Henry®

Henry® Blueskin® VP160 Air Barrier System Installation Manual

Building Envelope Systems®

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1. Introduction

This installation manual includes materials and installation procedures for Henry® Blueskin® VP160 Self-Adhered Water Resistive Air Barrier system. Blueskin® VP160 meets the current IBC and IECC air barrier requirements for a water resistive barrier (WRB) as referenced in ICC ESR-2975. Designed as an air and water barrier for exterior wall construction, Blueskin® VP160 allows for the outward passage of water vapor, avoiding the risk of condensation build-up in exterior wall assemblies.

1.01 Air barrier considerations

Blueskin® VP160 provides protection within the exterior wall assembly against the intrusion of water and uncontrolled air leakage, and allows the exterior wall assembly to dry.

- Penetrations, substrate transitions and connections around window and door flashings are an essential and critical element to manage water, air, vapor and drainage to the exterior. The Blueskin® VP160 system shall be completed to seal air leakage pathways and gaps. Typical air leakage pathways include, but are not limited to, the following:
  - Connections of the wall to roof
  - Connections of the wall to foundation
  - Construction joints
  - Window and door rough openings
  - Pipe penetrations
  - Fastener and bolt penetrations

1.02 Building code standards

This installation manual is based upon the following industry standards, recognized by window manufacturers, installers, code officials, building envelope consultants and design professionals. It is recommended to consult with design professionals to determine compliance with applicable codes and regulations.

- American Architectural Manufacturers Association (AAMA):
  - AAMA 711-13 - Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products
  - AAMA 2400-02 - Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction
- American Society for Testing Materials (ASTM):
  - ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
  - ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
  - ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
  - ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
  - ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
  - ASTM E2178 - Standard Test Method for Air Permeance of Building Materials
  - ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights
  - ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- International Code Council (ICC):
  - ICC-ES AC-38 – Acceptance Criteria for Water Resistive Barriers
- National Fire Protection Association (NFPA)*:
  - NFPA 285: Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

*Refer to the Henry® Tech-Talk Bulletin “NFPA 285 Assemblies” for a list of Henry® NFPA 285-compliant wall assemblies.

2. Blueskin® VP160 air barrier system

Henry® defines a warranted air barrier system as the installation of a primary WRB membrane, such as Blueskin® VP160, and authorized auxiliary components. For this reason, Blueskin® VP160 is designed to be installed in conjunction with Henry® authorized auxiliary products to create a complete air barrier system that manages long-term protection of commercial buildings including uncontrolled air leakage, water penetration and energy loss.

2.01 Warranties

Warranty options	Warranty duration	Warranty description
Product warranty	One (1) year	Products warranted individually
Assembly warranty	Twelve (12) years	Blueskin® VP160 and authorized auxiliary products warranted collectively

2.02 Blueskin® VP160 system components

System components	Product name	Product description
Primary product	**Blueskin® VP160 Self-Adhered Water Resistive Air Barrier**	**Water resistive barrier (WRB)**
Auxiliary materials	Blueskin® SA Self-Adhered Water Resistive Air Barrier	Self-adhered flashing
	Blueskin® SALT Self-Adhered Water Resistive Air Barrier	Low-temperature self-adhered flashing
	Blueskin® Butyl Flash	Self-adhered flashing
	Blueskin® VP160 Self-Adhered Water Resistive Air Barrier	Self-adhered flashing
	Metal Clad® Self-Adhered Water Resistive Air Barrier	Self-adhered flashing
	Air-Bloc® LF Liquid-Applied Flashing	Liquid-applied flashing
	212 All Purpose Crystal Clear Sealant	Termination sealant
	925 BES Sealant	Building envelope sealant
	Aquatac™ Primer	Water based primer
	Blueskin® Adhesive	Solvent-based adhesive
	Blueskin® LVC Adhesive	Low VOC solvent-based adhesive
	Blueskin® Spray Prep Adhesive	Aerosol primer
	Blueskin® LVC Spray Primer	Low VOC solvent-based primer
	Blueskin® TWF Self-Adhered Thru-Wall Flashing	Thru-wall flashing

3. Installation considerations

Consider your installation prior to application: sequencing of materials may be dependent on job progress, product or crew availability. Only products offered through Henry® and installed as referenced in this installation manual qualify for warranty.

3.01 Safety

First and foremost, job site safety is of prime consideration. Coordinate in advance with job site supervision and follow all site-specific and OSHA safety requirements and recommendations. Be aware of your surroundings at all times. If in doubt, stop all work, remove yourself from immediate danger and speak with your job site supervisor or safety official before proceeding.

3.02 Delivery, storage and handling

For product-specific delivery, storage and handling instructions, refer to relevant product Technical Data Sheets (TDS) and Safety Data Sheets (SDS) available at www.henry.com.

- Materials should be delivered to the job site undamaged and in original packaging indicating the manufacturer and product name.
- Store materials in original packaging, in accordance with relevant product TDS, and conform to applicable safety regulatory agencies.
- Keep solvent-based products, such as adhesives and primers, away from open flame or excessive heat.
- Provide adequate ventilation for protection from hazardous fumes.

3.03 Site conditions

Environmental requirements

For product-specific characteristics, limitations and suitable weather conditions, refer to relevant product TDS and material SDS available at www.henry.com.

- Do not install during rain or inclement weather. Do not install materials over frost-covered substrates or surfaces that are wet to touch.
- If applicable, installer should verify compliance with all federal, state and local regulations controlling use of volatile organic compounds (VOCs) on the job site.

3.04 Substrate conditions and preparation

Substrate conditions

Appropriate substrate conditions are critical to obtain proper adhesion; be sure surfaces are ready for product installation and are in accordance with this installation manual.

- Do not install until substrate conditions are in accordance with this installation manual.
- Substrate must be continuous and secure.
- Mechanical fasteners used to secure substrate shall be set flush with substrate and secured into solid backing.
- Concrete and CMU substrates:
  - Fill voids, gaps and spalled areas in substrate to provide an even plane.
  - Strike masonry joints full-flush.
  - Curing compounds or release agents used in concrete construction must be resin based without oil, wax or pigments.
  - New concrete should be cured for a minimum of fourteen (14) days and must be dry prior to primer application. Refer to the primer section of this installation manual for application requirements.
- Not all product installations require the use of primer. However, primer may be used in some cases to enhance adhesion. Refer to the primer section of this installation manual for further information.
- Adjacent or multiple pipe penetrations through sheathing should be sufficiently spaced apart, typically 4 to 6 inches, to allow proper detailing of individual pipes.

Preparation

Appropriate substrate preparation is critical to obtain proper adhesion, so be sure surfaces are ready to accept the product and are in accordance with this installation manual.

- Ensure all required preparatory work is complete prior to applying Blueskin® VP160 system components.
- For optimal adhesion, surfaces must be sound, dry to touch, clean and free of oil, grease, dirt, excess mortar, frost, laitance, loose and flaking particles, and other contaminants.
- Repair or replace products that are not installed to create a continuous and secure substrate.
- Protect adjacent surfaces to prevent spillage and overspray.
- Cap and protect exposed back-up walls against wet weather conditions during and after application of Blueskin® VP160.
- Back side of wall must not be exposed to bulk water after Blueskin® VP160 installation.

3.05 Temperature and exposure limitations

Minimum application temperature (ambient and substrate) and primer requirements of the Blueskin® VP160 system may vary by substrate and system component. Refer to application temperature chart below for further clarification.

- Best practices suggest storing rolled material above 50 °F (10 °C) prior to cold weather installation to enhance adhesion and ease installation. Refer to relevant product TDS for product specific temperature and exposure limitations.
- Good practice calls for covering the Blueskin® VP160 system as soon as possible; not to exceed 180 days.
- Actual temperature limitations may vary by product. Refer to relevant product TDS for product specific information.
- Not all Henry® products are designed for permanent exposure. Refer to relevant product TDS for product specific limitations.

Application temperatures

Minimum temperature installation limitations		
System components	**Product name**	**Minimum application temperature**
Primary product	Blueskin® VP160	20 °F (-7 °C)*
Auxiliary materials	Blueskin® SA	41 °F (5 °C)*
	Blueskin® SALT	10 °F (-12 °C)*
	Blueskin® Butyl Flash	25 °F (-4 °C)*
	Metal Clad®	20 °F (-7 °C)*
	Air-Bloc® LF	20 °F (-7 °C)**
	Blueskin® TWF	25 °F (-7 °C)*

*For installations where the substrate is less than 40 °F (4 °C), an approved Henry® primer is required.
**Air-Bloc® LF primer recommendations are only applicable at raw edges of exposed compressed gypsum.

3.06 Primer

In some cases, a product's ability to adhere to a substrate may become compromised. Adhesion enhancements are required when an assembly is unable to maintain a continuous and secure installation. For this reason, Henry® offers primers where adhesion enhancements are needed as a result of any of the following:

- Irregular surface texture
- Release agents
- Dirt and debris
- Temperatures below 40 °F (4 °C)
- High winds
- Peel adhesion less than minimum requirements in accordance with AAMA 711-13

The following charts indicate available primers per product and substrate requirements.

- Refer to individual product TDS for recommended primer installation rates and cure times prior to installation. Allow primer to properly cure prior to covering. Premature membrane installation may result in failed enhancement of adhesion to the substrate.
- Avoid over-application of primer. Excessive primer may result in additional drying time.
- Primed surfaces must be covered during the same working day. Primed surfaces not covered during the same working day must be re-primed.

Primer table I: primer requirements by substrate

Product	Substrate							
	Plywood	OSB	Concrete	CMU	Masonry	Fiberboard	Metal	Gypsum sheathing
Blueskin® VP160	○	○	●	●	●	○	○	○
Blueskin® SA	●	●	●	●	●	●	○	●
Blueskin® SALT	●	●	●	●	●	●	○	●
Blueskin® Butyl Flash	○	○	●	●	●	○	○	○
Metal Clad®	●	●	●	●	●	●	○	●
Air-Bloc® LF	–	–	–	–	–	–	–	●*
Blueskin® TWF	●	●	●	●	●	●	○	●

*Air-Bloc® LF primer recommendations are only applicable at raw edges of exposed, compressed gypsum.

KEY
- ● Primer required
- ○ Primer required for installations where substrate temperatures are less than 40 °F (4 °C) or for adhesion enhancements as described in section 3.06 Primer of this installation manual.
- – Primer not required

Primer table II: compatible primers per product

Blueskin® VP160 system components							
Primer	Blueskin® VP160	Blueskin® Butyl Flash	Blueskin® TWF	Blueskin® SA	Blueskin® SALT	Metal Clad®	Air-Bloc® LF
Aquatac™ Primer	●	●	●	●	●	●	○
Blueskin® Adhesive	●	●	●	●	●	●	○
Blueskin® LVC Adhesive	●	●	●	●	●	●	○
Blueskin® Spray Prep	●	●	●	●	●	●	●*
Blueskin® LVC Spray Primer	●	●	●	●	●	●	○

*Air-Bloc® LF primer recommendations are only applicable at raw edges of exposed, compressed gypsum.

KEY
- ● Preferred Primer Use
- ○ Sufficient; recommend utilizing preferred primer

Primer table III: recommended primers per membrane to membrane transitions

Product lapping onto membrane installed onto substrate	Membrane installed onto substrate						
	Blueskin® VP160	Blueskin® SA	Blueskin® SALT	Blueskin® Butyl Flash	Metal Clad®	Air-Bloc® LF	Blueskin® TWF
Blueskin® VP160	O	O	O	O	O	O	O
Blueskin® SA	●	–	–	–	–	O	–
Blueskin® SALT	●	–	–	–	–	O	–
Blueskin® Butyl Flash	–	–	–	–	–	O	–
Metal Clad®	●	–	–	–	–	O	–
Air-Bloc® LF	–	–	–	–	–	–	–
Blueskin® TWF	●	–	–	–	–	O	–

*Air-Bloc® LF primer recommendations are only applicable at raw edges of exposed, compressed gypsum.

KEY
- ● Primer required
- O Primer required for installations where substrate temperatures are less than 40 °F (4 °C) or for adhesion enhancements as described in section 3.06 Primer of this installation manual.
- – Primer not required

4. Installation

Blueskin® VP160 is a commercial, self-adhered, vapor permeable, water resistive air barrier consisting of an engineered film surface and a patented, permeable adhesive technology with split-back poly-release film. Blueskin® VP160 is fully adhered to the wall substrate in a shingle fashion without the need for mechanical attachment.

4.01 Planning material installation

Prior to installation of the Blueskin® VP160 system, it is important to understand installation recommendations. This will help ensure system assembly integrity, minimization of waste and proper sequencing.

- Rolled materials, including Blueskin® VP160 and self-adhered flashings, can be pre-cut to more manageable lengths from the main roll for easier handling and installation. This is especially helpful when working solo. It is a good idea to label these to keep materials organized.
- Install multiple courses in shingle fashion to properly shed water and avoid reverse laps.
- Refer to Blueskin® VP160 details located at www.us.henry.com/blueskinvp160/ for recommended flashing and sealant applications. Products and installation requirements may vary.
- 212 Sealant must fully cure prior to subsequent installations.
- Wall assemblies containing a vapor retarder on the interior wall assembly:
  - Extend flashing into rough opening to ensure sufficient membrane for connection with vapor retarder and provide a continuous WRB.

4.02 Self-adhered flashing installation procedures

Primer

- Where required, install primer continuously to ensure complete substrate coverage of anticipated flashing installation area. Refer to primer section of this installation manual for further information.
- Allow primer to cure to a tacky film prior to application of flashing.
- Refer to relevant product TDS for estimated cure times.

Preparation

- Measure and cut flashing to ensure adequate length to achieve continuous coverage of desired installation.
- Avoid scoring material while rolled up so as to not inadvertently damage underlying material.

Installation

- Peel protective film from flashing and align top of membrane verifying proper positioning prior to complete film removal and flashing placement.
- Press flashing firmly into place by applying hand pressure to the middle of the membrane and working the pressure towards the edges, eliminating wrinkles and air bubbles.
- Install flashings in shingle fashion to eliminate reverse laps.
- Where adhesion enhancements are needed, prime laps ensuring complete coverage of anticipated lap installation. Refer to relevant primer TDS for recommended application rates.
- Lap adjoining edges a minimum of two (2) inches.
- Roll flashing and laps with countertop roller to obtain thorough adhesion.
- Seal end of day and permanently exposed reverse laps in accordance with **Recommended sealant per product** table.
- Avoid stretching and overextending material at corners or inside angles.

4.03 Liquid-applied flashing installation procedures

Primer

- Apply a uniform film of Blueskin® Spray Prep to raw edges of gypsum sheathing to completely encapsulate cut edge of gypsum sheathing. Refer to primer section of this installation manual for further information.
- Allow Blueskin® Spray Prep to cure to a tacky film prior to application of liquid-applied flashing.

Installation

- Apply flashing in a serpentine pattern. Minimum width of flashing application may vary. Refer to relevant detail in this installation manual for further information.
- Spread flashing to achieve a monolithic membrane over substrate requiring flashing. Refer to Air-Bloc® LF TDS for installation rates and recommended thickness.
- Allow Air-Bloc® LF to cure prior to subsequent installations.

4.04 Blueskin® VP160 installation procedures

Blueskin® VP160 may be installed in vertical or horizontal courses when installed in accordance with this installation manual.

Primer

- Refer to the **Primer (section 3.06)** section of this installation manual for further clarity.
- Where adhesion enhancements of Blueskin® VP160 to the substrate are desired, install primer continuously to ensure complete substrate coverage of anticipated WRB installation area. Refer to Primer section of this installation manual for further information.
- Allow primer to cure to a tacky film prior to application of WRB.

Preparation

- Measure and cut Blueskin® VP160 to ensure adequate length to achieve continuous coverage of desired installation.

Installation

- Peel protective film from Blueskin® VP160 and align top of membrane, verifying proper positioning prior to complete film removal and membrane placement.
- Press Blueskin® VP160 firmly into place by applying hand pressure to the middle of the membrane and working the pressure towards the edges to smooth out membrane.
- Install Blueskin® VP160 in shingle fashion to eliminate reverse laps.
- Where adhesion enhancements are needed, prime laps ensuring complete coverage of anticipated lap installation. Refer to relevant primer TDS for recommended application rates.

- Lap adjoining horizontal seams a minimum of two (2) inches and vertical seams a minimum of three (3) inches.
- Roll Blueskin® VP160 and laps with countertop roller to obtain thorough adhesion.
- Seal reverse laps of Blueskin® VP160 with 212 Sealant and tool to promote water shedding.

5. Adjacent material attachment and fastener penetrations

It is the responsibility of the installing contractor to properly install and accept fastener installation and associated components that interface with the WRB assembly to maintain continuity. Install fasteners and components to produce a seal around the point of penetration by creating a continuous compression thereby maintaining continuity in the WRB.

Fasteners and components unable to create a seal as described in this installation manual require supplemental sealant to fully encapsulate the hole created at the point of WRB penetration.

Recommended sealant per product

Sealant	Blueskin® VP160	Blueskin® Butyl Flash	Blueskin® TWF	Blueskin® SA	Blueskin® SALT	Metal Clad®	Air-Bloc® LF
212 Sealant	●	●	○	○	○	○	●
925 BES Sealant	–	●	●	●	●	●	●

KEY
- ● Preferred sealant
- ○ Acceptable sealant; may cause discoloration
- – Sufficient; recommend utilizing preferred sealant

5.01 Rigid insulation

Installation of continuous insulation may be installed over Henry® WRB assemblies.

5.02 Fastener penetrations through Blueskin® VP160

Refer to Henry® Tech-Talk Bulletin "Fastener Penetrations Through Air Barrier Membranes" for further information. www.henry.com/wrb-fastener-penetrations.

Self-tapping fasteners
- Fastener head or assembly component must be larger in diameter than the fastener shank.
- Fastener head or assembly component must be installed to provide a continuous compression firmly against WRB creating a gasketing seal without damaging the membrane.
- Do not install fastener components over unsupported areas of the substrate, such as sheathing joints.
- Overdriven fasteners, improperly installed fasteners, defective/broken fasteners or fasteners not properly fastened into the building structure should be removed and the vacated hole sealed with 212 Sealant prior to the installation of the exterior cladding.

Pre-drilled fastening assemblies
- Fastening head or assembly component must be larger in diameter than pre-drilled hole.
- Fastening head or assembly component must be installed to provide a continuous compression firmly against WRB, creating a gasketing seal without damaging the membrane.
- Do not install fastening components over unsupported areas of the substrate, such as sheathing joints.
- Seal improperly drilled and/or vacated holes with 212 Sealant prior to the installation of the exterior cladding.

6. Details

Drawings are available that indicate typical conditions for installing the Blueskin® VP160 assembly. Prior to installation, verify unique requirements of local codes, laws, statutes or regulations that may be applicable for a specific installation. Henry® assumes no liability for the accuracy, completeness or appropriateness of the drawings included in this installation manual for a specific installation or purpose. Confirm project specific conditions with a local licensed design professional in order to assure compliance with all legal requirements. Henry® is not licensed to provide professional engineering or architectural services.

A complete selection of Blueskin® VP160 guide specifications and details are located at www.us.henry.com/blueskinvp160/

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