Building with conscience.

Sto Corp.
3800 Camp Creek Parkway
Building 1400, Suite 120
Atlanta, GA 30331
Tel: 404-346-3666
Toll Free: 1-800-221-2397
Fax: 404-346-3119
www.stocorp.com

Sto Guide Specification 81838

Sto GoldSeal™ STPE Air and Water-resistive Barrier Specification

Section 07 27 26

Fluid-Applied Membrane Air Barriers – Vapor Permeable

This specification is intended for use by the design/construction professional and user of Sto products to assist in developing project specifications for the application of Sto GoldSeal STPE to vertical above grade concrete, concrete masonry, and frame wall construction with sheathing. Sto GoldSeal STPE is designed for use in Sto proprietary wall assemblies – StoVentec®, StoTherm® ci, StoPowerwall®, StoQuik® Silver, StoPanel® – and other building code compliant wall assemblies.

Sto GoldSeal STPE functions to restrict air movement through wall assemblies and to resist water penetration. When used as directed in combination with StoGuard Detail Components to connect with other air and water-resistive barrier components, Sto GoldSeal STPE creates a complete StoGuard Air and Water-resistive Barrier assembly. This assembly minimizes the risk of condensation within the building envelope by eliminating mass transfer of warm moisture laden air into the wall assembly to a cold surface where it can condense. Sto GoldSeal STPE also works in conjunction with flashing to prevent water infiltration. Flashing must always be integrated with the air and water-resistive barrier in the wall assembly to direct water to the exterior of the cladding, not into the wall assembly, particularly at potential leak sources such as windows. Refer to Sto Guide Details and Sto Tech Hotline No. 0403-BSc, ***Critical Detail Checklist for Wall Assemblies****, Sto Tech Hotline No. 0603-BSc,* ***Moisture Control Principles for Design and Construction of Wall Assemblies****, and Sto Tech Hotline No. 1001-BSc,* ***Effects of Temporary Heating on Construction Materials in Cold Weather****, at www.stocorp.com*

The function of an air barrier should not be confused with that of a vapor retarder. A vapor retarder is placed in the wall to resist differential vapor pressures, whereas the air barrier is designed to resist the structural live loads induced by air pressure difference. A vapor retarder should not be used on the interior side of walls in warm humid climates. If a vapor retarder (or vapor impermeable) air barrier is desired refer to Sto Specification 80263 for a high build vapor impermeable fluid applied air barrier or Sto Specification 81948 for a vapor impermeable self-adhered membrane air barrier.

Notes in italics, such as this one, are explanatory and intended to guide the design/construction professional and user in the proper selection and use of materials. This specification should be modified where necessary to accommodate individual project conditions. Verify that section titles in this specification are correct for the Project Specifications. Verify that table headers and spacing are aligned after final edit, including table header repeated at top of table, at any new pages.

Table of Contents

PART 1 GENERAL

1.1 RELATED DOCUMENTS

Retain or delete this article in all sections of the Project Manual

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes materials and installation of vapor permeable fluid-applied membrane air and water-resistive barrier over vertical above grade concrete walls, concrete masonry walls, and wall sheathing.

Add or delete section below depending on specific project requirements

B. Related Requirements

1. Section 03 30 00: Cast-In-Place Concrete
2. Section 04 22 00: Concrete Unit Masonry
3. Section 06 16 00: Sheathing
4. Section 07 25 00: Weather Barriers
5. Section 07 26 00: Vapor Retarders
6. Section 07 50 00: Membrane Roofing
7. Section 07 60 00: Flashing and Sheet Metal
8. Section 07 90 00: Joint Protection
9. Section 08 50 00: Windows

1.3 DEFINITIONS

A. Air Barrier Material: A primary element that provides a continuous barrier to the movement of air.

B. Air Barrier Accessory: A transitional component of the air barrier that provides continuity[1].

C. Air Barrier Assembly: The combination of air barrier materials and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 PRE-INSTALLATION MEETINGS

A. Pre-installation Conference

1. Review air barrier installation requirements and installation details, mock-ups, testing requirements, protection, and sequencing of work.

1. *Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies*, ASTM E2357, ASTM International, West Conshohocken (2018): https://www.astm.org

1.5 REFERENCES

A. Building Codes and Standards

2018, 2021 IBC	International Building Code
2018, 2021 IRC	International Residential Code
2018, 2021 IECC	International Energy Conservation Code
ICC-ES AC212	Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing

B. AAMA – American Architectural Manufacturers Association Standards

AAMA 711	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

C. AATCC – American Association of Textile Chemists and Colorists

AATCC -TM127	Test Method for Water Resistance: Hydrostatic Pressure

D. ASTM - American Society for Testing and Materials Standards

C1177	Specification for Glass Mat Gypsum Substrate for Use as Sheathing
C 1305	Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane
C1325	Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units
D412	Standardized Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
D1970	Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
D4541	Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
E72	Standard Test Methods of Conducting Strength Tests of Panels for BuildingConstruction
E84	Standard Test Method for Surface Burning Characteristics of Building Materials
E96	Test Method for Water Vapor Transmission of Materials
E331	Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
E779	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
E783	Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
E1186	Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems
E1233	Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential
E1827	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
E2178	Test Method for Air Permeance of Building Materials

E2357	Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

E. APA – The Engineered Wood Association

E30W	Engineered Wood Construction Guide,
PS 2	Performance Standard for Wood Structural Panels

F. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)

ASHRAE	2021, Handbook-Fundamentals
ASHRAE 90.1	2022, Energy Standard for Buildings Except Low-Rise Residential Buildings

G. NFPA – 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

H. South Coast Air Quality Management District (South Coast AQMD)

Rule 1113 (2019)	Architectural Coatings

I. Sto Corp. Publications

Sto GoldSeal STPE	Product Bulletin
Sto RapidGuard®	Air & Water-Resistive Barrier Installation Guide
StoGuard Conformable Membrane	Installation Guide

1.6 COORDINATION/SCHEDULING

The work in this section requires close coordination with related sections and trades. Sequence work to provide protection of construction materials from weather deterioration

A. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuous air and water-resistive barrier.

B. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall.

C. Provide sill flashing to direct water to the exterior before windows and doors are installed.

D. Install window and door head flashing immediately after windows and doors are installed.

E. Install diverter flashings wherever water can enter the assembly to direct water to the exterior.

F. Install parapet cap flashing and similar flashing at copings and sills to prevent water entry into the wall assembly.

G. Install cladding within 90 days of air and water-resistive barrier installation.

1.7 SUBMITTALS

A. Manufacturer's specifications, details and product data.

B. Manufacturer's standard warranty.

C. Samples for approval as directed by architect or owner.

D. Shop drawings of: substrate joints, cracks, flashing transitions, penetrations, corners, terminations, and tie-ins with adjoining construction, and interfaces with separate materials that form part of the air barrier assembly.

1.8 QUALITY ASSURANCE

A. Manufacturer requirements

1. Manufacturer of exterior wall air and water-resistive barrier materials for a minimum of 35 years in North America.
2. Maintain current registered ISO 9001 Certified Quality System and ISO 14001 Certified Environmental Management System

B. Contractor requirements

1. Knowledgeable in the proper use and handling of Sto materials.
2. Employ skilled mechanics who are experienced and knowledgeable in waterproofing and air barrier application, and familiar with the requirements of the specified work.
3. Provide the proper equipment, manpower and supervision on the job-site to install the air barrier assembly in compliance with the project plans & specifications, shop drawings, and Sto's published specifications and details.

C. Regulatory Compliance

1. Primary air barrier and joint treatment materials:
   a. Primary air barrier coatings: comply with South Coast AQMD-2019 Rule 1113 VOC requirements for Building Envelope Coatings
   b. Comply with air barrier material requirements of ASHRAE 90.1 – 2022
   c. Comply with 2018 and 2021 IBC and IRC requirements for a continuous air barrier
   d. Comply with air barrier material requirements of 2018 and 2021 IBC, IRC, and IECC
   e. Comply with requirements of 2024 ICC-ES AC212
   f. Liquid-applied flashing for rough openings and sheathing joints: comply with AAMA 714
   g. Self-adhered flashing for rough openings and sheathing joints: comply with AAMA 711

D. Mock-ups

1. Build stand-alone site mock-up or sample wall area on as-built construction to incorporate back-up wall construction, typical details covering substrate joints, cracks, flashing transitions, penetrations, corners, terminations, tie-ins with adjoining construction, and interfaces with separate materials that form part of the air barrier assembly. Include windows and other wall penetrations as applicable to the project.

1.9 PRE-CONSTRUCTION TESTING

A. Conduct site testing by qualified test agency or building envelope consultant

1. Conduct assembly air leakage testing in accordance with ASTM E783
2. Conduct adhesion testing to substrates in accordance with ASTM D4541
3. Conduct wet sealant compatibility testing in accordance with sealant manufacturer's field quality control test procedure.

4. Notify design professional minimum 7 days prior to testing.

1.10 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.

B. Protect STPE products from moisture and humidity, freezing temperatures, and temperatures in excess of 90 degrees F (32 degrees C). Store under cover off the ground in a cool, dry location. Store away from direct sunlight.

C. Protect Portland cement-based materials (bag products) from moisture and humidity. Store under cover off the ground in a cool, dry location.

D. Protect and store air barrier accessories and products in accordance with manufacturer's written instructions.

1.11 PROJECT/SITE CONDITIONS

A. STPE products

1. Maintain ambient and surface temperatures between 20 degrees F (-6.7 degrees C) and rising, and 110 degrees F (43 degrees C), during application and drying period. See manufacturer's special instructions for cold weather and hot weather application precautions. Temperatures must be above 32 degrees F (0 degrees C) for STPE products to cure.
2. Provide supplementary heat for installation if surface temperature is likely to fall below 20 degrees F (-6.7 degrees C).

B. Portland cement-based products

1. Maintain ambient and surface temperatures above 40 degrees F (4 degrees C) and rising
2. Provide supplementary heat for installation if surface temperature is likely to fall below 40 degrees F (4 degrees C)

C. Provide protection of surrounding areas and adjacent surfaces from application of materials.

1.12 WARRANTY

A. Provide manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Sto Corp.

B. Obtain primary air barrier and accessory air barrier materials from single source.

2.2 MATERIALS

A. Primary Air Barrier Material: Sto GoldSeal STPE – ready-mixed, flexible, roller or spray applied vapor permeable air and water-resistive barrier

B. Accessory Materials

Select one or more of the following options as applicable to the project

1. StoGuard Detail Components for: sealing sheathing joints and seams, small penetrations or attachments (scupper, pipe, electrical box) and other static transitions in above grade wall construction, rough opening protection, and counterflashing
    a. Sto RapidGuard®: one component gun-applied STPE liquid flashing, rough opening protection, joint treatment and transition detailing material
    b. StoGuard Conformable Membrane: self-adhered membrane flashing, rough opening protection, sheathing joint treatment, and transition detailing material
2. StoGuard Detail Components for transitions: sheathing to foundation, dissimilar materials (e.g. CMU to frame wall), wall to balcony floor slab or ceiling, and other detailing in above grade wall construction
    a. Sto RapidGuard®: one component gun-applied STPE liquid flashing, rough opening protection, joint treatment and transition detailing material
    b. StoGuard Conformable Membrane: self-adhered membrane flashing, rough opening protection, sheathing joint treatment, and transition detailing material
3. Floor line deflection joints, masonry control joints, expansion joints in masonry or frame construction, and other dynamic joint conditions in above grade wall construction
    a. StoGuard Conformable Membrane: self-adhered membrane flashing, rough opening protection, sheathing joint treatment, and transition detailing material for static and dynamic joints
4. Wet sealant

Wet sealant typically requires field adhesion testing to verify compatibility with other air barrier components

    a. StoSeal STPE: low modulus, non-sag one component STPE joint sealant for dynamic joints or connections with other air barrier components
    b. Other compatible sealant for dynamic joints or connections with other air barrier components, if needed
5. Spray foam
    a. Sto TurboStick: single component polyurethane spray foam adhesive for filling gaps and cracks
    b. Other compatible low expanding spray foam for filling gaps and cracks, if needed

C. Patching and Leveling Material for Concrete and Masonry

1. Sto Leveler and Skim Coat: polymer modified portland cement-based patch and leveling material for prepared concrete and masonry surfaces for leveling up to 1/4 inch (6mm).
2. Sto BTS Xtra: polymer modified portland cement-based lightweight patch and leveling material for prepared concrete and masonry surfaces for leveling up to 1/8 inch (3mm).

D. Fluid Applied Block Filler for Masonry

1. StoPrime Block Surfacer HP: acrylic-based block filler for CMU surfaces applied by brush, roller or spray.

2.3 PERFORMANCE REQUIREMENTS

A. Air permeance: ASTM E2178, $\leq$ 0.004 cfm/ft^2 (0.02 L/s·m^2) air leakage at 1.57 psf (75 Pa)

B. Water vapor permeability: ASTM E96 Method B, > 10 perms (572 ng/Pa·s·m^2)

C. Surface burning: ASTM E84, Flame Spread ≤ 25, Smoke Developed ≤ 75, Class A Building Material

D. Elongation: ASTM D412, > 300 % at 25 DFT

E. Tensile Strength: ASTM D412, > 100 psi (579 kPa) at 25 DFT

F. Adhesion: joint treatment and primary air barrier material, ASTM D4541, > 15 psi (103 kPa), or exceeds strength of glass mat facing on glass mat gypsum substrates

G. Nail Sealability: ASTM D1970, no water penetration after 72 hours at 40°F (4°C) at 25 DFT

H. Low Temperature Crack Bridging: ASTM C1305, no cracking after 10 cycles at 25 DFT

I. Accelerated Weathering/Hydrostatic Pressure: ASTM E2570/AATCC 127 (modified), no cracking of the coating or bond failure, no water penetration after cyclic weathering & 5 hour water column (21.5 in [55 cm])

J. Structural, Racking, Restrained Environmental Conditioning, and Resistance to Water Penetration: ASTM E2570/ E1233/ E72/E331 (par 6.6.3), no water penetration after 15-minute water sprays at 2.86 psf (137 Pa)

K. Assembly air leakage: ASTM E2357, < 0.04 cfm/ft^2 (0.2 L/s·m^2) air leakage after conditioning protocol

L. Fire Performance of Assembly: NFPA 285, meets requirements for use on noncombustible construction as tested

M. Volatile Organic Compounds: South Coast AQMD Rule 1113, Building Envelope Coating, < 50 g/L

N. Water-resistive Barrier (WRB): ICC-ES AC 212, meets requirements as a water-resistive coating used as a WRB over exterior sheathing

2.4 DESIGN CRITERIA

A. Structural (Wind and Axial Loads)

1. Design for maximum allowable deflection normal to the plane of the wall of: L/240. Where cladding dictates stiffer deflection criteria use cladding design criteria for maximum allowable deflection.
2. Design for wind load in conformance with code requirements.

B. Moisture Control

1. Prevent the accumulation of water in the wall assembly and behind the exterior wall cladding:
   a. Minimize condensation within the assembly.
   b. Drain water directly to the exterior where it is likely to penetrate components in the wall assembly (windows and doors, for example).
   c. Provide corrosion resistant flashing to direct water to the exterior in accordance with code requirements, including: above window and door heads, beneath window and door sills, at roof/wall intersections, floor lines, decks, intersections of lower walls with higher walls, and at the base of the wall.

C. Air Barrier Continuity: provide continuous air barrier assembly of compatible air barrier components.

D. Substrates

1. Concrete Masonry Units: provide CMU surfaces in conformance with the applicable building code, and such that a void and pinhole free air barrier is achieved. Provide normal weight units with flush joints (struck flush with the surface).
2. Concrete: provide concrete in conformance with the applicable building code.
3. Sheathing:
    a. Provide frame/sheathing assembly that meets required design wind pressures.
    b. Provide gypsum sheathing in compliance with ASTM C1177
    c. Provide Exterior Grade plywood sheathing in conformance with PS 2
    d. Provide Exposure 1 OSB (Oriented Strand Board) sheathing in conformance with PS 2
    e. Provide cementitious sheathing in compliance with ASTM C1325 Type A and with ICC-ES listing or other nationally recognized product evaluation agency

E. Mechanical Ventilation: maintain pressurization and indoor humidity levels in accordance with recommendations of ASHRAE (see 2021 ASHRAE Handbook—Fundamentals).

PART 3 EXECUTION

3.1 EXAMINATION

A. Inspect concrete and concrete masonry surfaces for:
1. Contamination – algae, dirt, dust, efflorescence, form oil, fungus, grease, mildew or other foreign substances.
2. Surface deficiencies – weak, friable, chalkiness, laitance, bugholes, and spalls.
3. Cracks – measure crack width and record location of cracks.
4. Damage or deterioration.
5. Moisture content and moisture damage – use a moisture meter to determine if the surface is dry enough to receive the air and water-resistive barrier and record any areas of moisture damage or excess moisture.
6. Flush masonry mortar joints completely filled with mortar.

B. Inspect sheathing application for compliance with applicable requirement:
1. Exterior Grade and Exposure I wood based sheathing: E30W-2019, Engineered Wood Construction Guide, and the requirements of the applicable building code.
2. Glass mat faced gypsum sheathing in compliance with ASTM C1177: consult manufacturer's published recommendations and ICC-ES Report. Conform with project requirements for wind load resistance.
3. Cementitious sheathing – Consult manufacturer's published recommendations and ICC-ES Report. Conform with project requirements for wind load resistance.

C. Report deviations from the requirements of project specifications or other conditions that might adversely affect the air and water-resistive barrier installation. Do not start work until deviations are corrected.

3.2 SURFACE PREPARATION

IMPORTANT: for "rough" CMU wall surfaces skim coat the entire wall surface with levelling material to fill and level the surface or apply block filler prior to applying the air and water-resistive barrier membrane and transition materials. Use the mock-up and site tests as the basis for the work.

A. Concrete Masonry

1. Surface must be structurally sound and free of weak or damaged surface conditions such as laitance or spalls. Surface must be clean, dry, frost-free, and free of any bond-inhibiting materials such as dust, dirt, oil, algae, mildew, salts, efflorescence, or any other surface contamination. Mortar joints must be struck flush with the surface.
2. Remove excess mortar from masonry ties, lintels and shelf angles.
3. Remove loose or damaged material by water-blasting, sandblasting or mechanical wire brushing. Remove surface contamination such as dirt or efflorescence by chemical or mechanical means. Repair surface defects such as spalls, voids and holes with Sto BTS Xtra (up to 1/8inch [3 mm] thick) or Sto Leveler and Skim Coat (up to 1/4 inch [6 mm] thick).
4. Repair non-structural cracks up to 1/8 inch (3 mm) wide by raking with a sharp tool to remove loose, friable material and blow clean with oil-free compressed air. Apply one component knife grade STPE air barrier joint treatment material over crack at minimum 20 WFT and allow to dry. Consult a structural engineer for structural cracks.

B. Concrete

1. Surface must be structurally sound and free of weak or damaged surface conditions such as laitance, bugholes, or spalls. Surface must be clean, dry, frost-free, and free of any bond-inhibiting materials such as dust, dirt, oil, form release, algae, mildew, salts, efflorescence, or any other surface contamination.
2. Remove projecting fins, ridges, form ties, and high spots by mechanical means.
3. Remove loose or damaged material by water-blasting, sandblasting or mechanical wire brushing. Remove form release by chemical or mechanical means. Repair surface defects such as honeycombs, pitting, spalls, voids or holes with Sto BTS Xtra (up to 1/8 inch [3 mm] thick) or Sto Leveler and Skim Coat (up to 1/4 inch [6 mm] thick).
4. Repair non-structural cracks up to 1/8 inch (3 mm) wide by raking with a sharp tool to remove loose, friable material and blow clean with oil-free compressed air. Apply one component knife grade STPE air barrier joint treatment material over crack at minimum 20 WFT and allow to dry. Consult a structural engineer for structural cracks.

C. Sheathing

1. Remove and replace damaged sheathing.
2. Spot surface defects such as over-driven fasteners, knot holes, or other voids in sheathing with knife grade STPE air barrier joint treatment material.

3.3 INSTALLATION

Air and water-resistive barrier installation over Exterior or Exposure I Wood-Based Sheathing (Plywood and OSB), Glass Mat Faced Gypsum Sheathing in compliance with ASTM C1177, Cementitious sheathing in compliance with ASTM C1325 Type A, and prepared concrete, and concrete masonry (CMU) wall construction

Refer to Sto RapidGuard Air & Water-Resistive Barrier Installation Guide or Sto Guard Conformable Membrane Installation Guide, as applicable

A. Coordinate work with other trades to ensure air barrier continuity with connections at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roofing.

B. Transition Detailing: detail transition areas with appropriate StoGuard Detail Components.

C. Rough opening protection

1. Install rough opening protection with StoGuard rough opening protection .

D. Sheathing joints

1. Install StoGuard joint treatment over sheathing joints.

E. Air and Water-resistive Barrier Coating

Refer to Sto GoldSeal STPE Product Bulletin

1. Apply coating uniformly by airless spray or roller to achieve a VOID and PINHOLE FREE surface on all substrates. Back roll when applying by airless spray on CMU and OSB substrates.
2. Glass Mat Gypsum: apply one coat at minimum 15 mils WFT
3. Plywood: apply one coat at minimum 15 mils WFT
4. Cementitious Sheathing: apply one coat at minimum 15 mils WFT
5. OSB: apply one or two coats to achieve minimum 15 mils WFT. If applied by roller, apply two coats. Touch up any bare spots and raised OSB strands.
6. CMU: apply two or three coats to achieve minimum 15 mils WFT.
7. Concrete: apply one coat at minimum 15 mils WFT

IMPORTANT: the condition of the substrate may dictate thicker application or more coats to achieve a VOID and PINHOLE FREE surface, particularly on substrates like concrete masonry where CMU composition, unit weight (lightweight or normal weight), porosity, joint profile, and other variables may exist. For "rough" CMU wall surfaces level with a Sto portland cement based leveler or fill with StoPrime Block Surfacer HP before applying the coating. Use the mock-up and site tests as the basis for the work. Avoid excess film build-up of wet material to prevent sag, especially on non-porous surfaces and during cold weather. Work away from sun during application.

3.4 FIELD QUALITY CONTROL

A. Owner's qualified testing agency or building envelope consultant shall perform inspections and tests.

B. Inspections: air barrier materials are subject to inspection to verify compliance with requirements.

1. Condition of substrates and substrate preparation.
2. Installation of primary air barrier material and accessory materials over structurally sound substrates and in conformance with architectural design details, contractor's shop drawings, project mock-up, and manufacturer's written installation instructions.
3. Air barrier continuity and connections without gaps and holes at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roofing.

C. Tests: air barrier materials and assembly are subject to tests to verify compliance with performance requirements
1. Qualitative air leakage test: ASTM E1186
2. Quantitative air leakage test: ASTM E779, E783, and E1827
3. Adhesion test: ASTM D4541
4. Qualitative adhesion and compatibility testing: wet sealant manufacturer's field quality control adhesion test

D. Repair non-conforming substrates and air barrier material installation to conform with project requirements.

E. Take corrective action to repair and replace, or reinstall materials, and to seal openings, gaps, or other sources of air leakage to conform with project performance requirements.

3.5 PROTECTION AND CLEANING

A. Protect air barrier materials from damage during construction caused by wind, rain, freezing, continuous high humidity, or prolonged exposure to sun light.

B. Protect air barrier materials from damage from trades, vandals, and water infiltration during construction.

C. Repair damaged materials to meet project specification requirements.

D. Clean spills, stains, soiling from finishes or other construction materials that will be exposed in the completed work with compatible cleaners.

E. Remove all masking materials after work is completed.