SECTION 07 30 70

STEEP SLOPE ROOFING UNDERLAYMENTS

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\*\* NOTE TO SPECIFIER \*\* Underlayment Specialties Plus (USP); roof and wall underlayments.  
This section is based on the products of Underlayment Specialties Plus (USP), which is located at:  
805 W. 5th St. Unit # 10A  
Lansdale, PA 19446  
Toll Free Tel: 844-767-4963  
Email: [request info (info@uspunderlayment.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Underlayment+Specialties+Plus+(USP)&coid=52429&rep=&fax=&message=RE:%20Spec%20Question%20(07305usp):%20%20&mf=)  
Web: <https://www.uspunderlayment.com>   
 [ [Click Here](https://www.arcat.com/arcatcos/cos52/arc52429.html) ] for additional information.  
A certified Veteran Owned Small Business, Underlayment Specialties Plus LLC, USP, has made service, response and quality roofing products its top priority. We are not just a division of some large corporation; rather, we pride ourselves in providing the roofing industry our experience, expertise and performance-based water protection materials, including synthetic roofing underlayment.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Roofing Underlayments of the following types:
       1. Premium high temperature roofing underlayment. (RoofTopGuard II)
       2. High temperature roofing underlayment. (RoofTopGuard SA HT)
       3. Standard synthetic roofing underlayment. (Roofers Choice II Synfelt, Petex 15)
       4. Breathable roofing and wall underlayment. (AirOutshield SA 280, AirOutshield Roof)
    2. Wall Underlayment. (AirOutshield Wall, AirOutshield UV, AirOutshield SA 280)
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 06 10 00 - Rough Carpentry.
    2. Section 07 31 13 - Asphalt Shingles.
    3. Section 07 41 13 - Metal Roof Panels.
    4. Section 07 46 16 - Aluminum Siding.
    5. Section 07 62 00 - Sheet Metal Flashing and Trim.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM International (ASTM):
       1. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
       2. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
       3. ASTM D751 - Standard Test Methods for Coated Fabrics.
       4. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
       5. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
       6. ASTM D1938 - Standard Test Method for Tear-Propagation Resistance, Trouser Tear, of Plastic Film and Thin Sheeting by a Single-Tear Method.
       7. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
       8. ASTM D2523 - Standard Practice for Testing Load-Strain Properties of Roofing Membranes.
       9. ASTM D4073 - Standard Test Method for Tensile-Tear Strength of Bituminous Roofing Membranes.
       10. ASTM D4518 - Standard Test Methods for Measuring Static Friction of Coating Surfaces.
       11. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
       12. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
       13. ASTM D4869 - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing.
       14. ASTM D5034 - Standard Test Method for Breaking Strength and Elongation of Textile Fabrics, Grab Test.
       15. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
       16. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
       17. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
       18. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
       19. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
       20. ASTM E2357 - Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies.
    2. Dade County Protocols:
       1. Dade County PA 104 - Test Procedure for Nail-On Underlayments for Use in Discontinuous Roof Systems.
       2. Notice of Acceptance, Miami Dade: NOA 18-0829.08.
    3. Deutsches Institut fUr Normung or German Institute for Standardization (DIN):
       1. DIN EN 13859 - Flexible Sheets for Waterproofing - Definitions and Characteristics of Underlays.
    4. Florida Building Code (FBC):
       1. FBC: Approval Number FL 27703
    5. International Code Council (ICC):
       1. ICC AC 38 - Acceptance Criteria for Water-Resistive Barriers.
       2. ICC/EM AC 48 - Acceptance Criteria for Self-Adhered Roof Underlayments for Use as Ice Barriers.
       3. ICC AC 188 - Acceptance Criteria for Roof Underlayments.
       4. ICC AC 207 - Acceptance Criteria for Polypropylene Roof Underlayments.
       5. ICC-ES: ESR-4384 - Evaluation Report for Underlayment Specialties Plus LLC. RoofTopGuard SA HT.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data:
        1. Manufacturer's data sheets on each product to be used.
        2. Preparation instructions and recommendations.
        3. Storage and handling requirements and recommendations.
        4. Typical installation methods.
     3. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.
  2. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
     2. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
       1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
       2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
       3. Retain mock-up during construction as a standard for comparison with completed work.
       4. Do not alter or remove mock-up until work is completed or removal is authorized.
  1. PRE-INSTALLATION CONFERENCE
     1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
     2. Protect from damage due to weather, excessive temperature, and construction operations.
  3. PROJECT CONDITIONS
     1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
  4. WARRANTY
     1. Manufacturer's Warranty: Provide manufacturer's standard limited warranty.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Underlayment Specialties Plus (USP), which is located at: 805 W. 5th St. Unit # 10A; Lansdale, PA 19446; Toll Free Tel: 844-767-4963; Email: [request info (info@uspunderlayment.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Underlayment+Specialties+Plus+(USP)&coid=52429&rep=&fax=&message=RE:%20Spec%20Question%20(07305usp):%20%20&mf=); Web: <https://www.uspunderlayment.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* RoofTopGuard II Premium synthetic roofing underlayment was carefully engineered to be the safest, best-performing synthetic roofing underlayment in the world, making it the premium brand synthetic roofing underlayment available on the market today. RoofTopGuard II Premium synthetic roofing underlayment can be used under all roof claddings and is a superior alternate to #15 and #30 paper felt. Delete Article if not required.

* 1. PREMIUM HIGH TEMPERATURE ROOFING UNDERLAYMENT
     1. Performance Requirements:
        1. Approvals:
           1. ICC-ES ESR 2928. For Underlayment Specialties Plus LLC.
           2. FBC: Approval Number FL12145.
           3. ICBO: ITS 484-1932 and 484-2143
           4. CAN/CSA: A220.1
        2. Dimensional Stability, tested at 180 degrees F (82 degrees C) for six hours per Dade County PA 104: No tears, cracks, shrinking, or wrinkling.
        3. Tear Resistance, per ASTM D1938: Minimum average result of 13.18 pounds (5.978 kg).
        4. Breaking Strength, New, per ASTM D2523: Minimum average result of 86.82 pounds (39.38 kg).
        5. Elongation, New, per ASTM D2523: Minimum average result of 27 percent.
        6. Water Absorption, per ASTM D570: Maximum average result of 2.4 percent.
        7. Cold Flexibility, per ASTM 1970: No cracking.
        8. Ultraviolet Resistance, per ICC/EM AC 48: No peeling, chipping, cracking, flaking, pitting, or other damage.
        9. Accelerated Aging, per Dade County PA 104: No visible damage, passes breaking strength and elongation tests.
        10. Cyclic Elongation, per ICC/EM AC 48: No cracking.
        11. Water Vapor Transmission, per ASTM E96: Maximum average result of 0.0012 oz/sq.ft. (0.38 g/sq.m.)
        12. Puncture Resistance, per Dade County PA 104: No puncture.
        13. Slippage Resistance, per Dade County PA 104: No tears, slippage, or pulling away from fasteners.
        14. Static Friction, per ASTM D4518: Performs similarly to 30 lb felt.
        15. Water Penetration, per ASTM E331: No leakage found around fasteners when secured per instructions.
        16. Fire Rating, per ASTM E108 and ICC AC 207: Class A.
     2. Basis of Design: RoofTopGuard II; as supplied by Underlayment Specialties Plus LLC.
        1. Description: High-strength performance roofing underlayment used on steep-sloped roofs.
        2. Composition: Woven HDPE with a polyethylene film laminated with black LDPE on one side and, a nonwoven polypropylene layer laminated with LDPE on the other side.
        3. Roll Width: 60 inches (1524 mm).
        4. Roll Length: 200 feet (60,960 mm).
        5. Color: Gray.
     3. Accessories:
        1. Sealant: Asbestos free plastic roofing cement compliant with ASTM D4586, Type I.
        2. Fasteners: Plastic or steel cap roofing nails with minimum 1 inch (25 mm) caps.

\*\* NOTE TO SPECIFIER \*\* RoofTopGuard SA is a High-Temperature Self-Adhered Ice & Water Protector that raises the performance bar for all Ice & Water Shields. RoofTopGuard SA is a synthetic based Ice & Water Protector that incorporates the basic structure of the best performing Synthetic Underlayment in the market; RoofTopGuard II. By engineering RoofTopGuard II with a custom formulation of adhesive, RoofTopGuard SA Ice & Water Protector introduces to the building and roofing market the superior solution for a waterproof membrane. Delete Article if not required.

* 1. HIGH TEMPERATURE ROOFING UNDERLAYMENT
     1. Performance Requirements:
        1. Certifications:
           1. Evaluation Report: ICC-ES: ESR-4384. For Underlayment Specialties Plus LLC.
           2. Notice of Acceptance, Miami Dade: NOA 18-0829.08.
           3. FBC: Approval Number FL 27703.
        2. Tensile Strength, per ASTM D1970 and ASTM D2523: 71 lbf/in (12 N/mm).
        3. Pliability, per ICC/EM AC 48: Pass.
        4. Water Ponding, per ICC/EM AC 48: Pass.
        5. Cycling and Elongation, per ICC/EM AC 48: Pass.
        6. UV Exposure, per ICC/EM AC 48: Pass.
        7. Adhesion to Plywood at 40 degrees F (4.4 degrees C), per ASTM D903: 95 lbf/ft (1.4 N/mm).
        8. Adhesion to Plywood at 75 degrees F (24 degrees C), per ASTM D903: 35 lbf/ft (0.51 N/mm).
        9. Thermal Stability, per ASTM D1970: Pass.
        10. Tear Resistance, per ASTM D4073: 128 lbf (569 N).
        11. Sealability around Nail, per ASTM D1970: Pass.
        12. Waterproof Integrity after low Temp Flex, per ASTM D1970: Pass.
        13. Waterproof Integrity of Seam, per ASTM D1970: Pass.
        14. Water Vapor Transmission, per ASTM E96: 0 perm.
        15. Slip Resistance, per ASTM D1970: Greater than felt.
     2. Basis of Design: RoofTopGuard SA HT; as manufactured and supplied by Underlayment Specialties Plus LLC.
        1. Description: Synthetic based, high-temperature, self-adhered ice and water roof underlayment used in steep slope applications.
        2. Composition: Polyethylene and polypropylene.
        3. Thickness: 0.026 inches (0.66 mm).
        4. Roll Width: 59 inches (1499 mm).
        5. Minimum Installation Temperature: 15 degrees F (Minus 9.4 degrees C).
        6. Service Temperature: Minus 20 to 260 degrees F (Minus 29 to 127 degrees C).

\*\* NOTE TO SPECIFIER \*\* Delete Article if not required.

* 1. STANDARD SYNTHETIC ROOFING UNDERLAYMENT

\*\* NOTE TO SPECIFIER \*\* Roofers Choice II Synfelt is the synthetic roofing underlayment engineered for safety and value that makes no compromises in construction and performance. The best value in the synthetic roofing underlayment market, Roofers Choice II Synfelt synthetic roofing underlayment is conceived and engineered by industry experts who developed the safest and highest-performing products in the industry. Delete if not required.

* + 1. Basis of Design: Roofers Choice II Synfelt; as manufactured and supplied by Underlayment Specialties Plus LLC.
       1. Performance Requirements:
          1. Meets ASTM E108, Class A fire rating.
       2. Description: High strength and high temperature performance roofing underlayment used on steep sloped roofs.
       3. Composition: Woven HDPE fabric extrusion coated with a high coefficient of friction polyolefin blended with carbon black providing a skid-resistant finish on one side, laminated to a non-woven polypropylene fabric surface with LDPE on the other side.
       4. Roll Width: 60 inches (1524 mm).
       5. Roll Length: 200 feet (60,960 mm).
       6. Color: Gray.

\*\* NOTE TO SPECIFIER \*\* Petex-15 is a Contractor Grade Synthetic Underlayment. Petex-15 is a direct replacement for #15 conventional roofing felt that provides greater installation efficiency and is tear resistant. Unlike other #15 conventional felt replacements that are manufactured in China or India, Petex-15 is proudly Made In the USA. Petex-15 Contractor Grade Synthetic Underlayment provides the best solution for shingle applications that require an highly efficient application and a job that is price paramount. Delete if not required.

* + 1. Basis of Design: Petex 15; as manufactured and supplied by Underlayment Specialties Plus LLC.
       1. Performance Requirements:
          1. Tensile Strength, per ASTM D751: Minimum 78 lb (35 kg).
          2. Elongation, per ASTM D751: Minimum 14 percent.
          3. Tear Strength, Trapezoidal, per ASTM D4533: Minimum 26 lb (12 kg).
          4. Liquid Water Resistance, per ASTM D4869: Pass.
          5. UV Exposure, per ICC AC 188: Pass.
          6. Pliability, per ASTM D226: Pass.
       2. Description: High strength performance roofing underlayment used on steep sloped roofs.
       3. Composition: Woven HDPE fabric extrusion coated with a high coefficient of friction polyolefin blended with carbon black providing a skid-resistant finish on one side, laminated to a non-woven polypropylene fabric surface with LDPE on the other side.
       4. Roll Width: 60 inches (1524 mm).
       5. Roll Length: 200 feet (60,960 mm).
       6. Thickness: 0.007 inches (0.18 mm).
       7. Service Temperature: Minus 20 to 180 degrees F (Minus 29 to 82 degrees C).

\*\* NOTE TO SPECIFIER \*\* Delete Article if not required.

* 1. BREATHABLE ROOFING UNDERLAYMENT

\*\* NOTE TO SPECIFIER \*\* AirOutshield SA 280 is a fully self-adhered, triple layer polypropylene micro-porous film laminate with a proprietary full coverage vapor permeable adhesive. AirOutshield SA 280 can be installed on walls and sloped roofs behind the primary water shedding surface, and functions as the secondary drainage plane and air barrier. Delete if not required.

* + 1. Basis of Design: AirOutshield SA 280; as supplied by Underlayment Specialties Plus LLC.
       1. Performance Requirements:
          1. Water Vapor Permeance, per ASTM E96 - A: 12.6 perms.
          2. Air Leakage Resistance, per ASTM E2357: Less than 0.05.
          3. Flame Spread Index, per ASTM E84: 5.
          4. Smoke Developed Index, per ASTM E84: 5.
       2. Description: Fully self-adhered, micro-porous film laminate.
       3. Composition: Triple layer, spun bonded polypropylene.
       4. Roll Width: 57 inches (1448 mm).
       5. Thickness: 0.024 inch (0.60 mm).
       6. Color: Black.
       7. Minimum Installation Temperature: 20 degrees F (Minus 6.7 degrees C).
       8. Service Temperature: Minus 40 to 212 degrees F (Minus 40 to 100 degrees C).
       9. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

* + - * 1. Detail Tape: As recommended by Manufacturer.
        2. Eave Protection: Self adhered membrane.
        3. Eave Protection: High Temperature resistant underlayment.
        4. Fasteners: As recommended by Manufacturer.
        5. Ventilation Mat: Non-woven nylon with maximum 20 percent contact area or battens.

\*\* NOTE TO SPECIFIER \*\* AirOutshield Roof is a breathable roofing underlayment that is composed of a multi-layer, spun bonded polypropylene. AirOutshield Roof is used as a secondary drainage plane under the roofing systems including metal, copper, zinc, slate, cedar, clay tile and other systems that require an underlayment. Delete if not required.

* + 1. Basis of Design: AirOutshield Roof; as supplied by Underlayment Specialties Plus LLC.
       1. Performance Requirements:
          1. Water Vapor Transmission, per ASTM E96: 119 perms.
          2. Liquid Water Transmission, per ASTM D4869: Pass.
          3. Pliability, per ASTM D226: Pass.
          4. Accelerated Aging, per ICC AC 48: Pass.
          5. UV Exposure, per ICC AC 48: Pass.
       2. Description: Breathable roofing underlayment.
       3. Composition: Multi-layer, spun bonded polypropylene.
       4. Roll Width: 57 inches (1448 mm).
       5. Thickness: 0.024 inch (0.60 mm).
       6. Color: Black.
       7. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

* + - * 1. Detail Tape: As recommended by Manufacturer.
        2. Eave Protection: Self adhered membrane.
        3. Eave Protection: High Temperature resistant underlayment.
        4. Fasteners: As recommended by Manufacturer.
        5. Ventilation Mat: Non-woven nylon with maximum 20 percent contact area.

\*\* NOTE TO SPECIFIER \*\* Delete Article if not required.

* 1. WALL UNDERLAYMENT

\*\* NOTE TO SPECIFIER \*\* AirOutshield Wall is a breathable underlayment for Rain Screen Wall Systems. AirOutshield Wall is a triple layer, spun bonded polypropylene, water resistant breathable underlayment that is used as secondary drainage plane. Used as a Weather Resistive Barrier (WRB) behind rainscreen wall cladding systems including siding (vinyl, wood, fiber cement, metal and brick) and shingles (metal, copper, zinc, and cedar). Installed in open joint cladding systems. Delete if not required.

* + 1. Basis of Design: AirOutshield Wall; as supplied by Underlayment Specialties Plus LLC.
       1. Performance Requirements:
          1. Water Vapor Permeance, per ASTM E96 - A: 156.1 perms.
          2. Tensile Strength, per ASTM D882: 27.4 lbf/in (4.79 N/mm).
          3. Breaking Force, MD, per ASTM D5034: 77.6 lbf (345 N).
          4. Flame Spread Index, per ASTM E84: 20.
          5. Smoke Developed Index, per ASTM E84: 185.
          6. Low Temperature Flexibility, per ICC AC 38: Pass.
          7. UV Exposure, per ICC AC 38: Pass.
          8. Accelerated Aging, per ICC AC 38: Pass.
          9. Water Ponding, per ICC AC 38: Pass.
          10. Air Permeance, per ICC AC 38: No air leakage at 75 Pa.
       2. Description: Breathable underlayment for rain screen wall systems, used as a secondary drainage plane.
       3. Composition: Triple layer, spun bonded polypropylene.
       4. Thickness: 0.023 inch (0.58 mm).
       5. Color:
          1. Top: Orange.
          2. Bottom: White.
       6. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

* + - * 1. Tapes: As recommended by Manufacturer.
        2. Detail Membrane Flashing: SRP AirOutshield SA 280 flashing.
        3. Sealant/Adhesive: As recommended by Manufacturer.
        4. Fasteners: As recommended by Manufacturer.
        5. Ventilation Mat: Non-woven nylon with maximum 20 percent contact area.

\*\* NOTE TO SPECIFIER \*\* A double layer, coated polyester, water and ultra violet light (UV) resistant, breathable underlayment for open joint rain screen wall systems. As a secondary drainage plane, sheathing membrane or air barrier behind rain screen wall cladding systems including siding (wood, fiber cement, metal, brick) and shingles (metal, copper, zinc, cedar). Especially suited for use in cladding systems where the membrane will be visible and resistance to long term UV exposure is needed. Delete if not required.

* + 1. Basis of Design: AirOutshield UV; as supplied by Underlayment Specialties Plus LLC.
       1. Performance Requirements:
          1. Water Vapor Permeance, per ASTM E96 - A: 26.9 perms.
          2. Fire Classification, per ASTM E84: Class A.
          3. Air Permeance, per ASTM E2178: 0.0001 cfm/sq.ft. (0.0005 L/s.sq.m.) at 75 Pa.
          4. UV Resistance, per DIN EN-13859: 5000 hours exposure with a reduction in tensile of less than 5 percent.
       2. Description: Water and UV resistant, breathable underlayment for open joint rain screen wall systems.
       3. Composition: Double layer, coated polyester.
       4. Roll Width: 59 inches (1.5 m).
       5. Roll Length: 164 feet (50 m).
       6. Thickness: 0.023 inch (0.58 mm).
       7. Color: Black.
       8. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

* + - * 1. Tapes: As recommended by Manufacturer.
        2. Self-Adhered Membrane: Regular temperatures.
        3. Self-Adhered Membrane: High temperature.
        4. Fasteners: As recommended by Manufacturer.
        5. Ventilation Mat: Non-woven nylon with maximum 20 percent contact area.

\*\* NOTE TO SPECIFIER \*\* AirOutshield SA 280 is a fully self-adhered, triple layer polypropylene micro-porous film laminate with a proprietary full coverage vapor permeable adhesive. AirOutshield SA 280 can be installed on walls and sloped roofs behind the primary water shedding surface, and functions as the secondary drainage plane and air barrier. Delete if not required.

* + 1. Basis of Design: AirOutshield SA 280; as supplied by Underlayment Specialties Plus LLC.
       1. Performance Requirements:
          1. Water Vapor Permeance, per ASTM E96 - A: 12.6 perms.
          2. Air Leakage Resistance, per ASTM E2357: Less than 0.05.
          3. Flame Spread Index, per ASTM E84: 5.
          4. Smoke Developed Index, per ASTM E84: 5.
       2. Description: Fully self-adhered, micro-porous film laminate.
       3. Composition: Triple layer, spun bonded polypropylene.
       4. Roll Width: 57 inches (1448 mm).
       5. Thickness: 0.024 inch (0.60 mm).
       6. Color: Black.
       7. Minimum Installation Temperature: 20 degrees F (Minus 6.7 degrees C).
       8. Service Temperature: Minus 40 to 212 degrees F (Minus 40 to 100 degrees C).
       9. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete options not required.

* + - * 1. Detail Tape: As recommended by Manufacturer.
        2. Eave Protection: Self adhered membrane.
        3. Eave Protection: High Temperature resistant underlayment.
        4. Fasteners: As recommended by Manufacturer.
        5. Ventilation Mat: Non-woven nylon with maximum 20 percent contact area or battens.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly constructed and prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
      3. Roof Underlayments: Verify that proper roof slope exists.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
         1. Prepare penetrations as recommended by Manufacturer.
         2. Treat seams and joints as recommended by Manufacturer.
         3. Install flashings and detail membranes as recommended by Manufacturer.
   4. FIELD QUALITY CONTROL
      1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.
   5. CLEANING AND PROTECTION
      1. Clean products in accordance with the manufacturer's recommendations.
      2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION