaces and conditions are ready to accept the Work of this section.

### Ensure all surfaces are clean, dry, sound, smooth, continuous and comply with air barrier manufacturer's requirements.

### Do not start work until deficiencies have been corrected. Commencement of Work implies acceptance of conditions.

## PREPARATION

### Remove loose or foreign matter which might impair adhesion of materials.

### Ensure all substrates are free of surface moisture prior to application of air barrier system.

## INSTALLATION

### Install products of this section to manufacturer’s written instructions.

### Sill gaskets: Prior to wall installation, install sill gasket between bottom sill plates and foundation, and on vertical face of sill plate. Use two layers of gasket if necessary to achieve a proper seal.

### Gaskets: Install gaskets between all insulation board joints and framing, and at all corners where one exterior wall abuts another exterior wall.

### Polystyrene boards:

#### Use only insulation boards free from chipped or broken edges.

#### Install polystyrene boards [horizontally] [vertically] with offset vertical joints; butt joints tightly and ensure a plumb, level and square installation, as weathertight as possible.

#### Cut and fit insulation tight around electrical boxes, conduits, doors and windows and all other penetrations in exterior building envelope.

#### Keep insulation minimum 75 mm from heat-emitting devices such as chimneys and vents protruding through wall.

### Mechanically fasten polystyrene boards to [wall studs] [through the intermediate sheathing]. Space fasteners:

#### Individual board edges, along studs: maximum 150 mm oc.

#### Board field, along intermediate studs: maximum 300 mm oc.

### Seal all external corner board joints with joint tape.

### Seal all penetrations using joint and flashing tape to maintain a continuous air barrier, including those made by work of other Sections and by exterior cladding fastening devices.

### Seal voids around windows, doors, ventilation louvres and other elements located in the air barrier system plane with polyurethane foam sealant. Avoid spillage past voids and protect from contact with water.

SPEC NOTE: Ensure clearances meet local building safety regulations and code requirements. For electrical fixtures housed in a CSA-approved insulated enclosure, prescribed clearances are not required unless indicated otherwise by the fixture's manufacturer. Edit the following paragraph to suit.

### Install blanket installation in exterior stud wall spaces with tight joints, and around service equipment such as electrical boxes, pipes and ducts. Keep minimum 75 mm from heat-emitting devices such as lights or chimneys.

## PROTECTION

### Protect finished Work in accordance with Section [01 61 00 - Common Product Requirements].

### Do not permit adjacent work to damage work of this Section.

### Ensure finished Work is protected from climatic conditions.

END OF SECTION

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