SPEC NOTE: This document is a reference for the recommended organization and preparation is ideally suited for exterior continuous insulation polyisocyanurate “polyiso” products for wall assemblies. For assistance on the use of the products in this section, contact Atlas Roofing Corporation at 800-388-6134 or visit their website at wall.atlasrwi.com.

SPEC NOTE: This specification includes editing notes to assist the user throughout the process. Where selection is indicated within an [OR] statement, select the appropriate information to suit project requirements and delete non applicable information, including “SPEC NOTE” paragraphs.

DISCLAIMER: The manufacturer of has reviewed the product information contained in this guide specification. The information is organized and presented to assist the specification writer working on a construction project to select the appropriate products and to save time in writing the project specification section. The specification writer is responsible for product selection as well as the use and application of this information and should contact the manufacturer to ensure that all options are available and that the associated specification information is valid and correct.

1. GENERAL
	1. SECTION INCLUDES

EnergyShield Polyisocyanurate Continuous Wall Insulation Products.

* 1. RELATED REQUIREMENTS

[Continue as appropriate for project].

* 1. REFERENCE STANDARDS

ASTM C209 – Standard Test Methods for Cellulosic Fiber Insulating Board.

ASTM C272 – Standard Test Method for Water Absorption of Core Materials for Sandwich Constructions Scope.

ASTM C518 – Standard Test Method for the Determination of the Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

ASTM C1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

ASTM D1621 – Test Method for Compressive Properties of Rigid Cellular Plastics.

ASTM E2178 – Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials

ASTM E2273 – Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems Clad Wall Assemblies.

ASTM E2357 – Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies.

ASTM E84 (UL 723) – Standard Test Method for Surface Burning Characteristics of Building Materials.

ASTM E96 – Standard Test Methods for Gravimetric Determination of Water Vapor Transmission of Materials.

ASHRAE 90.1 – Energy Standard for Buildings Except Low-Rise Residential Buildings.

ASHRAE 189.1 – Standard for the Design of High-Performance Green Buildings.

SPEC NOTE: Retain below subparagraph for wall construction requiring interior-exposed application.

IBC Chapter 8 – Interior Finishes

IBC Chapter 26 –Plastic.

SPEC NOTE: Retain below subparagraph for wall construction requiring interior-exposed application tested in accordance with Acceptance Criteria per ICC-ES AC12, Appendix B.

ICC-ES AC12 – Acceptance Criteria for Foam Plastic Insulation.

ICC-ES AC71 – Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water-Resistive Barriers.

IRC Chapter 3, Section R316 – Foam Plastic

SPEC NOTE: Retain below subparagraph for commercial above-grade wall construction requiring compliance with multi-story fire testing in accordance with NFPA 285.

NFPA 285 – Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load Bearing Wall Assemblies Containing Combustible Components.

SPEC NOTE: Retain below subparagraph for wall construction requiring interior-exposed application tested in accordance with NFPA 286.

NFPA 286 – Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

UL 2824: GREENGUARD Certification Program for Measuring Microbial Resistance from Various Sources Using Static Environmental Chambers.

* 1. SUBMITTALS

Submit under provisions of Section 01 03 00 – Administrative Requirements.

Product Data: Manufacturer’s technical data sheets on each product to be used, including:

Preparation instructions and recommendations.

Storage and handling requirements and recommendations.

Installation methods.

Product Samples: Obtain two (2) verification samples of specified product, minimum 4 by 4 inches.

SPEC NOTE: Delete the following subparagraph if LEED is not applicable.

LEED Submittals: Provide documentation for credit requirements

For recycled content, indicating post- and pre-consumer recycled content for each product.

For product life-cycle, ISO-compliant Environmental Product Declaration.

SPEC NOTE: Delete the following subparagraph for projects specifying EnergyShield Ply Pro as is not applicable.

For GREENGUARD Gold Compliance, certificate of compliance per UL 2818.

Research Reports: Third-party evaluation reports validating testing performed by a qualified testing agency.

Warranty: Provide Manufacturer’s Limited Thermal Warranty for polyisocyanurate insulation to not vary more than ten (10) percent from the published R-Value for a period of no less than fifteen (15) years from the date of manufacture.

* 1. QUALITY ASSURANCE

Manufacturer Qualifications: Manufacturer shall be a North America-based company that regularly manufactures specified insulation in-house having multiple manufacturing facilities to ensure consistency of product supply.

Pre-Installation Meeting: Conduct pre-installation meeting to verify project requirements, structural and substrate conditions, manufacturer’s installation instructions, and quality control procedures.

Mock-Up: Provide a mock-up for evaluation of specified wall assembly illustrating proper installation and sequencing of materials.

Product Compliance:

Verify compliance with all building codes and regulations.

Confirm compatibility of adjacent products to ensure integrity of assembly.

* 1. DELIVERY, STORAGE, AND HANDLING

Store and handle insulation materials in accordance with manufacturer's written instructions.

Protect insulation from open flame.

* 1. FIELD CONDITIONS

Comply with manufacturer’s recommendations for environmental conditions.

1. PRODUCTS
	* + 1. DISTRIBUTOR

Materials Distributor:

Gentek Building Products, 1001 Corporate Drive, Burlington, ON, L7L 5V5
Contact: Martin Miville-Dechene, Business Development Manager
M: (905) 208-7007; E: martin\_miville-dechene@gentek.ca; W: [www.gentek.ca](http://www.gentek.ca)

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* + - 1. MATERIALS

SPEC NOTE: Atlas offers multiple continuous wall insulation product options. Choose from the following and delete sections not applicable to the project specific specification.

Aluminum foil-faced polyisocyanurate thermal insulation boards complying with ASTM C1289, Type I, Class 1 or 2. Comprised of closed cell polyiso foam core with coated foil facers on both sides.

Basis of Design: EnergyShield Pro Continuous Wall Insulation.

Flame Spread Index and Smoke Contribution per ASTM E84 (UL 793): Class A, with maximum flame-spread and smoke-developed indexes of 25 and 450 respectively.

Fire Propagation Characteristics: Compliant with NFPA 285 testing as part of an approved wall assembly.

Exposed Interior Use: Tested in accordance with NFPA 286 and Approval Criteria per IBC, Chapter 8; relative to the following:

SPEC NOTE: Select only one of the following applications based on the project specific specification, if applicable.

Without need for thermal barrier when installed on walls only within a given interior connected space.

Without need for thermal barrier when installed on ceilings only within a given interior connected space.

Exposed Attic or Crawlspace Use: Tested in accordance with NFPA 286 and Approval Criteria per IBC, Chapter 8, relative to the following:

SPEC NOTE: Select only one of the following applications based on the project specific specification, if applicable.

Without need for ignition barrier when installed on walls only within a given attic or crawlspace interconnected space.

Without need for ignition barrier when installed on ceilings only within a given attic or crawlspace interconnected space.

Compressive Strength per ASTM D1621: Grade 3, 25 psi (172 kPa).

Water Vapor Permeability per ASTM E96, desiccant method: 0.1 perm or less.

Tested for chemical emissions per UL 2818: GREENGUARD Gold Certified

Microbial Resistance per UL 2824: Highly Resistant.

Qualify as weather resistive barrier per AC71 with sealed joints: Pass

R-Value per ASTM C518 at required thickness:

SPEC NOTE: Provide to thickness indicated on drawings. Refer to manufacturer’s technical data sheet for alternative thickness not included.

1.0 inch: R-6.5.

1.5 inches: R-9.8.

2.0 inches: R-13.1.

2.5 inches: R-16.0.

3.0 inches: R-19.7.

3.5 inches: R-22.2.

4.0 inches: R-26.

SPEC NOTE: Retain below subparagraph for below-grade foundation wall and/or under slab.

Basis of Design: EnergyShield XR Continuous Insulation.

Meets performance requirements per ASTM C578, Physical Properties Table 1 complying with Type IV.

Flame Spread Index and Smoke Contribution, core per ASTM E84 (UL 793): Class A, with maximum flame-spread and smoke-developed indexes of 25 and 450 respectively.

Compressive Strength per ASTM D1621: Grade 3, 25 psi (172 kPa).

Density: 2.0 lbs/ft3.

Flexural Strength: >50 psi (>345 kPa).

Water Vapor Permeability per ASTM E96, desiccant method: 0.1 perm or less.

Water Absorption per ASTM C272: Pass, <0.3% by volume.

Service Temperature: -100°F to +250°F.

Tested for chemical emissions per UL 2818: GREENGUARD Gold Certified

Microbial Resistance per UL 2824: Highly Resistant.

R-Value per ASTM C518 at required thickness:

SPEC NOTE: Provide to thickness indicated on drawings.

1.55 inch: R-10.1.

2.0 inch: R-13.1.

2.4 inches: R-15.

3.0 inches: R-19.1.

Basis of Design: EnergyShield Continuous Wall Insulation.

Flame Spread Index and Smoke Contribution per ASTM E84 (UL 793): Class B, with maximum flame-spread and smoke-developed indexes of 75 and 450 respectively.

Exposed Attic or Crawlspace Use: Tested in accordance with NFPA 286 and Approval Criteria per ICC-ES AC12, Appendix B, relative to the following:

Without need for ignition barrier when installed on walls and/or ceilings of attic or crawlspace.

Compressive Strength per ASTM D1621:

Grade 1, 16 psi (110 kPa).

Grade 2, 20 psi (138 kPa).

Water Vapor Permeability per ASTM E96, desiccant method: 0.1 perm or less.

Tested for chemical emissions per UL 2818: GREENGUARD Gold Certified

Microbial Resistance per UL 2824: Highly Resistant.

Qualify as weather resistive barrier per AC71 with sealed joints: Pass

R-Value per ASTM C518 at required thickness:

SPEC NOTE: Provide to thickness indicated on drawings. Refer to manufacturer’s technical data sheet for alternative thickness not included.

0.5 inch: R-3.3.

1.0 inch: R-6.5.

1.5 inches: R-9.8.

2.0 inches: R-13.1.

2.5 inches: R-16.0.

3.0 inches: R-19.7.

3.5 inches: R-22.2.

4.0 inches: R-26.

Glass fiber mat faced polyisocyanurate thermal insulation boards complying with ASTM C1289, Type II, Class 2. Comprised of closed cell polyiso foam core with coated glass-mat facers on both sides.

Basis of Design: EnergyShield CGF Pro Continuous Wall Insulation.

Flame Spread Index and Smoke Contribution per ASTM E84 (UL 793): Class A, with maximum flame-spread and smoke-developed indexes of 25 and 450 respectively.

Fire Propagation Characteristics: Compliant with NFPA 285 testing as part of an approved wall assembly.

Compressive Strength per ASTM D1621: Grade 3, 25 psi (172 kPa).

Water Vapor Permeability per ASTM E96, desiccant method:

1.2 perm at 1-inch or less.

1.0 perm or less greater than 1-inch.

Tested for chemical emissions per UL 2818: GREENGUARD Gold Certified

Microbial Resistance per UL 2824: Highly Resistant.

Qualify as weather resistive barrier per AC71 with sealed joints: Pass

R-Value per ASTM C518 at required thickness:

SPEC NOTE: Provide to thickness indicated on drawings. Refer to manufacturer’s technical data sheet for alternative thickness not included.

1.0 inch: R-6.

1.5 inches: R-9.

2.0 inches: R-12.1.

2.5 inches: R-15.3.

3.0 inches: R-18.5.

3.5 inches: R-21.7.

4.0 inches: R-25.

Basis of Design: EnergyShield PanelCast Continuous Wall Insulation.

SPEC NOTE: For use in precast insulated concrete sandwich panels, tilt-up walls and cast-in-place concrete wall systems in Type I-V construction.

Flame Spread Index and Smoke Contribution per ASTM E84 (UL 793): Class B, with maximum flame-spread and smoke-developed indexes of 75 and 450 respectively.

Compressive Strength per ASTM D1621: Grade 3, 25 psi (172 kPa).

Water Vapor Permeability per ASTM E96, desiccant method:

1.2 perm at 1-inch or less.

1.0 perm or less greater than 1-inch.

Tested for chemical emissions per UL 2818: GREENGUARD Gold Certified

Microbial Resistance per UL 2824: Highly Resistant.

R-Value per ASTM C518 at required thickness:

SPEC NOTE: Provide to thickness indicated on drawings. Refer to manufacturer’s technical data sheet for alternative thickness not included.

1.0 inch: R-6.

1.5 inches: R-9.

2.0 inches: R-12.1.

2.5 inches: R-15.3.

3.0 inches: R-18.5.

3.5 inches: R-21.7.

4.0 inches: R-25.

Basis of Design: EnergyShield CGF Continuous Wall Insulation.

Flame Spread Index and Smoke Contribution per ASTM E84 (UL 793): Class B, with maximum flame-spread and smoke-developed indexes of 75 and 450 respectively.

Exposed Attic or Crawlspace Use: Tested in accordance with NFPA 286 and Approval Criteria per ICC-ES AC12, Appendix B, relative to the following:

Without need for ignition barrier when installed on walls and/or ceilings of attic or crawlspace.

Compressive Strength per ASTM D1621:

Grade 1, 16 psi (110 kPa).

Grade 2, 20 psi (138 kPa).

Water Vapor Permeability per ASTM E96, desiccant method:

1.2 perm at 1-inch or less.

1.0 perm or less greater than 1-inch.

Tested for chemical emissions per UL 2818: GREENGUARD Gold Certified

Microbial Resistance per UL 2824: Highly Resistant.

Qualify as weather resistive barrier per AC71 with sealed joints: Pass

R-Value per ASTM C518 at required thickness:

SPEC NOTE: Provide to thickness indicated on drawings. Refer to manufacturer’s technical data sheet for alternative thickness not included.

0.5 inch: R-3.

1.0 inch: R-6.

1.5 inches: R-9.

2.0 inches: R-12.1.

2.5 inches: R-15.3.

3.0 inches: R-18.5.

3.5 inches: R-21.7.

4.0 inches: R-25.

Nail-base polyisocyanurate thermal insulation boards complying with ASTM C1289, Type V. Comprised of closed cell polyiso foam core with coated glass-mat facers on both sides, complying with ASTM C1289, Type II, Class 2, bonded to APA- or TECO-rated fire-retardant treated plywood on exterior exposed side.

Basis of Design: EnergyShield Ply Pro Continuous Wall Insulation.

Flame Spread Index and Smoke Contribution per ASTM E84 (UL 793): Class A, with maximum flame-spread and smoke-developed indexes of 25 and 450 respectively.

Fire Propagation Characteristics: Compliant with NFPA 285 testing as part of an approved wall assembly.

Compressive Strength per ASTM D1621: Grade 3, 25 psi (172 kPa).

Water Vapor Permeability per ASTM E96, desiccant method, foam core only:

1.2 perm at 1-inch or less.

1.0 perm or less greater than 1-inch.

Microbial Resistance per UL 2824: Highly Resistant.

SPEC NOTE: Atlas offers multiple fire-retardant treated plywood product options. Choose from the following foam core only values or total composite thickness values based on fire-retardant treated plywood selection and delete sections not applicable to the project specific specification. Provide to thickness indicated on drawings based. Refer to manufacturer’s technical data sheet for alternative thickness not included.

R-Value per ASTM C518 at required thickness, [foam core only][5/8” fire-retardant treated plywood composite][3/4” fire-retardant treated plywood composite]:

[1.0 inch: R-6][1.625 inches: R-6.8][1.75 inches: R-6.9].

[1.5 inches: R-9][2.125 inches: R-9.8][2.25 inches: R-9.9].

[2.0 inches: R-12.1][2.625 inches: R-12.9][2.75 inches R-13].

[2.5 inches: R-15.3][3.125 inches: R-16.1][3.25 inches: R-16.2].

[3.0 inches: R-18.5][3.625 inches: R19.3][3.75 inches: R-19.5].

[3.5 inches: R-21.7][4.125 inches: R-22.5][4.25 inches: R-22.7].

[4.0 inches: R-25][4.625 inches: R-25.8][4.625 inches: R-25.8].

* + - 1. ACCESSORIES

Insulation Fastener for securing polyisocyanurate thermal insulation boards should be corrosion resistant with compatible washers.

Provide fastener length and size as required for board insulation thickness, any furring material, sheathing, and minimum penetration to structural wall.

Fastener should be suitable for structural wall substrate, such as wood framing, steel framing, concrete and/or CMU.

SPEC NOTE: Retain Manufacturers Subparagraph and list of manufacturers below to require products from manufacturers listed or a comparable product from other manufacturers.

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

TRUFAST Walls.

[**Insert manufacturer's name**].

Insulation-Retaining Washer sized as required to hold insulation securely in place, minimum 1-3/4 inches (44 mm) in diameter.

SPEC NOTE: Retain Manufacturers Subparagraph and list of manufacturers below to require products from manufacturers listed or a comparable product from other manufacturers.

Manufacturers: Subject to compliance with requirements, provide products by one of the following:

TRUFAST Walls.

**[Insert manufacturer's name]**.

SPEC NOTE: Delete the following subparagraph if use of insulation board as air and/or water resistive barrier is not applicable.

Joint-Sealing Components for use at static board joints at minimum width of 3 inches (76 mm) to comply with air and/or weather resistive barrier installation methods, as required.

SPEC NOTE: Retain subparagraph to require material standards. Choose from the following and delete sections not applicable to the project specific specification.

Provide joint sealing component as recommended by polyiso thermal insulation board manufacturer and verify compatibility with all material manufacturers.

Material Standards:

AAMA 711 – Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products.

AAMA 714 – Voluntary Specification for Liquid Applied Flashing Used to Create a Water-Resistive Seal around Exterior Wall Openings in Buildings.

1. EXECUTION
	* + 1. PREPARATION

Clean substrate surfaces prior to installation as recommended by the manufacturer.

* + - 1. INSTALLATION, GENERAL

Comply with manufacturer's written instructions applicable to products and applications.

Install in proper sequence with adjacent construction.

* + - 1. PROTECTION

Protect installed products until completion of project.

Repair or replace damage products before Substantial Completion.

END OF SECTION 07 21 00