OWENS CORNING INSULATING SYSTEMS CANADA LP

07 27 23 – BOARD PRODUCT AIR BARRIERS

**INTRODUCTION - TECHNICAL SPECIFICATIONS**

This specification Section is used to prescribe building envelope wall air barriers using extruded polystyrene insulation boards and joint sealers used to seal joints and penetrations in the air barrier. The insulation boards forming the major part of this system are fabricated by **Owens Corning Insulating Systems Canada LP (Owens Corning Canada)** in their Rockford IL, USA; Tallmadge OH, USA; Gresham OR, USA; Valleyfield PQ, Canada manufacturing facilities and the joint sealers used in the system are manufactured by commercial partners meeting Owens Corning's quality standards. The system is marketed under the name:

**FOAMULAR® & FOAMULAR® NGX™ C-200/CodeBord® Air Barrier System**

**Filing, Organization and Formatting**

This Section has been classified and numbered in accordance with the MasterFormat™ 2020 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 and formatted like all other National Master Specification (NMS) Sections which are 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 section prescribes building envelope wall air barriers using extruded polystyrene insulation boards, and joint sealers to seal joints and penetrations in the air barrier.

For any additional information concerning these products, contact your regional technical support representative or consult Owen Corning Canada’s web site at the following address: <http://www.owenscorning.ca>.

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 05 41 00 - Structural Metal Stud Framing

### Section 06 16 43 - Gypsum Sheathing

### Section 07 21 16 – Blanket Insulation

### 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 E228-17, Standard Test Method for Linear Thermal Expansion of Solid Materials With a Push-Rod Silica Dilatometer

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

#### ASTM D2126-15, Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging

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

#### ASTM E96-16, Test Methods for Water Vapor Transmission of 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-S604:2016, Type A Chimneys

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

### Canadian Gas Association (CGAl)

#### CSA-B149 HB:20, Natural Gas and Propane Installation Code Handbook

#### CSA-B149.1:20, Natural Gas and Propane Installation Code

Visit [www.owenscorning.ca](http://www.owenscorning.ca) for a current copy of the [Safe Use Instruction Sheet (SUIS) for FOAMULAR® and FOAMLUAR® 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 proof of manufacturer's CCMC Listing and Listing Number to (Engineer) (Consultant)].

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.

### 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.

### Samples:

#### Polystyrene board: [One (1)] [Two (2)] sample(s) of each type, 600 x 600 mm x indicated thickness, including the following required information printed on one face:

##### Reference standard product meets

##### Board Type, name of manufacturer or brand name

##### The following cautionary statement: Combustible product. Protection or thermal barrier is required in accordance with applicable building codes.

#### Accessories: [One] [Two] sample(s) of each type of specified accessory and fastener.

##### self-adhesive tape

##### trowel applied joint sealant

##### one component spray-applied urethane insulating foam, low expansion grade

##### fasteners

## MOCK-UPS

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

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

### Locate [where directed] [\_\_\_\_].

### Mock-up 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.

## QUALITY ASSURANCE

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

### 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 [GETTECH](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.

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

#### .1 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.

## 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 printed 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

## EXTRUDED POLYSTYRENE INSULATION

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 C-200] [FOAMULAR NGX C-200] [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:

.1 FOAMULAR® & FOAMULAR NGX™ C-200: 610 mm x 2438 mm x [25] [38 [51][64][76][102] mm

.2 FOAMULAR® & FOAMULAR NGX™ CodeBord®: 1220 mm x 2438 [2743] mm x [20] [25] [38] [51] mm

#### Dimensions: 610 mm x 2438 mm x [25 mm] [38 mm] [51 mm] [64 mm] [76 mm] [102 mm] [thickness as indicated], [ship lapped] [square] edges

#### Dimensions: 1220 mm x [2438 mm] [2743 mm] x [20 mm] [25 mm] [38 mm] [51 mm] [thickness as indicated], [ship lapped] [square] edges

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

#### Thermal: [RSI 0.88 / 25 mm] [RSI 0.70 / 25 mm]

#### Compressive strength: 140 kPa (20 psi)

#### Water vapour permeance: >30 ng/Pa.s.m2 (0.52 Perm) and  <60 ng/Pa.s.m2 (1.05 Perm)

#### Air permeance: negligible

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

SPEC NOTE: Joint sealers described in paragraphs 2.1.2, 2.1.3 and 2.1.4 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.

## JOINT SEALERS

SPEC NOTE: Specify foam tape to seal joints between polystyrene boards

### Air barrier foam tape: Self-adhesive type.

#### Manufacturer: JointSealR™ Foam 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

#### Water vapour permeance: 11 ng / Pa.m2.s

SPEC NOTE: Specify membrane 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

SPEC NOTE: Use of a primer to ensure an excellent membrane adhesion to polystyrene boards is an optional better practice and has been found to have no influence on the air barrier system performance. Consult an Owens Corning regional technical support representative to evaluate the pertinence of using a primer.

### Air barrier low expansion polyurethane foam sealant: to CAN/ULC-S710.1 and S-710.2 [and as listed in CCMC 13074-R].

#### Air permeability: ≤ 0.05 L/s.m2 at75 Pa

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

## ACCESSORIES

### Fastening screws: Self-drilling and self-tapping type [corrosion resistant] [hot-dip galvanized] [Climaseal polymer coated] [electro-galvanized] steel screws, #8-18, of sufficient length to penetrate steel studs at least 9.5 mm (minimum 3 exposed screw threads).

### Metal fastening plates: corrosion resistant metal [hot-dip galvanized] [Climaseal polymer coated] [electro-galvanized].

#### Round: [32 mm] [65 mm] diameter.

#### Square: [38 x 38 mm] [50 x 50 mm]

### Plastic fastening plates: [65] mm diameter round.

# Execution

## EXAMINATION

### 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.

### Ensure joints in intermediate sheathing have been sealed with an appropriate product.

### Ensure work penetrating sheathing [and cladding] is completed.

### Ensure all exterior cladding anchoring devices have been installed.

SPEC NOTE: Extruded polystyrene board thickness and that of the insulation batts installed between studs (specified in Section 07 21 16) shall 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.

### Ensure that batt insulation and vapour retarder are installed in metal stud voids.

### Report any unsatisfactory conditions to the [Architect] [Consultant] in writing.

### 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 clean of oil or excess dust; all masonry joints struck flush, and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.

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

### Ensure metal closures are free of sharp edges and burrs.

### Seal penetrations and voids in intermediate sheathing with sealant.

### Prime substrate surfaces to receive self-adhesive membranes in accordance with manufacturer's instructions.

## BOARD INSTALLATION

### Use only insulation boards free from chipped or broken edges; reject any board with holes greater than 2500 mm2 (4 in2).

### 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 metal wall studs, through the intermediate sheathing.

### Square edge boards: Screw boards with fastening plates spaced:

#### Individual board edges, along steel studs: 150 mm oc

#### Board field, along intermediate steel studs: 300 mm oc

### Ship-lapped boards: Screw boards with fastening plates spaced:

#### Along ship-lapped edges, aligned with vertical steel studs, 150 mm oc, using minimum 65 mm diameter fastening plates overlapping both boards placed side by side.

#### Board field, along intermediate steel studs: 300 mm oc. using minimum 32 mm diameter fastening plates.

## JOINT SEALING

SPEC NOTE: Select joint sealer to suit site conditions and type of work required. Consult your Owens Corning Canada regional technical support representative to select the appropriate material.

### Once polystyrene boards are installed, [prime board perimeters and] seal joints between each board using membrane strips centered on the joint.

### Seal all penetrations and voids, including those made to intermediate sheathing by work of other Sections and by exterior cladding fastening devices.

### As work progresses, trowel apply [air barrier] [air/vapour barrier] sealant continuously to all board edges to a wet thickness of 3 mm.

### Air barrier and thermal resistance continuity:

#### Block and seal protruding exterior cladding connectors and anchoring, fissures and around penetrations in air barrier system with appropriate sealant.

SPEC NOTE: Installation technique must not cause deflection on the window jams. This may require phased installation on the sealant.

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

## 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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