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# MANUFACTURER'S GUIDE SPECIFICATION

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## SECTION 07 27 26

**FIRE  
RESIST** BARRITHANE VP

**HIGH-SOLIDS, MOISTURE-CURING, FLUID-  
APPLIED, VAPOR-PERMEABLE MEMBRANE AIR  
BARRIERS**



## SECTION 07 27 26

### HIGH-SOLIDS, MOISTURE-CURING, FLUID-APPLIED, VAPOR-PERMEABLE MEMBRANE AIR BARRIERS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. A fluid-applied vapor-permeable membrane of high solids, moisture-curing and fire-retardant composition for use as an air and water resistive barrier in exterior walls. Minimum 13 mil dry thickness on sheathing substrates, minimum 26 mil dry thickness on masonry and concrete
- B. Monolithic, fully-adhered membrane and accessory products installed as a continuous air and water resistive barrier assembly over substrates of the Project's opaque walls as indicated on Drawings
- C. Air and water resistive barrier assembly providing air and water tight coverage over these conditions
  1. Joints between building materials such as sheathing joints, mortar joints and dissimilar materials.
  2. Joints around windows, curtain walls, louvers, door frames and other service openings
  3. Junctions between walls and floors, between walls at building corners and between walls, roofs and ceilings.
  4. Mechanical and electrical penetrations
  5. Structural penetrations for canopies, decks, walkways and similar horizontal projections or junctions to the exterior walls
  6. Fastener and hardware penetrations used to attach insulation, cladding, trim or other overburden
  7. Termination at footing, roof deck and existing construction
  8. Junction to air & water barrier in roof, below grade or other adjacent systems
- D. Air and water resistive barrier assembly providing air and water tight coverage while accommodating designed movement at expansion and control joints.
- E. Air and water resistive barrier assembly performing as a liquid water drainage plane flashed to discharge to the exterior any incidental condensation or water penetration

##### 1.02 RELATED SECTIONS

- A. Section 03 30 00 - Cast-In-Place Concrete [NOTE TO SPECIFIER: Require that backup concrete be free of fins, protrusions and large holes]
- B. Section 04 20 00 - Unit Masonry [NOTE TO SPECIFIER: When concrete masonry unit (CMU) block walls are to receive air barrier materials it is critical to address surface preparation issues in

this section. Due to the method of installation of the CMU, generally from the inside out, the most critical surfaces to receive the air barrier materials are neglected and not tooled properly. It is strongly suggested to cut and paste text located in PART 3 – EXECUTION, Article 3.02, Paragraph A of Section 07 27 13 into Section 04 20 00. The masonry trade must be made aware that this is a critical element for the fluid-applied air barrier material. The performance of the air barrier material is directly related to the substrate OVER WHICH IT WILL be applied.]

- C. Section 07 13 00 - Sheet Waterproofing
- D. Section 07 14 00 – Fluid-Applied Waterproofing
- E. Section 07 11 00 – Damp Proofing.
- F. Section 07 21 00 - Thermal Insulation
- G. Section 07 53 00 – Elastomeric Membrane Roofing
- H. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal through-wall flashings
- I. Section 07 65 00 – Flexible Flashings: Self-adhering and EPDM through-wall flashing
- J. Section 07 90 00 - Joint Protection: Joint sealant materials and installation.
- K. Section 08 12 00 - Metal Door Frames
- L. Section 08 43 00 – Storefronts
- M. Section 08 44 00 – Curtain Wall and Glazed Assemblies
- N. Section 08 51 00 - Metal Windows
- O. Section 09 29 00 - Gypsum Sheathing: Gypsum sheathing over metal studs.
- P. [Section \[\\_\\_\\_\\_\\_\]](#) Other

### 1.03 REFERENCES

- A. American Association of Textile Chemists and Colorists (AATCC) Test Method 127. “Water Resistance – Hydrostatic Pressure Test”
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2010 “Energy Standard for Buildings Except Low-Rise Residential Buildings”
- C. ASTM C 920 Standard Specification for Elastomeric Joint Sealants
- D. ASTM D 412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

- E. ASTM D 1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep slope roofing Underlayment for Ice Dam Protection.
- F. ASTM D 4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- G. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
- H. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials.
- I. ASTM E 331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
- J. ASTM E 783 Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
- K. ASTM E 1105 Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference
- L. ASTM E 1354 Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
- M. ASTM E 2178 Standard Test Method for Air Permeance of Building Materials
- N. ASTM E 2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- O. National Fire Protection Association (NFPA) 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

#### 1.04 PERFORMANCE REQUIREMENTS

- A. Installed product and accessories shall exhibit an air leakage rate, infiltration and exfiltration modes, measured after pressure cycling, not to exceed  $0.2 \text{ L/s}\cdot\text{m}^2$  at 75 Pa [0.040 CFM/ft<sup>2</sup> at 1.57 PSF] according to ASTM E 2357.
- B. Product and accessories, installed on the ASTM E 2357 penetrated mockup, shall resist water intrusion with no leaks to the inside for 2 hours at -6.24 PSF and for 15 minutes at -15 PSF, tested to ASTM E 331.
- C. Product be a vapor-permeable material exhibiting a minimum of  $35 \text{ g/m}^2/24\text{h}$  (5 Perms), tested to ASTM E 96 desiccant method (A) and minimum  $70 \text{ g/m}^2/24\text{h}$  (10 Perms) tested to ASTM E 96 water method (B).
- D. For Type I, II, III and IV construction: Installed product and accessories shall be tested to NFPA 285 and pass in wall assemblies of the Project or shall pass by engineering judgement.

- E. Installed product and accessories shall be recommended by manufacturer for at least 180 days of outdoor exposure.
- F. Installed product and accessories shall have an upper service temperature limit of 180°F or higher.
- G. Manufacturer shall provide product and accessories which have a minimum installation temperature of 15°F or lower.
- H. Product shall be a high-solids, low VOC, moisture-curing material: silane terminated polyether (STPE), polyurethane or silicone chemistry with minimum 80% solids by volume and maximum 100g/L VOC
- I. Product shall be minimum 0.013 inch (13mils) dry thickness membrane on exterior sheathing and minimum 0.026 inch (26 mils) dry thickness membrane on concrete and masonry. Dry membrane thickness shall be calculated based on field-measured wet mil thickness using a comb gauge and volume % solids of the product. [\[Example 88% solids membrane applied at minimum 30 wet mils yields a minimum 26 mil thickness membrane\].](#)
- J. Product shall cure firm the same day of installation: Cure-through of 0.040 inch thickness (40 mil) wet film within 4 hours at 75°F/50% RH.
- K. Product shall meet the following requirements:

REQUIREMENT	RESULT	TEST METHOD
Air Permeance – on Porous Substrate	Not more than 0.02 L/s*m <sup>2</sup> at 75 Pa (0.004 CFM/ft <sup>2</sup> at 1.57 PSF)	ASTM E-2178, mod applied to CMU
Air Permeance – Free Film	Not more than 0.02 L/s*m <sup>2</sup> at 75 Pa (0.004 CFM/ft <sup>2</sup> at 1.57 PSF)	ASTM E-2178
Low Temperature Flexibility	No cracking at minus 20 degrees F, 180 degree bend over 1 inch mandrel	ASTM D 1970
Tensile Strength	Minimum 100 lb <sub>f</sub> per square inch	ASTM D 412
Tensile Elongation	Minimum 200%	ASTM D 412
Elastic Recovery	100% at minimum 100% elongation	ASTM D 412
Fastener Sealability	No water leaking through nail penetration after 24 h.	ASTM D 1970
Water Resistance	Product over CMU substrate and over gypsum sheathing with joint shall resist a 55 cm (22 inch) column of water for 5 hours, no leaking or wet through.	AATCC-127 - mod, static head generated with 5” diameter PVC pipe sealed to specimen
Pull Adhesion	Not less than 100 lb <sub>f</sub> per square inch on CMU; substrate failure on glass-faced gypsum sheathing	ASTM D 4541, modified 4 inch wood puck
Surface Burning Characteristics.	Flame Spread Index: ≤ 25 Smoke Generation Index: ≤ 450	ASTM E 84, tested at full coverage, minimum 40 mil dry film, cement board substrate
Measurement of Heat Release Rate by Cone Calorimeter	Effective Heat of Combustion: Not more than 18 MJ/kg	ASTM E 1354, tested on minimum 40 mil dry film. Horizontal

	Total Heat Released: not more than 20 MJ/m <sup>2</sup> Peak Heat Release: Not more than 150 kW/m <sup>2</sup>	orientation, 50 kW/m <sup>2</sup> heat flux
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## 1.05 SUBMITTALS

- A. Provide submittals in accordance with [\[Section 01 33 00\]](#)
- B. At bid submission, provide evidence to the Architect of installer qualification by the air barrier manufacturer.
- C. Shop drawings showing locations and extent of air barrier and details of all typical conditions.
- D. Vertical and lateral fire propagation evaluation of the Project's exterior wall assemblies containing the product, submit documentation of one of the following:
  1. NFPA 285 test and pass
  2. NFPA 285 pass through engineering judgement
  3. Exemption from the NFPA 285 requirement.
- E. Manufacturer's technical data sheets and safety data sheets for product and accessories.
- F. Manufacturer's installation instructions.
- G. Certification of compatibility by manufacturer, listing all materials on the project with which the product and accessories may come into contact.
- H. Free film sample of product at representative cured thickness, minimum 2 inch by 3 inch size.
- I. Sample of sheet detail flashing, minimum 2 inch by 3 inch size.

## 1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Shall be experienced in applying the same or similar materials and shall be specifically approved in writing by Manufacturer.
- B. Single-Source Responsibility: Obtain product and accessories from single manufacturer.
- C. Product and Accessories shall comply with all state and local regulations controlling use of volatile organic compounds (VOCs).
- D. Comply with the provisions of the Owner's building envelope commissioning program in accordance with [\[Section 01 91 15\]](#)
- E. Pre-Installation Meeting: Convene [\[one\]](#) [\[\\_\\_\\_\\_\\_\]](#) week prior to commencing Work of this Section, in accordance with Section 01 31 19 - Project Meetings.
- F. Field-Constructed Mock-Ups: Prior to installation on Project, apply product and accessories on mock-up to verify details under shop drawing submittals, to demonstrate tie-ins with adjoining

construction and other termination conditions and to become familiar with properties of materials in application:

[NOTE TO SPECIFIER: incorporate sub paragraph 1 or 2 into Paragraph F]

1. Apply in field-constructed mockups of assemblies as specified in [Section 01 43 39 – Mockups]
  2. Construct typical exterior wall panel, 8 feet long by 8 feet wide, incorporating back-up wall, cladding, window and doorframe and sill, insulation, flashing, [building corner condition,] [junction with roof system] [foundation wall] [and] [typical penetrations and gaps]; illustrating interface of materials and seals
- G. Allow full cure of product and test mock-up in accordance with Section [01 43 00 – Quality Assurance] and test in accordance with ASTM E 783 and ASTM E1105 for air and water infiltration
- H. Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover any installed product unless it has been inspected, tested and approved.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product, lot number and directions for storage.
- B. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by manufacturer.
- C. During cold weather, maintain product temperature within acceptable range for application, as required by air barrier manufacturer. Protect freeze-sensitive materials from freezing.
- D. Avoid spillage. Immediately notify Owner, [Architect] [Consultant] if spillage occurs and start clean up procedures. Clean spills and leave area as it was prior to spill.

#### 1.08 WASTE MANAGEMENT AND DISPOSAL

- A. Separate and recycle waste materials in accordance with [Section 01 74 19 – Construction Waste Management and Disposal], and with the Waste Reduction Work Plan.
- B. Place materials defined as hazardous or toxic waste in designated containers.
- C. Ensure emptied containers are stored safely for disposal away from children.

#### 1.09 PROJECT CONDITIONS

- A. Do not apply product or accessories during rain or accumulating snowfall.
- B. Apply product and accessories within approved ambient and substrate temperature range stated in manufacturer's literature.

- C. Do not apply product or accessories over incompatible materials.
- D. Observe safety and environmental measures indicated in manufacturer's SDS, and mandated by federal, state and local regulations.

1.10 WARRANTIES: Provide the manufacturer's minimum five year material warranty under provisions of [\[Section 01 78 36 – Warranties\]](#).

## PART 2 PRODUCTS

### 2.01 PRODUCTS AND MANUFACTURERS :

- A. Carlisle Coatings & Waterproofing, Incorporated. 900 Hensley Lane, Wylie, TX 75098. Phone 1-800-527-7092. Website <http://www.carlisleccw.com>: Barrithane VP
- B. [\[Other manufacturers and products, as approved by Architect\]](#)

### 2.02 ACCESSORIES: Provide from same manufacturer as air barrier membrane.

- A. Sheet Detail Flashing: Foil composite faced rubberized asphalt flashing, minimum 0.040 inch (40 mils) thickness.
  - 1. Fire-Resist 705 FR-A or Fire-Resist 705 FR-A LT low temperature application formula by Carlisle Coatings & Waterproofing, Incorporated
  - 2. Others as approved by air barrier membrane manufacturer
- B. Contact Adhesive:
  - 1. Carlisle Coatings & Waterproofing, Incorporated:
    - a) Over approved wall substrates: CCW-702 Solvent-Based, CCW-702 LV VOC Compliant Solvent-Based, CCW-702 WB Water-Based, CAV-GRIP™ Aerosol Spray or Travel-Tack portable aerosol spray cans
    - b) Over cured liquid air barrier: CAV-GRIP™ Aerosol Spray or Travel-Tack portable aerosol spray cans
  - 2. Others as approved by air barrier membrane manufacturer
- C. Liquid Detail Flashing. Silane-terminated polyether, minimum 80% solids.
  - 1. Barribond trowel-applied at minimum 40 wet mils thickness
  - 2. Barrithane VP roller or brush-applied at minimum 40 wet mils thickness, all cracks and gaps exceeding 1/16 inch filled with detail sealant or fill compound struck flush.
  - 3. Others as approved by air barrier membrane manufacture
- D. Detail Sealant: Silane-terminated polyether, minimum 90% solids, ASTM C 920 Type S, Grade NS, Class 25, Use NT.
  - 1. Barribond by Carlisle Coatings & Waterproofing, Incorporated
  - 2. Others as approved by air barrier membrane manufacturer
- E. Fill Compound: 2-part, non-sag polyurethane sealant
  - 1. Carlisle Coatings & Waterproofing, Incorporated: CCW-201
  - 2. Others as approved by air barrier membrane manufacturer



## 2.03 RELATED MATERIALS BY OTHERS

- A. Silicone Sheet, as approved by air barrier manufacturer.
- B. Silicone Sealant, as approved by air barrier manufacturer.
- C. Polyurethane Foam Sealant, select any:
  - 1. TVM Fireblock Foam
  - 2. Fomo Handifoam Fireblock
  - 3. Great Stuff PRO or Froth Pack by Dow Chemical Company
  - 4. Other product approved by air barrier membrane manufacturer
- D. Impaling Pin Adhesive, select any
  - 1. Barribond
  - 2. Other product approved by air barrier membrane and insulation manufacturer
- E. Insulation Adhesive, select any
  - 1. Barribond
  - 2. LM 800 XL
  - 3. Other product approved by air barrier membrane and board foam insulation manufacturer

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates, areas, and conditions affecting installation of the air & vapor barrier and accessory products for compliance with requirements. Verify that surfaces and conditions are suitable prior to commencing Work of this section. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Verify that wall assemblies are dried in, such that water intrusion will not occur from above, behind or around the air barrier installation.
- C. Concrete shall be cured for a minimum of three days. It shall be smooth, with sharp protrusions such as form joints or fins removed and ground flush. Honeycomb and holes/cracks shall be filled with grout or mortar.
- D. Surfaces shall be sound, dry and free of oil, grease, dirt, excess mortar or other contaminants.
- E. Surfaces shall be supported and flush at joints without large voids or sharp protrusions.
- F. Mortar joints shall be struck flush and shall be free of voids. Mortar droppings shall be removed from brick ties and all other surfaces accepting air barrier.
- G. Sheathing boards shall be flush at joints, with gaps between boards according to building code and sheathing manufacturer's requirements. Sheathing boards shall also be securely fastened to the structure with proper fastener type, technique and spacing according to building code and sheathing manufacturer's requirements. Sheathing boards shall be repaired or replaced if

inspection reveals moisture damage, mechanical damage or if sheathing boards have exceeded the exposure duration or exposure conditions as required by the sheathing manufacturer.

- H. Plywood, OSB, lumber or pressure-treated wood moisture content, measured with a wood moisture meter in the core of the substrate, shall be below 20%.
- I. Inform Architect [Consultant] [Owner] in writing of
  1. Unsatisfactory substrates
  2. Cracks in concrete and masonry.
  3. Gaps or obstructions such as steel beams, angles, plates and projections which cannot be spanned or covered by Product or Accessories.
  4. Anticipated problems applying product and accessories over substrate.

### 3.02 SURFACE PREPARATION

[NOTE TO SPECIFIER: Incorporate Paragraph A and its sub-paragraphs into Section 04 20 00 - Unit Masonry]

- A. [Note to Mason: This project will have fluid-applied Membrane Air Barrier material applied to the cavity side of the CMU. Special attention and care must be taken to provide a smooth, filled surface to receive the membrane. The care is necessary to insure the design performance of the selected materials.] Concrete masonry unit (CMU) wall shall be prepared as follows to accept the air & vapor barrier:
  1. Surfaces shall be free of contaminants such as grease, oil and wax on surfaces to receive membrane
  2. The CMU surfaces shall be free from projections.
  3. Strike all mortar joints flush to the face of the concrete block.
  4. Fill all voids and holes with mortar, sealant or other approved fill material.
  5. Surface irregularities shall be ground flush or made smooth.
  6. Fill around all penetrations with mortar, sealant or other approved fill material and strike flush.
  7. If the surfaces cannot be made smooth to the satisfaction of the Architect, it will be the responsibility of the trade to alternatively apply a parge coat (typically one part cement to three parts sand) over the entire surface to receive Air Barrier Membrane
  8. Remove mortar droppings on brick ties, shelf angles, brick shelves or other horizontal obstructions.
- B. Cover counter-sunk fasteners and holes through exterior sheathing with fill compound or detail sealant struck flush.
- C. Fill cracks, gaps and joints with fill compound, detail sealant or other material approved by air barrier manufacturer.
- D. Fill rough gaps around pipe, conduit and similar penetrations with mortar, non-shrink grout, fill compound or polyurethane foam sealant shaved flush.
- E. Apply a ¾ inch cant of fill compound or detail sealant at the intersection of the base of the wall and the footing.

### 3.03 DETAILING

- A. Detailing requires materials and installation at joints, transitions, openings, terminations, penetrations and similar conditions. Perform detailing before or after product installation.
- B. Install product and accessories in details as directed in manufacturer's literature.
- C. Cover sheathing joints with 2" width liquid detail flashing centered over joint:
- D. Sheathing inside and outside corners. Install flashing bearing 3 inches minimum onto either side of angle change. Use either of the following methods:
  - 1. Sheet detail flashing
  - 2. Liquid detail flashing
- E. Window rough openings. Install flashing bearing onto wall 3 inches minimum and returning into opening according to Project drawings. Use either of the following methods:
  - 1. Sheet detail flashing
  - 2. Liquid detail flashing
- F. Pipe or duct penetrations. Install flashing bearing onto wall 3 inches minimum and bearing onto pipe or duct 3 inches, or according to Project drawings. Use either of the following methods:
  - 1. Sheet detail flashing
  - 2. Liquid detail flashing
- G. Expansion or deflection joints: Install sheet detail flashing incorporating bellows or expansion bulb to allow joint movement. Flashing shall bear 3 inches minimum onto either side of joint.
- H. Interface of dissimilar substrates: Install sheet detail flashing, covering transition and bearing 3 inches minimum onto either side of transition.
- I. Prepare all surfaces accepting sheet detail flashing with contact adhesive provided by the same manufacturer. Apply contact adhesive to substrate with sufficient footprint to extend 1 inch beyond edges of sheet detail flashing. Follow contact adhesive application technique and drying time as specified in manufacturer's literature.
- J. Press sheet detail flashing firmly in place with a suitable hand roller tool.
- K. Sheet detail flashings shall be firmly adhered to the substrate, with no wrinkles, fishmouths or bridging at corners. Seal all terminations of sheet detail flashing with a tooled ribbon of detail sealant, centered over termination.
- L. Liquid detail flashings shall be smooth, free of voids and meeting the minimum installation thickness of 40 wet mils.

### 3.04 INSTALLATION

- A. Apply product and accessories over opaque wall surfaces as indicated in Project drawings.
- B. Apply product by roller, brush or other method as recommended by air barrier manufacturer.

- C. Apply product at specified wet mil thickness in accordance with air barrier manufacturer's requirements.
- D. Verify compliance with air barrier manufacturer's minimum required thickness by documenting product use per area. Perform and document wet mil thickness measurements every 100 square feet, or more frequently if required, to establish uniform and adequate coverage.
- E. Installation shall produce complete coverage of opaque substrates as indicated in Drawings.
- F. Product and accessories shall be fully-adhered to substrates, free of holes, fishmouths, blisters, de-lamination, bridging or inadequate mil thickness. Makes repairs to any of these defects according to air barrier manufacturer's instructions.

### 3.05 SCHEDULE WITH RELATED WORK

- A. Related Work shall be sequenced to allow effective installation and inspection of the air barrier.
- B. Finishes, insulation or other layers covering the air barrier shall not be installed until the air barrier installation over that area is complete, has been inspected and is approved to cover.
- C. If the air barrier has been damaged after installation, it shall be repaired according to air barrier manufacturer's instructions before covering.
- D. Penetrations made through the air barrier, such as mechanical/electrical penetrations and fasteners for attaching cladding/insulation, shall be sealed according to the air barrier manufacturer's instructions.
- E. Fenestration shall be sealed to air barrier with sheet detail flashing, silicone sheet, detail sealant, silicone sealant or polyurethane foam sealant according to Project drawings
- F. Through-wall flashing may be installed before or after air barrier. Seal termination of through-wall flashing to air barrier according product manufacturer's instructions.
- G. Wall air barrier shall have a durable, air and watertight seal to the foundation, below-grade waterproofing, roof air barrier, air barrier in neighboring wall assemblies and other conditions as indicated in Project drawings.

### 3.06 REPAIR AND PROTECTION

- A. Protect air barrier from damage during application and remainder of construction period.
- B. Inspect and make necessary repairs to air barrier before covering. Repair or replace damaged material according to manufacturer's literature.
- C. Air barrier is not designed for permanent exposure. Cover with insulation or exterior cladding as soon as schedule allows.

D. Outdoor exposure of installed air barrier shall not exceed 180 days.

END OF SECTION