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Specifications Guide – Section 07 27 23
Board Product Air Barrier System

ISOCLAD Air Barrier Rigid Insulation



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**Isolofoam Group Spec Note: This master specification is written to include SPEC NOTES noted as “Isolofoam Group Spec Note” in order to assist designers in their decision-making process. SPEC NOTES precede the text to which they apply. Although written by a professional specification writer, this section should serve as a guideline only and should be edited by a knowledgeable person to meet the requirements of each specific project.**

**Text indicated in bold and by square brackets is optional. Make appropriate decisions and delete the optional text as well as the brackets in the final copy of the specification. Delete or hide the SPEC NOTES in the final version of the document.**

This specification section is written to follow the recommendations of the Construction Specifications Institute/Construction Specifications Canada (CSI/CSC) such as MasterFormatTM, SectionFormatTM, and PageFormatTM. It is also written with metric and imperial units of measurement.

Values in this specification have been provided in metric units followed by imperial units in brackets. Where necessary, some of the values have been converted and rounded from imperial values.

**This Specification specifies board air barrier products (air-barrier sheathing, air-barrier material) and related accessories. It is based on ISOCLAD by Isolofoam Group.**

Isolofoam Group manufactures and sells building insulation materials. Although the specification was written by a professional specification writer, Isolofoam Group does not practice architecture or engineering. Therefore, the design responsibility remains with the architect, engineer, or consultant. We trust the information provided within will be of some assistance. It is based upon data considered to be true and accurate and is offered solely for the user's consideration, examination and verification. Nothing contained herein is representative of a warranty or guarantee for which Isolofoam Group can be held legally responsible. Isolofoam Group does not assume any responsibility for any misinterpretation or assumptions the reader may formulate.

1. GENERAL
	1. SUMMARY
		1. Section Includes: Labour, materials, products, equipment and services to complete the board product air barriers specified herein. This includes, but is not limited to:
			1. Insulation and sheathing system (board product air barriers) designed to function as an air barrier assembly.
			2. Auxiliary materials and accessories required for a complete air barrier assembly installation.
	2. RELATED REQUIREMENTS
		1. Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.
		2. Related requirements provided below are for convenience purposes only.

Isolofoam Group Spec Note: The following list of sections is provided as a sample only. Edit to meet the requirements of the project. Limit section listings to only those sections containing specific information that would directly affect the work of this section. Do not include Division 01 sections in this list.

* + - 1. Section **[06 16 00, Sheathing]**: provision of sheathing substrates.
			2. Section **[06 10 53, Miscellaneous Rough Carpentry]**: for provision of wood framing supporting panels.
			3. Section **[07 21 00, Thermal Insulation]**: for provision of other insulation materials.
			4. Section **[07 26 00, Vapour Retarders]**: for provision of materials acting as vapor retarder in the building envelope.
			5. Section **[07 27 00, Air Barrier Systems]**: for provision of air barrier systems not specified in this Section.
			6. Section **[07 62 00, Sheet Metal Flashing and Trim]**: provision for flashings and other metal accessories.
			7. Section **[07 92 00, Joint Sealants]**: for provision of joint sealants between the work of this Section, and other construction.
			8. Section **[09 21 16, Gypsum Board Assemblies]**: provision for gypsum board sheathing.
			9. Section **[09 22 16, Non-Structural Metal Framing]**: for provision of metal framing supporting panels.
	1. DEFINITIONS
		1. In accordance with standards CAN/ULC-S741 and CAN/ULC-S742:
			1. Air Barrier Accessory: products designated to maintain air tightness between air barrier materials, air barrier assemblies and air barrier components, to fasten them to the structure of the building, or both (e.g., sealants, tapes, backer rods, transition membranes, fasteners/washers, ties, clips, staples, strapping, primers).
			2. Air Barrier Assembly: the combination of air barrier materials and air barrier accessories that are designated and designed within the environmental separator to act as a continuous barrier to the movement of air through the environmental separator.
			3. Air Barrier Component: pre-manufactured elements such as windows, doors and mechanical and electrical services that are installed in the environmental separator.
			4. Air Barrier Material: a building material with an air leakage characteristic not greater than 0.02 L/(s·m²) at 75 Pa pressure difference that is designed and manufactured to provide the primary resistance to airflow through an air barrier assembly.
			5. Air Barrier System: the combination of air barrier assemblies and air barrier components, connected by air barrier accessories, designed to provide a continuous barrier to the movement of air through an environmental separator.
	2. REFERENCE STANDARDS
		1. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
		2. All reference amendments adopted prior to the Bid Closing date of this Project shall be applicable to this Project.
		3. All materials, installation and workmanship shall comply with all applicable requirements and standards.
		4. ASTM International
			1. ASTM C203: Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.
			2. ASTM C518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
			3. ASTM D1621: Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
			4. ASTM D2842: Standard Test Method for Water Absorption of Rigid Cellular Plastics.
			5. ASTM E96/E96M: Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.
			6. ASTM E779: Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
			7. ASTM E1186: Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.
			8. ASTM E2178: Standard Test Method for Air Permeance of Building Materials.
			9. ASTM E2357: Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies.
		5. International Organization for Standardization
			1. ISO 14025: Environmental labels and declarations – Type III environmental declarations -- Principles and procedures.
			2. ISO 9001:2015: Quality management systems – Requirements.
		6. Underwriters Laboratories of Canada
			1. CAN/ULC-S102.2: Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.
			2. CAN/ULC-S701.1:2017: Standard for Thermal Insulation, Polystyrene Boards.
			3. CAN/ULC-S741:2008-R2016: Standard for Air Barrier Materials – Specification.
			4. CAN/ULC-S742-11: Standard for Air Barrier Assemblies – Specification.
	3. ADMINISTRATIVE REQUIREMENTS
		1. Pre-installation Meeting: Schedule, and conduct pre-installation meeting at Project Site, in order to coordinate work of this Section, with work of related Subcontractors.
			1. Ensure attendance of Subcontractor performing work of this Section and representatives of manufacturers and fabricators involved in, or affected by, installation and coordination with other materials and installations that have preceded or will follow. Advise Consultant and Owner in advance of scheduled meeting dates.
			2. Agenda: As a minimum, include the following:

Isolofoam Group Spec Note: Delete “air leakage testing” from paragraph below if in-situ air leakage testing is not required for the project.

* + - * 1. Sequence of construction, coordination with substrate preparation, materials approved for use, compatibility of materials, coordination with installation of adjacent and cladding materials, **[air leakage testing,]** protection of installed materials and details of construction.
				2. Review progress of other construction activities and preparations for the specific activity under consideration.
			1. Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
			2. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
		1. Sequencing:
			1. Sequence work to permit installation of materials in conjunction with related materials and envelope seals.
	1. ACTION AND INFORMATIONAL SUBMITTALS

Isolofoam Group Spec Note: Edit text in square brackets to reflect the specifics of the project.

* + 1. Make Submittals in accordance with provisions indicated in **[Section 01 33 00, Submittal Procedures.]**
		2. Product Data: Submit product literature and data sheets for board product air barriers indicating product features, performance criteria, physical dimensions, finishes and limitations.
			1. Submit WHMIS Safety Data Sheets (SDS) in accordance with requirements of **[Section 01 33 00, Submittal Procedures.]**
		3. Sustainable Design Submittals:
			1. Building Product Disclosure and Optimization: To promote the use of environmentally and health-conscious construction materials, manufacturer must provide publicly available information as follows:

Isolofoam Group Spec Note: Retain text in square brackets below if the project is pursuing LEED V4 credits related to building product disclosure and optimization.

* + - * 1. Environmental Product Declarations (EPD): Submit industry-wide (generic) EPD conforming to ISO 14025 **[or other approved environmental product declaration framework recognized by CaGBC]**.
				2. General Emissions Evaluation Documentation: Submit valid “GREENGUARD Gold Standard for Chemical Emissions for Building Materials, Finishes and Furnishings” certificate issued by UL Solutions, certifying that the specified rigid insulation meets the low emission standard requirements for volatile organic compounds (VOCs). Website: https://spot.ul.com/
		1. Shop Drawings: Show the following:
			1. Locations and extent of insulation boards and details of typical conditions.
			2. Intersections with other envelope assemblies and materials.
			3. Details showing how joints in construction will be bridged, treatment of inside and outside corners, and sealing of miscellaneous penetrations such as conduits, pipes, electric boxes, and similar items.
			4. Details of interfaces with other materials that form part of building envelope assemblies.
		2. Quality Assurance Submittals: Submit following in accordance with Section **[01 45 00, Quality Control]**.
			1. Certificates: Submit proof of manufacturer's ISO 9001 registration and compliance.
			2. Manufacturer's Instructions: Submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

Isolofoam Group Spec Note: Edit text below to reflect the applicable building code to the jurisdiction of the project.

* + 1. Evaluation Reports: Submit evaluation reports from CCMC or similar third-party reports published by evaluation bodies recognized by authorities having jurisdiction demonstrating compliance with requirements of the **[National Building Code of Canada]**.
	1. QUALITY ASSURANCE
		1. Sample Warranties: Submit sample warranties for extended warranties indicated in this Section for Consultant's review.
		2. Manufacturer Qualifications:
			1. Provide Products from a manufacturer with minimum 10 years of experience and capable of providing board product air barrier systems that meet or exceed performance requirements indicated in this Section.
			2. Manufacturer must be an ISO 9001 registered company.
		3. Applicator Qualifications:
			1. Company specializing in performing work of this Section with minimum **[5]** years documented experience with installation of air barriers and building envelope products specified herein.

Isolofoam Group Spec Note: Edit text in square brackets to reflect the specifics of the project.

* + 1. Mock-up:
			1. Construct mock-up in accordance with Section **[01 45 00, Quality Control]** representative of typical primary board product air barrier assemblies including backup wall and typical penetrations.
			2. Mock-up must be a minimum 2.5 m long by 2.5 m high (8 ft long by 8 ft high) and include materials and accessories identical to those that will be used in exterior wall assembly.
			3. Locate mock-up where directed by Consultant.
			4. Allow **[24]** hours for inspection of mock-up by Consultant before proceeding with remainder of work of this Section.

Isolofoam Group Spec Note: Delete text in square brackets below if in-situ air leakage testing is not required for the project.

* + - 1. Purpose of mock-up: To establish benchmark for the work of this Section **[and for the purposes of air leakage testing]**.

Isolofoam Group Spec Note: Edit paragraph below to establish whether mock-ups must be demolished at the end of the Project, or if they can be incorporated into the final work.

* + - 1. Mock-up at time of Substantial Performance of the work: **[Demolish and remove.]** **[May be incorporated in the completed work if intact and undamaged.]**
		1. Source Limitations: Obtain primary boards specified in this Section from a single manufacturer. Obtain secondary materials such as adhesives, tapes and sealants from sources compatible with primary board insulation.
	1. DELIVERY, STORAGE AND HANDLING
		1. Deliver, store and handle materials in accordance with Section **[01 61 00, Product Requirements]** and in accordance with manufacturer's written instructions.
		2. Protect boards from physical damage and from deterioration due to moisture, UV, heat, soiling, and other sources that may cause deleterious effects.
		3. Do not expose to sunlight except as necessary for installation and concealment.
		4. Protect against ignition at all times.
		5. Promptly complete installation and concealment of boards in each area of construction. Apply exterior veneer or cladding as soon as practical after installation of boards. If boards will be left exposed for more than 180 days, install protective covering to prevent degradation due to UV, weather and environmental factors.
	2. FIELD CONDITIONS
		1. Weather Conditions: Begin installation only when current and anticipated weather conditions allow for proper assembly of boards in accordance with manufacturers' written instructions and warranty requirements.
1. PRODUCTS
	1. MANUFACTURERS
		1. Materials specified in this Section are based on products by Isolofoam Group; 1338, boulevard Vachon Nord, Sainte-Marie (QC) G6E 1N4 CANADA; T.: 418-387-3641; 1-800-463-8886; F.: 1-877-463-8886; Website: [isolofoam.com](https://isolofoam.com/en/) as listed in this Specification.

Isolofoam Group Spec Note: Retain one of the two options below to either permit or preclude other manufacturers from bidding on the work of this Section.

* + 1. **[Substitution Limitations: Substitutions are not permitted.]**

**OR**

* + 1. **[Substitution Limitations: Conforming to requirements of Section 01 25 00, Substitution Procedures and as follows:**
			1. **Consultant will consider requests for substitution if received [10] days before Bid Closing Deadline. Requests received after that time will be rejected. Consultant will consider requests for substitution when following conditions are satisfied:**
				1. **Requests for substitution include a list of at least five similar projects of equivalent size where products have been installed for a minimum of five years.**
				2. **Requested substitution does not require extensive revisions to the Contract Documents.**
				3. **Requested substitution is consistent with the Contract Documents and will produce indicated results.**
				4. **Requested substitution will not adversely affect construction schedule.**
				5. **Requested substitution provides specified warranty.]**
	1. DESIGN AND PERFORMANCE REQUIREMENTS
		1. Provide insulation based on thicknesses indicated on Drawings to provide the minimum thermal resistances necessary to prevent moisture condensation and to maintain comfortable conditions for building occupants.
		2. Insulation boards used for the work of this Section must not rely on blowing agents to contribute to thermal resistance. Otherwise, the long-term thermal resistance (LTTR) used for compliance purposes must be the value specified in CAN/ULC-S701.1.
		3. Board product air barrier assemblies must provide a continuous barrier to movement of air with an air leakage rate less than 0.05 L/(s·m²) at a pressure differential of 75 Pa (0.04 cfm/ft2 at 1.57 lb/ft2) when tested in accordance with CAN/ULC-S742 (full assembly test).
		4. Panels used in air barrier assemblies must be listed as air barrier materials by the Canadian Construction Materials Center (CCMC), CCMC-TG-072709.02-15D “CCMC Technical Guide for Air Barrier Materials” or certified by a third party to CAN/ULC-S741, Standard for Air Barrier Materials – Specification.
		5. Provide necessary auxiliary materials to accommodate expansion, contraction, changes in substrate, and perimeter movements.
		6. Ensure assembly is capable of withstanding combined design wind, fan and stack pressures (positive and negative) on building envelope without damage or displacement, and transfer of loads to structure.
		7. Ensure boards are connected to air barriers of adjacent building components in an airtight and flexible manner to allow for relative movement of elements due to temperature and moisture fluctuations, creep, and other expected movements.
		8. Connections to adjacent materials: Provide air barrier accessories to prevent air leakage at the following locations:

Isolofoam Group Spec Note: Edit list below as appropriate to reflect specific project conditions.

* + - 1. Foundation and walls, including penetrations, ties and anchors.
			2. Walls, windows, curtain walls, storefronts, louvers and doors.
			3. Different assemblies and fixed openings within those assemblies.
			4. Wall and roof connections.
			5. Floors over unconditioned space.
			6. Walls, floors and roofs across construction, control, seismic and expansion joints.
			7. Walls, floors and roofs to utility, pipe and duct penetrations.
			8. All other potential air leakage pathways in the building envelope.
		1. Do not allow air barrier materials to come in contact with chemically incompatible materials.
	1. MATERIALS
		1. Board Product Air Barrier: Rigid expanded polystyrene insulating panel, complying to CAN/ULC-S701.1 (Type 2), with factory-laminated vapour-permeable membrane, and of minimum physical characteristics specified below:
			1. Acceptable Products: **“ISOCLAD”** by Isolofoam Group.
			2. Air Permeability – Material: Not more than 0.0039 L/(s·m²) when tested in accordance with CAN/ULC-S741.
			3. Air Permeability – Assembly: Not more than 0.05 L/(s·m²) (Class A1) when tested in accordance with CAN/ULC-S742.
			4. Water Vapour Permeance:
				1. At 25 mm (1 inch): Not less than 105 ng/Pa•s•m2 (1.8 perms) when tested in accordance with ASTM E96/E96, Method A.
				2. At 57 mm (2-1/4 inches): Not less than 73 ng/Pa•s•m2 (1.3 perms) when tested in accordance with ASTM E96/E96, Method A.
			5. Thermal Resistance per 25 mm (1 in.): Not less than RSI 0.71 m2•°C/W (R4.05 ft2•h•°F/Btu) when tested in accordance with ASTM C518.
			6. Compressive Strength: Not less than 110 kPa (16 psi) when tested in accordance with ASTM D1621.
			7. Flexural Strength: Not less than 240 kPa (35 psi) when tested in accordance with ASTM C203.
			8. Water Absorption: Not more than 4 percent (%) when tested in accordance with ASTM D2842.
			9. Fire-performance: Flame Spread Rating (FSR) of 240 or less when tested in accordance with CAN/ULC-S102.2.
			10. UV resistance: Not less than 180 days.
			11. Total VOC Emissions: Not more than 0.22 mg/m3 when tested in accordance with CDPH Standard Method v1.2, as required for Greenguard Gold certified products.

Isolofoam Group Spec Note: Edit the text below to reflect the size and thickness of boards required for the project based on the project’s thermal performance criteria.

* + - 1. Sizes: **[610 mm x 2440 mm (2 ft x 8 ft)]** **[1220 mm x 2440 mm (4 ft x 8 ft)]** **[1220 mm x 2745 mm (4 ft x 9 ft)]** **[1220 mm x 3050 mm (4 ft x 10 ft)]** **[As indicated on Drawings]**.
			2. Thickness: **[13 mm (1/2 inch)] [19 mm (3/4 inch)] [25 mm (1 inch)] [32 mm (1-1/4 inches)] [38 mm (1-1/2 inches)] [51 mm (2 inches)] [57 mm (2-1/4 inches)] [64 mm (2-1/2 inches)] [76 mm (3 inches)] [As indicated on Drawings]**.
			3. Edge Type: **[butt edge] [shiplapped 2 edges] [shiplapped 4 edges]**.
	1. ACCESSORIES

Isolofoam Group Spec Note: Although Isolofoam Group does not have specific recommendations for sealants, tapes and adhesives, the generic types and chemistries listed below should be generally suitable for use with the ISOCLAD product:

* Silane Modified Polymers
* Acrylic Polymers
* Siliconized Acrylic Polymers
* Polyurethanes
* Silicones
	+ 1. Provide air barrier accessory materials that are compatible with board product air barrier materials to produce a complete and airtight assembly. Air barrier accessory materials include, but are not limited to:
			1. Sealing tape with acrylic based adhesive such as **[Tuck Tape Contractor Sheathing Tape]** **[3M 3015]** to seal panel joints,
			2. Flexible, durable, tear-resistant self-adhering membranes **[with acrylic-based adhesive such as [3M 3015]]** **[with SBS bituminous-based adhesive such as [Blueskin SA] [Blueskin SA LT]** for flashing, around window and door openings, and at junctions with other assemblies,
			3. Detailing Mastics,
			4. Sealants,
			5. Low expansion polyurethane foam sealants,
			6. Other auxiliary materials required to produce a complete installation.
		2. Insulation Fasteners: **[Nails][Screws]** with **[plastic][metal]** washers not less than 25 mm (1 inch) in diameter.
1. EXECUTION
	1. MANUFACTURER'S INSTRUCTIONS
		1. Compliance: Comply with manufacturer's latest written installation publications, including product technical bulletins, handling, storage and installation instructions, and datasheets.
	2. INSPECTION
		1. Verify that surfaces and conditions are ready to fulfill work of this section.
		2. Ensure surfaces are free of substances that are harmful to boards or that may interfere with attachment.
		3. Confirm that sealants, tapes and adhesives are compatible with the proposed board product air barrier materials.
		4. As a minimum ensure that the following conditions are met:
			1. Surfaces are sound, dry, even, and free of ice, snow or other contaminants.
			2. Substrates are smooth and devoid of significant gaps or sharp protrusions.
			3. If applicable, masonry joints are reasonably flush and thoroughly filled, and any surplus mortar resting on masonry ties has been removed.
			4. Work that must penetrate board air barriers such as piping and framing (including sill plates) has been completed by other trades.
		5. Report unsatisfactory or non-conforming conditions to Consultant in writing.
		6. Do not start work until deficiencies have been corrected.
		7. Beginning of work implies acceptance of conditions.
	3. INSTALLATION
		1. Install boards and accessory materials according to manufacturer's written instructions and to provide insulating and air barrier continuity throughout the building envelope.
		2. Unless otherwise indicated or necessary, provide insulation in single layer to provide required total thicknesses or to achieve specified thermal resistance values specified for Project.
		3. Install boards that are undamaged, dry, clean, free of ice and snow, and have not been exposed to any deleterious substances.
		4. Install boards on wall structure with printed side facing outward and ensure that edges are solidly supported by framing or structure.
		5. Install panels **[vertically,]** **[horizontally,]** staggering vertical joints.
		6. Mechanically fasten panels along their edges and at intermediate supports at **[200 mm (8 in) c/c]**. Ensure a penetration of at least **[12 mm (1/2 in) in steel framing]** **[25 mm (1 in) in wood framing]**.
		7. Protect from exposure to ultraviolet (UV) radiation from the sun within 180 days of installation.
		8. Cut and trim materials to fit tightly around openings and penetrations. Tightly butt joints and boards around openings and penetrations.
		9. Seal all joints between panels, at penetrations, at perimeters of board product air barriers and other gaps with a compatible sealing tape or self-adhesive sealing membrane.
		10. Ensure continuity of air tightness at transitions (e.g., between exterior walls and foundation walls, exterior walls and roofs, exterior walls and windows) and intersections (e.g., corners, overhangs, cantilevers, balconies etc.) and all other potential air leakage pathways in the building envelope.
		11. Do not install insulation in direct contact with hot and heat-emitting surfaces (e.g., chimneys, furnaces, water heater flues, recessed lights etc.). Provide minimum gap in accordance with Building Code and requirements of authorities having jurisdiction. Seal such openings with appropriate and compatible sealant in accordance with sealant manufacturer’s instructions.
		12. Repair damage to boards that occurred during installation process. If repair is extensive, cut a board section of the same width as that between studs. Ensure new boards have dimensions that match cutout size. Seal gaps and penetrations with sealant, tapes, or foam to ensure air barrier continuity.
	4. FIELD QUALITY CONTROL

Isolofoam Group Spec Note: Edit the wording in square brackets below to reflect which entity is responsible for engaging the inspection and testing agency's services.

* + 1. Inspection and Testing Agency: **[Owner may engage]** **[Owner will engage]** **[Contractor must engage]** a qualified independent testing agency to perform field tests and inspections.

Isolofoam Group Spec Note: Indicate below whether installed assemblies will be evaluated in the field using test methods such as ASTM E779, ASTM E1186 or CAN/CGSB 149.10 to assess air leakage rates through them.

* + - 1. **[Insert description of field tests here]**
			2. Cooperate with testing agency. Allow access to work areas and staging. Notify testing agency in writing of schedule for work of this Section to allow sufficient time for testing and inspection. Do not cover work of this Section until testing and inspection activities are complete.
			3. Where tests and inspections reveal deficiencies, provide corrective measures promptly.
			4. Additional tests and inspections, if required, will be performed at Contractor's expense to determine compliance of replaced or additional work with requirements specified in this Section.
		1. A final inspection with the owner's representative and the contractor **[may be completed]** **[will be completed]**.
	1. CLEANING
		1. Proceed in accordance with Section **[01 74 00, Cleaning]**.
		2. On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
	2. PROTECTION OF WORK
		1. Protect finished work in accordance with Section **[01 61 00, Product Requirements]**.
		2. Protect boards against damage caused by ultraviolet (UV) radiation, adverse weather exposures, physical abuse, and other harmful conditions. Ensure boards are protected from UV radiation within 180 days of application.

**END OF SECTION**