Thermal Insulation Specification

For:

**WALLcontrol™**

**Exterior Wall Insulation Systems**

Prepared by:

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This specification is provided as a general guide for use of Siplast, Inc. products based on typical building conditions and standard roofing practices. This guide specification is not a substitute for professional design services. The information in this guide specification must be reviewed/approved by a design professional and modified as necessary and appropriate for each project. Each project has unique requirements and Siplast, Inc. recommends that the Owner's representative independently verify the accuracy and appropriateness of the specification provided for a particular project. Each selection or deletion made to this guide specification should be carefully considered. Users of this guide specification assume sole responsibility for its use.

Siplast recommends that WALLcontrol products be installed in a manner to shed water in a shingle fashion. The membrane should be installed in a sequence that maintains a continuous downward water drainage plane onto an acceptable air and water barrier with an unobstructed path to the exterior of the wall system.

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SECTION 07 21 00 THERMAL INSULATION (Rev 08/2024)

1. **GENERAL**
	1. RELATED DOCUMENTS
		1. The project plans, details, and general Contract requirements apply to this Section.
	2. SUMMARY
		1. Items Included:
			1. Foil-Faced Closed Cell Polyisocyanurate (Polyiso) Insulation Board
			2. Glass-Faced Closed Cell Polyisocyanurate (Polyiso) Insulation Board
			3. Adhered Board Accessories
			4. Mechanically Attached Board Accessories
		2. Related Requirements
			1. **[Section 042000 "Unit Masonry"] [Section 042613 "Masonry Veneer"] [Section 044200 "Exterior Stone Cladding"] [Section 044313.13 "Anchored Stone Masonry Veneer"] [Section 044313.16 "Adhered Stone Masonry Veneer"] [ Section 047200 "Cast Stone Masonry"]** for stone masonry ties and flashing installation.
			2. Section 06 16 00 "Sheathing" for wall sheathing panels.
			3. **[Section 072700 "Air Barrier Adhered"] [ Section 072726 "Air Barrier VP Liquid”]** for installation of air barrier systems.
			4. **[Section 07 52 16 “Modified Bituminous Membrane Roofing”] [Section 07 54 19 “Polyvinyl Chloride Roofing”] [Section 09 96 53 “Elastomeric Roof Coating”]** for roof systems.
			5. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof flashings and counter flashings.
			6. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
			7. Section **<Insert Section number and title> for <insert material or product to be installed and that requires coordination>.**
	3. REFERENCES
		1. References in these specifications to standards, test methods, and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies that may be used as references throughout this specification section.
			1. ASTM: American Society for Testing and Materials
			2. NFPA: National Fire and Protection Agency
			3. USGBC: US Green Building Council
	4. ADMINISTRATIVE REQUIREMENTS
		1. Pre-installation meetings:
			1. When required, and with prior notice, a Manufacturer representative will meet with the necessary parties at the jobsite to review and discuss project conditions as it relates to the integrity of the assembly.
	5. SUBMITTALS
		1. Product Data: Manufacturers' technical data sheets for each type of product utilized in the exterior wall assembly.
		2. Manufacturer Instructions: For installation of each product specified.
		3. Sample Warranty: For manufacturer’s warranty of complete wall system for continuous insulation, air barrier, and accessories.
		4. Qualification Data: For insulation product applicator
	6. QUALITY ASSURANCE
		1. Source Limitations: Obtain exterior thermal insulation, primary air-barrier material and through-wall flashing through one source from a single manufacturer.
		2. Applicator Qualifications: A firm experienced in applying materials similar in material, design, and extent to those indicated for this project, whose work has resulted in applications with a record of successful in-service performance.
			1. Perform Work in accordance with manufacturer’s published literature and as specified in this section.
			2. Maintain one (1) copy of Manufacturer’s instructions on site.
			3. Allow the Manufacturer representative site access during installation.
			4. Contact the Manufacturer a minimum of two weeks prior to scheduling a meeting.
		3. Mock-ups: Build mock-ups to set quality standards for materials and execution.
			1. Build integrated mockups of exterior wall assembly **[as indicated on Drawings] [150 sq. ft. (14 sq. m)] <Insert area or dimensions>**, incorporating backup wall construction, external cladding, thermal insulation, window, storefront, door frame and sill, insulation, ties, and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of weather barriers, and sealing of gaps, terminations, and penetrations.
				1. Include junction with roofing membrane **[building corner condition,] [and] [foundation wall intersection] [fenestration and wall interface].**
				2. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply thermal insulation until mockups are approved.
			2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
	7. DELIVERY, STORAGE, AND HANDLING
		1. Delivery of Materials:
			1. Deliver materials and products in labeled packages.
			2. Sequence deliveries to avoid delays, but minimize on-site storage.
		2. Storage of Materials
			1. Store and handle in strict compliance with the manufacturer and conform to applicable safety regulatory agencies. Refer to all applicable data including, but not limited to, Safety Data Sheets, Product Datasheets, product labels, and specific instructions for personal protection.
			2. Protect products from damage from sunlight, weather, excessive temperatures and construction operations.
			3. Remove damaged material from the site and dispose of in accordance with applicable regulations.
	8. SITE CONDITIONS
		1. Environmental Requirements:
			1. Do not perform Work during rain or inclement weather, including during high winds, snow, rain, fog, or mist.
			2. Do not perform application on frost-covered substrates or surfaces that are wet to touch.
			3. Product requirements may vary. Refer to Manufacturer’s published literature.
		2. Protection:
			1. It is the responsibility of the installing Subcontractor to protect all surfaces not included in scope of Work from damage.
			2. Protect top and backside of substrate walls against bulk water during and after application of thermal insulation.
			3. Complete preparation Work prior to installing the thermal insulation assembly.
	9. WARRANTY
		1. Upon completion of work the contractor shall supply the owner with a single source warranty direct from the manufacturer. All products must be installed and used in strict conformance with the written manufacturer's instructions. Refer to manufacturer published warranties for complete coverage and restrictions.
		2. Available Warranties *(Note to Specifier: Edit to Project Requirements)*:
			1. Material Warranty
				1. Standard Limited Warranty: Manufacturer to provide replacement products or the cash value for that portion of the products that contain a manufacturing defect that adversely affect the installed performance of the products.

Warranty Period: 5-Years

* + - * 1. Extended Limited Warranty: Manufacturer to provide replacement products or the cash value for that portion of the products that contain a manufacturing defect that adversely affect the installed performance of the products. The products must be installed by a Siplast Select Wall Contractor and be registered in accordance with Siplast registration requirements.

Warranty Period: 10-Years

* + - 1. Building Enclosure Addendum: Combine documentation of coverage of the wall air barrier and thermal insulation system provided by the same manufacturer for wall and roof systems.
				1. In addition to the specified roofing/waterproofing guarantee under section 07 52 00, furnish the Owner with the roofing/waterproofing manufacturer's inclusion addendum to the guarantee offering.
1. **PRODUCTS**

2.01 EXTERIOR WALL SYSTEM

* + 1. Obtain air barrier, air barrier accessories, and exterior wall thermal insulation materials as a single source from the manufacturer to ensure compatibility and compliance.

2.02 FOIL-FACED CLOSED CELL POLYISOCYANURATE (POLYISO) INSULATION BOARD

* + 1. FOIL-FACED POLYISO INSULATION BOARD: Foil-faced closed-cell poyiso insulation board combines high R-value, Class A foam core, and durable aluminum facers in a high-performance rigid wall insulation and is designed to be used as exterior continuous wall insulation. It is faced with a reflective reinforced foil facer on one side and a white reinforced acrylic-coated aluminum facer on the other. Product shall have the following minimum physical properties:
			1. ASTM C1289, Type 1 and 2, Class 3;
			2. Approved for use in NFPA 285 wall assemblies.
			3. Flame spread/smoke developed rating: Class A, maximum 25/450, tested to ASTM E84.
			4. Free from CFCs, HCFCs, and HFCs.
			5. Compressive strength: Minimum 25 PSI, tested to ASTM D1621.
			6. Moisture vapor transmission: Maximum 0.1 perm, tested to ASTM E96 desiccant method.
			7. Water absorption: Maximum 1 percent by volume, tested to ASTM C209.
			8. Dimensional stability: Maximum 1.5 percent linear change, tested to ASTM D2126.
			9. Service temperature: Minus 100 to plus 250 degrees F.
			10. Potential heat: 12,000 BTU/LB, tested to NFPA 259.
			11. Auto ignition temperature: 800 degrees F, tested to ASTM D1929.
			12. Microbial resistance:
				1. Pass ASTM D6329.
				2. Pass, UL2824.
			13. Recycled content: Minimum 10 percent.
			14. Tested to UL 2818; GreenGuard Gold certified.
			15. Comply with CDPH 01350 low-emitting chamber requirements.
			16. Pass NFPA 286.
			17. Thickness and insulation value: [0.75 inch, R-value 5.0.] [1.0 inch, R-value 6.5.] [1.2 inches, R-value 97.5.] [1.5 inches, R-value 9.8.] [1.6 inches, R-value 10.5.] [2.0 inches, R-value 13.1.] [2.5 inches, R-value 16.0.] [3.0 inches, R-value 19.7.] [3.1 inches, R-value 20.2.]
		2. Basis of Design Product: Subject to compliance with requirements provide Siplast WALLcontrol Polyiso Foil-Faced Insulation board or comparable product by one of the following:
			1. <Insert manufacturer's name>.

2.02 GLASS-FACED CLOSED CELL POLYISOCYANURATE (POLYISO) INSULATION BOARD

* + 1. GLASS-FACED POLYISO INSULATION BOARD: Glass-faced closed-cell poyiso insulation board combines high R-value, Class A foam core, and durable coated glass facers in a high-performance rigid wall insulation. One side of the product is dark gray for use in open joint rainscreen applications. WALLcontrol Polyiso is designed to be used as exterior continuous wall insulation.
			1. ASTM C1289, Type 2, Class 2
			2. Approved for use in NFPA 285 wall assemblies.
			3. Flame spread/smoke developed rating: Class A, maximum 25/450, tested to ASTM E84.
			4. Free from CFCs, HCFCs, and HFCs.
			5. Compressive strength: Minimum 25 PSI, tested to ASTM D1621.
			6. Moisture vapor transmission: Maximum 1.2 perms, tested to ASTM E96 desiccant method.
			7. Water absorption: Maximum 1.0 percent by volume, tested to ASTM C209.
			8. Dimensional stability: Maximum 2 percent linear change, tested to ASTM D2126.
			9. Service temperature: Minus 100 to plus 250 degrees F.
			10. Potential heat 12,000 BTU/LB, tested to NFPA289
			11. Auto ignition temperature 800 deg F, tested to ASTM D1929
			12. Microbial resistance:
				1. Pass ASTM D6329.
				2. Pass UL2824.
			13. Recycled content: minimum 10 percent
			14. Tested to UL 2818; GreenGuard Gold certified.
			15. Comply with CDPH 01350 low-emitting chamber requirements.
			16. Thickness and insulation value: [0.50 inch, R-value 3.0.] [0.75 inch, R-value 4.5.] [1.0 inch, R-value 6.0.] [1.5 inches, R-value 9.0.] [2.0 inches, R-value 12.1.] [2.5 inches, R-value 15.3.] [3.0 inches, R-value 18.5.] [3.5 inches, R-value 21.7.]
		2. Basis of Design Product: Subject to compliance with requirements provide Siplast WALLcontrol Polyiso Glass-Faced Insulation or comparable product by one of the following:
			1. <Insert manufacturer's name>.

2.04 ADHERED BOARD ACCESSORIES

* + 1. BOARD INSULATION BONDING ADHESIVE AND FACER REPAIR FLASHING: A liquid-applied single-component silyl-terminated polyether (STPE) moisture cure flashing and adhesive to apply thermal insulation to an exterior wall substrate and repair minor damage to the insulation facer surface. Product shall have the following minimum physical properties:
			1. Air Permeance per ASTM E2178 and CAN/ULC S741: Not to exceed 0.004 cfm/sf under a pressure differential of 1.57 psf (0.02 L/sq.m @ 75 Pa)
			2. Assembly Air Permeance per ASTM E2357 and CAN/ULC S742: Not to exceed 0.04 cfm/sf under a pressure differential of 1.57 psf (0.2 L/sq.m @ 75 Pa)
			3. Liquid Flashing Performance per AMAA 714: Pass all test criteria
			4. Low-Temperature Crack Bridging per ASTM C1305: Pass at 20 mils
			5. Adhesive Strength to Substrates (without Primer) per ASTM C794: Greater than 5 pli on mortar, CMU, concrete, and plywood.
			6. UV resistance during construction: 6 months
		2. Basis of Design Product: Subject to compliance with requirements provide Siplast WALLcontrol Modified Silicone (STPE) Liquid Flashing or comparable product by one of the following:
			1. <Insert manufacturer's name>.

2.05 MECHANICALLY ATTACHED BOARD ACCESSORIES

* + 1. FASTENERS: Board insulation manufacturer's recommended polymer or other corrosion-protected steel screw with washer for fastening insulation sheathing to CMU substrate; ASTM C954.
			1. Provide fastener length and size as required for board insulation sheathing thickness.
			2. Provide fastener along placement of base flashing as necessary.
			3. Product: Grip-Deck Self-Drilling Ceramic Coated Screws by TRUFAST Walls (formerly Rodenhouse, Inc.).
		2. WASHER: Provide 2 inch (51 mm) diameter plastic washers for each screw fastener.
			1. Product: Thermal-Grip ci prong washer by TRUFAST Walls (formerly Rodenhouse, Inc.).
1. **EXECUTION**

3.01 SUBSTRATE EXAMINATION

* + 1. Refer to manufacturer’s literature for requirements for acceptable substrates.
		2. Verify that substrates and conditions are ready to accept the Work of this section. Notify **[engineer] [architect] [consultant]** in writing of any discrepancies. Commencement of the Work or any parts thereof shall mean acceptance of the prepared substrates. Substrate conditions to verify include:

3.02 SUBSTRATE PREPARATION

* + 1. Verify surfaces, rough openings, and transitions and are in accordance with the product technical data sheet and as stated in this specification and the manufacturer’s requirements.
		2. Prior to the installation of thermal insulation products the following are required:
			1. Coordinate with the installation of air barrier products to ensure compatibility and continuity with the thermal insulation system.
			2. Roofing systems shall be capped and sealed, or the top of walls protected, in such a way as to eliminate the ability of water to saturate the wall or interior space, both before and after, thermal insulation system installation.
			3. Substrate must be clean and dry and free from gross irregularities, loose material, unsound material, sharp protrusions, any foreign material (such as dirt, ice, snow, water, grease, bitumen/coal tar, oil, release agents, lacquers, paint coverings), or any other condition that would be detrimental to the adhesion of the membrane to the substrate.
			4. Clean loose dust or dirt from the surface to which the thermal insulation product is to be applied by wiping with a clean, dry cloth or brush.
		3. Perform a mock-up or field adhesion test on the actual materials being used on the job to verify adhesion and utilize a primer as needed.

3.03 THERMAL INSULATION BOARD INSTALLATION

* + 1. Apply thermal insulation board according to manufacturer's written instructions.
			1. Fasten or adhere board insulation to exterior face of metal stud wall framing using insulation board manufacturer’s recommended screws, washers, and adhesive.
			2. Install board insulation panels tightly to each other and around openings and penetrations.
			3. Install insulation sheathing panels horizontally with specified facer to exterior side.
			4. Use panels having maximum length to minimize number of joints.
			5. Locate vertical edge joints parallel to and centered over support framing.
			6. Provide additional support framing wherever panel edge joints do not bear against metal stud framing or sill plate.
			7. Fasten panels to support framing with fasteners spaced at maximum of 12 inch (305 mm) on center at wall perimeter, and at maximum of 16 inch (406 mm) on center at panel field.
				1. Set perimeter fasteners back from edge of insulation panels at least 3/8 inch (9.5 mm).
				2. Drive fasteners to bear tight and flush with surface of insulation panel.
				3. Maximum of two board joints may be bridged per fastener.
			8. Install facer repair flashing where required.

3.04 FIELD QUALITY CONTROL

* + 1. Remove and replace deficient thermal insulation components as specified.

3.05 CLEANING AND PROTECTION

* + 1. Protect membranes to avoid damage by other trades and construction materials during subsequent operations. Insulation and/or protection products may be installed after membranes have been installed.
		2. As the Work proceeds, and upon completion, promptly clean up and remove from the premises all rubbish and surplus materials resulting from the foregoing Work.
		3. Clean soiled surfaces, spatters, and damage to adjacent areas caused by Work of this Section.
		4. Check area to ensure cleanliness and remove debris, equipment, and excess material from the site.
		5. Inspect the membrane before covering it with subsequent construction materials and repair any punctures, damaged areas, or inadequately lapped seams.
		6. Remove masking and / or temporary protection materials after installation.