

SECTION 07 27 13

MODIFIED BITUMINOUS SHEET AIR BARRIERS

This guide specification has been prepared by Polyguard Products Inc., in printed and electronic media, as an aid to specifiers in preparing written construction documents for sheet air barrier membranes. The Polyguard® Airllok® Sheet 400 Series of self-adhered sheet membranes include the following products: Airllok® Sheet 400 NP, Airllok® Sheet 400 HT/NP, Airllok® Sheet UV 400 NP, and Airllok® Sheet UV Ultra 400 NP. The series of Air and Moisture Barriers are 40-mil, laminated, modified-asphalt, self-adhesive, non-permeable sheet membranes, with the Airllok® Sheet 400 NP and Airllok® Sheet 400 HT/NP bonded to a cross-laminated polyethylene sheet, and the Airllok® Sheet UV Ultra 400 NP bonded to a cross-laminated polyethylene sheet with a top protective layer of aluminum. The Airllok® Sheet 400 HT/NP has a high temperature resistance of up to 260 ° F (127° C). The Airllok® Sheet 400 NP is used for temperatures 25 ° F (-4° C) and rising. Airllok® Sheet UV Ultra 400 NP product is used for temperatures 40 ° F (5° C) and rising.

Edit entire master document to suit project requirements. Modify or add items as necessary. Delete items which are not applicable. Words and sentences may contain choices to be made regarding inclusion or exclusion of a particular item or statement. This section may include performance-, proprietary-, and/or descriptive-type specifications. Edit to avoid conflicting requirements. Editor notes to guide the specifier are included between lines of asterisks to assist in choices. Remove these editor notes before final printing of specification.

This guide specification is written around the Construction Specifications Institute (CSI) Section Format standards.

For specification assistance on specific product applications, please contact our offices above or any of our local product representatives throughout the country.

Polyguard Products Inc. reserves the right to modify these guide specifications at any time. Updates for this guide specification will be posted on the manufacturer's web site and/or in printed media as they occur. Manufacturer makes no expressed or implied warranties regarding content, errors, or omissions in the information presented.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of liquid-applied, vapor permeable air barrier.
- C. Materials for:
 - a. All penetrations through the wall assembly.
 - b. Connections to foundation walls.
 - c. Walls, windows, curtain walls, storefronts, louvers or doors.
 - d. Expansion and control joints.
 - e. Masonry ties.
 - f. Wall and roof connections and penetrations.

1.02 RELATED SECTIONS

Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

- A. Section 04 20 00 – Unit Masonry.
- B. Section 07 21 00 – Thermal Insulation.
- C. Section 07 60 00 – Flashing and Sheet Metal.
- D. Section 07 92 00 – Joint Sealants.
- E. Section 08 10 00 – Doors and Frames.
- F. Section 08 50 00 – Windows.
- G. Section 09 20 00 – Plaster and Gypsum Board.

1.03 REFERENCES

- A. AATCC 127-08 – Standard Test Method for Water Resistance: Hydrostatic Pressure.
- B. ASTM D 36 – Standard Test Method for Softening Point of Bitumen.
- C. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
- D. ASTM D 882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- E. ASTM D 903 – Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
- F. ASTM D 1000 – Standard Test Methods for Pressure-Sensitive, Adhesive-Coated Tapes used for Electrical and Electronic Applications.
- G. ASTM D 1876 – Standard Test Method for Peel Resistance of Adhesives
- H. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection – Section 7.9 Nail Sealability.
- I. ASTM D 4073 – Standard Test Method for Tensile-Tear Strength of Bituminous Roofing Membranes.
- J. ASTM D 4541 – Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers.
- K. ASTM E 96 – Standard Test Methods for Water Vapor Transmission of Materials.
- L. ASTM E 154 – Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
- M. ASTM E 283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- N. ASTM E 2178 – Standard Test Method for Air Permeance of Building Materials.
- O. ASTM E 2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
- P. NFPA 285 – Standard Test Method of determining the flammability characteristics of exterior, non-load bearing wall assemblies/panels.

1.04 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit manufacturer's product data and application instructions.
- C. Sustainable Design Submittals:
 - 1. Submit invoices and documentation from manufacturer of the amounts of materials and content for products specified.
 - 2. Submit invoices and documentation showing manufacturing locations and origins of materials for products manufactured and sourced within 500 miles of project site.
- D. LEED Submittal: Documentation of materials, recycled content and location of manufacturer.
 - 1. LEED MR Credit 2 – Construction Waste Management: Provide documentation of reusable materials by weight and volume diverted back to manufacturing process or to appropriate sites.
 - 2. LEED, MR Credit 5 – Regional Materials: Provide documentation for cost of materials or products that have been extracted, harvested, recovered, and also manufactured within 500 miles of project site.
 - a. If only a portion of the materials or products is extracted, harvested, or recovered and manufactured locally, then only provide percentage by weight for credit value.
 - 3. LEED EA Credit 1 - Optimize Energy Performance: Provide documentation verification for materials increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Sheet Membrane must be manufactured by a company with a minimum of ten (10) years of experience in the production and sales of air barrier membrane materials.

- B. Applicator Qualifications: A firm having at least three (3) years of experience in applying these types of specified materials and specifically accepted in writing by the membrane system manufacturer.
- C. Materials: For each type of material required to complete the work of this section, provide primary materials which are the products of a single manufacturer.
- D. Pre-Application Conference: A pre-application conference shall be held to establish procedures and to review conditions, installation procedures and coordination with other related work. Meeting agenda shall include review of special details and flashing.
- E. Manufacturer's Representative: Arrange to have trained representative of the manufacturer on site periodically to review installation procedures.

1.06 MOCK-UPS

- A. Prior to installation of air barrier, apply air barrier as mock-up sample to verify details under shop drawing submittals and to demonstrate tie-ins with adjoining construction, and other termination conditions, as well as qualities of materials and execution.
- B. Construct typical exterior wall panel, 6 feet long by 6 feet wide, incorporating back-up wall, cladding, window frame, door frame, and sill, insulation, flashing; illustrating materials interface and seals.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in a clean dry area in accordance with manufacturer's instructions.
- C. Store at temperatures at or above 40°F (5°C), free from contact with cold or frozen surfaces.
- D. Protect materials during handling and application to prevent damage or contamination.
- E. Store membrane cartons on pallets.
- F. Keep away from sparks and flames.
- G. Completely cover when stored outside. Protect from rain.
- H. Do not store at temperatures above 90°F (32°C) for extended periods.
- I. Avoid use of products which contain tars, solvents, pitches, polysulfide polymers, or PVC materials that may come into contact with the air barrier membrane system.

1.08 PROJECT CONDITIONS

- A. Proceed with installation only when substrate construction and preparation work is complete. If necessary, ensure that subsoil is approved by architect or geotechnical firm.
- B. Warn personnel against breathing of vapors and contact with skin and eyes; wear appropriate protective clothing and respiratory equipment.
- C. Keep flammable products away from spark or flame. Post "No Smoking" signs. Do not allow use of spark-producing equipment during application and until all vapors have dissipated.
- D. Maintain work area in a neat and workmanlike condition. Remove empty cartons and rubbish from the site daily.
- E. Perform work only when existing and forecasted weather conditions are within the limits established by the membrane manufacturer. Do not apply membrane if the temperature is below 40° F (5° C); or to a damp, frost-covered, or otherwise contaminated surface.

1.09 WARRANTY

- A. Manufacturer warrants only that this product is free of defects, since many factors which affect the results obtained from this product are beyond our control; such as weather, workmanship, equipment utilized and prior condition of the substrate. We will replace, at no charge, proven defective product within twelve (12) months of purchase, provided it has been applied in accordance with our written directions for uses we recommended as suitable for this product. Proof of purchase must be provided. A five (5) year material or system warranty may be available upon request. Contact Polyguard Products, Inc. for further details.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Polyguard Products Inc. P.O. Box 755 Ennis, TX 75120-0755; Phone: (214) 515-5000;
E-mail: info@polyguard.com

2.02 MATERIALS

- A. Polyguard® Airllok® Sheet 400 NP Air and Moisture Barrier is a 40-mil, laminated, modified-asphalt, self-adhesive sheet membrane bonded to a cross-laminated polyethylene sheet with the following characteristics:

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
MEMBRANE THICKNESS	ASTM D 1000	40 Mils
COLOR	-	36" width: pre-printed white 6" to 24" widths: black
SERVICE TEMPERATURE	-	-40° F to 160° F (-40° C to 71° C)
AIR PERMEANCE	ASTM E 2178	0.00 CFM/SF (0.0003 L/s*m ²)
STRUCTURAL PERFORMANCE	ASTM E 330	Pass
WATER RESISTANCE	AATCC 127-08	Pass
CRACK BRIDGING	ASTM C 1305	Pass
TENSILE STRENGTH - MEMBRANE	ASTM D 412 Modified Die C	574 PSI (MD) 585 PSI (TD)
TENSILE STRENGTH - MEMBRANE	ASTM D 882 Modified	650 PSI (MD) 868 PSI (TD)
BREAKING STRENGTH	ASTM D 882 Modified	27.4 lbs/in (MD) 36.1 lbs/in (TD)
ELONGATION – ULTIMATE FAILURE OF RUBBERIZED ASPHALT	ASTM D 412 Modified Die C	> 800%
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96 Method A	0.00 Perms (0.19 ng/PA*s*m ²)
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96 Method B	0.03 Perms (0.197 ng/PA*s*m ²)
PUNCTURE RESISTANCE - MEMBRANE	ASTM E 154	53.3 lbf
NAIL SEALABILITY	ASTM D 1970	Pass
LOW TEMPERATURE FLEXIBILITY	ASTM D 1970	Pass
TEAR INITIATION & TEAR PROPAGATION	ASTM D 4073	15.58 lbf
PULL ADHESION - CONCRETE	ASTM D 4541	35.7 PSI
PULL ADHESION - DENSGLASS®	ASTM D 4541	31.7 PSI
PEEL ADHESION - CONCRETE	ASTM D 903	9.51 lbs/in. width
PEEL ADHESION - DENSGLASS®	ASTM D 903	8.39 lbs/in. width
LAP PEEL ADHESION	ASTM D 1876	10.5 lbf/in. width
SYSTEM PROPERTIES	TEST METHOD	TYPICAL VALUE
AIR PERMEANCE OF AN ASSEMBLY	ASTM E 2357	0.012 cfm/sf @ 1.57 psf
EVALUATION OF FIRE PROPAGATION OF BUILDING MATERIALS	NFPA 285	Compliant*

*Related to specific assemblies

1. Width: [6, 9, 12, 18, 24 & 36]-inches.

2. Features and Benefits

a. Strengths

- i. Traditional 40-mil rubberized-asphalt sheet for field membranes and works well as window and through-wall flashings.

b. Limitations

- i. 60-day UV exposure limit.
- ii. Maximum in-service temperature of 160° F (71° C).

- iii. Limited NFPA 285 approved assemblies.
- c. Uses
 - i. Field membrane, window flashing, and through-wall flashing, for assemblies such as brick facades.
- B. Polyguard® Airluk® Sheet 400 HT / NP Air and Moisture Barrier is a 40-mil, laminated, modified-asphalt, self-adhesive sheet membrane bonded to a cross-laminated polyethylene sheet used for high service temperatures and has the following characteristics:

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
MEMBRANE THICKNESS	ASTM D 1000	40 Mils
COLOR	-	36" width: non-printed white
SOFTENING POINT	ASTM D 36	< 260° F
SERVICE TEMPERATURE	-	-40° F TO 160° F (-40° C TO 127° C)
AIR PERMEANCE	ASTM E 2178	0.00 CFM/SF (0.0003 L/s*m ²)
STRUCTURAL PERFORMANCE	ASTM E 330	Pass
WATER RESISTANCE	AATCC 127-08	Pass
CRACK BRIDGING	ASTM C 1305	Pass
TENSILE STRENGTH - MEMBRANE	ASTM D 412 Modified Die C	574 PSI (MD) 585 PSI (TD)
TENSILE STRENGTH - MEMBRANE	ASTM D 882 Modified	821 PSI (MD) 1055 PSI (TD)
BREAKING STRENGTH	ASTM D 882 Modified	28.9 lbs/in (MD) 37.2 lbs/in (TD)
ELONGATION – ULTIMATE FAILURE OF RUBBERIZED ASPHALT	ASTM D 412 Modified Die C	> 800%
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96 Method A	0.00 Perms (0.19 ng/PA*s*m ²)
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96 Method B	0.03 Perms (0.197 ng/PA*s*m ²)
PUNCTURE RESISTANCE - MEMBRANE	ASTM E 154	53.3 lbf
NAIL SEALABILITY	ASTM D 1970	Pass
LOW TEMPERATURE FLEXIBILITY	ASTM D 1970	Pass
TEAR INITIATION & TEAR PROPAGATION	ASTM D 4073	15.58 lbf
PULL ADHESION - CONCRETE	ASTM D 4541	35.7 PSI
PULL ADHESION - DENSGLASS®	ASTM D 4541	31.7 PSI
PEEL ADHESION - CONCRETE	ASTM D 903	9.51 lbs/in. width
PEEL ADHESION - DENSGLASS®	ASTM D 903	8.39 lbs/in. width
LAP PEEL ADHESION	ASTM D 1876	10.5 lb _f /in. width
SYSTEM PROPERTIES	TEST METHOD	TYPICAL VALUE
AIR PERMEANCE OF AN ASSEMBLY	ASTM E 2357	0.012 cfm/sf @ 1.57 psf
EVALUATION OF FIRE PROPAGATION OF BUILDING MATERIALS	NFPA 285	Compliant*

*Related to specific assemblies

1. Width: [36]-inches.
2. Features and Benefits
 - a. Strengths
 - i. Traditional 40-mil rubberized-asphalt sheet for field membranes and works well as window and through-wall flashings.
 - ii. Maximum in-service temperature of 260° F (127° C).
 - b. Limitations
 - i. 60-day UV exposure limit.
 - ii. Limited NFPA 285 approved assemblies.

c. Uses

- i. High-temperature field membrane, window flashing, and through-wall flashing, for assemblies such as metal cladding and coping caps.

- C. Polyguard® Airluk® Sheet UV Ultra 400 NP Air and Moisture Barrier is a 40-mil, laminated, modified asphalt, self-adhesive sheet membrane bonded to a cross-laminated polyethylene sheet with a top protective layer of aluminum with the following characteristics:

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
MEMBRANE THICKNESS	ASTM D 1000	40 Mils
COLOR	-	36" width: non-printed silver 6" to 12" widths: silver
SERVICE TEMPERATURE	-	-40° F to 160° F (-40° C to 71° C)
AIR PERMEANCE - CONCRETE	ASTM E 2178	0.00 CFM/SF (0.00005 L/s*m ²)
STRUCTURAL PERFORMANCE	ASTM E 330	Pass
WATER RESISTANCE	AATCC 127-08	Pass
TENSILE STRENGTH - MEMBRANE	ASTM D 412 Modified Die C	656 PSI (MD) 767 PSI (TD)
TENSILE STRENGTH - MEMBRANE	ASTM D 882 Modified	943 PSI (MD) 992 PSI (TD)
BREAKING STRENGTH	ASTM D 882 Modified	35.9 lbs/in (MD) 43.1 lbs/in (TD)
ELONGATION – ULTIMATE FAILURE OF RUBBERIZED ASPHALT	ASTM D 412 Modified Die C	> 800%
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96 Method B	0.00 Perms
PUNCTURE RESISTANCE - MEMBRANE	ASTM E 154	78.6 lbf
NAIL SEALABILITY	ASTM D 1970	Pass
LOW TEMPERATURE FLEXIBILITY	ASTM D 1970	Pass
PULL ADHESION - CONCRETE	ASTM D 4541	33.8 PSI
PULL ADHESION - DENSGLASS®	ASTM D 4541	34.0 PSI
PEEL ADHESION - CONCRETE	ASTM D 903	9.51 lbs/in. width
PEEL ADHESION - DENSGLASS®	ASTM D 903	9.51 lbs/in. width
LAP PEEL ADHESION	ASTM D 1876	4 lbs/in. width
SYSTEM PROPERTIES	TEST METHOD	TYPICAL VALUE
AIR PERMEANCE OF AN ASSEMBLY	ASTM E 2357	0.012 cfm/sf @ 1.57 psf
EVALUATION OF FIRE PROPAGATION OF BUILDING MATERIALS	NFPA 285	Compliant*

*Related to specific assemblies

1. Width: [6, 9, 12, & 36]-inches.

2. Features and Benefits

a. Strengths

- i. Traditional 40-mil rubberized-asphalt sheet for field membranes and window flashings.
- ii. Receives a wide range of sealants.
- iii. 2-year UV exposure limit.
- iv. Extensive NFPA 285 approved assemblies.

b. Limitations

- i. Maximum in-service temperature of 160° F (71° C).
- ii. Cannot be used for through-wall flashings in a masonry façade.

c. Uses

- i. Field membrane and window flashing for assemblies that will have an extended UV exposure time due to long construction schedules.

2.03 SYSTEM ACCESSORIES

- A. Sealant: Detail Sealant PW™:
Polyguard® Detail Sealant PW™ is a single component, Silyl Terminated Polyether (STPE), 100% solid moisture-cured, elastomeric tube and trowel applied joint filler, sealant and fluid flashing.
- B. Surface Primer Roller-grade Adhesive:
 1. Polyguard® 650 LT Liquid Adhesive: A rubber-based, tacky adhesive which is specifically formulated to provide excellent adhesion.
 2. Polyguard® 650 WB Liquid Adhesive: A water-based, rubber-based adhesive which is specifically formulated to provide excellent adhesion.
 3. Polyguard® California Sealant: A rubber-based sealant which is specifically formulated to provide excellent adhesion. The VOC (Volatile Organic Compound) content meets the South Coast Air Quality Management District regulations established under the February 1, 1991 version of Rule 1168 ©) (2) Adhesion and Sealant Applications. California Sealant is classified as an Architectural Sealant Primer Porous, with VOC of 527 g/L. Current SCAQMD regulations for this type sealant primer are 775 g/L.

PART 3 EXECUTION

3.01 EXAMINATION

- A. All surfaces to be treated must be sound, dry, clean and free of dirt, excess mortar, or other contaminants. Masonry substrate to have tooled mortar joints, and concrete masonry walls or brick with deeply recessed mortar joints require a well-adhered parge coat before application of the Polyguard® Airlok® Sheet 400 Series of self-adhered sheet membranes.
- B. Cutouts and breakouts for support columns and beams are to be filled and made flush with the substrate by others prior to commencing work.
- C. Masonry and new concrete shall have been cured a minimum of seven (7) days and must be dry at time of application.
- D. Design Professional to verify substrate and conditions are acceptable to commence work within this section. Examine surfaces to receive membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Surface must be clean and dry: free of mortar or gypsum smears, ice, frost or excess moisture.
- B. Eliminate sharp protrusions that can puncture sheet membrane.

3.03 APPLICATION

- A. Priming:
 1. Apply primer to a cleaned, dust free surface by roller or spray. Apply Polyguard® 650 LT Liquid Adhesive or California Sealant at a rate of 250-300 square feet per gallon or, or 650 WB Liquid Adhesive at a rate of 350-400 square feet per gallon or apply a low-rise spray adhesive. Coverage rate will vary due to porosity of a substrate. Test substrates for coverage. Allow to dry per manufacturer's directions. Do not thin liquid adhesive/sealant. Membrane can be applied when liquid adhesive becomes tacky.
- B. Membrane Installation:
 1. Install all materials following manufacturer's guide specifications.
 2. Pre-cut the selected Polyguard® Airlok® Sheet 400 Series of self-adhered sheet Air and Moisture Barrier material into easy-to-handle pieces.
 3. Peel the silicone-coated release sheet off, then start applying the membrane with pressure. Use a hand roller to assure that the Polyguard® Airlok® Sheet 400 Series of self-adhered sheet Air and Moisture Barrier material is adhered to primed substrate. System is applied in a shingled method to shed water.
 4. Vertical and reverse laps will be detailed with Polyguard® Detail Sealant PW™.

5. Install the selected Airluk® Sheet 400 Series of self-adhered sheet Air and Moisture Barrier material to primed substrate beginning at the base of the wall.
6. All overlaps of barrier membrane are to be a minimum 2 1/2-inch side lap, a minimum 4-inch end lap.
7. Install the selected Airluk® Sheet 400 NP and Airluk® Sheet UV 400 NP of self-adhered sheet Air and Moisture Barrier material in ambient and substrate surface temperatures of 25° F (-4° C) and rising. Install the selected Airluk® Sheet 400 HT/NP and Airluk® Sheet UV Ultra 400 NP of self-adhered sheet Air and Moisture Barrier material in ambient and substrate surface temperatures of 40° F (5° C) and rising.
8. Polyguard® Detail Sealant PW™ can be used to seal any cuts or edges in the membrane due to tie wires, pipes and other penetrations.

3.04 PROTECTION

1. Polyguard® Airluk® Sheet 400 NP and Airluk® Sheet 400 HT / NP membranes should be covered within sixty (60) days to prevent impaired performance due to prolonged exposure to sunlight.
2. Polyguard® Airluk® Sheet UV 400 NP membrane may be left exposed up to one (1) year and should be covered after one (1) year to prevent impaired performance due to prolonged exposure to sunlight.
3. Polyguard® Airluk® Sheet UV Ultra 400 NP membrane may be left exposed up to two (2) years and should be covered after two (2) years to prevent impaired performance due to prolonged exposure to sunlight.
4. Cover the membrane when applicable in a manner that prevents damage to the material.

END OF SECTION