**NEMO|etc.**
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**ENGINEER** **TEST** **CONSULT**

# P.E. EVALUATION REPORT (PEER)

**Tarco Roofing**
One Information Way, Suite 225
Little Rock, AR 72202
**(254) 913-7750**

**PEER-TAR-001.A.R23**
**FL10450-R22 (NON-HVHZ)**
Date of Issuance: 07/11/2008
**Revision 23: 04/09/2025**

**SCOPE:**
This P.E. Evaluation Report (henceforth 'PEER') is issued under **F.A.C. Rule 61G20-3** and the applicable rules and regulations governing the use of construction materials in the State of Florida. The documentation submitted has been reviewed by Robert Nieminen, P.E. for use of the product under the Florida Building Code. The products described herein have been evaluated for compliance with the **8th Edition (2023) Florida Building Code** sections noted herein.

**DESCRIPTION: Tarco Roof Underlayments (NON-HVHZ)**

**LABELING:** Labeling shall be in accordance with the requirements of the Accredited Quality Assurance Agency noted herein and **FBC 1507.1.1**.

**CONTINUED COMPLIANCE:** This PEER is valid until such time as the named product(s) changes, the referenced Quality Assurance or production facility location(s) changes, or Code provisions that relate to the product(s) change. Acceptance of our PEERs by the named client constitutes agreement to notify NEMO ETC, LLC of any changes to the product(s), the Quality Assurance or the production facility location(s). NEMO ETC, LLC requires a complete review of its PEER relative to updated Code requirements with each Code Cycle.

**ADVERTISEMENT:** "NEMO P.E. Evaluated" may be displayed in advertising literature. If any portion of the PEER is displayed, then it shall be in its entirety.

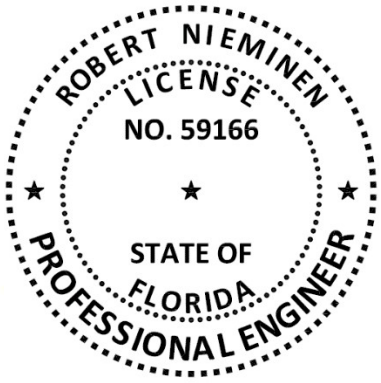
**INSPECTION:** Upon request, a copy of this entire PEER shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This PEER consists of pages 1 through 17.

**Prepared by:**

Digitally signed by Robert Nieminen
Date: 2025.04.09 '11:03:15 -04'00

This item has been digitally signed and sealed by Robert Nieminen, P.E.
Printed copies of this document are not considered signed and sealed, and the signature must be verified on any electronic copies.
Robert Nieminen, Florida P.E. 59166, FBC ANE1983
NEMO ETC, LLC, Florida CA #32455




**CERTIFICATION OF INDEPENDENCE:**
1. NEMO ETC, LLC does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products it evaluates.
2. NEMO ETC, LLC is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
3. Robert Nieminen, P.E. does not have nor will acquire, a financial interest in any company manufacturing or distributing products for which the PEERs are being issued.
4. Robert Nieminen, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.
5. This is a building code evaluation. Neither NEMO ETC, LLC nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this PEER, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

**ROOFING COMPONENT EVALUATION:**

## 1. SCOPE:

**Product Category:** Roofing
**Sub-Category:** Underlayment
**Product Approval Method:** Method 1, Option D – Codified Material, Evaluation by Engineer
**Compliance Statement:** **Tarco Roof Underlayments**, as produced by **Tarco Roofing**, have demonstrated compliance with the following sections of the **8th Edition (2023) Florida Building Code** through testing in accordance with the following Standards. Compliance is subject to the Installation Requirements and Limitations of Use set forth herein.

## 2. STANDARDS:

| SECTION | PROPERTY | STANDARD |
|---|---|---|
| 1504.2.1.4 | Wind resistance | FM 4474, UL 1897 |
| 1507.1.1 / R905.1.1 | Material standard | ASTM D226, D8257 |
| 1507.1.1, 1507.2.9.2 / R905.1.1, R905.2.8.2 | Material standard | ASTM D1970 |
| 1507.2.9.2 / R905.2.8.2 | Material standard | ASTM D3909, D6380 |
| 1507.3.3 / R905.3.3 | Material standard | FRSA/TRI Manual |
| 1515.2.4 | Impact Resistance | ASTM D3746 |
| TAS 110 | Accelerated Weathering | ASTM D4798 |
| TAS 110 | Material standard | TAS 103 |

## 3. REFERENCES:

| ENTITY | EXAMINATION | REFERENCE | DATE |
|---|---|---|---|
| ERD (TST6049) | FM 4474 | T6460.06.07-R2 | 06/26/07 |
| ERD (TST6049) | FM 4474 | T37610.07.11 | 06/29/11 |
| ERD (TST6049) | FM 4474 | TAR-SC5670.03.16 | 03/21/16 |
| ERD (TST6049) | ASTM D226 | TAR-SC13965.02.17-R1 | 02/27/17 |
| NEMO (TST6049) | FRSA/TRI | TAR-SC8020.06.18 | 06/05/18 |
| NEMO (TST6049) | ASTM D4798 | 4j-TAR-19-SSUDL.01.A | 08/27/19 |
| NEMO (TST6049) | ASTM D1970 | 4j-TAR-20-SSUDL-02.A | 03/29/21 |
| NEMO (TST6049) | ASTM D1623/D4798 | 4j-TAR-20-SSUDL-03.A | 05/04/21 |
| NEMO (TST6049) | ASTM D3909 | 4j-TAR-21-SSUDL-01.A | 10/01/21 |
| NEMO (TST6049) | TAS 103 | 4j-TAR-21-SSUDL-01.C | 11/05/21 |
| NEMO (TST6049) | ASTM D226, Type II | 4j-TAR-21-SSUDL-01.B | 12/21/21 |
| NEMO (TST6049) | TA/LTA, TAS 103 | 4j-TAR-21-SSUDL-03.A | 06/02/22 |
| NEMO (TST6049) | ASTM D6380 | 4j-TAR-22-SSUDL-01.A | 07/25/22 |
| NEMO (TST6049) | ASTM D4798/D1623 | 4j-TAR-22-SSUDL-03.A | 11/15/22 |
| NEMO (TST6049) | ASTM D1970 | 4j-TAR-21-SSUDL-04.A | 10/14/22 |
| NEMO (TST6049) | FM 4474 | 4a-TAR-22-LSWUS-01.A | 12/12/22 |
| NEMO (TST6049) | TA/LTA, TAS 103 | 4j-TAR-23-SSUDL-01 | 01/25/23 |
| NEMO (TST6049) | TAS 103 (Tile Slip) | 4j-TAR-23-SSUDL-03.A | 03/13/23 |
| NEMO (TST6049) | UL1897 | 4a-TAR-23-LSWUS-01.A | 05/10/23 |

| ENTITY | EXAMINATION | REFERENCE | DATE |
|---|---|---|---|
| NEMO (TST6049) | ASTM D1970 | 4j-TAR-21-SSUDL-04.B | 05/24/23 |
| NEMO (TST6049) | ASTM D8257 | 4j-TAR-23-SSUDL-02.A | 06/07/23 |
| NEMO (TST6049) | TA/LTA, TAS 103 | 4j-TAR-23-SSUDL-01.A | 06/14/23 |
| NEMO (TST6049) | TA/LTA, TAS 103 | 4j-TAR-23-SSUDL-04.A | 10/06/23 |
| NEMO (TST6049) | Extend Weathering | 4j-TAR-23-SSUDL-05.A | 11/16/23 |
| NEMO (TST6049) | ASTM D4798 | 4j-TAR-23-SSUDL-10.A | 11/27/23 |
| NEMO (TST6049) | ASTM D1970 | 4j-TAR-23-SSUDL-07.A | 11/28/23 |
| NEMO (TST6049) | UL1897 | 4a-TAR-23-LSWUS-03.A | 12/20/23 |
| NEMO (TST6049) | UL1897 | 4a-TAR-23-LSWUS-02.A | 01/03/24 |
| NEMO (TST6049) | UL1897 | 4a-TAR-LSWUS-001.A | 05/14/24 |
| NEMO (TST6049) | UL1897 | 4a-TAR-LSWUS-002.A | 05/29/24 |
| NEMO (TST6049) | UL1897 | 4a-TAR-LSWUS-004.A | 06/18/24 |
| NEMO (TST6049) | UL1897 | 4a-TAR-LSWUS-006.A | 07/29/24 |
| NEMO (TST6049) | UL1897 | 4a-TAR-LSWUS-008.A.R1 | 12/09/24 |
| NEMO (TST6049) | UL1897 | 4a-TAR-LSWUS-010.A | 04/09/25 |
| NEMO | Traceability | FBC CLA | 01/20/20 |
| NEMO | Traceability | FBC CLA | 03/22/21 |
| NEMO | Traceability | FBC CLA | 02/14/25 |
| UL (QUA9625) | QA | Service Confirm | 04/03/25 |
| UL (QUA9625) | QA | Florida BCIS | Current |

## 4. PRODUCT DESCRIPTION:

**TABLE 1: EVALUATED UNDERLAYMENTS**

| PRODUCT | MATERIAL STANDARD | PLANT(S) | DESCRIPTION |
|---|---|---|---|
| #30 ASTM Specification Felt | ASTM D226, Type II | Greencastle, PA | asphalt-saturated organic felt |
| LeakBarrier® EasyLay® | ASTM D226, Type II | Belton, TX | asphalt-coated polyester fabric roof underlayment |
| LeakBarrier® EasyLay® UDL 15 | ASTM D8257 | Gujarat, India | woven-polymeric scrim with a textured fabric on the top surface |
| SRS Distribution TopShield® EL30 | ASTM D8257 | Gujarat, India | woven-polymeric scrim with a textured fabric on the top surface |
| LeakBarrier® EasyLay® UDL Basic | ASTM D8257 | Gujarat, India | woven-polymeric scrim with a textured fabric on the top surface |
| LeakBarrier® FS500$^{HT}$ | ASTM D1970 | Belton, TX | self-adhering, film-surfaced, SBS modified roof underlayment |
| LeakBarrier® MS300 Ice and Water Armor | ASTM D1970 | Belton, TX<br>Greencastle, PA | self-adhering, glass mat reinforced, mineral surfaced, SBS modified roof underlayment |
| SRS Distribution TopShield Ice & Water G300 | ASTM D1970 | Belton, TX<br>Greencastle, PA | self-adhering, glass mat reinforced, mineral surfaced, SBS modified roof underlayment |
| LeakBarrier® PS200$^{HT}$ Ice and Water Armor | ASTM D1970, FRSA/TRI and TAS 103 | Greencastle, PA | self-adhering, glass mat reinforced, fabric surfaced, SBS modified roof underlayment |
| LeakBarrier® PS200$^{MU}$ Ice and Water Armor | ASTM D1970 | Greencastle, PA | self-adhering, glass mat reinforced, smooth poly film surfaced, SBS modified roof underlayment |
| LeakBarrier® NR600 Ultra Ice and Water Armor | FRSA/TRI and TAS 103 | Greencastle, PA | self-adhering, polyester-fabric surfaced, SBS modified roof underlayment |
| SRS Distribution TopShield TS600 Ice & Water | FRSA/TRI and TAS 103 | Greencastle, PA | self-adhering, polyester-fabric surfaced, SBS modified roof underlayment |
| LeakBarrier® Self-Adhering Quick Roll Shingle Starter | ASTM D1970 | Belton, TX<br>Greencastle, PA | self-adhering, glass mat reinforced, mineral surfaced, SBS modified shingle starter roll |
| Fiberglass Mineral Surfaced Roll Roofing | ASTM D3909 | Greencastle, PA | glass-fiber-reinforced, asphalt-coated, granule surfaced underlayment used as a valley liner |
| ASTM Organic Mineral Surface Tile Underlayment | ASTM D6380, Class M | Greencastle, PA | asphalt-saturated organic roll roofing sheet |

## 5. LIMITATIONS:

5.1 This is a building code evaluation. Neither NEMO ETC, LLC nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this PEER, or previous versions thereof, is/was used for permitting or design guidance. PEERs are not to be construed as representing any attributes not specifically listed, nor are PEERs to be construed as an endorsement of the subject, or a recommendation for its use. There is no warranty by NEMO ETC, LLC or Robert Nieminen, P.E., express or implied, as to any finding or other matter in this PEER, or as to any product covered by the PEER.

5.2 This PEER is not for use in FBC High Velocity Hurricane Zone jurisdictions, as defined in FBC Chapter 2 (Broward and Miami-Dade Counties).

5.3 This PEER pertains to above-deck roof components. Roof decks and structural members shall be in accordance with FBC requirements to the satisfaction of the Authority Having Jurisdiction.

5.4 This PEER does not include evaluation of fire classification. Refer to **FBC 1505** for requirements and limitations regarding roof assembly fire classification. Refer to **FBC 2603** for requirements and limitations concerning the use of foam plastic insulation.

5.5 **Tarco Roof Underlayments** may be used with any prepared roof cover where the product is specifically referenced within FBC approval documents. If not listed, a request may be made to the Authority Having Jurisdiction for approval based on this PEER combined with supporting data for the prepared roof covering.

5.6 **Allowable Roof Covers:**

**TABLE 2: ROOF COVER OPTIONS**

| *FBC NON-HVHZ:* | *1507.2* | *1507.3* | | *1507.4 & 1507.5* | *1507.7* | *1507.8 & 1507.9* |
|---|---|---|---|---|---|---|
| UNDERLAYMENT | ASPHALT SHINGLES | CLAY AND CONCRETE TILE | | METAL PANELS OR SHINGLES | SLATE OR SLATE-TYPE SHINGLES | WOOD SHINGLES OR SHAKES |
| | | MECHANICAL ATTACH | ADHESIVE- OR MORTAR-SET | | | |
| #30 ASTM Specification Felt | Yes | Yes (Base Sheet per Table 4B) | Yes (Base Sheet per Table 4B) | Yes | Yes | Yes |
| LeakBarrier EasyLay | Yes | Yes (Base Sheet per Table 4B) | Yes (Base Sheet per Table 4B) | No | Yes | No |
| LeakBarrier EasyLay UDL 15 or LeakBarrier EasyLay UDL Basic | Yes | Yes (Base Sheet per Table 4B) | Yes (Base Sheet per Table 4B) | Yes | Yes | No |
| TopShield EL30 | Yes | Yes (Base Sheet per Table 4B) | Yes (Base Sheet per Table 4B) | Yes | Yes | No |
| LeakBarrier FS500$^{HT}$ | Yes | No | No | Yes | Yes | Yes[1] |
| LeakBarrier MS300 | Yes | No | No | No | Yes | Yes[1] |
| TopShield Ice & Water G300 | Yes | No | No | No | Yes | Yes[1] |
| LeakBarrier PS200$^{HT}$ | Yes | Yes | Yes (Table 2A) | Yes *(No copper or zinc)* | Yes | Yes[1] |
| LeakBarrier PS200$^{MU}$ | Yes | No | No | Yes *(No copper or zinc)* | Yes | Yes[1] |
| LeakBarrier NR600 Ultra | Yes | Yes | Yes (Table 2A) | Yes | Yes | Yes[1] |
| TopShield TS600 Ice & Water | Yes | Yes | Yes (Table 2A) | Yes | Yes | Yes[1] |
| LeakBarrier® Self-Adhering Quick Roll Shingle Starter | Yes (shingle starter only) | No | No | No | No | No |
| Fiberglass Mineral Surfaced Roll Roofing | Yes (Valley Liner) | No | No | No | No | No |
| ASTM Organic Mineral Surface Tile Underlayment | Yes (Valley Liner) | Yes | Yes | No | No | No |

[1] *Used as min. 3 ¾-inch wide joint-strips per FBC 1507.1.1.1(2) / FBC R905.1.1.1(2) or installed in full-coverage atop ASTM D226, Type II felt, ASTM D4869 Type III or IV felt, LeakBarrier EasyLay, LeakBarrier EasyLay UDL 15, TopShield EL30 or LeakBarrier EasyLay UDL Basic mechanically attached in accordance with FBC Table 1507.1.1.1 or FBC Residential Table R905.1.1.1.*

5.6.1 **Allowable Tile Adhesives:**

| TABLE 2A: ALLOWABLE UNDERLAYMENT / TILE-ADHESIVE COMBINATIONS[2] | | | | | | |
|---|---|---|---|---|---|---|
| | TILE-ADHESIVE OPTIONS AND FLORIDA PRODUCT APPROVAL | | | | | |
| | DAP GLOBAL | | DUPONT | ICP CONSTRUCTION | | MORTAR (MEETING FRSA/TRI AND HOLDING CURRENT FPA) |
| | FL14506 | | FL22525 | FL6332 | FL6276 | |
| UNDERLAYMENT | STORMBOND | STORMBOND 2 | TILE BOND | APOC POLYSET AH-160 | APOC POLYSET RTA-1 | |
| LeakBarrier NR600 Ultra | Yes | Yes | Yes | Yes | Yes | No |
| TopShield TS600 Ice & Water | Yes | Yes | Yes | Yes | Yes | No |
| LeakBarrier PS200$^{HT}$ | No | No | Yes | Yes | Yes | No |
| ASTM Organic Mineral Surface Tile Underlayment | Yes | Yes | Yes | Yes | Yes | Yes |

5.7 **Allowable Substrates:**

| TABLE 3: ALLOWABLE SUBSTRATE OPTIONS FOR ADHERED UNDERLAYMENTS | | | | |
|---|---|---|---|---|
| UNDERLAYMENT | APPLICATION | SUBSTRATES (DESIGNED TO MEET CODE) | | |
| | | TYPE | PRIMER | MATERIAL(S) |
| LeakBarrier FS500$^{HT}$ | self-adhering | Deck / sheathing | (Optional) ASTM D41 | Plywood, OSB |
| | | Base Sheet | None | LeakBarrier EasyLay UDL 15, TopShield EL30 or LeakBarrier EasyLay UDL Basic |
| | | Flashing / Valley | ASTM D41 | aluminum, galvanized steel |
| LeakBarrier MS300, TopShield Ice & Water G300, LeakBarrier PS200$^{HT}$, LeakBarrier PS200$^{MU}$, LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water | self-adhering | Deck / sheathing | (Optional) ASTM D41 | Plywood, OSB |
| | | Deck | ASTM D41 | structural concrete |
| | | Base Sheet | None | ASTM D226 Type II felt; ASTM D4869 Type III or IV felt; LeakBarrier EasyLay, LeakBarrier EasyLay UDL 15, TopShield EL30 or LeakBarrier EasyLay UDL Basic |
| | | Flashing / Valley | ASTM D41 | aluminum, galvanized steel |
| ASTM Organic Mineral Surface Tile Underlayment | hot asphalt | Deck | ASTM D41 | structural concrete |
| | | Base Sheet | None | ASTM D226 Type II felt, ASTM D4601 base sheet |

5.8 **Attachment Limitations:**

5.8.1 For use in NON-TILE applications, refer to Section 6 herein and the applicable Code requirements.

5.8.2 Wind Resistance for Underlayment Systems in Tile Roof Applications:
The following wind uplift limitations apply to tile underlayment systems per **FBC 1504.2.1.4**. The Maximum Design Pressure ('MDP') is the result of testing for wind load resistance based on allowable wind loads, and reflects the ultimate passing pressure divided by 2 (the 2 to 1 margin of safety per **FBC 1504.9** has already been applied).

5.8.2.1 Unless otherwise noted, referenced back-nailing shall utilize corrosion resistant metal cap nails meeting specifications set forth in **FBC Table 1507.1.1.1** or "nail and tin caps" meeting the specifications set forth in **FBC HVHZ 1517.5**.

[2] *Refer to Tile Manufacturer's or Adhesive Manufacturer's Florida Product Approval for Overturning Moment Resistance Performance.*

5.8.2.2 Adhered, Direct-to-Deck Underlayment Systems:

The maximum design pressure for the selected assembly shall meet or exceed that required under **FRSA/TRI Florida Manual, 7th Edition, Appendix A** or the critical (highest) design pressure determined in accordance with **FBC 1609** or **FBC Residential Chapter 3**.

**TABLE 4A: ALLOWABLE DESIGN PRESSURES, ADHERED, DIRECT-TO-DECK UNDERLAYMENT SYSTEMS**

| SYSTEM NO. | DECK | PRIMER | JOINT TREATMENT | BASE PLY | CAP PLY | MDP (PSF) |
|---|---|---|---|---|---|---|
| UDL-1. | **OSB**, APA rated sheathing, 32/16, Exposure 1, PS2, 15/32 category | ASTM D41 | None | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting **FBC HVHZ 1517.5**, max. 12-inch o.c. | -60.0 |
| UDL-2. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | (Optional) ASTM D41 | None | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier PS200$^{HT}$, LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed, max. 12-inch o.c. | -75.0 |
| UDL-3. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | (Optional) ASTM D41 | None | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier PS200$^{HT}$, self-adhered and back-nailed using "nails and tin caps" meeting **FBC HVHZ 1517.5**, max. 12-inch o.c. | -82.5 |
| UDL-4. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | (Optional) ASTM D41 | None | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed, max. 12-inch o.c. | -105.0 |
| UDL-5. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | (Optional) ASTM D41 | Min. 4-inch wide strips of LeakBarrier PS200$^{MU}$ | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed, max. 12-inch o.c. | -120.0 |
| UDL-6. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | (Optional) ASTM D41 | Min. 4-inch wide strips of LeakBarrier PS200$^{MU}$ or LeakBarrier EasyBase | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier PS200$^{HT}$, self-adhered and back-nailed, max. 12-inch o.c. | -120.0 |
| UDL-7. | Nominal 1-inch, SYP, T&G **wood plank** | (Optional) ASTM D41 | None | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting **FBC HVHZ 1517.5**, max. 12-inch o.c. | -135.0 |
| UDL-8. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | ASTM D41 | None | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting **FBC HVHZ 1517.5**, max. 12-inch o.c. | -142.5 |
| UDL-9. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS2, 19/32 category | None | None | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting **FBC HVHZ 1517.5**, max. 12-inch o.c. | -142.5 |

| TABLE 4A: ALLOWABLE DESIGN PRESSURES, ADHERED, DIRECT-TO-DECK UNDERLAYMENT SYSTEMS | | | | | | |
|---|---|---|---|---|---|---|
| SYSTEM NO. | DECK | PRIMER | JOINT TREATMENT | BASE PLY | CAP PLY | MDP (PSF) |
| UDL-10. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS2, 19/32 category | ASTM D41 | None | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -150.0 |
| UDL-11. | Structural concrete | (Optional) ASTM D41 | N/A | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed using FBC Approved fasteners and plates, max. 12-inch o.c. | LeakBarrier PS200$^{HT}$, LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using FBC Approved fasteners and plates, max. 12-inch o.c. | -217.5 |
| UDL-12. | Structural concrete | ASTM D41 | N/A | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using FBC Approved fasteners and plates, max. 12-inch o.c. | -340.0 |

5.8.2.3 Mechanically-Attached, Multi-Ply Underlayment Systems:

The maximum design pressure for the selected assembly shall meet or exceed that required under **FRSA/TRI Manual, 7th Edition**, Appendix A or the critical (highest) design pressure determined in accordance with **FBC 1609** or **FBC Residential Chapter 3**. Alternatively, the maximum design pressure for the selected assembly shall meet or exceed at least the Zone 1 design pressure determined in accordance with **FBC 1609** or **FBC Residential Chapter 3**. Elevated pressure zones shall employ an attachment density by a qualified design professional to resist the elevated pressure criteria. Commonly used methods are ANSI/SPRI WD1, FM Loss Prevention Data Sheet 1-29 or Roofing Application Standard RAS 117 or RAS 137. Assemblies marked with an asterisk* carry the limitations set forth in Section 2.2.10.1 of FM Loss Prevention Data Sheet 1-29 for enhancements.

| TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS | | | | | | | |
|---|---|---|---|---|---|---|---|
| SYS. NO. | DECK | BASE SHEET | | | BASE PLY | CAP PLY | MDP (PSF) |
| | | TYPE | FASTENERS | ATTACH | | | |
| **Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch. | | | | | | | |
| UDL-13. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | #30 ASTM Specification Felt | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at two (2) equally spaced, staggered center rows | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -22.5 |
| UDL-14. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | #30 ASTM Specification Felt | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at three (3) equally spaced, staggered center rows | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -30.0 |
| UDL-15. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | #30 ASTM Specification Felt | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 9-inch o.c. at two (2) equally spaced, staggered center rows | None | ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -37.5 |

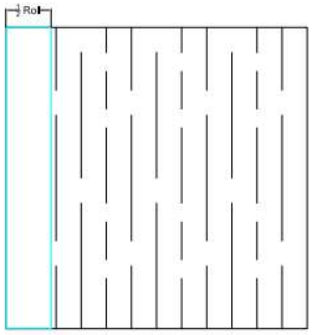
| TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS | | | | | | | |
|---|---|---|---|---|---|---|---|
| SYS. NO. | DECK | BASE SHEET | | | BASE PLY | CAP PLY | MDP (PSF) |
| | | TYPE | FASTENERS | ATTACH | | | |
| **Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch. | | | | | | | |
| UDL-16. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | #30 ASTM Specification Felt | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at four (4) equally spaced, staggered center rows | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -45.0 |
| UDL-17. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | LeakBarrier EasyLay UDL 15, TopShield EL30 or LeakBarrier EasyLay UDL Basic | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 8-inch o.c. at three (3) equally spaced, staggered center rows | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier NR600 Ultra, TopShield TS600 Ice & Water or LeakBarrier PS200$^{HT}$, self-adhered and back-nailed, max. 12-inch o.c. | -45.0 |
| UDL-18. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category | #30 ASTM Specification Felt | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 9-inch o.c. at two (2) equally spaced, staggered center rows | None | ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -45.0 |
| UDL-19. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category | #30 ASTM Specification Felt | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at three (3) equally spaced, staggered center rows | None | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -52.5 |
| UDL-20. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category | #30 ASTM Specification Felt | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at two (2) equally spaced, staggered center rows | None | ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -52.5 |
| UDL-21. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category | LeakBarrier EasyLay | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 7-inch o.c. at the 4-inch wide side laps and 7-inch o.c. at three (3) equally spaced, staggered center rows | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier NR600 Ultra, TopShield TS600 Ice & Water or LeakBarrier PS200$^{HT}$, self-adhered and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -60.0 |
| UDL-22. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | LeakBarrier EasyLay UDL 15, TopShield EL30 or LeakBarrier EasyLay UDL Basic | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6-inch o.c. at the 4-inch wide side laps and 6-inch o.c. at four (4) equally spaced, staggered center rows | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier NR600 Ultra, TopShield TS600 Ice & Water or LeakBarrier PS200$^{HT}$, self-adhered and using nails and tin caps*, max. 12-inch o.c. | -60.0 |

**TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS**

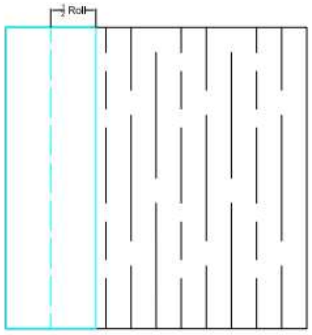
| SYS. NO. | DECK | BASE SHEET | | | BASE PLY | CAP PLY | MDP (PSF) |
|---|---|---|---|---|---|---|---|
| | | TYPE | FASTENERS | ATTACH | | | |
| **Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch. | | | | | | | |
| UDL-23. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | Double-layer application, #30 ASTM Specification Felt** | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6x8-inch grid; start 6-inch o.c. with centerline 1-inch from starting edge, followed by rows spaced 8-inch o.c. with fasteners spaced 6-inch o.c. within each row. | None | ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -82.5 |

** Base sheet applied in double-layer application:

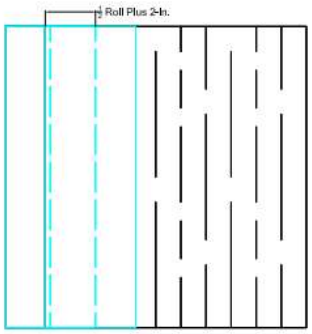
Apply a strip of base sheet for the first course that is half the width of a full sheet, fastened sufficiently to hold in place.



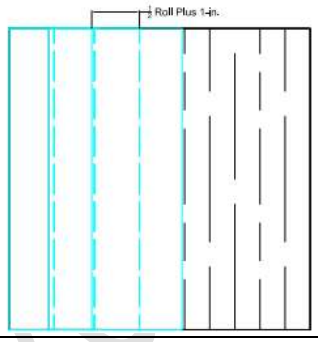

Apply a full sheet of a base sheet for the second course, fully overlapping the first half-width course.



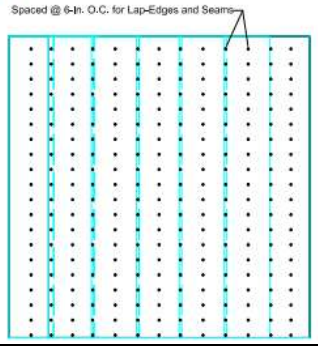

Apply the third course of base sheet overlapping the second course half the width of a full sheet plus 2 inches.



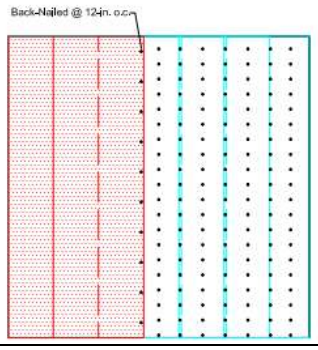

Overlap all successive courses half the width of a full sheet plus 1 inch.




Fastening: 12 ga. x 1.5-inch long x 3/8-inch head diameter annular ring shank roofing nails and 32 ga., 1-5/8-inch diameter tin caps, 6x8-inch grid; start 6-inch o.c. with centerline 1-inch from start-edge, followed by rows spaced at the 8-inch o.c. with fasteners spaced 6-inch o.c. within each row.




ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using 12 ga. annular ring shank roofing nails and 32 ga., 1-5/8-inch diameter tin caps, max 12-inch o.c.

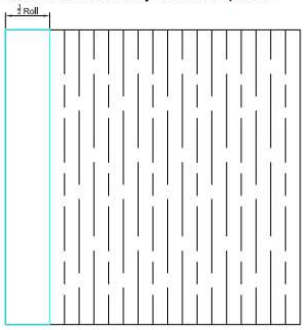


## TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS

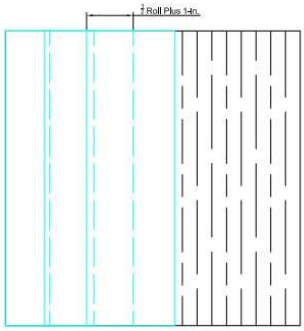
| SYS. NO. | DECK | BASE SHEET | | | BASE PLY | CAP PLY | MDP (PSF) |
|---|---|---|---|---|---|---|---|
| | | TYPE | FASTENERS | ATTACH | | | |
| **Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch. | | | | | | | |
| UDL-24. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | Double-layer application, #30 ASTM Specification Felt** | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 4x8-inch grid; start 4-inch o.c. with centerline 1-inch from starting edge, followed by rows spaced 8-inch o.c. with fasteners spaced 4-inch o.c. within each row. | None | ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -90.0 |

** Base sheet applied in double-layer application:

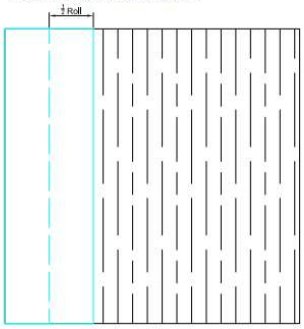
Apply a strip of base sheet for the first course that is half the width of a full sheet, fastened sufficiently to hold in place.



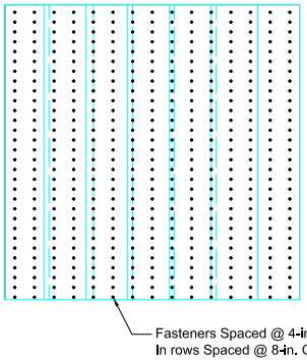

Overlap all successive courses half the width of a full sheet plus 1 inch.



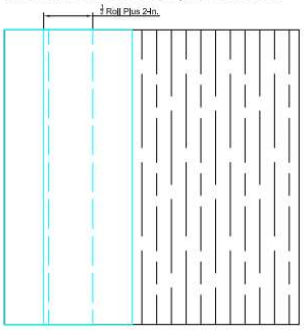

Apply a full sheet of a base sheet for the second course, fully overlapping the first half-width course.




Fastening: 12 ga. x 1.5-inch long x 3/8-inch head diameter annular ring shank roofing nails and 32 ga., 1-5/8-inch diameter tin caps, 4x8-inch grid; start 4-inch o.c. with centerline 1-inch from starting edge, followed by rows spaced 8-inch o.c. with fasteners spaced 4-inch o.c. within each row.




Apply the third course of base sheet overlapping the second course half the width of a full sheet plus 2 inches.




ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using 12 ga. annular ring shank roofing nails and 32 ga., 1-5/8-inch diameter tin caps, max. 12-inch o.c.

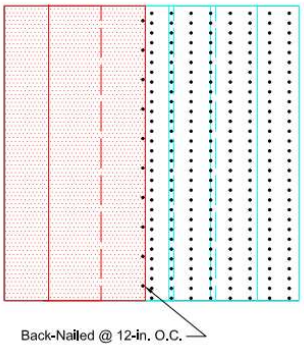
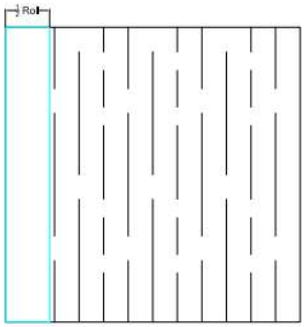
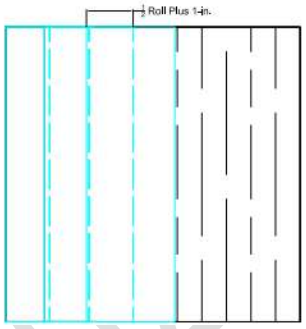
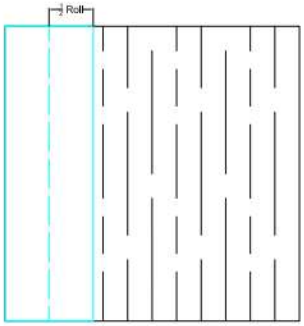
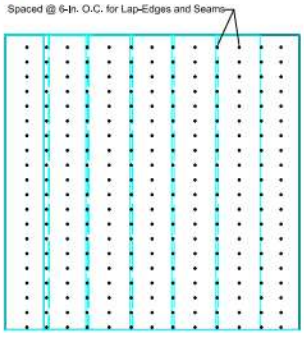
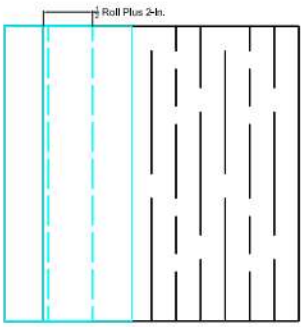
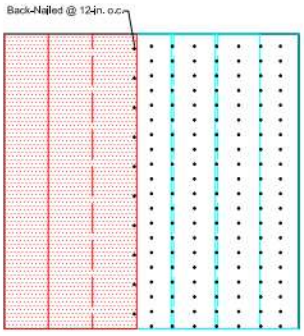


**TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS**

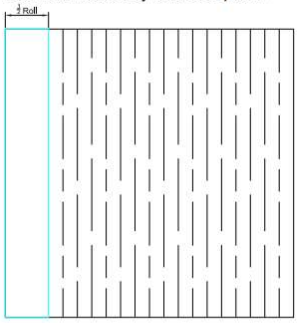
| SYS. NO. | DECK | BASE SHEET | | | BASE PLY | CAP PLY | MDP (PSF) |
|---|---|---|---|---|---|---|---|
| | | TYPE | FASTENERS | ATTACH | | | |
| **Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch. | | | | | | | |
| UDL-25. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category | Double-layer application, #30 ASTM Specification Felt** | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 6x8-inch grid; start 6-inch o.c. with centerline 1-inch from start-edge, followed by rows spaced at the 8-inch o.c. with fasteners spaced 6-inch o.c. within each row. | None | ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -90.0 |
| | ** Base sheet applied in double-layer application:<br>Apply a strip of base sheet for the first course that is half the width of a full sheet, fastened sufficiently to hold in place.<br>  <br><br>Overlap all successive courses half the width of a full sheet plus 1 inch.<br>  <br><br>Apply a full sheet of a base sheet for the second course, fully overlapping the first half-width course.<br>  <br><br>Fastening: 12 ga. x 1.5-inch long x 3/8-inch head diameter annular ring shank roofing nails and 32 ga., 1-5/8-inch diameter tin caps, 6x8-inch grid; start 6-inch o.c. with centerline 1-inch from start-edge, followed by rows spaced at the 8-inch o.c. with fasteners spaced 6-inch o.c. within each row.<br>  <br><br>Apply the third course of base sheet overlapping the second course half the width of a full sheet plus 2 inches.<br>  <br><br>ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using 12 ga. annular ring shank roofing nails and 32 ga., 1-5/8-inch diameter tin caps, max 12-inch o.c.<br>  <br> | | | | | | |
| UDL-26. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category | #30 ASTM Specification Felt | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 4-inch o.c. at the 4-inch wide side laps and 4-inch o.c. at three (3) equally spaced center rows | None | ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -105.0 |
| UDL-27. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | LeakBarrier EasyLay | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 4-inch o.c. at the 4-inch wide side laps and 4-inch o.c. at four (4) equally spaced, staggered center rows | (Optional) LeakBarrier PS200$^{MU}$, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier PS200$^{HT}$, self-adhered and back-nailed, max. 12-inch o.c. | -120.0 |

## TABLE 4B: ALLOWABLE DESIGN PRESSURES, MECHANICALLY ATTACHED, MULTI-PLY UNDERLAYMENT SYSTEMS

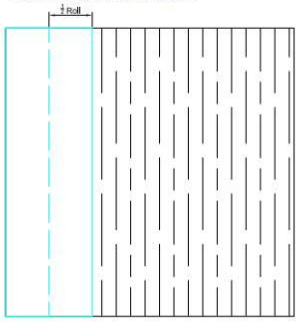
| SYS. NO. | DECK | BASE SHEET | | | BASE PLY | CAP PLY | MDP (PSF) |
|---|---|---|---|---|---|---|---|
| | | TYPE | FASTENERS | ATTACH | | | |
| **Nails shall be corrosion resistant and be of sufficient length to penetrate through the sheathing by min. 3/16-inch. | | | | | | | |
| UDL-28. | **Plywood**, APA rated sheathing, 32/16, Exposure 1, PS1, 15/32 category | LeakBarrier EasyLay | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 4-inch o.c. at the 4-inch wide side laps and 4-inch o.c. at four (4) equally spaced, staggered center rows | LeakBarrier PS200MU, self-adhered and back-nailed, max. 12-inch o.c. | LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water, self-adhered and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -120.0 |
| UDL-29. | **Plywood**, APA rated sheathing, 40/20, Exposure 1, PS1, 19/32 category | Double-layer application, #30 ASTM Specification Felt** | 12 ga. x 3/8-inch head diameter annular ring shank roofing nails** through 32 ga. x 1-5/8-inch dia. tin caps | 4x8-inch grid; start 4-inch o.c. with centerline 1-inch from start-edge, followed by rows spaced at the 8-inch o.c. with fasteners spaced 4-inch o.c. within each row. | None | ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using "nails and tin caps" meeting FBC HVHZ 1517.5, max. 12-inch o.c. | -142.5 |

** Base sheet applied in double-layer application:

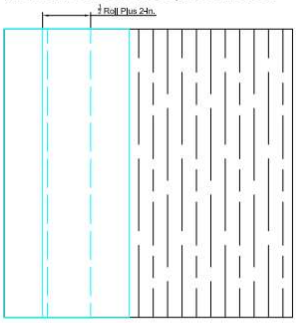
Apply a strip of base sheet for the first course that is half the width of a full sheet, fastened sufficiently to hold in place.



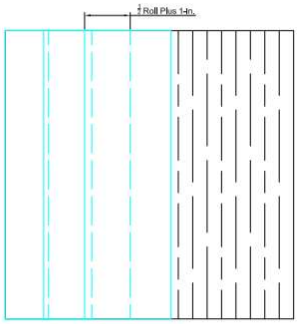

Apply a full sheet of a base sheet for the second course, fully overlapping the first half-width course.



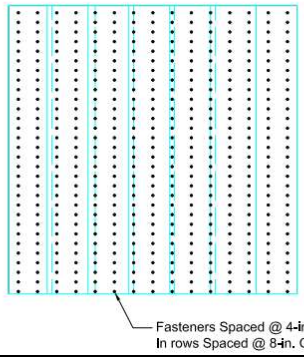

Apply the third course of base sheet overlapping the second course half the width of a full sheet plus 2 inches.



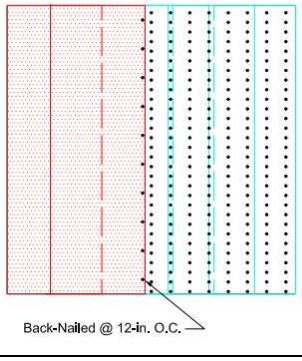

Overlap all successive courses half the width of a full sheet plus 1 inch.




Fastening: 12 ga. x 1.5-inch long x 3/8-inch head diameter annular ring shank roofing nails and 32 ga., 1-5/8-inch diameter tin caps, 4x8-inch grid; start 4-inch o.c. with centerline 1-inch from starting edge, followed by rows spaced 8-inch o.c. with fasteners spaced 4-inch o.c. within each row.




ASTM Organic Mineral Surface Tile Underlayment, applied in ASTM D312, Type IV hot asphalt and back-nailed using 12 ga. annular ring shank roofing nails and 32 ga., 1-5/8-inch diameter tin caps, max. 12-inch o.c.



5.9 **Exposure Limitations:**

| TABLE 5: EXPOSURE LIMITATIONS | | |
|---|---|---|
| UNDERLAYMENT | PREPARED ROOF COVER INSTALLATION TYPE | MAXIMUM EXPOSURE (DAYS) |
| #30 ASTM Specification Felt | Mechanically attached | 1 |
| LeakBarrier MS300, LeakBarrier PS200$^{MU}$ or TopShield Ice & Water G300 | Mechanically attached | 30 |
| LeakBarrier Self-Adhering Quick Roll Shingle Starter | Asphalt shingles | 30 |
| LeakBarrier EasyLay UDL 15, TopShield EL30 or LeakBarrier EasyLay UDL Basic | Mechanically attached | 90 |
| LeakBarrier EasyLay, LeakBarrier FS500$^{HT}$ | Mechanically attached | 180 |
| LeakBarrier PS200$^{HT}$ | Any type (per Table 2) | 180 |
| ASTM Organic Mineral Surface Tile Underlayment | Any type (per Table 2) | 180 |
| LeakBarrier NR600 Ultra | Any type (per Table 2) | 360 |
| TopShield TS600 Ice & Water | Any type (per Table 2) | 360 |

5.10 **Tile Slippage Limitations:** When loading roof tiles on the underlayment, the maximum roof pitch shall be as follows. These pitch limitations can only be exceeded by using battens or loading boards during loading of the roof tiles.

| TABLE 6: TILE SLIPPAGE LIMITATIONS FOR DIRECT-DECK TILE INSTALLATIONS | | | |
|---|---|---|---|
| UNDERLAYMENT* | TILE PROFILE | STAGING METHOD | MAXIMUM STAGING PITCH |
| LeakBarrier PS200$^{HT}$ | Flat or Lugged | 6-tile stack (4 over 2) | 6:12 |
| LeakBarrier NR600 Ultra | Flat or Lugged | 10-tile stack | 6:12 |
| TopShield TS600 Ice & Water | Flat or Lugged | 10-tile stack | 6:12 |
| 2-ply system; LeakBarrier PS200$^{MU}$ followed by LeakBarrier NR600 Ultra or TopShield TS600 Ice & Water | Flat or Lugged | 10-tile stack | 6:12 |
| ASTM Organic Mineral Surface Tile Underlayment | Flat | 6-tile stack (4 over 2) | 5:12 |
| | Lugged | 6-tile stack (4 over 2) | 6:12 |

*Notes:* **Tarco specifies a minimum 48 cure-time after the installation of self-adhering membranes and before loading of roofing tiles.*

## 6. INSTALLATION:

6.1 **Tarco Roof Underlayments** shall be installed in accordance with **Tarco Roofing** installation instructions subject to the Limitations of Use herein and the specifics noted below.

6.1.1 Consult Tarco requirements for back-nailing at pitch of 2:12 or greater.

6.2 Re-fasten any loose decking panels, and check for protruding nail heads. Sweep the substrate thoroughly to remove any dust and debris prior to application, and prime the substrate (if applicable).

6.3 Refer to Section 6.4 for underlayments having prescriptive codified minimum attachment or Tables 4A and 4B for underlayment systems having maximum design pressures established in accordance with FBC 1504.2.1.4.

**6.4 Underlayment Assemblies with Prescriptive Minimum Attachment for use in NON-TILE applications:**

6.4.1

| CODE REFERENCE: | **1507.1.1.1 or R905.1.1.1, Option 1:** Underlayment adhered to deck |
|---|---|
| DECK DESCRIPTION: | Code-minimum wood or structural concrete deck to the satisfaction of the Authority Having Jurisdiction (refer to Table 3 for specific underlayment/substrate combinations) |
| UNDERLAYMENT: | BASE PLY: (Optional) **LeakBarrier® PS200$^{MU}$** self-adhered in accordance with FBC Section 1507.1.1.1(1) or R905.1.1.1(1) and back-nailed in accordance with the manufacturer's requirements.<br>CAP PLY: **LeakBarrier FS500$^{HT}$, LeakBarrier® MS300, LeakBarrier® PS200$^{MU}$, TopShield Ice & Water G300, LeakBarrier® PS200$^{HT}$, LeakBarrier® NR600 Ultra or TopShield TS600 Ice & Water** self-adhered in accordance with FBC Section 1507.1.1.1(1) or R905.1.1.1(1) and back-nailed in accordance with the manufacturer's requirements. |
| SURFACING: | FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in Table 2 herein. |

6.4.2

| CODE REFERENCE: | **1507.1.1.1 or R905.1.1.1, Option 2:** Self-adhering strips to deck-joints followed by underlayment mechanically attached to deck |
|---|---|
| DECK DESCRIPTION: | Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction |
| SECONDARY WATER BARRIER: | Min. 3 ¾-inch wide strips of **LeakBarrier FS500$^{HT}$, LeakBarrier® MS300, LeakBarrier® PS200$^{MU}$, TopShield Ice & Water G300, LeakBarrier® PS200$^{HT}$, LeakBarrier® NR600 Ultra or TopShield TS600 Ice & Water** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1507.1.1.1(2) or R905.1.1.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped. |
| UNDERLAYMENT: | **#30 ASTM Specification Felt** in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1, with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck. |
| FASTENERS: | Min. 0.083-inch diameter annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1-inch and minimum thickness as follows. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing.<br>Note: Metal caps are required where the ultimate design wind speed, $V_{ult}$, equals or exceeds 170 mph.<br>**Cap Type** — **Minimum thickness**<br>Metal cap — 32 ga. sheet metal<br>Power-driven metal cap — 0.010-inch<br>Plastic cap — 0.035-inch (outside edge thickness) |
| FASTENING: | Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1 |
| SURFACING: | FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, wood shakes or wood shingles, subject to the allowable roof covers in Table 2 herein. |

6.4.3

| CODE REFERENCE: | **1507.1.1.1 or R905.1.1.1, Option 2:** Self-adhering strips to deck-joints followed by underlayment mechanically attached to deck |
|---|---|
| DECK DESCRIPTION: | Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction |
| SECONDARY WATER BARRIER: | Min. 3 ¾-inch wide strips of **LeakBarrier FS500$^{HT}$, LeakBarrier® MS300, LeakBarrier® PS200$^{MU}$, TopShield Ice & Water G300, LeakBarrier® PS200$^{HT}$, LeakBarrier® NR600 Ultra or TopShield TS600 Ice & Water** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1507.1.1.1(2) or R905.1.1.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped. |
| UNDERLAYMENT: | **LeakBarrier EasyLay, LeakBarrier EasyLay UDL 15, TopShield EL30 or LeakBarrier EasyLay UDL Basic** in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1, with a minimum 4-inch side lap and 6-inch end lap, mechanically fastened to deck |
| FASTENERS: | Min. 0.083-inch diameter annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1-inch and minimum thickness as follows. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing.<br>Note: Metal caps are required where the ultimate design wind speed, $V_{ult}$, equals or exceeds 170 mph.<br>**Cap Type** — **Minimum thickness**<br>Metal cap — 32 ga. sheet metal<br>Power-driven metal cap — 0.010-inch<br>Plastic cap — 0.035-inch (outside edge thickness) |
| FASTENING: | Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1 |
| SURFACING: | FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in Table 2 herein. |

6.4.4

| CODE REFERENCE: | **1507.1.1.1 or R905.1.1.1, Option 3:** Two-layer underlayment mechanically fastened to deck |
|---|---|
| DECK DESCRIPTION: | Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction |
| UNDERLAYMENT: | Two (2) layers of **#30 ASTM Specification Felt** in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3). |
| FASTENERS: | Min. 0.083-inch diameter annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1-inch and minimum thickness as follows. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing.<br>Note: Metal caps are required where the ultimate design wind speed, $V_{ult}$, equals or exceeds 170 mph.<br>**Cap Type** — **Minimum thickness**<br>Metal cap — 32 ga. sheet metal<br>Plastic cap — 0.035-inch (outside edge thickness) |
| FASTENING: | Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3). |
| SURFACING: | FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, wood shakes or wood shingles, subject to the allowable roof covers in Table 2 herein. |

6.4.5

| **CODE REFERENCE:** | **1507.1.1.1 or R905.1.1.1, Option 3:** Two-layer underlayment mechanically fastened to deck |
|---|---|
| DECK DESCRIPTION: | Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction |
| UNDERLAYMENT: | Two (2) layers of **LeakBarrier EasyLay, LeakBarrier EasyLay UDL 15, TopShield EL30 or LeakBarrier EasyLay UDL Basic** in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3). |
| FASTENERS: | Min. 0.083-inch diameter annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1-inch and minimum thickness as follows. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing.<br>Note: Metal caps are required where the ultimate design wind speed, $V_{ult}$, equals or exceeds 170 mph.<br>**Cap Type** — **Minimum thickness**<br>Metal cap — 32 ga. sheet metal<br>Plastic cap — 0.035-inch (outside edge thickness) |
| FASTENING: | Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3). |
| SURFACING: | FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in Table 2 herein. |

6.4.6

| **CODE REFERENCE:** | **1507.1.1.1 or R905.1.1.1, Option 1 combined with Option 2 or 3:** Optional self-adhering strips to deck-joints followed by base sheet mechanically fastened to deck followed by underlayment adhered to base sheet |
|---|---|
| DECK DESCRIPTION: | Code-minimum wood deck to the satisfaction of the Authority Having Jurisdiction |
| SECONDARY WATER BARRIER: | (Optional) Min. 3 ¾-inch wide strips of **LeakBarrier FS500$^{HT}$,LeakBarrier® MS300, LeakBarrier® PS200$^{MU}$, TopShield Ice & Water G300, LeakBarrier® PS200$^{HT}$, LeakBarrier® NR600 Ultra or TopShield TS600 Ice & Water** self-adhered over joints of the roof deck prior to installation of subsequent layer(s) in accordance with FBC Section 1507.1.1.1(2) or R905.1.1.1(2). Do not overlap end-joints or T-joints. All end-joints and T-joints shall be butted firmly side by side, flush with each other but not overlapped. |
| BASE SHEET: | One (1) layer of **#30 ASTM Specification Felt, LeakBarrier EasyLay, LeakBarrier EasyLay UDL 15, TopShield EL30, LeakBarrier EasyLay UDL Basic** or FBC Approved ASTM D226, Type II felt, in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1, with a minimum 4-inch side lap and 6-inch end lap or two (2) layers of **#30 ASTM Specification Felt, LeakBarrier EasyLay, LeakBarrier EasyLay UDL 15, TopShield EL30, LeakBarrier EasyLay UDL Basic** or FBC Approved ASTM D226, Type II felt in accordance with FBC Section 1507.1.1.1(3) or R905.1.1.1(3), mechanically fastened to deck |
| FASTENERS: | Min. 0.083-inch diameter annular ring or deformed shank nails with metal or plastic caps with a nominal cap diameter of not less than 1-inch and minimum thickness as follows. The nail shall be of sufficient length to penetrate through the roof sheathing, or not less than 0.75-inch into the roof sheathing.<br>Note: Metal caps are required where the ultimate design wind speed, $V_{ult}$, equals or exceeds 170 mph.<br>**Cap Type** — **Minimum thickness**<br>Metal cap — 32 ga. sheet metal<br>Power-driven metal cap — 0.010-inch<br>Plastic cap — 0.035-inch (outside edge thickness) |
| FASTENING: | Grid pattern of 12-inches between the overlaps and 6-inch spacing at the overlaps, in accordance with FBC Table 1507.1.1.1 or Table R905.1.1.1 or FBC Section 1507.1.1.1(3) or R905.1.1.1(3). |
| UNDERLAYMENT: | BASE PLY: (Optional) **LeakBarrier® PS200$^{MU}$** self-adhering and back-nailed in accordance with the manufacturer's requirements.<br>CAP PLY: **LeakBarrier FS500$^{HT}$, LeakBarrier® MS300, LeakBarrier® PS200$^{MU}$, TopShield Ice & Water G300, LeakBarrier® PS200$^{HT}$, LeakBarrier® NR600 Ultra or TopShield TS600 Ice & Water** self-adhering and back-nailed in accordance with the manufacturer's requirements. |
| SURFACING: | FBC Approved asphalt shingles, metal roof panels or metal shingles, slate or slate type shingles, subject to the allowable roof covers in Table 2 herein. |

**6.5 Valley Liners:**

**ASTM Organic Mineral Surface Tile Underlayment** or **Fiberglass Mineral Surface Roll Roofing** may be used as a valley liner in accordance with **FBC 1507.2.9.2** or **FBC Residential R905.2.8.2**. Installation shall be in accordance with the manufacturer's instructions.

**6.6 Shingle Starters:**

**LeakBarrier® Self-Adhering Quick Roll Shingle Starter** may be used as a starter-course at eaves and/or rakes for asphalt shingle roof installations. Installation shall be in accordance with the manufacturer's instructions.

## 7. BUILDING PERMIT REQUIREMENTS:

As required by the Building Official or Authority Having Jurisdiction in order to properly evaluate the installation of this product.

## 8. MANUFACTURING PLANTS:

Contact the named QA entity for manufacturing facilities covered by **F.A.C. Rule 61G20-3** QA requirements. Refer to Section 4 herein for products and production locations having met codified material standards.

## 9. QUALITY ASSURANCE ENTITY:

UL LLC – QUA9625; (360) 817-5512; bsai.inspections@ul.com

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