City of Whittier

COMMUNITY DEVELOPMENT
13230 Penn Street, Whittier, California 90602-1716
(562) 567-9320 Fax (562) 567-2872w ww.cityofwhittier.org

This bulletin provides information pertaining to re-roofing requirements within the City of Whittier. Its objective is to provide a permit, plan check, and inspection process that meet the minimum provisions of the current California Building Code (CBC) and California Residential Code (CRC).

GENERAL REQUIREMENTS

- A building permit is required for all re-roofing except for repairs totaling less than 100 square feet.
- A third-party evaluation report or listing is required for the specific roofing material being used on the project. (ICC-ESR, PRI-Group, UL, ASTM, or any other accredited third-party product certification program).
- 1 x sheathing is not allowed. *Exception:* Tongue and groove sheathing will be accepted only if no gaps between boards are observed by the inspector and the tongue is firmly seated in the groove.

Re-roofing is required to comply with 2022 CRC Chapter 9 and 2022 CBC Chapter 15, and/or other approved third-party testing/listing agencies for proprietary systems under the current code cycle. If you have any questions, please ask the building counter staff, an inspector, or call 562-567-9320.

Permits may be obtained by one of the following methods:

- A licensed and insured C-39 (Roofing) contractor
- A residential property owner (Owner/Builder) doing the work with help from immediate family members. If the owner pulls the permit and hires a licensed C-39 roofing contractor that has a city business license to do work in The City of Whittier, they must provide proof, on-site, of a C-39 and business license.
- A licensed and insured “B” contractor registered with the California State License Board, *cannot pull a roof permit*, unless the roof is in conjunction with an addition.

PLAN CHECK REQUIREMENTS

Submittal of a plan for review is **not** required for re-roofing with asphalt shingles, Tile (6lbs or less), or built-up roofs on *non-historic buildings*. Any roofing project in a historic district, designates as a landmark, or built in 1941 or earlier **will require review** from the Planning Department before it is submitted to the Building and Safety Department.

ROOF ASSEMBLIES

Roof assemblies must comply with a Class "A" fire rating according to 2022 CBC 1505.2 and 2022 CRC R902 (including all exceptions). M*inimum SRI of 16.*

- **Composite Shingles:** Not more than one (1) overlay of composite shingles may be applied over existing composite shingles. Building Official approval and a pre-roof inspection is required. All Materials must conform with the below requirements:

  - **Shingles:** Class A and ASTM D3462 requirements
  - **Underlayment:** ASTM D226/D4869/D6757/ or D1970 requirements
  - **Fasteners:** ASTM F1667 requirements
  - **Torch Down:** ASTM D6162/D6163/D6164/ or D6222 requirements

- **Tile:** Tile roofs may be applied over existing roof coverings when the installation is substantiated by an engineering analysis and approved by the Building Official. Removal and re-installation of existing tiles is permitted.
- **Metal Roofing:** Metal roofing may be applied over existing roof covering when approved by the Building Official and in compliance with 2022 CRC R908.3

Tile and other heavy re-roof materials, when heavier than existing roofing:

1. Materials **lighter** than six (6) pounds per square foot:
   a) List current ICC Evaluation Service Report number for proprietary materials. No structural justification is required.

2. Six (6) pounds per square foot or **heavier** materials:
   a) List current ICC Evaluation Services Report number for proprietary materials.
   b) Structural justification is needed as noted below:
      i. **Conventionally framed structures** using materials weighing 9 pounds or less per square foot may use standard tables and details as published by an approved manufacturer.
      ii. **Non-conventional frames structures** (i.e.: trusses) using materials weighing 9 pounds or less per square foot need structural roof calculations prepared by a State Licensed Civil or Structural Engineer or Architect.
      iii. **All materials that weigh over 9 pounds per square foot** require structural calculations. The structural calculations need to address vertical loading to roof framing members and affected floor framing members. In addition, the structural calculations need to include an analysis of the lateral resisting elements of the structure.
   c) Provide a complete basic framing plan to include structural sections and details.

INSPECTIONS

Inspections need to be requested in advance prior to the date of inspection. The following inspections are required for reroofing in order to verify compliance with minimum construction standards.

- **Pre-Roof:** If setting materials over pre-existing one (1) layer of roofing material. All rotted fascia needs to be replaced and sealed against the weather. ***ESR required to be onsite.***
- **Tear-Off:** All materials to be removed, the sheathing exposed, and all rotted or deteriorated wood sheathing or fascia replaced and sealed against the weather. ***ESR required to be onsite.***
- **Sheathing:** The new or existing sheathing material and nailing need to be inspected. Any replaced fascia needs to be sealed against the weather. ***ESR required to be onsite.***
- **Final:** To be made when the job is complete. All rotted materials have been replaced and sealed against the weather. Roof assembly has been completely rodent/insect proofed, flashing installed, and crickets/saddles installed (if required).

ACCESS

In gated communities, the contractor or owner need to notify the gate attendant that an inspection has been requested prior to the inspectors' arrival. If there is no gate attendant, the access code needs to be provided. Access to private yards need to be authorized in writing by the owner or tenant by leaving a note at the main entry door. Inspectors cannot enter yards with dogs present.

LADDERS

All ladders need to have a minimum duty rating of 250 pounds, be OSHA approved and extend three (3) feet above the roof. Hinged or stack ladders are limited to one story roofs, and they need to be assembled. Ladders need to be erected, in place, tied, and secured to prevent displacement before inspector arrives. If ladder is not secured inspector will not be able to conduct the inspection and a re-inspection will need to be scheduled.

EXCESSIVE PONDING

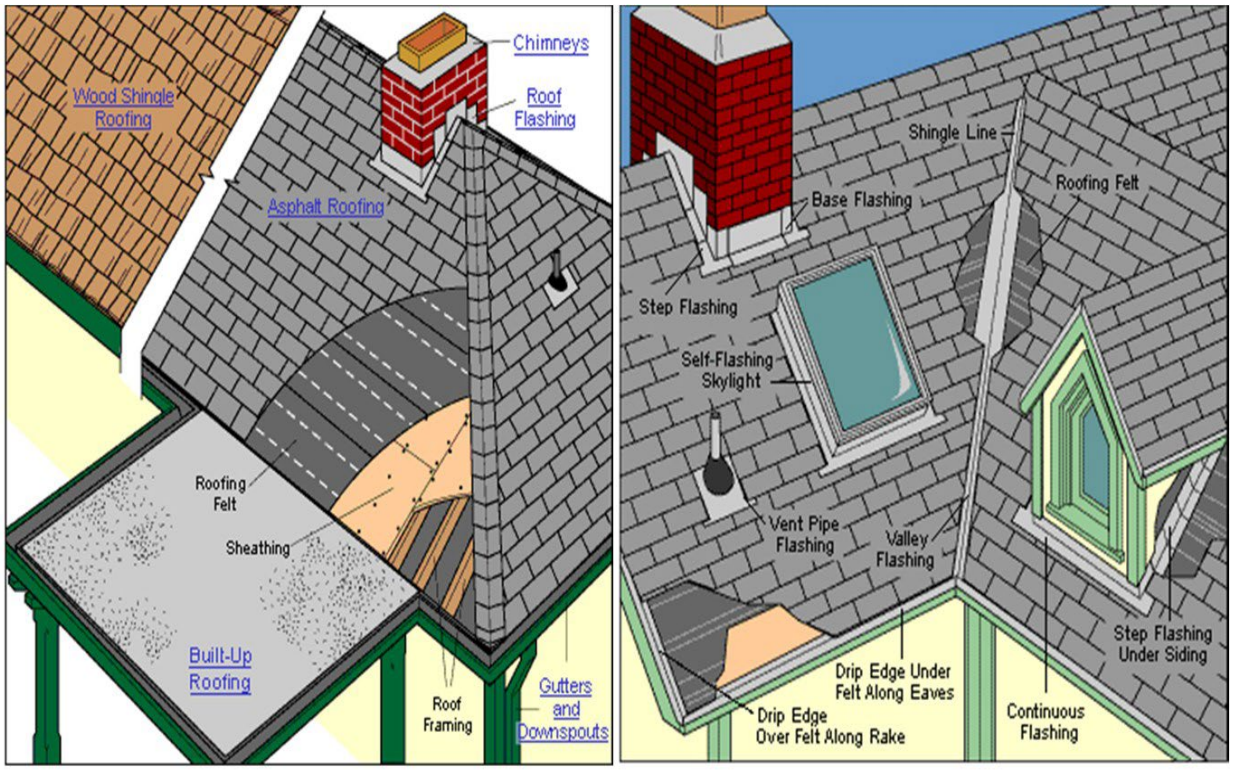
Ponding of water on roofs lead to premature failure of the roofing material and should be avoided. Prior to removing existing roofing material, the contractor or owner should view the roof for evidence of ponding such as water stains or deteriorated material. Material specifications should be reviewed for allowable ponding; however, as a rule of thumb, ponding generally is considered excessive if the depth exceeds ¼" or covers more than 100 square feet. Excessive ponding may be remedied by building up the low area or by installing auxiliary roof drains. If you are unsure if the roof exhibits excessive ponding, ask your building inspector prior to proceeding with your project.

ROOF VENTILATION

Roof ventilation needs to comply with 2022 CRC Section R806.

CRICKETS & SADDLES

Installed in accordance with 2022 CRC section R903.2.2, a cricket or saddle shall be installed on the ridge side of any chimney or penetration more than 30 in wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of the same material s the roof covering. ***Exception:*** skylights that are installed in accordance with 2022 CRC R308.6 do not require a cricket or saddle.



PRI Evaluation Report

PRI ER 1378E01
Issue Date: 07/03/2019
Last Revision: 05/08/2023
This Report is Reviewed Annually
Visit: pri-group.com for current status.

Report Holder:

Owens Corning Roofing and Asphalt LLC
1 Owens Corning Parkway
Toledo, OH 43659
(419) 248-7060
owenscorning.com/roofing

SCOPE

Subject: Asphalt Shingles

CSI MasterFormat®:

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION
Sub-level 2: 07 30 00 – Steep Slope Roofing
Sub-level 3: 07 31 00 – Shingles and Shakes
Sub-level 4: 07 31 13 – Asphalt Shingles

Code References:

- 2021, 2018, 2015, 2012, and 2009 International Building Code® (IBC)
- 2021, 2018, 2015, 2012, and 2009 International Residential Code® (IRC)

Properties Evaluated:

- External Fire Exposure (ASTM E108, ANSI/UL790)
- Wind Resistance (ASTM D3161; ASTM D7158)
- Physical Properties (ASTM D3462, ICC-ES AC438)
- Impact Resistance (UL 2218)

Evidence Submitted:

- Recognized test report(s) indicating compliance with ASTM E108 and/or ANSI/UL790
- Recognized test report(s) indicating compliance with ASTM D3161
- Recognized test report(s) indicating compliance with ASTM D7158
- Recognized test report(s) indicating compliance with ASTM D3462
- Recognized test report(s) indicating compliance with UL 2218
- Recognized test report(s) indicating compliance with ICC-ES AC438
- Quality Documentation
- Manufacturer's Drawings and Installation Instructions

Manufacturing Locations:

Factory ID	Location
Atlanta, GA	4795 Frederick Dr. Atlanta, GA 30336
Brookville, IN	128 W 8th St. Brookville, IN 47012
Compton, CA	1501 N Tamarind St., PO Box 5665 Compton, CA 90224
Denver, CO	5201 Fox St. Denver, CO 80216
Houston, TX	8360 Market St. Rd. Houston, TX 77029
Irving, TX	201 N Nursery Rd. Irving, TX 75061
Jacksonville, FL	1035 Talleyrand Ave. Jacksonville, FL 32206
Kearny, NJ	1249 Newark Tpke. Kearny, NJ 07032
Medina, OH	890 W Smith Rd. Medina, OH 44256
Memphis, TN	704 Corrine Ave., N Station Memphis, TN 38107
Minneapolis, MN	1901 49th Ave. N Minneapolis, MN 55430
Portland, OR	NW Yeon Ave. Portland, OR 97208
Savannah, GA	1 Foundation Dr. Savannah, GA 31408
Summit, IL	5824 S Archer Rd. Summit, IL 60501

PRODUCT DESCRIPTIONS and APPLICATIONS

Products:

Supreme®
Oakridge®
TruDefinition® Oakridge®
Duration® Premium
Duration® Premium COOL
TruDefinition® Duration®
TruDefinition® Duration® Designer
TruDefinition® Duration® COOL
TruDefinition® Duration® STORM®
TruDefinition® Duration® MAX™
TruDefinition® Duration® FLEX™
TruDefinition® WeatherGuard® HP
Berkshire®
Woodcrest®
Woodmoor®
Starter Strip Plus
Tri-Built Shingle Starter
SRS TopShield Starter Shingle
WoodStart® Starter Shingle
ProEdge®
ImpactRidge™ Hip & Ridge Shingles
RIZERidge® Hip & Ridge Shingles with Sealant
DuraRidge™ Hip & Ridge Shingles
Berkshire® Hip & Ridge Shingles
WeatherGuard® HP Hip & Ridge

Product Descriptions:

OWENS CORNING® asphalt shingles are roof covering materials that conform with the following properties when installed as instructed in this report. The products come in standard and metric sizes and consist of three-tab shingles, laminated shingles, and accessory shingles.

Three-tab (single-layer): Three-tab, fiberglass reinforced shingles. The shingles are manufactured with a single fiberglass mat, coated on both sides with asphalt, and surfaced on the weather-exposed side with mineral granules. The shingles are self-sealing and have a continuous bead of thermal-tab sealing adhesive above the shingle butt on the weather side.

Product:	Factory IDs:	Dimensions:
Supreme®	Denver, CO; Irving, TX; Medina, OH; Portland, OR	12” x 36”
Supreme®	Compton, CA; Portland, OR	13-1/4” x 39-3/8”

Laminated (multi-layer): Laminated shingles. The shingles are manufactured with 2 layers of fiberglass mat coated with asphalt on both sides, and surfaced on the weather-exposed side with mineral granules.

Product:	Factory IDs:	Dimensions:
Oakridge®	Atlanta, GA; Brookville, IN; Compton, CA; Denver, CO; Irving, TX; Jacksonville, FL; Kearny, NJ; Medina, OH; Memphis, TN; Minneapolis, MN; Portland, OR; Savannah, GA; Summit, IL	39-3/8” x 13-1/4”
TruDefinition® Oakridge®	Atlanta, GA; Irving, TX; Jacksonville, FL; Memphis, TN	39-3/8” x 13-1/4”
Duration® Premium	Compton, CA; Portland, OR	39-3/8” x 13-1/4”
Duration® Premium COOL	Compton, CA	39-3/8” x 13-1/4”
TruDefinition® Duration®	Brookville, IN; Compton CA; Denver, CO; Irving, TX; Jacksonville, FL; Kearny, NJ; Medina, OH; Memphis, TN; Minneapolis, MN; Portland, OR; Savannah, GA; Summit, IL	39-3/8” x 13-1/4”
TruDefinition® Duration® Designer	Brookville, IN; Irving, TX; Jacksonville, FL; Kearny, NJ; Minneapolis, MN; Portland, OR; Summit, IL	39-3/8” x 13-1/4”
TruDefinition® Duration® COOL	Compton CA	39-3/8” x 13-1/4”

TruDefinition® Duration® STORM®	Denver, CO; Memphis, TN	39-3/8" x 13-1/4"
TruDefinition® Duration® MAX™	Compton, CA	39-3/8" x 13-1/4"
TruDefinition® Duration® FLEX™	Denver, CO; Summit, IL	39-3/8" x 13-1/4"
TruDefinition® WeatherGuard® HP	Memphis, TN	39-3/8" x 13-1/4"
Berkshire®	Minneapolis, MN	38"x18-3/4"
Woodcrest®	Compton, CA	40" x 14-1/4"
Woodmoor®	Compton, CA	40" x 14-1/4"

Accessory (hip and ridge): Prefabricated hip and ridge shingles.

Product:	Factory IDs:	Dimensions:
ProEdge®	Atlanta, GA; Denver, CO; Irving, TX; Medina, OH Portland, OR	12" x 12"
ImpactRidge™ Hip & Ridge Shingles	Denver, CO; Summit, IL	12" x 12"
RIZERidge® Hip and Ridge	Houston, TX	12" x 12"
DuraRidge™ Hip and Ridge Shingles	Minneapolis, MN	10-5/8" x 12"
Berkshire® Hip & Ridge Shingles	Minneapolis, MN	10-5/8" x 12"
WeatherGuard® HP Hip & Ridge	Memphis, TN	12" x 12"

Accessory (starter): Prefabricated starter course shingles.

Product:	Factory IDs:	Dimensions:
Starter Strip Plus	Houston, TX; Medina, OH; Minneapolis, MN; Portland, OR	7-3/4" x 39-3/8"
Tri-Built Shingle Starter	Houston, TX; Medina, OH Minneapolis, MN; Portland, OR	7-3/4" x 39-3/8"
SRS TopShield Starter Shingle	Houston, TX; Medina, OH; Minneapolis, MN; Portland, OR	7-3/4" x 39-3/8"
WoodStart® Starter Shingle	Compton, CA	13-3/8" x 40"

Fire Classification:

When installed on new construction in accordance with this report and the OWENS CORNING® installation instructions, the OWENS CORNING® asphalt shingles are a Class A fire classification roof covering in accordance with ASTM E108 and/or ANSI/UL790 and qualify for use under the following code:

- 2021, 2018, 2015, 2012, and 2009 *IBC* Section 1505.1
- 2021, 2018, 2015, 2012, and 2009 *IRC* Section R902.1

When the shingles are installed over existing roof coverings, the fire classification is maintained.

Wind Resistance:

OWENS CORNING® asphalt shingles covered under this report have been tested for wind resistance in accordance with the following test methods:

Shingles tested in accordance with ASTM D3161 are classified as Class F and qualify for use under the exception to the following code:

- 2021 *IBC* Section 1504.2
- 2018 *IBC* Section 1507.2.3
- 2015 *IBC* Section 1507.2.8.1
- 2012 and 2009 *IBC* Section 1507.2.7.1
- 2021, 2018, 2015, 2012, and 2009 *IRC* Section R905.2.4.1

Shingles tested in accordance with ASTM D7158 are classified as Class H and qualify for use in locations as shown in the following code:

- 2021 *IBC* Table 1504.2
- 2018 and 2015 *IBC* Table 1504.1.1
- 2012 and 2009 *IBC* Table 1507.2.7.1
- 2021, 2018, 2015, 2012 and 2009 *IRC* Table R905.2.4.1

Where the maximum allowable stress design wind speed, V_{asd}, is 150 mph (67 m/s) or less in exposure category B or C (ASCE 7) and a maximum building height of 60 feet (18.3 m), installation must be in accordance with the following code as applicable:

- 2021 *IBC* Section 1507.2.5
- 2018 *IBC* Section 1507.2.6
- 2015, 2012, and 2009 *IBC* Section 1507.2.7
- 2021, 2018, 2015, 2012, and 2009 *IRC* Section R905.2

Physical Properties:

OWENS CORNING® asphalt shingles covered under this report have been tested for physical properties in accordance with ASTM D3462 and qualify for use under the following code:

- 2021 and 2018 *IBC* Section 1507.2.4
- 2015, 2012, and 2009 *IBC* Section 1507.2.5
- 2021, 2018, 2015, 2012, and 2009 *IRC* Section R905.2.4

Impact Resistance:

OWENS CORNING® TruDefinition® WeatherGuard® HP, TruDefinition® Duration® STORM, TruDefinition® Duration® FLEX, ImpactRidge™ Hip & Ridge Shingles, and WeatherGuard HP Hip & Ridge covered under this report have been tested for impact resistance in accordance with UL 2218 Class 4.

Shingles have also been evaluated in accordance with ICC-ES Acceptance Criteria, AC438.

INSTALLATION – GENERAL

OWENS CORNING® asphalt shingles must be installed in accordance with the applicable code, this report, and the manufacturer's published installation instructions, which must be available at all times on the jobsite during installation. Minimum roof slopes must be 2:12 (16.67% slope or 9°) for the three-tab shingles and for the laminated shingles. The shingles must be installed in accordance with the following code as applicable, except as noted in this report:

- 2021, 2018, 2015, 2012, and 2009 *IBC* Section 1507.2
- 2021, 2018, 2015, 2012, and 2009 *IRC* Section R905.2

Deck:

The roof deck must be code-complying, minimum $^{3}/_{8}$ inch thick (9.5 mm), exterior plywood complying with DOC PS-1; OSB rated sheathing complying with DOC PS-2; or solid sheathing using minimum nominal 1 by 6 lumber.

Underlayment and Ice Barriers:

Underlayment must comply with ASTM D226, ASTM D4869, or ASTM D6757 as specified in the following code:

- 2021, 2018, 2015, 2012, and 2009 *IBC* Section 1507.2.3
- 2021, 2018, 2015, 2012, and 2009 *IRC* Section R905.2.3

When used as an underlayment under shingles described in this report, self-adhering polymer modified bitumen sheet must comply with ASTM D1970.

For roof slopes greater than 4:12 (33.33% slope or 18°), the roof deck must be covered with minimum one layer of underlayment. Roofs having slopes between 2:12 (16.67% slope or 9°) and 4:12 (33.33% slope or 18°) require minimum two layers of underlayment. Underlayment application must be in accordance with the following code as applicable:

- 2021, and 2018 *IBC* Section 1507.2.3
- 2015, 2012, and 2009 *IBC* Section 1507.2.8
- 2021, 2018, and 2015 *IRC* Section R905.2.3
- 2012, and 2009 *IRC* Section R905.2.7

In areas where there has been a history of ice forming along the eaves, causing a backup of water, as indicated by Table R301.2 (1), an ice barrier must be provided in accordance with the following code as applicable:

- 2021 and 2018 *IBC* Section 1507.2.7
- 2015, 2012, and 2009 *IBC* Section 1507.2.8.2
- 2021, 2018, and 2015 *IRC* Section R905.2.7
- 2012 and 2009 *IRC* Section R905.2.7.1

Fasteners:

Fasteners must comply with ASTM F1667 and be minimum No. 12 gage (0.105 inch), $^{3}/_{8}$ inch diameter head, galvanized, stainless steel, aluminum or copper corrosion-resistance nails. Fasteners must penetrate into the deck minimum $^{3}/_{4}$ inch, or through the deck, where the deck is less than $^{3}/_{4}$ inch thick.

Asphalt Cement:

Asphalt cement must comply with ASTM D4586.

Sealant:

Sealant must comply with ASTM C920.

Valley Construction and Other Flashing:

Valleys must consist of woven, open valley or closed-cut construction and must be flashed in accordance with the following code as applicable:

- 2021 and 2018 *IBC* Section 1507.2.8.2
- 2015, 2012, and 2009 *IBC* Section 1507.2.9.2
- 2021, 2018, 2015, 2012, and 2009 *IRC* Section R905.2.8.2

Other flashings must comply with the following code as applicable:

- 2021 and 2018 *IBC* Section 1503.2 and 1507.2.8
- 2015, 2012, and 2009 *IBC* Section 1503.2 and 1507.2.9
- 2021, 2018, 2015 2012, and 2009 *IRC* Section R903.2 and 905.2.8

Reroofing:

Prior to the reroofing, hip and ridge coverings must be removed. The existing asphalt shingle roof covering must be inspected in accordance with the provisions and limitations of the following codes as applicable:

- 2021 *IBC* Section 1512
- 2018 and 2015 *IBC* Section 1511
- 2012 and 2009 *IBC* Section 1510
- 2021, 2018, and 2015 *IRC* Section R908
- 2012 and 2009 *IRC* Section R907

The shingles must be installed in accordance with this report. Fasteners must be of sufficient length to penetrate $^{3}/_{4}$ inch into the deck, or through the deck where the deck is less than $^{3}/_{4}$ inch thick.

INSTALLATION – ASPHALT SHINGLES

Starter Shingles:

A starter course of **Starter Strip Plus, Tri-Built Shingle Starter**, **SRS TopShield Starter Shingle,** or **Woodstart® Starter Shingle** must be attached to the eave edge using fasteners approved by this report, located 1-1/2 to 3 inches from the eave edge and spaced 8 to 10 inches apart, for a total of five fasteners per shingle. The starter strip must overhang the eaves and rake edges by 1/4 to 3/4 inch. See Figures 1 and 2.

If self-sealing three-tab shingles are used, remove the exposed tab portion and install with factory-applied sealant adjacent to the eaves.

Figure 1 – Starter Strip Plus, Tri-Built Shingle Starter, and SRS TopShield Starter Shingle

Fastening Pattern:

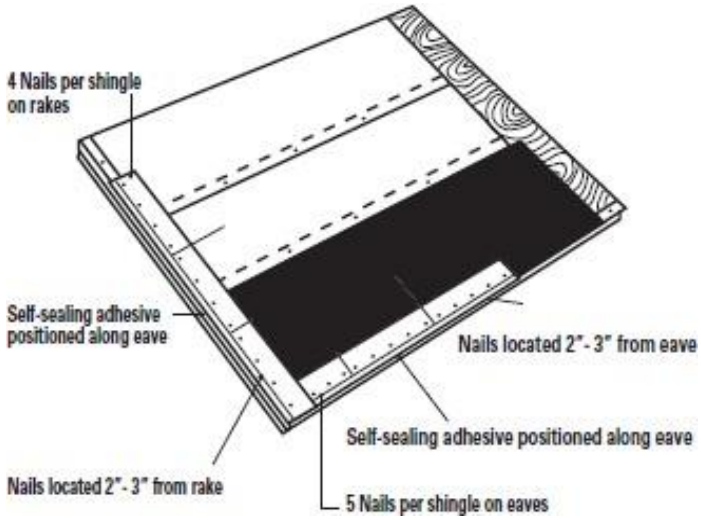
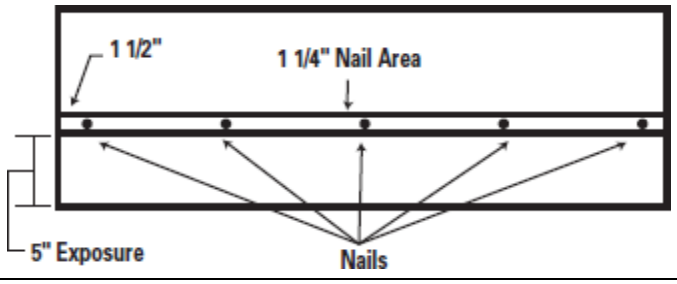


Figure 2 – WoodStart® Starter Shingle

Fastening Pattern:



Field Shingles:

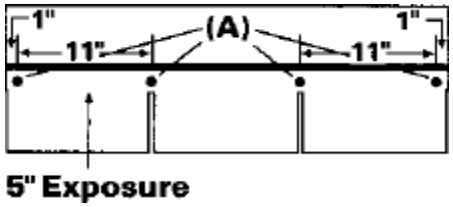
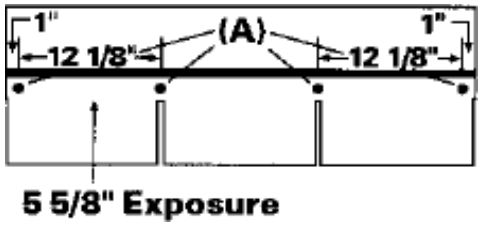
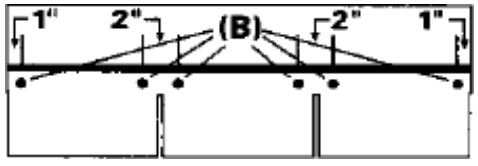
Supreme®: For roof slopes of 2:12 up to 21:12 (16.67% or 9° up to 175% or 60°), use a minimum of four (4) fasteners per shingle; a minimum of six (6) fasteners per shingle may optionally be used in high velocity wind zones. For roof slopes over 21:12 (175% or 60°), use a minimum of six (6) fasteners per shingle and 1 inch diameter spots of asphalt cement placed under each corner (1 to 2 inches from each end) of each tab (two spots per tab). See Figure 3 for fastener spacing. Fasteners must be located $^{5}/_{8}$ inch above the tab cut-out and below the sealant strip; do not drive fasteners into or above sealant strip. Maximum exposure to the weather must be 5 ± $^{1}/_{8}$ inches for standard-sized shingles or 5-$^{5}/_{8}$ ± $^{1}/_{8}$ inches for metric-sized shingles.

The first course of field shingles must be installed over a starter course. Apply first course starting with a full shingle, aligned even with starter. Subsequent shingle courses must be installed with vertical joint offsets from adjacent courses. For standard-sized three-tab shingles, 6 inch offsets are suggested, but repeatable patterns greater than 4 inches are permitted. For metric-sized three-tab shingles, 6-$^{9}/_{16}$ inch (167 mm) offsets are suggested, but repeatable patterns greater than 4 inches (102 mm) are permitted.

Caution must be exercised to assure that end joints are minimum 2 inches from a fastener in the shingle below and that side laps are minimum 4 inches in succeeding courses.

Note: In colder climates or wind regions where it is questionable whether the thermal-sealing adhesive will activate to seal the shingles, the shingles can be hand-sealed. A 1 inch diameter spot of asphalt cement should be placed under the corner (1 to 2 inches from each end) of each tab (two spots per tab).

Figure 3 - Supreme®

Four (4) Fastener Pattern: For standard-sized shingle	
Four (4) Fastener Pattern: For metric-sized shingle	
Six (6) Fastener Pattern:	

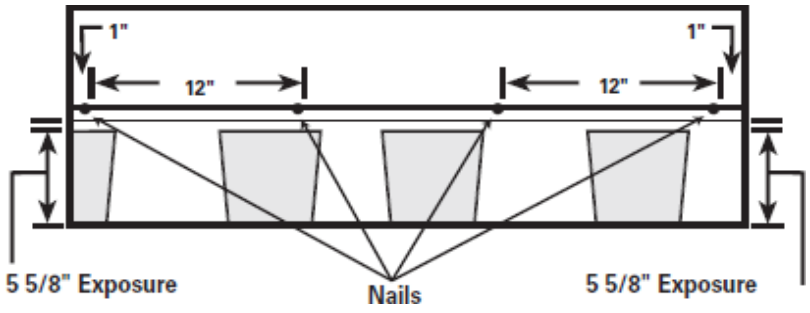
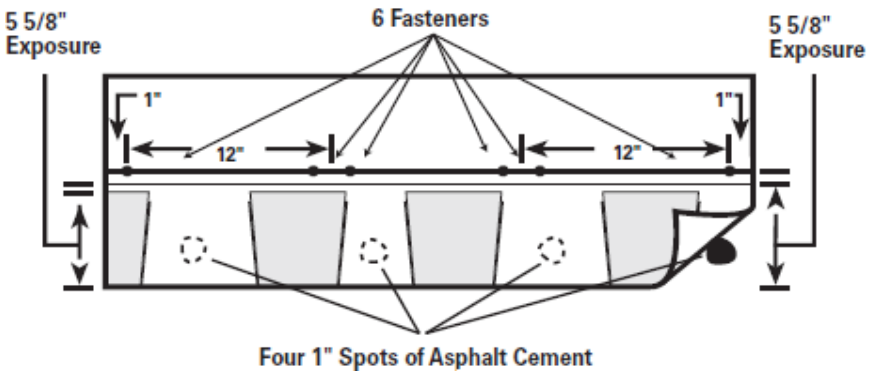
Oakridge® and **TruDefinition® Oakridge®:** For roof slopes of 2:12 up to 21:12 (16.67% or 9° up to 175% or 60°), use a minimum of four (4) fasteners per shingle; a minimum of six (6) fasteners per shingle may optionally be used in high velocity wind zones. For roof slopes over 21:12 (175% or 60°), use a minimum of six (6) fasteners per shingle and four (4) 1 inch diameter spots of asphalt cement per shingle (2 inches up from the bottom edge). See Figure 4 for fastener spacing. Fasteners must be located 6-1/8 inches above the butt edge of the shingles. Maximum exposure to the weather must be 5-5/8 ± 1/8 inches.

The first course of field shingles must be installed over a starter course. Apply first course starting with a full shingle, aligned even with starter. Subsequent shingle courses must be installed with vertical joint offsets from adjacent courses. 6-$^{1}/_{2}$ inch offsets are suggested, but repeatable patterns greater than 4 inches are permitted.

Caution must be exercised to assure that end joints are minimum 2 inches from a fastener in the shingle below and that side laps are minimum 4 inches in succeeding courses.

Note: In colder climates or wind regions where it is questionable whether the thermal-sealing adhesive will activate to seal the shingles, the shingles can be hand-sealed. Four (4) 1 inch diameter spots of asphalt cement should be placed under the exposed portion of the shingle, spaced 1 to 2 inches from each end of the shingle with two spots evenly spaced in between.

Figure 4 - Oakridge® and TruDefinition® Oakridge®

Four (4) Fastener Pattern:	
Six (6) Fastener Pattern: *Note: Asphalt Cement included for slopes greater than 21:12*	

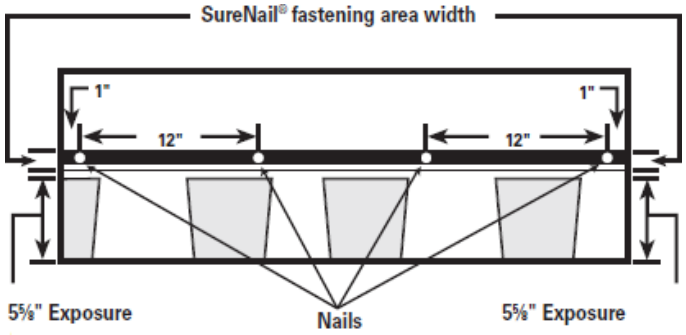
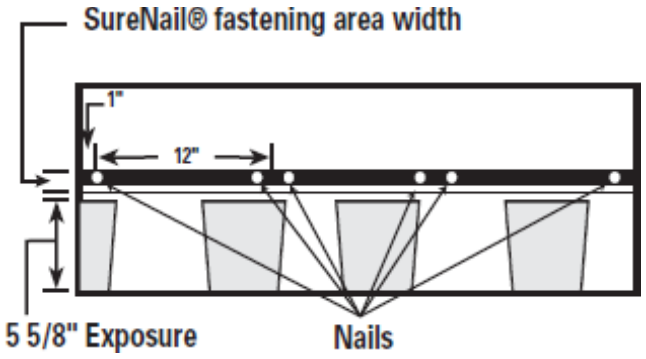
Duration® Premium, Duration® Premium COOL, TruDefinition® Duration®, TruDefinition® Duration® Designer, TruDefinition® Duration® COOL, TruDefinition® Duration® STORM®, TruDefinition® Duration® MAX, TruDefinition® Duration® FLEX: For roof slopes of 2:12 up to 21:12 (16.67% or 9° up to 175% or 60°), use a minimum of four (4) fasteners per shingle; a minimum of six (6) fasteners per shingle may optionally be used in high velocity wind zones. For roof slopes over 21:12 (175% or 60°), use a minimum of six (6) fasteners per shingle and four (4) 1 inch diameter spots of asphalt plastic cement per shingle (2 inches up from the bottom edge). See Figure 5 for fastener spacing. Fasteners must be located 6-$^{1}/_{8}$ inches above the butt edge of the shingles (center of the SureNail® fastening area for Duration® products). Maximum exposure to the weather must be 5-$^{5}/_{8} \pm {}^{1}/_{8}$ inch.

The first course of field shingles must be installed over a starter course. Apply first course starting with a full shingle, aligned even with starter. Subsequent shingle courses must be installed with vertical joint offsets from adjacent courses. 6-$^{1}/_{2}$ inch offsets are suggested, but repeatable patterns greater than 4 inches are permitted.

Caution must be exercised to assure that end joints are minimum 2 inches from a fastener in the shingle below and that side laps are minimum 4 inches in succeeding courses.

Note: In colder climates or wind regions where it is questionable whether the thermal-sealing adhesive will activate to seal the shingles, the shingles can be hand-sealed. Four (4) 1 inch diameter spots of asphalt cement should be placed under the exposed portion of the shingle, spaced 1 to 2 inches from each end of the shingle with two spots evenly spaced in between.

Figure 5 - Duration® Premium, Duration® Premium COOL, TruDefinition® Duration®, TruDefinition® Duration® Designer, TruDefinition® Duration® COOL, TruDefinition® Duration® STORM®, TruDefinition® Duration® MAX, and TruDefinition® Duration® FLEX

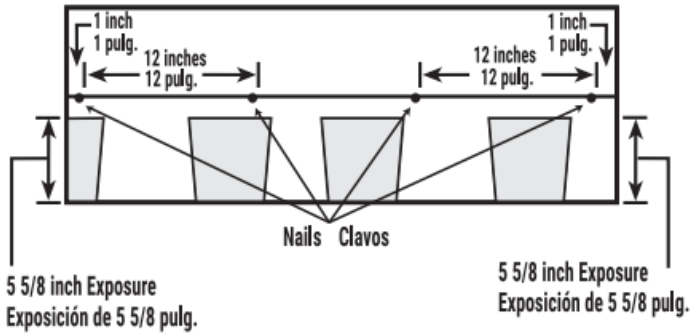
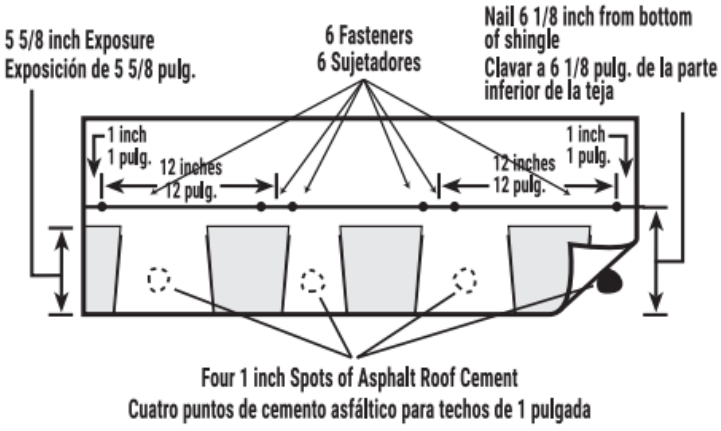
Four (4) Fastener Pattern:	
Six (6) Fastener Pattern:	

TruDefinition® WeatherGuard®- HP: For roof slopes of 2:12 up to 21:12 (16.67% or 9° up to 175% or 60°), use a minimum of four (4) fasteners per shingle; a minimum of six (6) fasteners per shingle may optionally be used in high velocity wind zones. For roof slopes over 21:12 (175% or 60°), use a minimum of six (6) fasteners per shingle and four (4) 1 inch diameter spots of asphalt cement per shingle (2 inches up from the bottom edge). See Figure 6 for fastener spacing. Fasteners must be located 6-$^{1}/_{8}$ inches above the butt edge of the shingles and secure both layers of the shingle. Maximum exposure to the weather must be 5-$^{5}/_{8} \pm {}^{1}/_{8}$ inches.

The first course of field shingles must be installed over a starter course. Apply first course starting with a full shingle, aligned even with starter. Subsequent shingle courses must be installed with vertical joint offsets from adjacent courses. 6-$^{1}/_{2}$ inch offsets are suggested, but repeatable patterns greater than 4 inches are permitted.

Note: In colder climates or wind regions where it is questionable whether the thermal-sealing adhesive will activate to seal the shingles, the shingles can be hand-sealed. Four (4) 1 inch diameter spots of asphalt cement should be placed under the exposed portion of the shingle, spaced 1 to 2 inches from each end of the shingle with two spots evenly spaced in between.

Figure 6 - TruDefinition® WeatherGuard® HP

Four (4) Fastener Pattern:	
Six (6) Fastener Pattern: *Note: Asphalt Cement included for slopes greater than 21:12*	

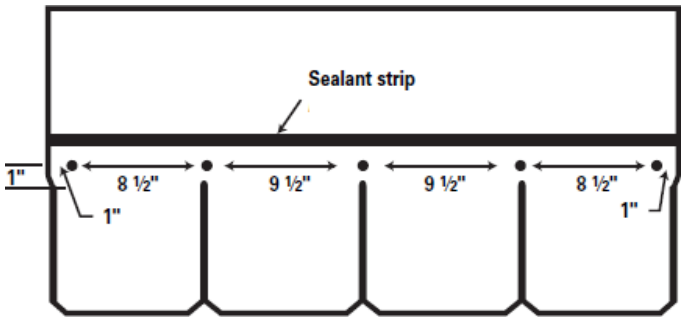
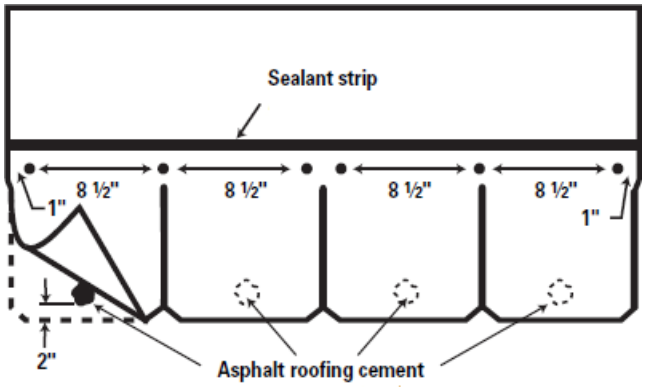
Berkshire®: For roof slopes of 2:12 up to 21:12 (16.67% or 9° up to 175% or 60°), use a minimum of five (5) fasteners per shingle; a minimum of six (6) fasteners per shingle may optionally be used in high velocity wind zones. For roof slopes over 21:12 (175% or 60°), use a minimum of six (6) fasteners per shingle and 1 inch diameter spots of asphalt cement placed under each tab (centered across tab width and 2 inches up from bottom edge of shingle). See Figure 7 for fastener spacing. Fasteners must be located $^{5}/_{8}$ inch above the tab cut-out and below the sealant strip; do not drive fasteners into or above sealant strip. Maximum exposure to the weather must be $8\text{-}^{3}/_{8} \pm {}^{1}/_{8}$ inch.

Shingles are applied in a single-column, vertical-racking method. The first course of field shingles must be installed over a starter course. Apply first course with a full shingle, aligned even with starter. Apply second course with a $4\text{-}^{3}/_{4}$ inch offset. Thereafter, alternate shingle courses; odd-numbered courses start with a full shingle and even-numbered courses start with a $4\text{-}^{3}/_{4}$ inch offset.

Caution must be exercised to assure that end joints are minimum 2 inches from a fastener in the shingle below and that side laps are minimum 4 inches in succeeding courses.

Note: In colder climates or wind regions where it is questionable whether the thermal-sealing adhesive will activate to seal the shingles, the shingles can be hand-sealed. A 1 inch diameter spot of asphalt cement should be placed under the corner 1 to 2 inches from each end of each tab (two spots per tab).

Figure 7 - Berkshire®

Five (5) Fastener Pattern:	
Six (6) Fastener Pattern: *Note: Asphalt Cement included for slopes greater than 21:12*	

Woodcrest® and Woodmoor®: For roof slopes of 2:12 up to 21:12 (16.67% or 9° up to 175% or 60°), use a minimum of five (5) fasteners per shingle; a minimum of six (6) fasteners per shingle may optionally be used in high velocity wind zones. For roof slopes over 21:12 (175% or 60°), use a minimum of nine (9) fasteners per shingle and 1 inch diameter spots of asphalt cement placed under each tab (centered across tab width and 2 inches up from bottom edge of shingle). See Figure 8 for fastener spacing. Maximum exposure to the weather must be 4 ± $^{1}/_{8}$ inches.

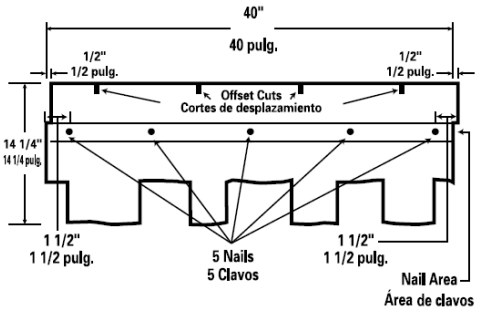
Shingles are applied in either a 5 inch & 5 inch or a 5 inch & 15 inch offset method. The first course of field shingles must be installed over a starter course. Apply first course with a full shingle, aligned even with starter. Subsequent shingle courses must be installed with vertical joint offsets from adjacent courses. For 5 inch & 5 inch offset method, apply subsequent courses with a 5 inch offset. For 5 inch & 15 inch offset method, apply second course with a 5 inch offset (cut 5 inches from a full shingle); apply third course with a 15 inch offset (cut 20 inches from a full shingle); apply fourth course with a 5 inch offset (cut 25 inches from a full shingle); repeat application pattern thereafter.

Caution must be exercised to assure that end joints are minimum 2 inches from a fastener in the shingle below and that side laps are minimum 4 inches in succeeding courses.

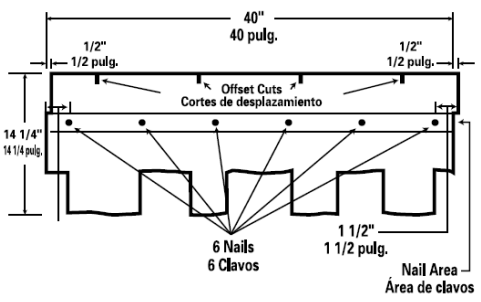
Note: In colder climates or wind regions where it is questionable whether the thermal-sealing adhesive will activate to seal the shingles, the shingles can be hand-sealed. A 1 inch diameter spot of asphalt cement should be placed under the corner 1 to 2 inches from each end of each tab (two spots per tab).

Figure 8 - Woodcrest® and Woodmoor®

Five (5) Fastener Pattern:

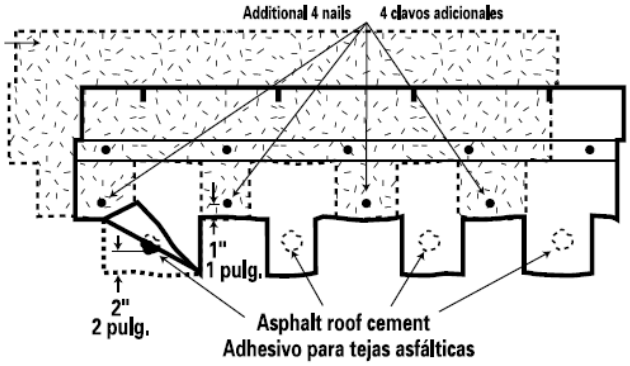


Six (6) Fastener Pattern:



Nine (9) Fastener Pattern:

Note: Asphalt Cement included for slopes greater than 21:12



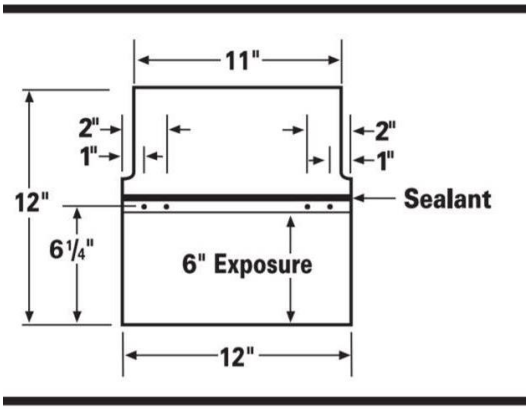
Hip and Ridge Shingles:

Complete field shingle application before applying hip and ridge shingles. Hip shingles must be applied before applying ridge shingles. Arrange hip and ridge shingles along center line so that both halves of the laminated piece fall on opposite sides of the hip or ridge. When finishing ridge, leave no headlap or laminated portion exposed; cover exposed fasteners with asphalt cement.

ProEdge®: Use four (4) fasteners per shingle. Fasten each shingle with two (2) fasteners on each side, placed 6-1/4 inch from the exposed end and 1 inch and 2 inch in from the side edge. See Figure 9 for fastener spacing. Fasteners must be located above the sealant strip; do not drive fasteners into sealant strip. Maximum exposure to the weather must be 6 inches.

Figure 9 - ProEdge®

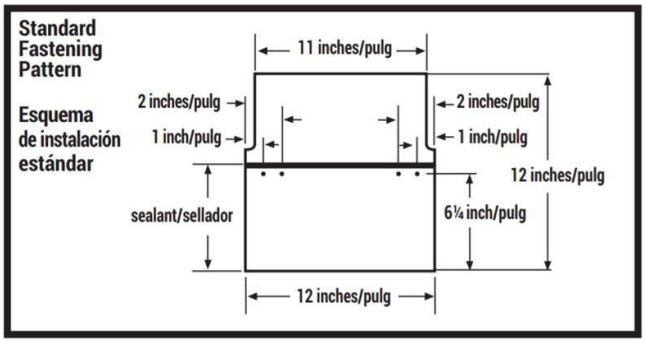
Fastening Pattern:
12" x 12" shingle



ImpactRidge™: Use four (4) fasteners per shingle. Fasten each shingle with two (2) fasteners on each side, placed 6-1/4 inch from the exposed end and 1 inch and 2 inch in from the side edge. See Figure 10 for fastener spacing. Fasteners must be located below the sealant strip; do not drive fasteners into sealant strip. Maximum exposure to the weather must be 6 inches.

Figure 10 – ImpactRidge™

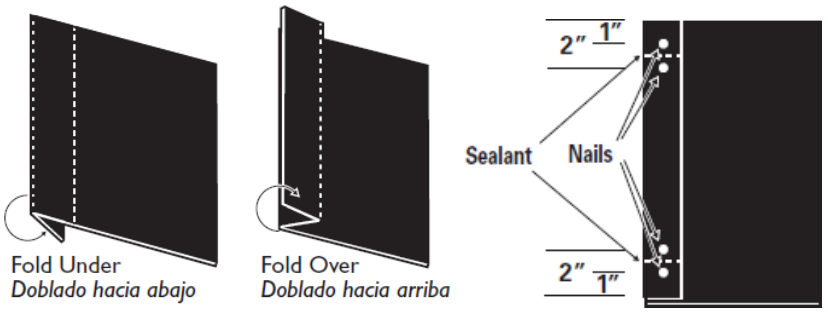
Fastening Pattern:



RIZERidge® Hip and Ridge Shingles: Shingles contain perforation lines to establish a foldable design and create a multi-layered dimension. Use four (4) fasteners and two (2) beads of sealant per shingle. Fasten each shingle with two (2) fasteners on each side, placed 7 inch from the exposed end and 1 inch and 2 inch in from the side edge. On each side and between the fasteners at approximately 1-1/2 inch in from the side edge, place a 1/4 inch wide by 2 inch long bead. See Figure 11 for fastener spacing and sealant application. Maximum exposure to the weather must be 6 inches.

Figure 11 - RIZERidge® Hip and Ridge Shingles

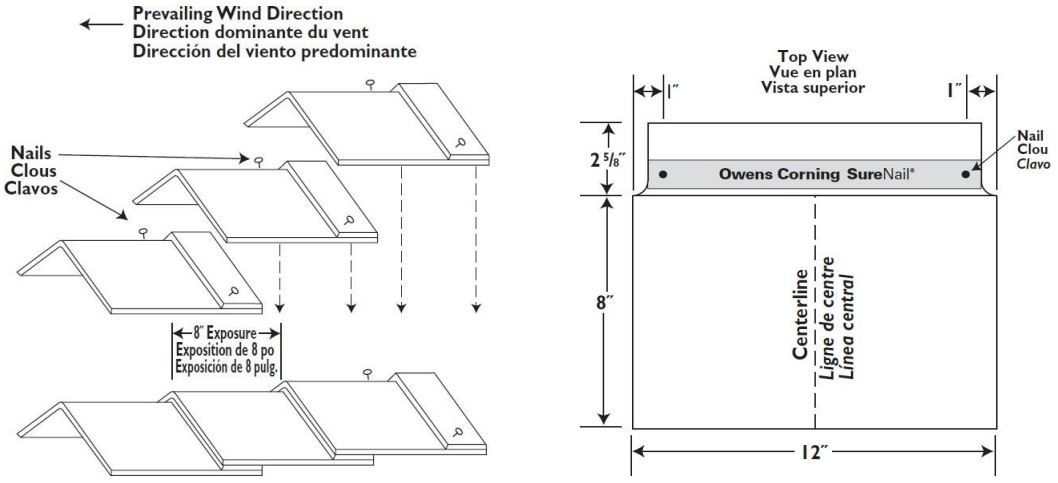
Fastening Pattern:
With Sealant



DuraRidge™ Hip and Ridge Shingles: Use two (2) fasteners per shingle. Fasten each shingle through the top laminated piece with one (1) fastener on each side, placed 9 inch from the exposed end and 1 inch in from the side edge. Fasteners must be located in the center of the SureNail® fastening area. See Figure 12 for fastener spacing. Maximum exposure to the weather must be 8 inches.

Figure 12 - DuraRidge™ Hip and Ridge Shingles

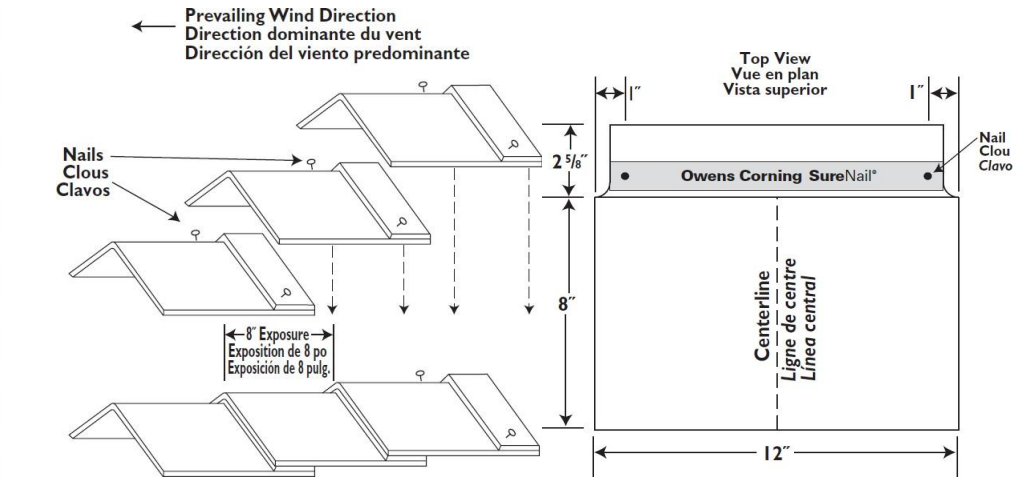
Fastening Pattern:



Berkshire® Hip and Ridge Shingles: Use two (2) fasteners per shingle. Fasten each shingle through the top laminated piece with one (1) fastener on each side, placed 9 inch from the exposed end and 1 inch in from the side edge. Fasteners must be located in the center of the SureNail® fastening area. See Figure 13 for fastener spacing. Maximum exposure to the weather must be 8 inches.

Figure 13 - Berkshire® Hip and Ridge Shingles

Fastening Pattern:

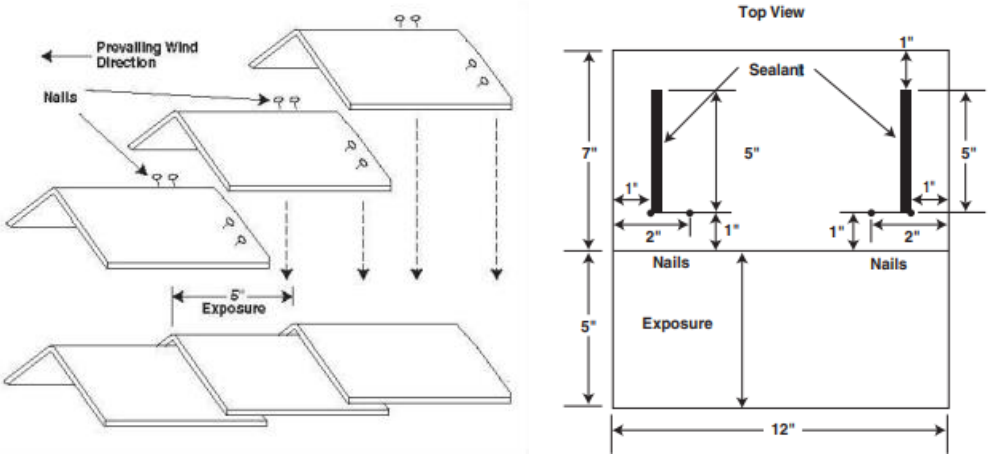


WeatherGuard® HP Hip and Ridge Shingles: Use four (4) fasteners per shingle. Fasten each shingle through the top laminated piece with two (2) fasteners on each side, placed 6 inch from the exposed end and 1 and 2 inches in from the side edge. See Figure 14 for fastener spacing. In high wind zones, apply a $^{1}/_{4}$ inch wide by 5 inch long bead of ASTM C920 elastomeric sealant starting 1 inch from the edge to each side of the shingle. Maximum exposure to the weather must be 5 inches.

Figure 14 – WeatherGuard® HP Hip and Ridge Shingles

Fastening Pattern:

Note: Sealant included for high wind zones



CONDITIONS OF USE & IDENTIFICATION

The OWENS CORNING® Asphalt Shingles described in this report comply with, or are suitable alternatives to, the codes listed in this report, subject to the following conditions:

- The products as well as the installation methods must be in compliance with the applicable code, this report, and the installation instruction provided by the manufacturer. If the manufacturer's installation instructions differ from what is listed in this report, this report governs.
- This report does not supersede the local jurisdiction regulations and the final approval of the building products, materials, or systems in this report is the responsibility of the authorities having jurisdiction.
- This report is only valid if the product(s) and/or the referenced documentation/codes related to the products do not change. If there is a change in product(s) and/or the referenced documentation/codes related to the products, PRI Construction Materials Technologies, LLC must be informed and further action may be necessary to revalidate this report.
- This report, in its entirety, must be available at job sites upon request by the user or for inspection by the Building Official. A copy of this report in full shall be provided by the manufacturer or its distributors.
- The products are identified by marks bearing the report holder's name, the manufacture location, the product name, and the Seal of PRI Validation Program for Building Materials. The Seal shall indicate, at a minimum, the following:
  a. ASTM E108 – Class A
  b. ASTM D3161 – Class F
  c. ASTM D7158 – Class H
  d. ASTM D3462
  e. ICC-ES Acceptance Criteria, AC438
- The products are manufactured at the locations listed in this report and are manufactured under a quality control program with surveillance and/or inspections by PRI Construction Materials Technologies, LLC.
- This report is a supplement to product certification. The products listed herein must be certified separately under the PRI Validation Program for Building Products. This report alone is not a product certification and requires separate product certification under the PRI Validation Program for Building Products to be valid.
- The current status of this report as well as a directory of certified products, including supplemental PRI Evaluation Reports, can be found at pri-group.com.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 31 13—Asphalt Shingles

REPORT HOLDER:

GAF

EVALUATION SUBJECT:

GAF SHINGLE ROOF COVERING SYSTEMS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that GAF shingle roof covering systems, described in ICC-ES evaluation report ESR-1475, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2022 *California Building Code*® (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 *California Residential Code*® (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The GAF shingle roof covering systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-1475, comply with CBC Sections 1505.1 and 1507.2, and may be used where the CBC requires a Class A roof covering complying with CBC Section 1505.1.1, a Class B roof covering complying with CBC Section 1505.3, or a Class C roof covering complying with CBC Section 1505.1.2, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions respectively, noted in the evaluation report and the additional requirements of CBC Section 1512, as applicable.

The asphalt shingles may be used in the construction of new buildings located in any Fire Hazard Severity Zone within a State Responsibility Areas or any Wildland-Urban Interface Fire Area, provided installation is in accordance with the 2021 *International Building Code*® (IBC) provisions, as applicable, noted in the evaluation report and the additional requirements of Sections 701A.3 and 705A of the CBC.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

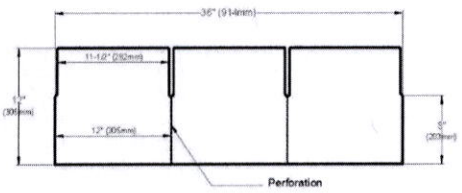
2.2 CRC:

The GAF shingle roof covering systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-1475, comply with CRC Sections R902.1 and R905.2, and may be used where the CRC requires a Class A roof cover complying with CRC Section R902.1.1, a Class B roof covering complying with CRC Section R902.3, or a Class C roof covering complying with CRC Section R902.1.2, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions respectively, noted in the evaluation report and the additional requirements of CRC Section R908, as applicable.

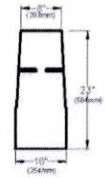
The asphalt shingles may be used in the construction of new buildings located in any Fire Hazard Severity Zone within a State Responsibility Areas or Wildland–Urban Interface Fire Area, provided installation is in accordance with the 2021 *International Residential Code*® (IRC) provisions, as applicable, noted in the evaluation report and the additional requirements of Sections R337.1.3 and R337.5 of the CRC.

The products included in this supplement have not been evaluated for compliance with the *International Wildland—Urban Interface Code*®

This supplement expires concurrently with the evaluation report, reissued October 2023.

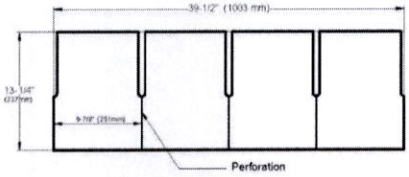


TIMBERTEX® PREMIUM RIDGE CAP SHINGLES



RIDGLASS® 10

RIDGLASS® PREMIUM RIDGE CAP SHINGLES



Z®RIDGE DISTINCTIVE RIDGE CAP SHINGLES

FIGURE 3—RIDGE AND STARTER SHINGLES

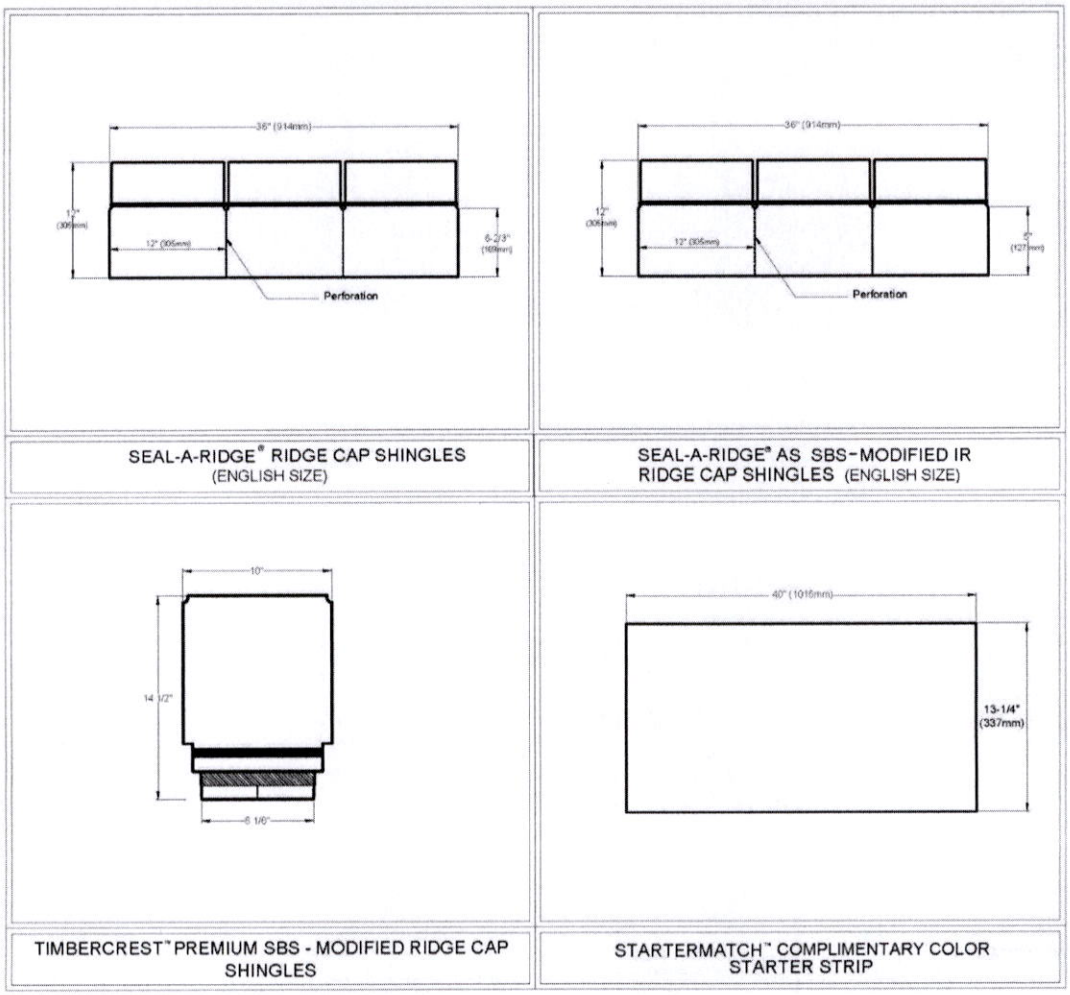


FIGURE 2—STARTER AND RIDGESHINGLES

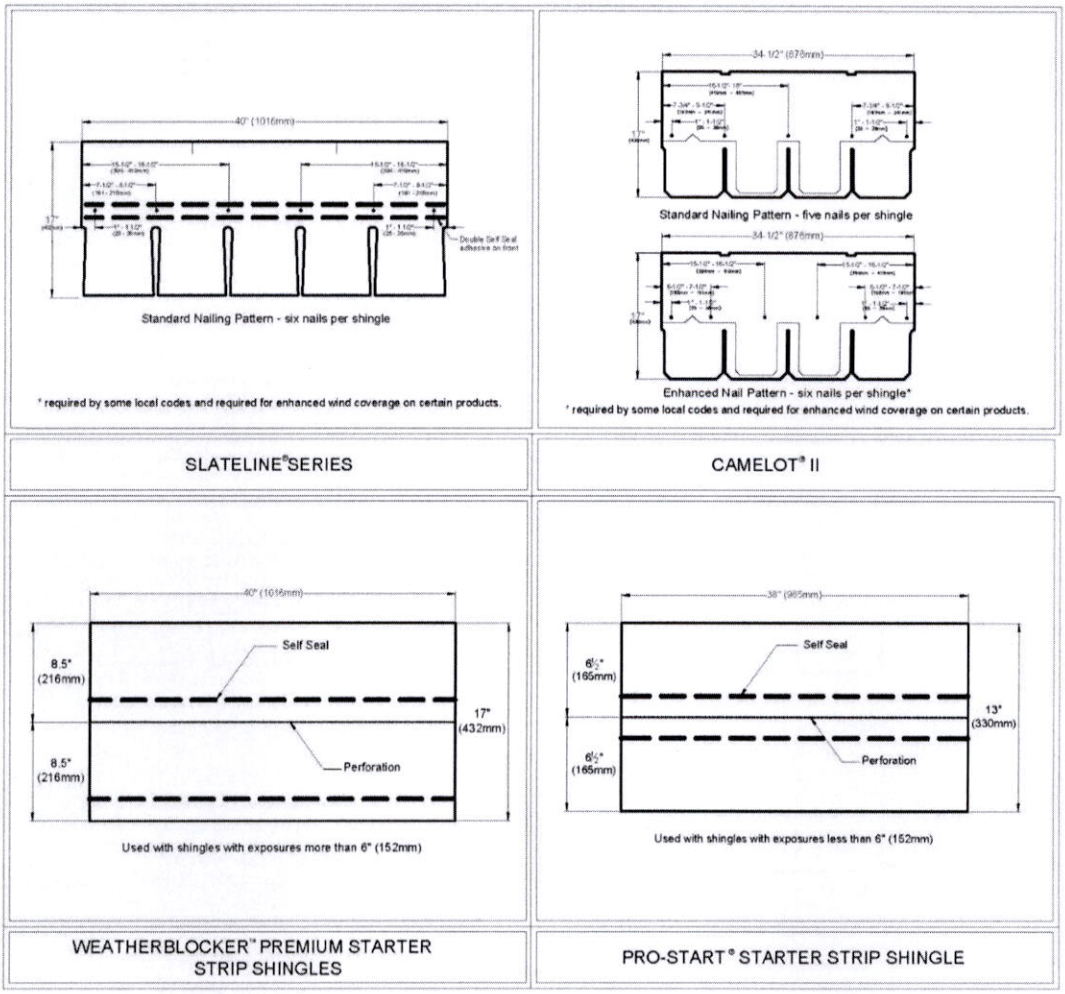


FIGURE 1—GAF SHINGLES (Continued)

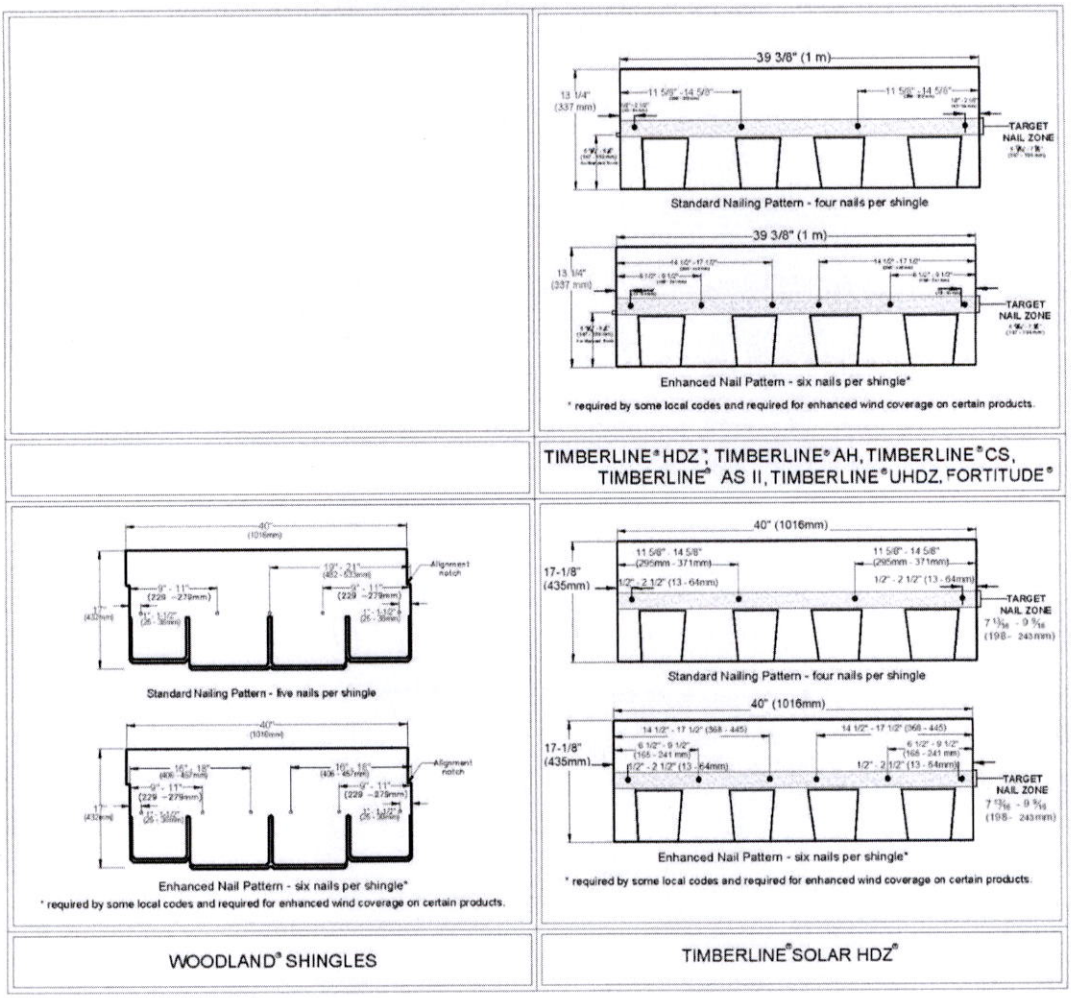


FIGURE 1—GAF SHINGLES (Continued)

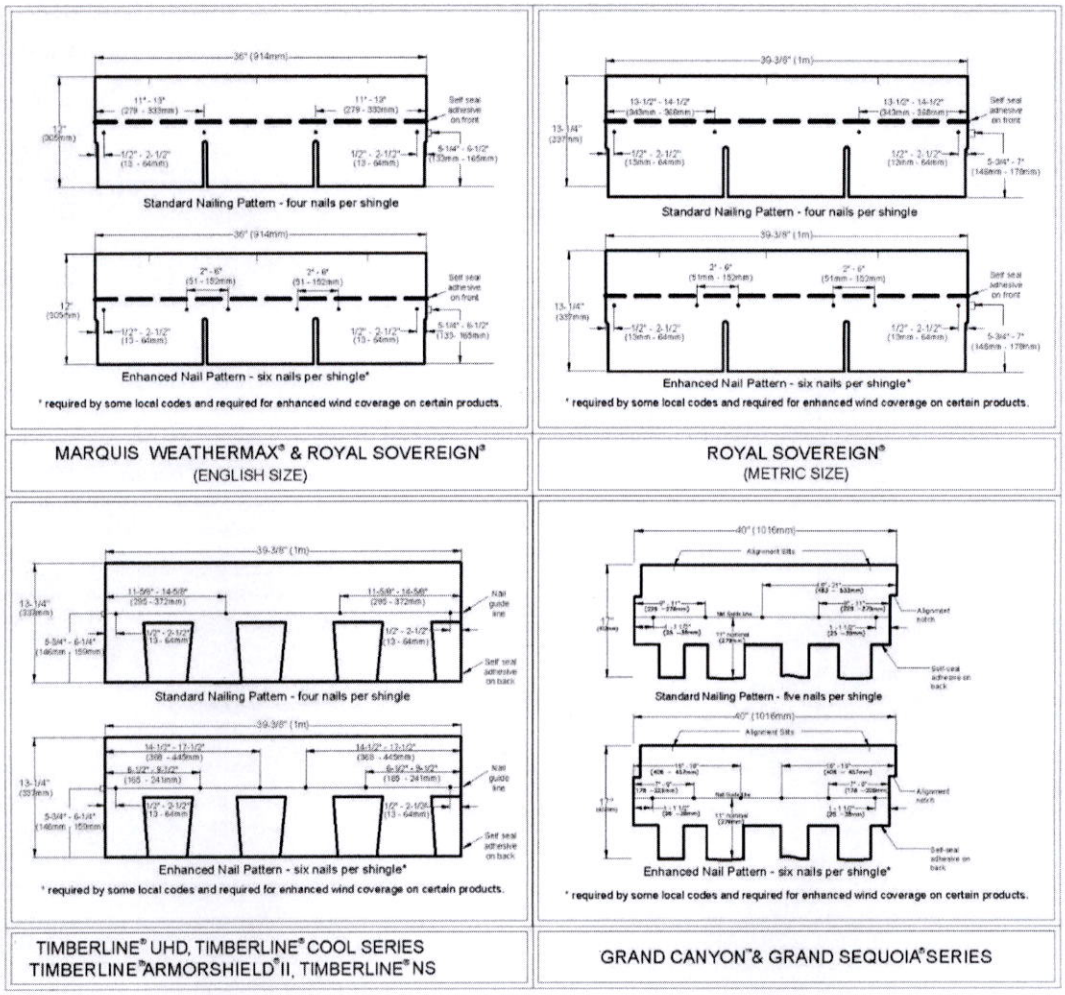


FIGURE 1—GAF SHINGLES

TABLE 2—ACCESSORY PRODUCTS – PRODUCT DESCRIPTIONS AND MANUFACTURING LOCATIONS

SHINGLE	SHINGLE TYPE	PLANT LOCATION	DIMENSIONS (height x width) (inches)	MAXIMUM EXPOSURE TO THE WEATHER (inches)
Ridglass® Premium Ridge Cap Shingles	Hip and Ridge	Fontana, CA	10 x 23 pieces	8
TimberCrest® Premium SBS-Modified Ridge Cap Shingles	Hip and Ridge	Fontana, CA	10 x 24 pieces	8
Royal Sovereign®	Hip and Ridge	Fontana, CA	$13^1/_4$ x $39^3/_8$ strip $13^1/_4$ x $9^7/_8$ pieces	See Footnote[1]
		Dallas, TX Minneapolis, MN Mt. Vernon, IN Myerstown, PA Savannah, GA Tampa, FL Tuscaloosa, AL	12 x 36 strip 12 x 12 pieces	See Footnote[1]
Seal-A-Ridge® Ridge Cap Shingles	Hip and Ridge	Savannah, GA Mt. Vernon, IN	12 x 36 strip 12 x 12 pieces	$6^2/_3$
Seal-A-Ridge® AS SBS-Modified IR Ridge Cap Shingles	Hip and Ridge	Savannah, GA	12 x 36 strip 12 x 12 pieces	5
TimberTex® Premium Ridge Cap Shingles	Hip and Ridge	Mt. Vernon, IN	12 x 36 strip 12 x 12 pieces	8
Z®Ridge® Distinctive Ridge Cap Shingles	Hip and Ridge	Shafter, CA	$13^1/_4$ x $39^1/_2$ strip $13^1/_4$ x $9^7/_8$ pieces	$5^5/_8$
Pro-Start® Starter Strip Shingles	Starter Strip	Mt. Vernon, IN Dallas, TX	13 x 38 strip $6^1/_2$ x 38 pieces	N/A
		Shafter, CA	$13^1/_4$ x 38 strip $6^5/_8$ x 38 pieces	N/A
StarterMatch® Starter Strip Shingles StarterMatch® Complimentary Color Starter Strip Shingles	Starter Strip	Fontana, CA	$13^1/_4$ x 40 strip	N/A
WeatherBlocker™ Premium Starter Strip Shingles	Starter Strip	Mt. Vernon, IN	17 x 40 strip $8^1/_2$ x 40 pieces	N/A

For **SI:** 1 inch = 25.4 mm, 1 lb/100 ft^2 = 0.0488 kg/m^2.

[1]Weather exposure must not exceed that permitted for the field of the roof

TABLE 1—GAF SHINGLES – PRODUCT DESCRIPTIONS AND MANUFACTURING LOCATIONS (Continued)

SHINGLE	SHINGLE TYPE	PLANT LOCATION	DIMENSIONS (height x width) (inches)	MAXIMUM EXPOSURE TO THE WEATHER (inches)	LOCATION OF NAIL LINE[1] (inches)	CLASS
Timberline® Natural Shadow®, Timberline® NS	Laminated	Baltimore, MD Dallas, TX Ennis, TX Fontana, CA Michigan City, IN Minneapolis, MN Myerstown, PA Shafter, CA Tampa, FL Tuscaloosa, AL	$13^{1}/_{4}$ x $39^{3}/_{8}$	$5^{5}/_{8}$	6	ASTM D3161, Class F ASTM D7158, Class H
Timberline® HDZ™ Timberline® UHDZ™	Laminated	Baltimore, MD Dallas, TX Ennis, TX Fontana, CA Michigan City, IN Minneapolis, MN Myerstown, PA Shafter, CA Tampa, FL Tuscaloosa, AL	$13^{1}/_{4}$ x $39^{3}/_{8}$	$5^{5}/_{8}$	$5^{7}/_{8} – 7^{5}/_{8}$	ASTM D3161, Class F ASTM D7158, Class H
Timberline® Cool Series®	Laminated	Fontana, CA	$13^{1}/_{4}$ x $39^{3}/_{8}$	$5^{5}/_{8}$	6	ASTM D3161, Class F ASTM D7158, Class H
Timberline® CS	Laminated	Fontana, CA	$13^{1}/_{4}$ x $39^{3}/_{8}$	$5^{5}/_{8}$	$5^{7}/_{8} – 7^{5}/_{8}$	ASTM D3161, Class F ASTM D7158, Class H
Timberline Ultra HD®, Timberline® UHD	Laminated	Baltimore, MD Dallas, TX Ennis, TX Fontana, CA Michigan City, IN Minneapolis, MN Myerstown, PA Shafter, CA Tampa, FL Tuscaloosa, AL	$13^{1}/_{4}$ x $39^{3}/_{8}$	$5^{5}/_{8}$	6	ASTM D3161, Class F ASTM D7158, Class H
Timberline® American Harvest®	Laminated	Fontana, CA Michigan City, IN Myerstown, PA Tuscaloosa, AL	$13^{1}/_{4}$ x $39^{3}/_{8}$	$5^{5}/_{8}$	6	ASTM D3161, Class F ASTM D7158, Class H
Timberline® AH	Laminated	Fontana, CA Michigan City, IN Myerstown, PA Tuscaloosa, AL	$13^{1}/_{4}$ x $39^{3}/_{8}$	$5^{5}/_{8}$	$5^{7}/_{8} – 7^{5}/_{8}$	ASTM D3161, Class F ASTM D7158, Class H
Fortitude®	Laminated	Myerstown, PA	$13^{1}/_{4}$ x $39^{3}/_{8}$	$5^{5}/_{8}$	$5^{7}/_{8} – 7^{5}/_{8}$	ASTM D3161, Class F ASTM D7158, Class H
Woodland®	Laminated	Mt. Vernon, IN	17 x 40	$6^{1}/_{2}$ - $7^{1}/_{2}$	8	ASTM D3161, Class F ASTM D7158, Class H
Timberline Solar HDZ™	Laminated	Mt. Vernon, IN	$17^{1}/_{8}$ x 40	$7^{9}/_{16}$	$7^{13}/_{16} – 9^{9}/_{16}$	ASTM D3161, Class F ASTM D7158, Class H

For **SI:** 1 inch = 25.4 mm, 1 lb/100 ft^2 = 0.0488 kg/m^2

[1]Nail line = distance from lowermost edge of shingle to target nail location. See Figure 1.

TABLE 1—GAF SHINGLES – PRODUCT DESCRIPTIONS AND MANUFACTURING LOCATIONS

SHINGLE	SHINGLE TYPE	PLANT LOCATION	DIMENSIONS (height x width) (inches)	MAXIMUM EXPOSURE TO THE WEATHER (inches)	LOCATION OF NAIL LINE[1] (inches)	CLASS
Royal Sovereign®	Three–tab	Fontana, CA	$13^1/_4$ x $39^3/_8$	$5^5/_8$	6	ASTM D3161, Class F ASTM D7158, Class H
		Dallas, TX Minneapolis, MN Mt. Vernon, IN Myerstown, PA Savannah, GA Tampa, FL Tuscaloosa, AL	12 x 36	5	$5^5/_8$	ASTM D3161, Class F ASTM D7158, Class H
Marquis WeatherMax®	Three–tab	Mt. Vernon, IN	12 x 36	5	$5^5/_8$	ASTM D3161, Class F ASTM D7158, Class H
Slateline®	Five–tab	Mt. Vernon, IN	17 x 40	$7^1/_2$	9	ASTM D3161, Class F ASTM D7158, Class H
Camelot® II	Laminated	Mt. Vernon, IN	17 x $34^1/_2$	$7^1/_2$	$8^1/_2$	ASTM D3161, Class F ASTM D7158, Class H
Grand Canyon®	Laminated	Fontana, CA Mt. Vernon, IN	17 x 40	5	11	ASTM D3161, Class F ASTM D7158, Class H
Grand Sequoia®	Laminated	Fontana, CA Mt. Vernon, IN	17 x 40	5	11	ASTM D3161, Class F ASTM D7158, Class H
Grand Sequoia® AS, Grand Sequoia® ArmorShield®	Laminated	Fontana, CA	17 x 40	5	11	ASTM D3161, Class F ASTM D7158, Class H
Timberline® ArmorShield® II,	Laminated	Ennis, TX Shafter, CA Fontana, CA	$13^1/_4$ x $39^3/_8$	$5^5/_8$	6	ASTM D3161, Class F ASTM D7158, Class H
Timberline® AS II	Laminated	Ennis, TX Shafter, CA Fontana, CA	$13^1/_4$ x $39^3/_8$	$5^5/_8$	$5^7/_8 – 7^5/_8$	ASTM D3161 Class F ASTM D7158 Class H

For **SI:** 1 inch = 25.4 mm, 1 lb/100 ft^2 = 0.0488 kg/m^2

- IRC: 2021, 2018 and 2015 Sections R908.5 and R908.6 (2012, 2009 and 2006 Sections R907.5 and R907.6).

4.4 Wind Resistance:

GAF asphalt shingles have been tested for wind resistance in accordance with ASTM D3161 or ASTM D7158. Shingles tested in accordance with ASTM D3161 are classified as Class F and qualify for use under 2021 IBC Section 1504.2 [2018 and 2015 IBC Section 1504.1.1 (2012 and 2009 IBC Section 1507.2.7.1 and 2006 IBC 1504.1.1)] or IRC Section R905.2.4.1, as applicable. Shingles tested in accordance with ASTM D7158 are classified as Class H and qualify for use in locations where the maximum basic wind speed is 150 mph (67 m/s) or less with an exposure category of B or C (ASCE 7) and a maximum building height of 60 feet (18.3 m). Installation must be in accordance with 2021 and 2018 IBC Section 1507.2.6 (2015, 2012, 2009 and 2006 IBC Section 1507.2.7) or IRC Section R905.2.6, as applicable.

5.0 CONDITIONS OF USE:

The GAF asphalt shingle roof covering systems described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The shingles must be manufactured, identified, and installed in accordance with the applicable codes, this report, and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

5.2 Installation must be in accordance with Section 4.0 of this report.

5.3 The GAF shingle products are manufactured at the locations noted in Table 1, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with ASTM D3462.

6.2 Reports of wind resistance testing in accordance with ASTM D7158 and ASTM D3161.

6.3 Reports of testing in accordance with UL 790 (ASTM E108).

6.4 Quality documentation.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling or the evaluation report number (ESR-1475) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the GAF asphalt shingles are identified by each bundle of shingles must bear a label with the name and address of the GAF manufacturing plant location; the product name; the roof classification (Class A); the installation instructions; the evaluation report number (ESR-1475); a reference indicating compliance with ASTM D3161 Class F or ASTM D7158, Class H, as applicable.

Additionally, in accordance with ASTM D3462, each bundle of shingles must be marked with the area of roof surface covered and the style, type and color of the product.

7.3 The report holder's contact information is the following:

GAF
1 CAMPUS DRIVE
PARSIPPANY, NEW JERSEY 07054
(877) 423-7663
www.gaf.com

4.0 DESIGN AND INSTALLATION

4.1 New Construction:

4.1.1 General: When installed on new construction in accordance with this section, the shingles are a Class A roof covering. The shingles, underlayment and flashings must be installed in accordance with IBC Section 1507.2 or IRC Section R905.2 except as noted in this report. The shingles must be installed over roof decks of code-complying, minimum $^3/_8$-inch-thick (9.5 mm) exterior-grade plywood; $^7/_{16}$-inch-thick (11.1 mm) oriented strand board (OSB); or nominally 1-inch-by-6-inch lumber installed as solid sheathing conforming to 2021, 2018 and 2015 IBC Sections 2304.8.2 or 2308.7.10 (2012, 2009 and 2006 IBC Section 2304.7.2 or 2308.10.8) or IRC Sections R803, as applicable, and underlayment in accordance with

4.1.2 Sections 3.3 and 4.1.2.3. Minimum roof slope must be 2:12 (16.7 percent).

4.1.3 Application:

4.1.3.1 Fastening: Fasteners are as described in Section 3.2. Shingles must be fastened to the roof deck with a minimum of four fasteners or as shown in the Standard Nailing Pattern in Figure 1. Spacing of fasteners must be as shown in Figure 1, and each course of shingles must be offset from the preceding course as shown in the manufacturer's published installation instructions.

4.1.3.2 Shingle Sealing: In colder climates or wind regions where it is questionable whether the factory-applied adhesive will activate and seal the shingles, to ensure sealing, the shingles must be hand-sealed with a minimum of three 1-inch-diameter (25.4 mm) spots of asphalt roofing cement equally spaced on the unexposed surface across each shingle. For applications on slopes greater than 21:12, hand-sealing is required. Hand-sealing consists of applying a minimum of three 1-inch-diameter (25.4 mm) spots of asphalt roofing cement on the unexposed surface, equally spaced across each shingle. For three–tab and five–tab shingles, one spot of asphalt roofing cement is placed under each corner of each tab (two spots per tab); the tab must then be pressed into the cement. For laminated shingles, four equally spaced spots of asphalt roofing cement are placed under the exposed portion of the shingle; the shingle must then be pressed into the cement. See the manufacturer's published installation instructions for hand-sealing guidelines. The shingles must be hand-sealed to the satisfaction of the code official.

4.1.3.3 Underlayment: Under the 2021 and 2018 IBC, the roof underlayment must be installed in accordance with Section 1507.1.1 and Tables 1507.1.1(2) and 1507.1.1(3). Under the 2015, 2012, 2009 and 2006 IBC, the roof underlayment must be installed in accordance with Section 1507.2.8. Under the 2021, 2018 and 2015 IRC, the roof underlayment must be installed in accordance with Section R905.1.1 and Tables R905.1.1(2) and Table R905.1.1(3). Under the 2012, 2009 and 2006 IRC, the roof underlayment must be installed in accordance with Section R905.2.7. Minimum roof slope must be 2:12 (17-percent). For roof slopes greater than 4:12, the roof deck must be covered with a minimum of one layer of underlayment as described in Section 3.3 of this report. For slopes between 2:12 and 4:12, two layers of the underlayment described in Section 3.3 of this report are required. In areas where there has been a history of ice forming along the eaves, causing a backup of water, an ice barrier must be provided in accordance with 2021 and 2018 IBC Section 1507.2.7 (2015, 2012, 2009 and 2006 IBC Section 1507.2.8.2) or 2021, 2018 and 2015 IRC Section R905.2.7 (2012, 2009 and 2006 IRC Section R905.2.7.1), as applicable.

4.2 Hip and Ridge Cap Shingles:

Hip and ridge cap shingles must be placed evenly over hips and ridges (or over shingle-over ridge vents), and fastened to the roof deck with two fasteners, described in Section 3.2 of this report, located on either side of the shingle, on the fastener line shown in Figure 1. Staples must not be used to fasten the ridge cap shingles.

4.3 Installation—Reroofing:

When installed over existing Class A or Class C asphalt shingle roofs in accordance with this section, the shingles described in this report are recognized as a Class A roof covering. The existing asphalt shingle roof covering must be inspected in accordance with the provisions and limitations 2021 IBC Section 1512 [2018 and 2015 IBC Section 1511 (2012, 2009 and 2006 IBC Section 1510)] or 2021, 2018 and 2015 IRC Section R908 (2012, 2009 and 2006 IRC Section R907). Prior to the reroofing, hip and ridge covering must be removed. Except as noted in this section, the shingles must be installed in accordance with Section 4.1 of this report. Fasteners must be of sufficient length to penetrate $^3/_4$ inch (19.1 mm) into the sheathing, or through the sheathing, whichever is less. Flashing and edging must comply with the following, as applicable:

- IBC: 2021 IBC Section 1512.4 and 1512.5 [2018 and 2015 Sections 1511.5 and 1511.6 (2012, 2009 and 2006 Sections 1510.5 and 1510.6)].

3.1.4 Hip and Ridge Cap Shingles: Hip and ridge cap shingles consist of fiberglass mat, impregnated and coated with asphalt on both sides and surfaced with mineral roofing granules on the weather side and a mineral release agent on the back side for use in covering hips and ridges. See Table 2 for product sizes, exposure to the weather and manufacturing locations. See also Figure 2.

3.1.4.1 Royal Sovereign® Ridge Cap Shingles: These ridge cap shingles are field-cut from Royal Sovereign® three-tab strip shingles. The field-cut ridge cap shingles are compatible with any of the GAF shingles recognized in this report.

3.1.4.2 Z®Ridge Distinctive Ridge Cap Shingles: These shingles are strips that are scored for separation into four ridge cap shingles. See Figure 2.

3.1.4.3 Seal-A-Ridge® Ridge Cap Shingles and Seal-A-Ridge® AS SBS-Modified IR Ridge Cap Shingles: These shingles are strips that are scored for separation into three ridge cap shingles.

3.1.4.4 Ridglass® Premium Ridge Cap Shingles: These shingles are individual, thick, ultra-high profile ridge cap shingles. See Figure 2.

3.1.4.5 TimberTex® Premium Ridge Cap Shingles: These shingles are double layer strips that are scored for separation into three ridge cap shingles.

3.1.4.6 TimberCrest® Premium SBS-Modified Ridge Cap Shingles: These shingles are individual, thick, ultra-high profile ridge cap shingles with a bullnose leading edge. See Figure 2.

3.1.5 Starter Shingles:

3.1.5.1 General: Starter Strip shingles are factory-made shingles used under the first course of shingles being installed or applied on the roof. See Table 2 for product sizes and manufacturing locations. See also Figure 3.

3.1.5.2 Pro-Start® Starter Strip Shingles: These shingles are strips that are scored for separation into two starter shingles. The mineral surfacing is on the weather side, with fine mineral granules on the underside. The self-sealing strip edge is applied facing up and along the roof eave or rake edge.

3.1.5.3 WeatherBlocker™ Premium Starter Strip Shingles: These starter shingles are strips with perforations to assist with alignment of various shingle sizes. The mineral surfacing is on the weather side, with fine mineral granules on the underside.

3.1.5.4 StarterMatch® Starter Strip Shingles and StarterMatch® Complementary Color Starter Strip Shingles: These starter shingles are color coordinated to match the GAF Grand Sequoia®, Grand Sequoia® AS, Grand Sequoia® ArmorShield® and Grand Canyon® ® field shingles. The starter shingles must be installed as the second starter at the eaves on Grand Sequoia®, Grand Sequoia® AS, Grand Sequoia® ArmorShield® and Grand Canyon® applications.

3.2 Fasteners:

Fasteners must comply with ASTM F1667 and must be minimum No. 12 gage [0.105-inch-diameter (2.67 mm) shank], $^3/_8$-inch-diameter-head (9.5 mm), galvanized, stainless steel, aluminum, or copper, barbed-, deformed, or smooth–shank roofing nails. Fasteners must be of sufficient length to penetrate $^3/_4$ inch (19.1 mm) into the sheathing, or through the sheathing, whichever is less.

3.3 Underlayment:

Under the 2021 and 2018 IBC, the roof underlayment must be in accordance with Section 1507.1.1 and Table 1507.1.1(1). Under the 2015, 2012, 2009 and 2006 IBC, the roof underlayment must be in accordance with Section 1507.2.3. Under the 2021, 2018 and 2015 IRC, the roof underlayment must be in accordance with Section R905.1.1 and Table R905.1.1(1). Under the 2012, 2009 and 2006 IRC, the roof underlayment must be in accordance with Section R905.2.3. Underlayment must comply with ASTM D226 Type I or Type II; ASTM D4869 Type I, Type II, Type III, or Type IV; or ASTM D6757.

3.4 Asphalt Cement:

Asphalt roofing cement used for hand-sealing the shingles must comply with ASTM D4586, Type I, Class I, or Type II, Class I.

ICC EVALUATION SERVICE®

ICC-ES Evaluation Report

ESR-1475

Reissued October 2023

This report also contains:

- CBC Supplement

Subject to renewal October 2025

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION Section: 07 31 13—Asphalt Shingles	REPORT HOLDER: GAF	EVALUATION SUBJECT: GAF SHINGLE ROOF COVERING SYSTEMS	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2021, 2018, 2015, 2012, 2009 and 2006 *International Residential Code®* (IRC)

Properties evaluated:

- Weather resistance
- Fire classification
- Wind resistance

2.0 USES

The GAF asphalt shingles described in this report comply with IBC Section 1507.2 and IRC Section R905.2 and are Class A roof coverings when installed as described in this report.

3.0 DESCRIPTION

3.1 Shingles:

3.1.1 General: The GAF asphalt shingles comply with ASTM D3462 and have been qualified for wind resistance as noted in Section 4.1.2 and Table 1. The shingles are available as three–tab, five–tab and laminated asphalt shingle roof coverings. See Table 1 and Figure 1 for recognized product names and classifications, shingle types, manufacturing locations, overall dimensions, maximum exposure to the weather and fastening details. The shingles are self-sealing by means of adhesive strips located on either the weather side or the underside. See Figure 1 for dimensions, nailing locations and adhesive strip location for field shingles.

3.1.2 Three-tab Shingles and Five-tab Shingles: Three-tab and five-tab shingles are composed of a single layer of fiberglass mat, impregnated and coated with asphalt on both sides, and surfaced with mineral roofing granules on the weather side and a mineral release agent on the underside.

3.1.3 Laminated Shingles: Laminated shingles are composed of multiple thicknesses of coated and surfaced fiberglass mat, cut and bonded together in different patterns. The weather side is surfaced with mineral roofing granules, and the underside is surfaced with a mineral release agent.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 52 00—Modified Bituminous Sheet Roofing

REPORT HOLDER:

POLYGLASS USA, INC.

EVALUATION SUBJECT:

MODIFIED BITUMEN ROOFING MEMBRANES: APP CONVENTIONAL, APP SELF-ADHERED, SBS CONVENTIONAL AND SBS SELF-ADHERED

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Polyglass USA, Inc. Modified Bitumen Roofing Membranes, described in ICC-ES evaluation report ESR-2018, have also been evaluated for compliance with the code noted below.

Applicable code edition:

- 2019 *California Building Code* (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

2.0 CONCLUSIONS

2.1 CBC:

The Polyglass USA, Inc. Modified Bitumen Roofing Membranes, described in Sections 2.0 through 7.0 of the evaluation report ESR-2018, comply with CBC Chapter 15, provided the design and installation are in accordance with the 2018 *International Building Code®* (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapter 15, as applicable.

2.1.1 OSHPD

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

This supplement expires concurrently with the evaluation report, reissued September 2023.

[6]Insulation, fasteners, adhesives, base sheets, ply sheets and membranes must be FM-approved.
[7]Self-Adhered systems include:
a. Base Membranes: Polyflex SA P, Polyflex SA Base, Elastoflex SA P, Elastoflex SA V, Elastoflex SA V FR, Elastoflex SA V PLUS, or Elastoflex SA V PLUS FR;
b. Ply Membranes: Polyflex SA P, Elastoflex SA P, Elastoflex SA V, Elastoflex SA V FR, Elastoflex SA V PLUS or Elastoflex SA V PLUS FR;
c. Cap Membranes: Polyflex SA P, Polyflex SA P FR, Polyfresko G SA , Polyfresko G SA FR, Elastoflex SA P, Elastoflex SA P FR, Polyfresko G SBS SA , Polyfresko G SBS SA FR, PolyKool and Polybianko.
[8]Torch-applied membranes include: Torch-applied (SBS) Base Membranes: Elastoflex S6 G, Elastoflex S6 G FR, Elastoflex V G, Elastoflex V G FR, Polyfresko G SBS, Polyfresko G SBS FR, Elastoshield TS G and Elastoshield TS G FR; **Torch-applied (APP) –** Polyflex, Polyflex G, Polyflex G FR, Polyfresko G, Polyfresko G FR
[9]Hot-asphalt membranes include Elastobase V, Elastobase P, Elastoflex S6 G, Elastoflex S6 G FR, Elastoshield TS 4, Elastoshield TS 4 FR, Polyfresko G SBS, Polyfresko G SBS FR, Elastoflex V G and Elastoflex V G FR.
[10]Unless otherwise specified, combustible wood decks must be minimum $^{15}/_{32}$-inch-thick (11.9 mm) plywood or minimum $^{7}/_{16}$-inch-thick (11.1 mm) oriented strand board (OSB). Unless otherwise specified, steel decks must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)]. Unless otherwise specified, concrete decks must have a minimum compressive strength (f_c) of 2500 psi. Lightweight concrete must be recognized by FM Approvals.

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
LWC-11	Min. 300 psi Lightweight insulating concrete cast over min 2500 psi structural concrete	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG", RMax, Inc. "Multi-Max FA3" or min. 2.0 pcf EPS insulation board, one or more layers	ICP Adhesives CR-20	(Optional) additional layers(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	240
CWF-1	Tectum	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II", Johns Manville "ENRGY 3", Hunter Panels "H-Shield", one or more layers	OlyBond 500 Insulation Adhesive	(Optional) additional layers(s) of base insulation	OlyBond Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	45
CWF-2	Tectum	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG" or RMax, Inc. "Multi-Max FA3", one or more layers	ICP Adhesives CR-20	(Optional) additional layer(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	52

For **SI:** 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 lb = 0.454 kg; 1 psf = 47.88 Pa; 1 pcf = 16.02 kg/m^3.

[1]Unless otherwise noted, insulation fasteners and plates must be Polygrip Fastener #12 or Dekfast DF- #12-PH3 (steel or wood only), Polygrip Fastener #14 or Dekfast DF-#14-PH3, Polygrip Fastener #15 or Dekfast DF- #15-PH3 with Polygrip Hex Plate or Dekfast PLT-H-2 7/8. Polygrip parts may be used in lieu of Dekfast parts.

[2]All foam plastic insulation must be limited to the maximum thickness in accordance with Section 5.4 of this report or the maximum thickness in accordance with this table, whichever is less.

[3]Preliminary securement consists of four fasteners per board for a board having any dimension less than 4 ft and two fasteners per board for a board having a maximum dimension of 4 ft.

[4]Insulation adhesive application rates are as follows (Consult adhesive manufacturer's published installation instructions for further details):

a. Hot asphalt at 25-30 lbs/square.
b. Dow Chemical, Insta-Stik Quik Set Insulation Adhesive applied in 3/4- to 1-inch-diameter beads spaced maximum 12 inches o.c.
c. Dow Chemical, Spray-N-Grip spray applied in full coverage to approximately 1 gallon per square.
d. H.B. Fuller Company: Millennium One Step Insulation Adhesive applied in 3/4-inch-diameter beads spaced maximum 12 inches o.c.
e. OMG OlyBond spray applied in full coverage to approximately 1 gallon per square.
f. OMG OlyBond 500 applied in 3/4-inch-diameter beads spaced maximum 12 inches o.c.
g. ICP Adhesives CR-20 sprays applied in continuous 3-inch-wide ribbons spaced maximum 12 inches o.c.

[5]See Section 5.7.

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
LWC-8	Min. 300 psi Lightweight insulating concrete cast over min 2500 psi structural concrete	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG", RMax, Inc. "Multi-Max FA3"or min. 2.0 pcf EPS insulation board, one or more layers	ICP Adhesives CR-20	(Optional) additional layers(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	180
LWC-9	Min. 300 psi Light weight insulating concrete cast over min. 2500 psi structural concrete	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG", RMax, Inc. "Multi-Max FA3" or min. 2.0 pcf EPS insulation board, one or more layers	ICP Adhesives CR-20	(Optional) additional layers(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	222
LWC-10	Min. 200 psi Lightweight insulating concrete cast over min. 2500 psi structural concrete	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II", or Hunter Panels "H-Shield", one or more layers	OlyBond 500 Insulation Adhesive	(Optional) additional layers(s) of base insulation	OlyBond 500 Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	225

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
LWC-6	Min 200 psi Lightweight insulating concrete cast over min. 2500 psi structural concrete	None	Min. 2.0-inch-thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. "Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing "ACFoam III" or min. 1.0-inch-thick Firestone Building Products "ISO 95+ GL", Hunter Panels "H-Shield" and H-Shield CG" or Johns Manville "ENRGY 3" or min. 3/4-inch min.3/4-inch, min. 1.0 pcf EPS insulation board	ICP Adhesives CR-20	Min.1/4-inch USG "SECUROCK Gypsum Fiber Roof Board" or Georgia-Pacific Gypsum "DensDeck"	ICP Adhesives CR-20	Self-adhered[7a], torch-applied[8]-or hot asphalt-applied[9]	-	Self-adhered[7c], torch-applied[8], or hot asphalt-applied[9]	128
LWC-7	Min 200 psi Lightweight insulating concrete cast over min. 2500 psi structural concrete	None	Min. 2.0-inch-thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. "Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing "ACFoam III" or min. 1.0-inch-thick Firestone Building Products "ISO 95+ GL", Hunter Panels "H-Shield" and H-Shield CG" or Johns Manville "ENRGY 3" or min. 3/4-inch min.3/4-inch, min. 1.0 pcf EPS insulation board	ICP Adhesives CR-20	Min.1/4-inch Georgia-Pacific Gypsum "DensDeck Prime	ICP Adhesives CR-20	Torch-applied[8] or hot asphalt-applied[9]	-	Torch-applied[8] or hot asphalt-applied[9]	128

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
LWC-4	Min. 200 psi Lightweight insulating concrete cast over min. 2500 psi structural concrete	None	Min. 1 1/2-inch, min. 2.0 pcf EPS insulation board	OlyBond 500 Insulation Adhesive	(Optional) additional layers of base insulation	OlyBond Insulation Adhesive	Self-adhered[7]	—	Self-adhered[7]	120
LWC-5	Min. 200 psi Lightweight insulating concrete cast over min. 2500 psi structural concrete	None	Min. 2.0-inch-thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. "Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing "ACFoam III" or min. 1.0-inch-thick Firestone Building Products "ISO 95+ GL", Hunter Panels "H-Shield" and H-Shield CG" or Johns Manville "ENRGY 3" or min. 3/4-inch min.3/4-inch, min. 1.0 pcf EPS insulation board	ICP Adhesives CR-20	Min.1/2-inch Structodek High Density Fiberboard Roof insulation	ICP Adhesives CR-20	Elastoflex V, hot asphalt-applied[9]	Elastoflex S6 or Elastoflex VP, hot asphalt-applied[9]	Torch-applied[8] or hot asphalt-applied[9]	128

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
LWC-2	Min. 200 psi Lightweight insulating concrete cast over min 2500 psi structural concrete	N/A	Min. 2.0-inch thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. " Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing " ACFoam III" or min. 1.0-inch-thick Firestone Building Products " ISO 95+GL", Hunter Panels "H-Shield" and "H-Shield CG" or Johns Manville "ENRGY 3" or min. 3/4 inch, min. 1.0 pcf EPS insulation board	ICP Adhesives CR-20	Min. 1/2-inch "Structodek High Density Fiberboard Roof Insulation"	ICP Adhesives CR-20	Self-adhered[7] or torch-applied[8] or hot asphalt-applied[9]	-	Self-adhered[7], orch-applied[8], or hot asphalt-applied[9]	75
LWC-3	200 Lightweight insulating concrete cast over min 2500 psi structural concrete	N/A	Min. 2.0-inch thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. " Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing " ACFoam III" or min. 1.0-inch-thick Firestone Building Products " ISO 95+GL", Hunter Panels "H-Shield" and "H-Shield CG" or Johns Manville "ENRGY 3" or min. 3/4 inch, min. 1.0 pcf EPS insulation board	ICP Adhesives CR-20	Min. 1/4-inch Georgia-Pacific Gypsum "DensDeck Prime""	ICP Adhesives CR-20	Torch-applied[8] or hot asphalt-applied[9]	-	Torch-applied[8] or hot asphalt-applied[9]	75

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-41	Min. 2,500 psi concrete	N/A	None	N/A	None	N/A	**(Optional when a ply sheet is installed)** Elastobase V, PermaPly No. 28 or GAFGLAS #75 in hot asphalt	**(Optional when a base sheet is installed)** One ply of Elastobase V, PermaPly No. 28 or GAFGLAS #75 or one to three plies of Polyglass Ply 4 or Ply 6 in hot asphalt	Torch applied to the base sheet or the ply sheet[8]	622
C-42	Min. 2,500 psi concrete	N/A	None	N/A	None	N/A	Polyflex, torch applied	None	Torch applied[8c]	622
LWC-1	Min. 200 psi Lightweight insulating concrete cast over min 2500 psi structural concrete	N/A	Min. 2.0-inch thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. " Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing " ACFoam III" or min. 1.0-inch-thick Firestone Building Products " ISO 95+GL", Hunter Panels "H-Shield" and "H-Shield CG" or Johns Manville "ENRGY 3" or min. 3/4 inch, min. 1.0 pcf EPS insulation board	ICP Adhesives CR-20	Min. 1/2-inch "Structodek High Density Fiberboard Roof Insulation"	ICP Adhesives CR-20	Elastoflex V, hot asphalt-applied	Elastoflex S6 or Elastoflex VP, hot asphalt-applied	Toarch-applied[8] or hot asphalt-applied[9]	75

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-35	Concrete	ASTM D41 complying asphalt primer	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG" or RMax, Inc. "Multi-Max FA3", one or more layers	Hot asphalt	(Optional) additional layers(s) of base insulation	Hot asphalt	Self-adhered[7a]	—	Self-adhered[7c]	480
C-36	Min. 2,500 psi structural concrete (primed with asphalt primer if using hot asphalt)	None	(Optional) Min. 2-inch-thick, Atlas Roofing "ACFoam II"	Hot asphalt or OlyBond Insulation Adhesive	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	Hot asphalt or OlyBond Insulation Adhesive	Hot asphalt-applied[9]	—	Hot asphalt-applied[9]	495
C-37	Concrete	None	None	N/A	Min. 1/4-inch G-P Gypsum "DensDeck"	Hot asphalt	Torch-applied[8] or hot asphalt-applied[9]	—	Torch-applied[8] or asphalt-applied[9]	510
C-38	Min. 2,500 psi structural concrete (primed with asphalt primer if using hot asphalt)	None	(Optional) Min. 2-inch-thick, Atlas Roofing "ACFoam II"	Hot asphalt or OlyBond Insulation Adhesive	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	Hot asphalt or OlyBond Insulation Adhesive	Torch-applied[8]	—	Torch-applied[8]	536
C-39	Min. 2,500 psi structural concrete	None	(Optional) Min. 2-inch-thick, Atlas Roofing "ACFoam II"	OlyBond Insulation Adhesive	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board", primed with D41 complying asphalt primer	OlyBond Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	543
C-40	Min. 2,500 psi structural concrete (primed with asphalt primer if using hot asphalt)	None	(Optional) Min. 2-inch-thick, Atlas Roofing "ACFoam II"	Hot asphalt	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board", primed with D41 complying asphalt primer	Hot asphalt	Self-adhered[7a]	—	Self-adhered[7c]	545

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-30	Min. 2,500 psi concrete, primed with asphalt primer	(Optional) Elastoflex SA V, SA V FR, SA V PLUS, SA V PLUS FR, SA P or Polyflex SA P, followed by torch or SA cap sheet	One or more layers, 1-inch-thick, Atlas Roofing "ACFoam II"	Hot asphalt	Min. 3/4-inch FM approved perlite	Hot asphalt	Elastobase V or ASTM D4601, Type II base sheet in hot asphalt	(Optional) torch- applied[8] or hot asphalt-applied[9] ply sheet	Torch-applied[8]	280
C-31	Concrete primed with asphalt primer	None	None	N/A	Min. 3/4-inch "Structodek High Density Fiberboard Roof Insulation"	Hot asphalt	Elastoflex V hot asphalt-applied	Elastoflex S6 or Elastoflex VP or hot asphalt-applied[9]	Torch-applied[8] or hot asphalt-applied[9]	285
C-32	Min. 2,500 psi concrete, primed with asphalt primer	None	None	N/A	None	N/A	Elastoflex SA V FR, or SA V PLUS FR, self-adhered	None	Elastoflex SA P FR, self-adhered or Polyflex G, torch-applied	315
C-33	Min. 2,500 psi structural concrete	None	(Optional) Min. 2-inch-thick, Atlas Roofing "ACFoam II"	Insta-Stik Quik Set Insulation Adhesive, OlyBond 500, or Millennium One Step Insulation Adhesive, ICP Adhesives CR-20	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	Hot asphalt or Insta-Stik, OlyBond 500, Millennium One Step Insulation Adhesive, ICP Adhesives CR-20	Torch-applied[8] or hot asphalt-applied[9]	—	Torch-applied[8] or hot asphalt-applied[9]	442
C-34	Min. 2,500 psi structural concrete	None	(Optional) Min. 2-inch-thick, Atlas Roofing "ACFoam II"	Insta-Stik Quik Set Insulation Adhesive, OlyBond 500, Millennium One Step Insulation Adhesive, ICP Adhesives CR-20	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board", primed with D41 primer	Hot asphalt or Insta-Stik Quik Set Insulation Adhesive, OlyBond 500, Millennium One Step Insulation Adhesive, ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	442

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-26	Concrete	ASTM D41 / Elastoflex SA V G	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG" or RMax, Inc. "Multi-Max FA3", one or more layers	ICP Adhesives CR-20	(Optional) additional layers(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	250
C-27	Concrete	None	Min. 3/4-inch, min. 1.0 pcf EPS insulation board	ICP Adhesives CR-20	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board" or Georgia-Pacific Gypsum "DensDeck"	ICP Adhesives CR-20	Self-adhered[7a] or torch-applied[8] or hot asphalt-applied[9]	—	Self-adhered[7c] or torch-applied[8] or hot asphalt-applied[9]	255
C-28	Concrete	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG" or RMax, Inc. "Multi-Max FA3", one or more layers	ICP Adhesives CR-20	(Optional) additional layers(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	270
C-29	Concrete, primed with asphalt primer	None	None	N/A	Min. 3/4-inch Johns Manville "FrescoBoard"	Hot asphalt	Elastoflex V, or hot asphalt-applied[9]	Elastoflex S6 or Elastoflex VP, hot asphalt-applied[9]	Torch-applied[8] or hot asphalt-applied[9]	278

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-24	Concrete	None	Min. 2.0-inch thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. "Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing "ACFoam III" or min. 1.0-inch-thick Firestone Building Products "ISO 95+ GL", Hunter Panels "H-Shield" and "H-Shield CG" or Johns Manville "ENRGY 3"	ICP Adhesives CR-20	(Optional) Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board" or Georgia-Pacific Gypsum "DensDeck" or "DensDeck Prime"	ICP Adhesives CR-20	Self-adhered[7a]	-	Self-adhered[7c]	240
C-25	Concrete	None	Min. 2.0-inch thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. "Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing "ACFoam III" or min. 1.0-inch-thick Firestone Building Products "ISO 95+ GL", Hunter Panels "H-Shield" and "H-Shield CG" or Johns Manville "ENRGY 3"	ICP Adhesives CR-20	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board" or Georgia-Pacific Gypsum "DensDeck" or "DensDeck Prime"	ICP Adhesives CR-20	Torch-applied[8] or hot asphalt-applied[9]	-	Torch-applied[8] or hot ashalt-applied[9]	240

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-20	Concrete	None	Min. 2.0-inch-thick Atlas Roofing "ACFoam IV" or min. 1 1/2-inch-thick RMax, Inc. "Multi-Max FA3" or min. 1.3-inch-thick Atlas Roofing "ACFoam III" or min. 1.0-inch-thick Firestone Building Products "ISO 95+GL", Hunter Panels "H-Shield" and "H-Shield CG" or Johns Manville "ENRGY 3"	ICP Adhesives CR-20	Min. 1/2-inch "Structodek High Density Fiberboard"	ICP Adhesives CR-20	Elastoflex V, hot asphalt-applied	Elastoflex S6 or Elastoflex VP, hot asphalt-applied[9]	Torch- applied[8] or hot ashalt-applied[9]	180
C-21	Min. 2,500 psi concrete, primed with asphalt primer	None	None	N/A	None	N/A	Elastoflex SA, SA V FR, SA V PLUS, SA V PLUS FR or SA P or Polyflex SA P, self-adhered	(Optional) Elastoflex; SA V, SA V FR, SA V PLUS, SA V PLUS FR or SA P or Polyflex SA P, self-adhered or torch applied[8] ply sheet	Self-adhered[7c] or torch applied[8]	200
C-22	Concrete	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" or RMax, Inc. "Multi-Max FA3", one or more layers	Millennium One Step Insulation Adhesive	(Optional) additional layers(s) of base insulation	Millennium One Step Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	232
C-23	Concrete	(Optional) ASTM D41 complying asphalt primer / Elastoflex SA V G	Min. 1 1/2-inch, min. 2.0 pcf EPS insulation board, one or more layers	ICP Adhesives CR-20	(Optional) additional layers of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	240

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-14	Concrete	None	Min. 1 1/2-inch, min. 2.0 pcf EPS insulation board, one or more layers	OlyBond Insulation Adhesive	(Optional) additional layers of base insulation	OlyBond 500 Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	120
C-15	Concrete	None	Min. 1 1/2-inch-thick, Johns Manville "ENRGY 3", one or more layers	OlyBond Insulation Adhesive	(Optional) additional layers(s) of base insulation	OlyBond 500 Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	127
C-16	Concrete	None	Min. 3/4-inch, min, 1.0 pcf EPS insulation board	ICP Adhesives CR-20	Min. 1/2-inch Structodek High Density Fiberboard	ICP Adhesives CR-20	Elastoflex V, hot asphalt-applied	Elastoflex S6 or Elastoflex VP hot asphalt-applied	Torch-applied[8] or hot asphalt-applied[9]	135
C-17	Concrete	(Optional) ASTM D41 complying asphalt primer	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or Johns Manville "ENRGY 3", one or more layers	Insta-Stik Quik Set Insulation Adhesive	(Optional) additional layers(s) of base insulation	Insta-Stik Quik Set Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	135
C-18	Concrete	None	Min. 1 1/2-inch, min. 2.0 pcf EPS insulation board, one or more layers	Insta-Stik Quik Set Insulation Adhesive	(Optional) additional layers of base insulation	Insta-Stik Quik Set Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	135
C-19	Concrete	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II", or Hunter Panels "H-Shield", one or more layers	OlyBond 500 Insulation Adhesive	(Optional) additional layers(s) of base insulation	OlyBond 500 Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	150

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-10	Concrete	ASTM D41 complying asphalt primer / Elastoflex VG in 1000 MB Adhesive at 1.5 gal/square	One or more layers Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG" or RMax, Inc. "Multi-Max FA3"	ICP Adhesives CR-20	(Optional) additional layers(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	68
C-11	Min. 2,500 psi structural concrete	None	(Optional) Min. 2-inch Atlas Roofing "ACFoam II", Hunter Panels H-Shield, or Firestone Building Products "ISO 95+GL"	Loose laid	Min. 1/2-inch USG "SECUROCK Gypsum Fiber Roof Board"	OMG HD with OMG Std. Metal Plates at 1 per 1.78 ft^2 (18 per 4 x 8 ft board)	Torch-applied[8] or hot asphalt-applied[9]	—	Torch-applied[8] or hot asphalt-applied[9]	75
C-12	Concrete, primed with asphalt primer	Polybase V , torch-applied or Elastoflex SA P, self-adhered	Min. 1 1/2-inch Type IX expanded polystyrene	Insta-Stik Quik Set Insulation Adhesive, or ICP Adhesives CR-20	Min. 1/4-inch Georgia-Pacific Gypsum "DensDeck Prime" or USG "SECUROCK Gypsum Fiber Roof Board" primed with ASTM D41 complying asphalt primer	Insta-Stik Quik Set Insulation Adhesive or, ICP Adhesives CR-20	Elastoflex SA V or SA V PLUS, self-adhered	—	Elastoflex SA P, Polyflex SA P self-adhered	75
C-13	Min. 2,500 psi concrete, primed with asphalt primer	(Optional) Elastoflex SA V; SA V FR; SA V PLUS; SA V PLUS FR or SA P or Polyflex SA P, followed by torch or SA cap sheet	One or more layers, Atlas Roofing "ACFoam II", Johns Manville "ENRGY 3" or RMax Inc. "Multi-Max FA-3"	Hot asphalt, Insta-Stik Quik Set Insulation Adhesive, Spray-N-Grip, Millennium One Step Insulation Adhesive, OlyBond, OlyBond 500, or ICP Adhesives CR-20	None	N/A	Elastoflex SA V; SA V FR, SA V PLUS, SA V PLUS FR or SA P or Polyflex SA P, self-adhered	(Optional) Elastoflex; SA V, SA V FR, SA V PLUS, SA V PLUS FR or SA P or Polyflex SA P, self-adhered or torch applied[8] ply sheet	Self-adhered[7c] or torch applied[8]	100

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
C-5	Min. 2,500 psi structural concrete	None	Min. 2-inch-thick, Atlas Roofing "ACFoam II" or Firestone Building Products "ISO 95+ GL"	OMG HD #14 with OMG Std. Metal Plates or Dekfast DF #14-PH3 with Dekfast PLT-H-2 7/8 Plates at 1 per 4 ft² (8 per 4 x 8 ft board)	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	Hot asphalt or Insta-Stik Quik Set Insulation Adhesive, OlyBond, OlyBond 500, Millennium One Step Insulation Adhesive, or ICP Adhesives CR-20	Torch-applied[8] or hot asphalt-applied[9]	—	Torch-applied[8] or hot asphalt-applied[9]	45
C-6	Min. 2,500 psi structural concrete	None	Min. 2-inch-thick, Atlas Roofing "ACFoam II" or Firestone Building Products "ISO 95+ GL"	OMG HD #14 with OMG Std. Metal Plates or Dekfast DF #14-PH3 with Dekfast PLT-H-2 7/8 Plates at 1 per 4 ft² (8 per 4 x 8 ft board)	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board", primed with D41 primer	Hot asphalt or Insta-Stik Quik Set Insulation Adhesive, OlyBond, OlyBond 500, Millennium One Step Insulation Adhesive, or ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	45
C-7	Min. 2,500 psi structural concrete, primed with ASTM D41 primer	None	None	N/A	None	N/A	Polyflex SA Base, self-adhered	(Optional) Polyflex SA Base, self-adhered	Elastoflex SA P, self-adhered	52.5
C-8	Concrete primed with asphalt primer	Elastoflex SA V, SA V PLUS or SA P, self-adhered	Min. 1 1/2-inch ASTM C578 Type IX expanded polystyrene	Insta-Stik Quik Set Insulation Adhesive, or ICP Adhesives CR-20	Min. 1/4-inch Georgia-Pacific Gypsum "DensDeck Prime" or USG "SECUROCK Gypsum Fiber Roof Board", primed with ASTM D41 primer	Insta-Stik Quik Set Insulation Adhesive, or ICP Adhesives CR-20	Self-adhered[7a] or torch-appled[8] or hot asphalt-applied[9]	—	Self-adhered[7c] or torch-applied[8] or hot asphalt-applied[9]	60
C-9	Concrete	(Optional) ASTM D41 complying asphalt primer	Min. 1 1/2-inch-thick, RMax, Inc. Multi-Max FA3," one or more layers	Insta-Stik Quik Set Insulation Adhesive	(Optional) additional layers(s) of base insulation	Insta-Stik Quik Set Insulation Adhesive	Self-adhered[7a]	—	Self-adhered[7c]	67

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
SC-1	Min. 22 ga. steel, min. 2,500 psi concrete	None	Min. 1 1/2-inch-thick Hunter Panels "H-Shield" and "H-Shield P", Polyglass "Polytherm or Polytherm Composite P"	1 per 2 ft²	None	N/A	(Optional) Elastoflex SA V FR or SA V PLUS FR, self-adhered	None	Elastoflex SA P FR, self-adhered or Polyflex G, torch-applied	60
C-1	Min. 2,500 psi structural concrete	None		None	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	OMG HD with OMG Std. Metal Plates or Dekfast DF #14-PH3 with Dekfast PLT-H-2 7/8 Plates at 1 per 3.2 ft²	Self-adhered[7a]	—	Self-adhered[7c]	30
C-2	Min. 2,500 psi concrete, primed with asphalt primer	(Optional) Elastoflex SA V; SA V FR; SA V PLUS; SA V PLUS FR or SA P or Polyflex SA P, followed by torch or SA cap sheet	One or more layers, Atlas Roofing "ACFoam II", Johns Manville "ENRGY 3" or RMax Inc. "Multi-Max FA3"	Hot asphalt, Insta-Stik, Spray-N-Grip, Millennium One Step Insulation Adhesive, OlyBond, OlyBond 500, or ICP Adhesives CR-20	Min. 1/4-inch Georgia-Pacific Gypsum "DensDeck" primed with asphalt primer	Hot asphalt, Insta-Stik, Spray-N-Grip, Millennium One Step Insulation Adhesive, OlyBond, OlyBond 500 ICP Adhesives CR-20	Elastoflex; SA V; SA V FR; SA V PLUS; SA V PLUS FR or SA P or Polyflex SA P, self-adhered	(Optional) Elastoflex SA V; SA V FR: SA V PLUS; SA V PLUS FR or SA P or Polyflex SA P, self-adhered or torch applied[8] ply sheet	Self-adhered[7c] or torch-applied[8]	37
C-3	Min. 2,500 psi concrete	N/A	Min. 1 1/2-inch-thick min. 2.0 pcf polyisocyanurate	1 per 4 ft²	Min. 3/4-inch-thick FM-approved perlite	Asphalt applied	(Optional) Elastobase V, PermaPly No. 28 or GAF GAFGLAS #75 in hot asphalt	(Optional) One ply of Elastobase V, PermaPly No. 28 or GAF GAFGLAS #75 or one to three plies of Polyglass Ply 4 or Ply 6 in hot asphalt	Torch applied[8]	45
C-4	Min. 2,500 psi structural concrete	None	(Optional) Min. 2-inch Atlas Roofing "ACFoam II", Hunter Panels H-Shield, or Firestone Building Products "ISO 95+GL"	Loose laid	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	OMG HD with OMG Std. Metal Plates or Dekfast DF #14-PH3 with Dekfast PLT-H-2 7/8 Plates at 1 per 4 ft²	Torch-applied[8] or hot asphalt-applied[9]	—	Torch-applied[8] or hot asphalt-applied[9]	45

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
S-3	Min. 22 ga., Type B, Grade 33 steel	None	Min. 2-inch-thick, Atlas Roofing "ACFoam II" or Firestone Building Products "ISO 95+ GL"	OMG Std. with OMG Std. Metal Plates or Dekfast DF-#12-PH3 with Dekfast PLT-H-2 7/8 Plates at 1 per 4 ft² (8 per 4 x 8 ft board)	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	Hot asphalt or Insta-Stik, OlyBond, OlyBond 500, Millennium One Step Insulation Adhesive, ICP Adhesives CR-20	Torch-applied[8] or hot asphalt-applied[9]	—	Torch-applied[8] or hot asphalt-applied[9]	45
S-4	Min. 22 ga. Type B, Grade 33 steel	None	Min. 2-inch-thick, Atlas Roofing "ACFoam II" or Firestone Building Products "ISO 95+ GL"	OMG Std. with OMG Std. Metal Plates or Dekfast DF-#12-PH3 with Dekfast PLT-H-2 7/8 Plates at 1 per 4 ft² (8 per 4 x 8 ft board)	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board", primed with D41 primer	Hot asphalt or Insta-Stik, OlyBond, OlyBond 500, Millennium One Step Insulation Adhesive, ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	45
S-5	22 ga. Type B, Grade 33 steel	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II," one or more layers	OlyBond 500 Insulation Adhesive	(Optional) additional layer(s) of base insulation	OlyBond 500 Insulation adhesive	Self-adhered[7a]	—	Self-adhered[7c]	45
S-6	22 ga. Type B, Grade 33 steel	None	Min. 1 1/2-inch-thick, Atlas Roofing " ACFoam II," one or more layers	ICP Adhesives CR-20	(Optional) additional layer(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	52
S-7	22 ga. Type B, Grade 33 steel	None	Min. 1/2-inch Georgia-Pacific Gypsum "DensDeck"	ICP Adhesives CR-20	Min. 1 1/2-inch ACFoam II	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	60
S-8	22 ga., Type B, Grade 80 steel	None	(Optional) one or more layers foam plastic insulation	Loose laid	Min. 1/2-inch USG "SECUROCK Gypsum Fiber Roof Board"	OMG HD with OMG Std. Metal Plates at 1 per 1.78 ft² (18 per 4 x 8 ft board)	Torch-applied[8] or hot asphalt-applied[9]	—	Torch-applied[8] or hot asphalt-applied[9]	75
S-9	Min. 22 ga. steel	None	Min. 1 1/2-inch Johns Manville "ENRGY 3"	Dekfast DF #14-PH3 with Isofast PLT-S-2 3/4 X 2 3/4 plates at 1 per 1.3 ft²	None	N/A	Elastoflex; SA V; SA V FR; SA V PLUS; SA V PLUS FR or SA P or Polyflex SA P, self-adhered	(Optional) Elastoflex SA V; SA V FR; SA V PLUS; SA V PLUS FR or SA P or Polyflex SA P, self-adhered or torch applied[8] ply sheet	Self-adhered[7c] or torch applied[8]	82

TABLE 4—WIND UPLIFT RESISTANCE – ADHERED ASSEMBLIES

SYSTEM NO.	ROOF DECK[5,10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
W-1	Plywood primed with asphalt primer	None	None	N/A	None	N/A	Elastoflex; SA V; SA V FR; SA V PLUS; SA V PLUS FR or SA P or Polyflex SA P, self-adhered	(Optional) Elastoflex SA V; SA V FR; SA V PLUS; SA V PLUS FR or SA P or Polyflex SA P, self-adhered or torch-applied[8] ply sheet	Self-adhered[7c] or torch-applied[8]	45
W-2	Plywood or OSB	None	Min. 1 1/2-inch-thick, Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG" or RMax, Inc. "Multi-Max FA3", one or more layers	ICP Adhesives CR-20	(Optional) additional layer(s) of base insulation	ICP Adhesives CR-20	Self-adhered[7a]	—	Self-adhered[7c]	52
W-3	Min. 15/32-inch plywood	4-inch strips of Elastoflex SA V or SA V PLUS used to cover plywood joints.	None	N/A	None	N/A	Elastoflex SA V or SA V PLUS, self-adhered	—	Elastoflex SA P or Polyflex SA P, self-adhered	135
S-1	Min. 22 ga., Type B, Grade 33 steel	None	(Optional) one or more layers foam plastic insulation	Loose laid	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	OMG HD with OMG Std. Metal Plates or Dekfast DF #14-PH3 with Dekfast PLT H-2 7/8 plates at 1 per 3.2 ft^2	Self-adhered[7a]	—	Self-adhered[7c]	30
S-2	Min. 22 ga., Type B, Grade 33 steel	None	(Optional) one or more layers foam plastic insulation	Loose laid	Min. 1/4-inch USG "SECUROCK Gypsum Fiber Roof Board"	OMG Std. Metal Plates or Dekfast DF #14-PH3 with Dekfast PLT H-2 7/8 plates 1 per 4 ft^2	Torch-applied[8] or hot asphalt-applied[9]	—	Torch-applied[8] or hot asphalt-applied[9]	45

TABLE 3—WIND UPLIFT RESISTANCE- MECHANICALLY FASTENED BASE SHEET ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5, 10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)[5]
			Type	Attachment[1,4]	Type	Attachment[1,4]	Base Sheet	Ply Sheet	Cap Membrane	
LWC-1	Min. 200 psi lightweight[10] concrete decks over min. 2500 psi structural concrete	N/A	None	N/A	None	N/A	GAFGLAS #75 attached with Buildex Lite Weight Concrete Fasteners 7-inches o.c. in a 4-inch lap and 7-inches o.c. in two staggered rows in the center of the sheet	(Optional) One ply of Elastobase V, PermaPly No. 28 or GAFGLAS #75 or one to three plies of Polyglass Ply 4 or Ply 6 in hot asphalt	Torch applied[8c]	45
LWC-2	Light weight insulating concrete min. compressive strength 350 psi, with supplemental attachment using Roofgrip #21 screws and 3-inch Flat Bottom plates at 1 per 8ft^2	None	None	N/A	None	N/A	Elastobase V fastened with Trufast Twin Loc-Nail Base sheet fastener 6 inches o.c. in laps and 6 inches o.c. in three equally spaced	Elastoflex SA V or SA V PLUS self-adhered	Self-adhered[7c] or Polyflex G torch-applied	60

For **SI:** 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 lb = 0.454 kg; 1 psf = 47.88 Pa; 1 pcf = 16.02 kg/m^3.

[1]Unless otherwise noted, insulation fasteners and plates must be Polygrip Fastener #12 or Dekfast DF-#12-PH3 (steel or wood only), Polygrip Fastener or Dekfast DF-#14-PHF, Polygrip Fastener #15 HS or Dekfast DF-#15-PH3 with Polygrip Hex Plate or Dekfast PLT-H-2$^7/_8$. Polygrip parts may be used in lieu of Dekfast parts

[2]All foam plastic insulation must be limited to the maximum thickness in accordance with Section 5.4 of this report or the maximum thickness in accordance with this table, whichever is less.

[3]Preliminary securement consists of four fasteners per board for a board having any dimension less than 4 ft and two fasteners per board for a board having a maximum dimension of 4 ft.

[4]Insulation adhesive application rates are as follows (Consult adhesive manufacturer's published installation instructions for further details):

- Hot asphalt at 25-30 lbs./square
- H.B. Fuller Company, Millennium One Step Insulation Adhesive applied in $^3/_4$-inch-diameter beads spaced max 12 inches o.c.

[5]See Section 5.7.

[6]Insulation, fasteners, adhesives, base sheets, ply sheets and membranes must be FM-approved.

[7]Self-Adhered systems include:

a. Base Membranes: Polyflex SA P, Polyflex SA Base, Elastoflex SA P, Elastoflex SA V, Elastoflex SA V FR, Elastoflex SA V PLUS, or Elastoflex SA V PLUS FR; .
b. Ply Membranes: Polyflex SA P, Elastoflex SA P FR, Elastoflex SA V, Elastoflex SA V FR, Elastoflex SA V PLUS or Elastoflex SA V PLUS FR;
c. Cap Membranes: Polyflex SA P, Polyflex SA P FR, Polyfresko G SA, Polyfresko G SA FR, Elastoflex SA P, Elastoflex SA P FR, Polyfresko G SBS SA, Polyfresko G SBS SA FR, PolyKool and Polybianko.

[8]Torch-applied membranes include: Torch-applied (SBS) Base Membranes: Elastoflex S6 G, Elastoflex S6 G FR, Elastoflex V G, Elastoflex V G FR, Polyfresko G SBS, Polyfresko G SBS FR, Elastoshield TS G and Elastoshield TS G FR; **Torch-applied (APP) –** Polyflex, Polyflex G, Polyflex G FR, Polyfresko G, Polyfresko G FR

[9]Hot-asphalt membranes include Elastobase V, Elastobase P, Elastoflex S6 G, Elastoflex S6 G FR, Elastoshield TS G, Elastoshield TS G FR, Polyfresko G SBS, Polyfresko G SBS FR, Elastoflex V G and Elastoflex V G FR.

[10]Unless otherwise specified, combustible wood decks must be minimum $^{15}/_{32}$-inch-thick (11.9 mm) plywood or minimum $^7/_{16}$-inch-thick (11.1 mm) oriented strand board (OSB). Unless otherwise specified, steel decks must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)]. Unless otherwise specified, concrete decks must have a minimum compressive strength (f_c) of 2500 psi. Light weight concrete must be recognized by FM Approvals.

TABLE 3—WIND UPLIFT RESISTANCE- MECHANICALLY FASTENED BASE SHEET ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5, 10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)[5]
			Type	Attachment[1,4]	Type	Attachment[1,4]	Base Sheet	Ply Sheet	Cap Membrane	
SCW-4	Min. 2,500 psi concrete or min. 3/4-inch-thick plywood	N/A	Min. 1 1/2-inch, min. 2.0 pcf polyisocyanurate, min. 1/4-inch Georgia-Pacific Gypsum "DensDeck" or min. 5/8-inch Type X gypsum	Preliminary Securement[3]	None	N/A	Polyflex attached with Dekfast DF-#14-PH3 with Dekfast PLT-R-2 3/8-6B 12-inches o.c. in 6-inch wide, heat welded lap.	None	Torch applied[8]	82
SCW-5	Min. 2,500 psi concrete or min. 3/4-inch-thick plywood	N/A	(Optional) 1/4-inch Georgia-Pacific Gypsum "DensDeck" or 5/8-inch Type X gypsum board	Loose laid	None	N/A	Elastobase P, Elastobase V or PermaPly No. 28 attached with Dekfast DF-#14-PH3 with Dekfast PLT-H-2 7/8 plates spaced 12 inches o.c. in a 4-inch lap and 18 inches o.c. in two staggered rows.	(Optional) One ply of Elastobase V, PermaPly No. 28 or GAFGLAS #75 or one to three plies of Polyglass Ply 4 or Ply 6 in hot asphalt	Torch applied[8]	45
SCW-5a	Min. 2,500 psi concrete or min. 3/4-inch-thick plywood	N/A	(Optional) 1/4-inch Georgia-Pacific Gypsum "DensDeck" or 5/8-inch Type X gypsum board	Loose laid	None	N/A	Elastobase P, Elastobase V or PermaPly No. 28 attached with Dekfast DF-#14-PH3 with Dekfast PLT-H-2 7/8 plates spaced 12 inches o.c. in a 4-inch lap and 18 inches o.c. in one center row	(Optional) One ply of Elastobase V, PermaPly No. 28 or GAFGLAS #75 or one to three plies of Polyglass Ply 4 or Ply 6 in hot asphalt	Torch applied[8]	30
SCW-6	Min. 2,500 psi concrete or min. 3/4-inch-thick plywood	N/A	(Optional) 1/4-inch Georgia-Pacific Gypsum "DensDeck" or 5/8-inch Type X gypsum board	Loose laid	None	N/A	Polyflex attached with Dekfast DF-#14-PH3 with Dekfast PLT-R-2 3/8-6B 18-inches o.c. in 5-inch wide, heat welded lap.	None	Torch applied[8]	45
SCW-7	Min. 2,500 psi concrete or min. 3/4-inch-thick plywood	N/A	(Optional) 1/4-inch Georgia-Pacific Gypsum "DensDeck" or 5/8-inch Type X gypsum board	Loose laid	None	N/A	Polyflex attached with Dekfast DF-#14-PH3 with Dekfast PLT-R-2 3/8-6B 12-inches o.c. in 6-inch wide, heat welded lap	None	Torch applied[8]	82

TABLE 3—WIND UPLIFT RESISTANCE- MECHANICALLY FASTENED BASE SHEET ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5, 10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)[5]
			Type	Attachment[1,4]	Type	Attachment[1,4]	Base Sheet	Ply Sheet	Cap Membrane	
S-1	Min. 22ga., Type B, Grade 40 Steel	None	Min. 1-inch Hunter Panels "H-Shield"	Loose laid	None	N/A	Elastoflex S6 or Elastoflex VP fastened with Trufast #14 HD fasteners with Trufast 2-inch Barbed Seam Plate 18 inches o.c. within 4-inch wide, torched side laps	—	Elastoflex S6 G torch-applied	30
S-2	Min. 22 ga., Type B, Grade 40 steel	None	Min. 1-inch Hunter Panels "H-Shield"	Preliminary Securement[3]	None	N/A	Elastoflex S6 or Elastoflex VP fastened with Trufast #15 EHD fasteners with Trufast 2.4-inch Scoop Plate 12 inches o.c. within 5-inch wide, torched side laps	—	Elastoflex S6 G or S6 G FR torch-applied	45
SCW-1	Min. 22 ga. steel, min. 2,500 psi concrete or min. $^3/_4$-inch-thick plywood	N/A	Min. $1^1/_2$-inch, min. 2.0 pcf polyisocyanurate, min. $^1/_4$-inch Georgia-Pacific Gypsum "DensDeck" or min. $^5/_8$-inch Type X gypsum	Loose laid	None	None	Elastobase P, Elastobase V or Perma-Ply No. 28 attached with Dekfast DF-#14-PH3 with Dekfast PLT-H-$2^7/_8$ plates spaced 12 inches o.c. in a 4-inch lap and 18 inches o.c. in two staggered rows in the center of the sheet	(Optional) One ply of Elastobase V, PermaPly No. 28 or GAFGLAS #75 or one to three plies of Polyglass Ply 4 or Ply 6 in hot asphalt	Torch applied[8]	45
SCW-2	Min. 22 ga. steel, min. 2,500 psi concrete or min.$^3/_4$-inch-thick plywood	N/A	Min. $1^1/_2$-inch, min. 2.0 pcf polyisocyanurate, min. $^1/_4$-inch Georgia-Pacific Gypsum "DensDeck" or min. $^5/_8$-inch Type X gypsum	Loose laid	None	None	Elastobase P, Elastobase V or Perma-Ply No. 28 attached with Dekfast DF-#14-PH3 with Dekfast PLT-H-$2^7/_8$ plates spaced 12 inches o.c. in a 4-inch lap and 18 inches o.c. in one center row	(Optional) One ply of Elastobase V, PermaPly No. 28 or GAFGLAS #75 or one to three plies of Polyglass Ply 4 or Ply 6 in hot asphalt	Torch applied[8]	30
SCW-3	Min. 22 ga. steel, min. 2,500 psi concrete or min. $^3/_4$-inch thick plywood	N/A	Min. $1^1/_2$-inch, min. 2.0 pcf polyisocyanurate, min.$^1/_4$-inch Georgia-Pacific Gypsum "DensDeck" or min. $^5/_8$-inch Type X gypsum	Preliminary Securement[3]	None	N/A	Polyflex attached with Dekfast DF-#14-PH3 with Dekfast PLT-R-$2^3/_8$-6B 18 inches o.c. in 5inch wide, heat welded lap.	None	Torch applied[8]	45

TABLE 3—WIND UPLIFT RESISTANCE- MECHANICALLY FASTENED BASE SHEET ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5, 10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)[5]
			Type	Attachment[1,4]	Type	Attachment[1,4]	Base Sheet	Ply Sheet	Cap Membrane	
W-14	Plywood or OSB	None	None	N/A	None	N/A	Elastobase V fastened with nails/tin caps 6 inches o.c. in 4-inch laps and 6 inches o.c. in four equally spaced staggered rows	—	Self-adhered[7c]	113
W-15	Min. $^{15}/_{32}$-inch plywood	None	None	N/A	None	N/A	Polybase V fastened with OMG #12 Standard Roofgrip or#14 OMG Heavy Duty fasteners and OMG 3-inch Round Metal Plates or OMG Flat Bottom Metal Plates spaced 6 inches o.c. in 4-inch laps and 6 inches in five equally spaced staggered rows	(Optional) Torch-applied (APP)[8] ply sheet	Torch applied (APP)[8]	120
W-16	Min. $^{15}/_{32}$-inch plywood	None	None	N/A	None	N/A	Elastobase V fastened with OMG #12 Standard Roofgrip or #14 OMG Heavy Duty fasteners and OMG 3-inch Round Metal Plates or OMG Flat Bottom Metal Plates spaced 6 inches o.c. in 4-inch laps and 6 inches o.c. in five equally spaced staggered rows	(Optional) Torch-applied[8] or hot asphalt-applied[9] ply sheet	Torch-applied[8] or hot asphalt-applied[9]	120
W-17	Min. $^{15}/_{32}$-inch plywood	None	None	N/A	None	N/A	Elastobase V fastened with Trufast #12 DP or Trufast #14 HD fasteners with Trufast 3-inch Metal Insulation Plate spaced 6 inches o.c. in 4-inch laps and 6 inches o.c. in five equally spaced staggered rows	(Optional) Hot asphalt-applied[9] ply sheet	Hot asphalt-applied[9]	120

TABLE 3—WIND UPLIFT RESISTANCE- MECHANICALLY FASTENED BASE SHEET ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5, 10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)[5]
			Type	Attachment[1,4]	Type	Attachment[1,4]	Base Sheet	Ply Sheet	Cap Membrane	
W-10	Min. $^{15}/_{32}$-inch plywood	None	None	N/A	None	N/A	Elastobase V fastened with OMG #12 Standard Roofgrip or OMG #14 Heavy Duty fasteners and OMG 3-inch Round Metal Plates or OMG Flat Bottom Metal Plates spaced 6 inches o.c. in 4-inch laps and 6 inches o.c. in three equally spaced staggered rows	(Optional) Torch-applied[8] or hot asphalt-applied[9] ply sheet	Torch-applied[8] or hot asphalt-applied[9]	90
W-11	Min. $^{15}/_{32}$-inch plywood	None	None	N/A	None	N/A	Elastobase V fastened with Trufast #12 DP or Trufast #14 HD fasteners with Trufast 3-inch Metal Insulation Plate spaced 6 inches o.c. in 4-inch laps and 6 inches o.c. in three equally spaced staggered rows	(Optional) Hot asphalt-applied[9] ply sheet	Hot-asphalt-applied[9]	90
W-12	Plywood or OSB	None	None	N/A	None	N/A	Elastobase V fastened with nails/tin caps spaced 6 inches o.c. at 4-inch laps and 6 inches o.c. at four equally spaced staggered rows, ASTM D41 primer applied to tin caps only	Elastoflex SA V or SA V FR self-adhered	Self-adhered[7c]	98
W-13	Min. $^{15}/_{32}$-inch CDX plywood	None	None	N/A	None	N/A	Elastobase V fastened with Simplex MAXX Cap fasteners spaced 6 inches o.c. in 2-inch laps and 6 inches o.c. in three equally spaced staggered rows in the center of the sheet	(Optional) Torch-applied[8] or hot asphalt-applied[9] ply sheet	Torch-applied[8] or hot asphalt-applied[9]	105

TABLE 3—WIND UPLIFT RESISTANCE- MECHANICALLY FASTENED BASE SHEET ASSEMBLIES (Continued)

SYSTEM NO.	ROOF DECK[5, 10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)[5]
			Type	Attachment[1,4]	Type	Attachment[1,4]	Base Sheet	Ply Sheet	Cap Membrane	
W-6	Min. $^{15}/_{32}$-inch plywood	None	None	N/A	None	N/A	Elastobase V fastened with Simplex Cap Nails spaced 6 inches o.c. in 3-inch laps and 6 inches o.c. in four equally spaced staggered rows	(Optional) Self-adhered[7b], torch-applied[8], hot asphalt-applied[9] ply sheet	Self-adhered[7c], or torch-applied[8] or hot asphalt-applied[9]	53
W-7	Plywood or OSB	None	Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG" or RMax, Inc. "Multi-Max FA3"	Millennium One Step Insulation Adhesive	None	N/A	Elastobase V fastened with nails/tin caps 6 inches o.c. in laps and 6 inches o.c. in four equally spaced staggered rows	Elastoflex SA V, or SA V PLUS, self-adhered	Self-adhered[7c] or Polyflex G torch-applied[8]	60
W-8	Min. $^{15}/_{32}$-inch CDX plywood	None	None	N/A	None	N/A	Elastobase V fastened with Simplex MAXX Cap fasteners spaced 6 inches o.c. in 2-inch laps and 6 inches o.c. in two equally spaced staggered rows in the center of the sheet	(Optional) Torch-applied[8] or hot asphalt-applied[9] ply sheet	Torch-applied[8] or hot ashalt-applied[9]	90
W-9	Min. $^{15}/_{32}$-inch plywood	None	None	N/A	None	N/A	Polybase V fastened with OMG #12 Standard Roofgrip or #14 OMG Heavy Duty fasteners with OMG 3-inch Round Metal Plates or OMG Flat Bottom Metal Plates spaced 6 inches o.c. in 4-inch laps and 6 inches o.c. in three equally spaced staggered rows	(Optional) Torch-applied (APP)[8] ply sheet	Torch applied (APP)[8]	90

TABLE 3—WIND UPLIFT RESISTANCE – MECHANICALLY FASTENED BASE SHEET ASSEMBLIES

SYSTEM NO.	ROOF DECK[5, 10]	VAPOR BARRIER	BARRIER BOARD AND/OR INSULATION[2, 6]		COVER BOARD		ROOF COVER			ALLOWABLE UPLIFT CAPACITY (psf)[5]
			Type	Attachment[1, 4]	Type	Attachment[1, 4]	Base Sheet	Ply Sheet	Cap Membrane	
W-1	Plywood or OSB	None	Atlas Roofing "ACFoam II" or "ACFoam III", Johns Manville "ENRGY 3", Hunter Panels "H-Shield" and "H-Shield CG" or RMax, Inc. "Multi-Max FA3"	Millennium One Step Insulation Adhesive	None	N/A	Elastobase V fastened with nails/tin caps 8 inches o.c. in laps and 8 inches o.c. in two equally spaced staggered rows	Elastoflex SA V, or SA V PLUS self-adhered	Self-adhered[7c] or Polyflex G torch-welded	30
W-2	Min. $^{15}/_{32}$-inch BCX plywood or Min, $^{15}/_{32}$" OSB	None	None	N/A	None	N/A	(Optional) ASTM D4601, Type II base sheet loose laid followed by Elastobase V or Elastobase P attached with min. 11 ga. ring shank cap nails with a min. 1-inch dia. round cap 6 inches o.c. in the 3-inch laps and 6 inches o.c. in two staggered rows in the field of the sheet	(Optional) Elastoflex SA V FR or SA V PLUS FR self-adhered	Elastoflex SA P FR or Polyflex SA P FR self-adhered or Polyflex G or Polyflex G FR torch-welded	37
W-3	Min. $^{15}/_{32}$-inch CDX plywood	None	None	N/A	None	N/A	Elastobase V fastened with Simplex MAXX Cap fasteners spaced 9 inches o.c. in 2-inch laps and 18 inches o.c. in two equally spaced staggered rows in the center of the sheet	(Optional) Torch-applied[8] or hot asphalt-applied[9] ply sheet	Torch-applied[8] or hot asphalt-applied[9]	45
W-4	Min. $^{15}/_{32}$-inch CDX plywood	None	None	N/A	None	N/A	Elastobase V fastened with Simplex MAXX Cap fasteners spaced 9 inches o.c. in 2-inch laps and 12 inches o.c. in two equally spaced staggered rows in the center of the sheet	(Optional) Torch-applied[8] or hot asphalt-applied[9] ply sheet	Torch-applied[8] or hot asphalt-applied[9]	53
W-5	Min. $^{15}/_{32}$-inch plywood	None	None	N/A	None	N/A	Polybase V fastened with Simplex Cap Nails spaced 6 inches o.c. in 3-inch laps and 6 inches o.c. in four equally spaced staggered rows	(Optional) Self-adhered[7b] or torch-applied (APP)[8] ply sheet	Self-adhered[7c] torch-applied (APP)[8]	53

TABLE 2—FIRE CLASSIFICATIONS[6] (Continued)

SYSTEM NO.	ROOF CLASS[1]	ROOF DECK[2,7]	MAX. SLOPE	INSULATION / BARRIER BOARDS			ROOF COVERING APPLICATION		
				Barrier Board[5]	Insulation/ Thickness[3,4]	Attachment	Base Sheet or Slip Sheet	Ply Sheet	Membrane
20	B	Noncombustible	1:12	None	(Optional) Any thickness, polyisocyanurate	Mechanically attached or adhered	Elastobase V (poly/sand) mechanically attached or Elastoflex SA V PLUS or SA V self-adhered	None	Polyflex SA P or Elastoflex SA P, self-adhered or Polyflex G, heat-fused
21	B	Combustible (plywood)	1/4:12	None	None	N/A	Elastobase V (poly/sand) mechanically attached	Elastoflex SA V PLUS or SA V self-adhered.	Polyflex SA P or Elastoflex SA P, self-adhered or Polyflex G, heat-fused
22	C	Noncombustible	1/2:12	None	1 1/2-inch-thick Hunter Panels "H-Shield"	Mechanically attached	Elastobase V (poly/sand), mechanically attached	None	Polyflex SA P self-adhered

For **SI:** 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 square = 9.29 m²; 1 gal = 3.785 L.

FOOTNOTES:

[1] Noncombustible deck classifications are applicable for use over combustible decks (min. 15/32-inch-thick plywood), when minimum 1/2-inch-thick Type X gypsum board or minimum 1/4-inch-thick Georgia-Pacific Gypsum LLC "DensDeck® Roof Board" or minimum 1/4-inch thick USG "SECUROCK" Gypsum-Fiber Roof Board is used directly over the combustible deck with all joints staggered a minimum of 6 inches from plywood joints.

[2] Unless otherwise noted, noncombustible substrates include concrete, lightweight concrete, and steel decks.

[3] Foam plastic insulation is permitted to be installed over a steel deck without a thermal barrier when there is an ICC-ES evaluation report on the specific foam plastic for direct-to-deck applications. See Section 5.3 and 5.4 of this report for conditions of use.

[4] All foam plastic insulation must be UL classified foamed plastic and must be limited to the maximum thickness in accordance with Section 5.4 of this report or the maximum thickness in accordance with this table whichever is less.

[5] The barrier board must be mechanically fastened to the deck with all joints staggered 6 inches from plywood joints.

[6] Unless otherwise specified, the barrier board, insulation, base, slip and ply sheets, membranes and coatings must be UL-Classified for roofing system applications.

[7] Unless otherwise specified, combustible wood decks must be minimum 15/32-inch-thick (11.9 mm) plywood or minimum 7/16-inch-thick (11.1 mm) oriented strand board (OSB). Unless otherwise specified, steel decks must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)]. Unless otherwise specified, concrete decks must have a minimum compressive strength (f_c) of 2500 psi.

TABLE 2—FIRE CLASSIFICATIONS[6] (Continued)

SYSTEM NO.	ROOF CLASS[1]	ROOF DECK[2,7]	MAX. SLOPE	INSULATION / BARRIER BOARDS			ROOF COVERING APPLICATION		
				Barrier Board[5,6]	Insulation/ Thickness[3,4]	Attachment	Base Sheet or Slip Sheet	Ply Sheet	Membrane
13	A	Noncombustible	2:12	None	Min. 1-inch thick to max. 4-inch-thick, Atlas "ACFoam III" or Hunter Panels "H-Shield"	Mechanically attached or loose laid	Elastobase V (poly/sand) mechanically attached; or Elastoflex SA V FR or SA V PLUS FR, self-adhered	None	Polyflex SA P FR or Elastoflex SA P FR self-adhered; or Polyflex G FR
14	A	Noncombustible	3:12	None	Min. 1-inch thick to max. 4-inch-thick, Atlas "ACFoam III" or Hunter Panels "H-Shield"	Mechanically attached	Elastoflex SA V FR, SA V PLUS FR, self-adhered.	None	Polyflex SA P FR or Elastoflex SA P FR, self-adhered
15	A	Noncombustible	1:12	None	(Optional) Min. 1 1/2-inch-thick polyisocyanurate	Mechanically attached or adhered	Elastoflex SA V or SA V PLUS self-adhered	None	Polyflex SA P self-adhered
16	A	Noncombustible	1/2:12	None	1 1/2-inch-thick Hunter Panels "H-Shield"	Mechanically attached	Elastoflex SA V FR, self-adhered	None	Elastoflex SA P FR, self-adhered
17	A	Noncombustible	1 1/4:12	None	(Optional) Any thickness, polyisocyanurate.	Mechanically attached or adhered	Elastoflex SA V FR or SA V PLUS FR , self-adhered	None	PolyKool, self-adhered
18	A	Combustible (plywood)	1/2:12	None	(Optional) Any thickness, polyisocyanurate.	Mechanically attached	Type G2, mechanically attached	Elastoflex SA V FR or SA V PLUS FR, self-adhered.	PolyKool, self-adhered
19	B	Combustible (plywood)	1/2:12	None	(Optional) Any thickness, one or more layers, polyisocyanurate.	Mechanically attached	One or more layers Elastobase V or Type G2, mechanically attached or applied in hot asphalt	None	Polyflex or Polyflex G, torch-applied. Surface with Fields "F530 Heat Shield Aluminum Coating" or "F630 Heat Shield Fibered Aluminum Coating" at 1 1/2 gal./sq., or Monsey "Endure Aluminum Roof Coating," "Weather Check" or "Pro-Grade Aluminum Roof Coating" at 1.5 gal./sq.

For **SI:** 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 square = 9.29 m²; 1 gal = 3.785 L.

TABLE 2—FIRE CLASSIFICATIONS[6] (Continued)

SYSTEM NO.	ROOF CLASS[1]	ROOF DECK[2,7]	MAX. SLOPE	INSULATION / BARRIER BOARDS			ROOF COVERING APPLICATION		
				Barrier Board[5]	Insulation/ Thickness[3,4]	Attachment	Base Sheet or Slip Sheet	Ply Sheet	Membrane
7	A	Noncombustible (excluding steel)	1:12	None	None	N/A	None	(Optional) One or more plies of Polyglass Ply 4 or Ply 6, applied in hot asphalt	Deck shall be primed with asphalt primer followed by Polyflex or Polyflex G, torch-applied. Surface with Monsey "Endure Aluminum Roof Coating" at 1.5 gal./square or Grundy Industries "a1 MB Aluminum Roof Coating" at 1-2 gal./square or Polyflex G FR, torch applied (no surfacing)
8	A	Noncombustible (excluding steel)	1:12	None	Min. 1-inch-thick, polyisocyanurate.	Mechanically attached	One or more layers Elastobase V or Type G2, mechanically attached or applied in hot asphalt	(Optional) One or more plies of Polyglass Ply 4 or Ply 6, applied in hot asphalt	Polyflex or Polyflex G, torch-applied. Surface with Fields "F530 Heat Shield Aluminum Coating" or "F630 Heat Shield Fibered Aluminum Coating" at $1^1/_2$ gal./square
9	A	Combustible (plywood)	$2^1/_2$:12	$^1/_4$-inch-thick Georgia-Pacific "DensDeck"	(Optional) Any thickness polyisocyanurate.	Mechanically attached	Elastobase V or Type G2, mechanically attached	None	Polyflex G FR, torch-applied
10	A	Noncombustible	$^1/_2$:12	None	(Optional) Any thickness, polyisocyanurate.	Mechanically attached or applied in hot asphalt	Elastobase V or Type G2 mechanically attached or applied in hot asphalt	(Optional) One or more plies of Polyglass Ply 4 or Ply 6, applied in hot asphalt	Polyflex, torch-applied. Surfaced with "300 AFX" Aluminum Roof Coating at $1^1/_2$ gal./square
11	A	Combustible (plywood)	2:12	Min. $^1/_4$-inch-thick Georgia-Pacific "DensDeck"	(Optional) Any thickness, polyisocyanurate.	Mechanically attached	Elastobase V (poly/sand) mechanically attached; or Elastoflex SA V FR or SA V PLUS FR, self-adhered	(Optional) Elastoflex SA V FR or SA V PLUS FR, self-adhered	Polyflex SA P FR or Elastoflex SA P FR, self-adhered; or Polyflex G FR
12	A	Combustible (plywood)	$^1/_2$:12	None	(Optional) Min. $1^1/_2$-inch thick polyisocyanurate	Mechanically attached	Type G2 followed by Elastobase V (poly/sand), mechanically attached	(Optional) Elastoflex SA V FR or SA V PLUS FR, self-adhered	Polyflex SA P FR or Elastoflex SA P FR, self-adhered; or Polyflex G FR

For **SI:** 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 square = 9.29 m^2; 1 gal = 3.785 L.

TABLE 2—FIRE CLASSIFICATIONS[6]

SYSTEM NO.	ROOF CLASS[1]	ROOF DECK[2,7]	MAX. SLOPE	INSULATION / BARRIER BOARDS			ROOF COVERING APPLICATION		
				Barrier Board[5]	Insulation/ Thickness[3,4]	Attachment	Base Sheet or Slip Sheet	Ply Sheet	Membrane
1	A	Noncombustible	1/2:12	None	Min. 1-inch-thick, polyisocyanurate or urethane.	Mechanically attached or loose	Elastobase V or Type G2, mechanically attached	(Optional) One or more plies of Polyglass Ply 4 or Ply 6, applied in hot asphalt	Polyflex or Polyflex G, torch-applied. Surface with Kokem "Sunguard Acrylic Roof Coating" at 1 gal./sq., or Karnak No. 97 Fibrated Aluminum Asphalt Roof Coating, or Karnak No. 97 Asbestos Free Aluminum Roof Coating at 1 to 2 gal./square
2	A	Combustible (plywood)	1/2:12	None	Min. 1-inch-thick, 2 or more layers (joints staggered a min. of 6 inches from plywood joints), polyisocyanurate or urethane.	Mechanically attached or loose	Elastobase V or Type G2, mechanically attached	None	Polyflex or Polyflex G, torch-applied. Surface with Kokem "Sunguard Acrylic Roof Coating" at 1 gal./sq., or Karnak No. 97 Fibrated Aluminum Asphalt Roof Coating, or Karnak No. 97 Asbestos Free Aluminum Roof Coating at 1 to 2 gal./square
3	A	Noncombustible	1:12	None	(Optional) Any thickness, polyisocyanurate.	Mechanically attached or applied in hot asphalt	Elastobase V or Type G2, mechanically attached or applied in hot asphalt	(Optional) One or more applies of Polyglass Ply 4 or Ply 6, applied in hot asphalt	Polyflex or Polyflex G, torch-applied. Surface with Grundy Industries "a1 MB Aluminum Roof Coating" at 1 to 2 gal./square
4	A	Noncombustible	1:12	None	Min. 1-inch-thick, polyisocyanurate or urethane.	Mechanically attached	Elastobase V or Type G2, mechanically attached	(Optional) One or more plies of Polyglass Ply 4 or Ply 6, applied in hot asphalt	Polyflex G FR, torch-applied
5	A	Combustible (plywood)	1/2:12	None	None	N/A	One or more layers Elastobase V or Type G2, mechanically attached or applied in hot asphalt	One or more layers Elastobase V or Type G2, mechanically attached or applied in hot asphalt	Polyflex G FR, torch-applied
6	A	Combustible (plywood)	1/2:12	None	Min. 2-inch- thick polyisocyanurate.	Mechanically attached	Elastobase V or Type G2, mechanically attached or applied in hot asphalt	Elastobase V or Type G2, mechanically attached or applied in hot asphalt	Polyflex G FR, torch-applied

For **SI:** 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 square = 9.29 m²; 1 gal = 3.785 L.

TABLE 1—PRODUCT TRADE NAMES

POLYGLASS USA, INC.		ADDITIONAL LISTEE
POLYGLASS PRODUCTS	**XTRAFLEX PRODUCTS**	**MULE-HIDE PRODUCTS CO., INC.**
Elastobase V	XtraFlex SBS Glass Base	Mule-Hide Nail Base
Elastobase P	-	-
Elastoflex S6 (base/ply sheet)	XtraFlex SBS Poly Base	-
Elastoflex VP (base/ply sheet)		
Elastoflex S6 G	-	-
Elastoflex S6 G FR	XtraFlex SBS Poly G	-
Elastoflex SA P	-	Mule-Hide SA-SBS Cap Sheet
Elastoflex SA P FR	XtraFlex SBS G SA	Mule-Hide SA-SBS Cap Sheet (FR)
Elastoflex SA V (base sheet)	-	Mule-Hide SA-Base Sheet
Elastoflex SA V FR (base sheet)	-	Mule-Hide SA-Base Sheet (FR)
Elastoflex SA V PLUS (base sheet)	XtraFlex SBS Base SA	-
Elastoflex SA V PLUS FR (base sheet)	-	-
Elastoflex V	XtraFlex SBS Glass Interply	-
Elastoflex V G	=	-
Elastoflex V G FR	XtraFlex SBS Glass G-	-
Elastoshield TS G	-	-
Elastoshield TS G FR	-	-
Polybianko	-	-
Polyflex	XtraFlex APP S	Mule-Hide APP Torch S
Polyflex G	-	Mule-Hide APP Torch G
Polyflex G FR	XtraFlex APP G	Mule-Hide APP Torch G FR
Polyflex SA Base	-	-
Polyflex SA P	-	Mule-Hide SA-APP Cap Sheet
Polyflex SA P FR	XtraFlex APP G SA	Mule-Hide SA-APP Cap Sheet (FR)
Polyfresko G	XtraFlex Kool APP G	Mule-Hide APP Torch KoolCap® G
Polyfresko G FR	-	Mule-Hide APP Torch KoolCap® G FR
Polyfresko G SA	-	Mule-Hide SA-APP KoolCap®
Polyfresko G SA FR	-	Mule-Hide SA-APP KoolCap® FR
Polyfresko G SBS	-	-
Polyfresko G SBS FR	-	-
Polyfresko G SBS SA	-	Mule-Hide SA-SBS KoolCap®
Polyfresko G SBS SA FR	-	Mule-Hide SA-SBS KoolCap (FR)-
Polybase V	-	Mule-Hide APP Torch Base
Polykool	-	

Since the composition and/or condition of any particular underlying existing roofing material may vary widely, roof recovery, or installing the adhered systems in this report over an existing roof covering, without removing the existing roof covering, is outside the scope of this report.

5.0 CONDITIONS OF USE:

The Polyglass USA, Inc. modified bitumen roofing membranes described in this report comply with, or are suitable alternatives to what is specified in, the code indicated in Section 1.0 of this report, subject to the following conditions:

5.1 Installation and application of the Polyglass modified bitumen roofing membranes must comply with the IBC, the manufacturer's published installation instructions, and this report. If there are any conflicts between the report holder's installation instructions and this report, this report governs.

5.2 Polyglass USA, Inc. modified bitumen roofing membranes must be installed by professional roofing contractors trained and approved by the report holder.

5.3 Foam plastic insulation must be separated from the interior of the building by an approved thermal barrier in accordance with IBC Section 2603.4.1.5, except when specifically recognized in an ICC-ES evaluation report as outlined in Footnote 3 to Table 2.

5.4 Any foam plastic insulation, where used, must bear the label of an approved agency indicating that the foam plastic has a flame-spread index of not more than 75 when tested at the maximum thickness intended for use in accordance with ASTM E84 or UL 723, subject to the approval of the code official.

5.5 Above-deck thermal insulation board must comply with the applicable standards listed in IBC Table 1508.2.

5.6 Design wind uplift pressure on any roof area, including edge and corner zones, must not exceed the allowable wind uplift pressure listed for the system installed in that particular area. Refer to allowable wind uplift pressure for systems as listed in Tables 3 and 4.

5.7 The allowable wind uplift pressures listed in Tables 3 and 4 are for the roof covering only. The deck and framing to which the system is attached must be designed for the applicable components and cladding wind loads in accordance with the IBC.

5.8 Calculations demonstrating that the required wind resistance is less than the allowable wind resistance must be submitted to the code official for approval.

5.9 Where gypsum board is used as barrier board in the roofing assembly, weather protection must be provided to prevent damage to the gypsum board prior to application of the roofing membrane.

5.10 The membranes are manufactured at Polyglass facilities in Fernley, Nevada, Hazleton, Pennsylvania, Waco, Texas and Winter Haven, Florida, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with ICC-ES Acceptance Criteria for Membrane Roof-covering Systems (AC75), dated July 2010 (editorially revised April 2021).

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-2018) along with the name, registered trademark, or registered logo of the report holder and/or listee must be included on in the product label.

7.2 In addition, each roll of the membranes, base sheets and ply sheets described in this report is identified with a label noting the product name (refer to Table 1); the manufacturer's name (Polyglass USA, Inc.) or the name of the additional listee (Mule-Hide Products Co., Inc.); the manufacturer's address or the address of the additional listee.

7.3 The report holder's contact information is the following:

POLYGLASS USA, INC.
1111 WEST NEWPORT CENTER DRIVE
DEERFIELD BEACH, FLORIDA 33442
(800)-894-4563
www.polyglass.com

7.4 The Additional Listees' contact information is the following:

MULE-HIDE PRODUCTS CO., INC.
POST OFFICE BOX 1057
BELOIT, WISCONSIN 53512
(800) 786-1492
www.mulehide.com

3.6.2 Polygrip #14: These are corrosion-resistant, Sentri-coated, carbon steel, self-drilling screws with a 0.181-inch (4.6 mm) shank diameter, 0.448-inch (11.3 mm) head diameter and a No. 3 Phillips recess. The screws are for installation in wood, steel and structural concrete decks and for use with Polygrip Hex Plates, Polygrip 2 1/2-inch HS Membrane Plates, IF/IG-70×70 plates or IF-50 plates.

3.6.3 Polygrip #15: These are corrosion-resistant, Sentri-coated, carbon steel, self-drilling screws with a 0.204-inch (5.2 mm) shank diameter, 0.448-inch (11.3 mm) head diameter and a No. 3 Phillips recess. The screws are for installation in steel and structural concrete decks and for use with Polygrip 2 1/2-inch HS Membrane Plates.

3.6.4 Isofast IF2: These are corrosion-resistant, coated, carbon steel, self-drilling screws with a 0.153-inch (3.9 mm) shank diameter, 0.448-inch (11.3 mm) head diameter and a No. 3 Phillips recess. The screws are for installation in wood and steel decks and for use with IF/IG-70×70 plates.

3.6.5 ITW Buildex Lite Weight Concrete Fasteners: These are 1.75-inch-long-by-1.1-inch-wide (44.5 mm by 28 mm), painted galvanized (G90) steel fasteners with an integral 2.7-inch-diameter (68.8 mm) AZ55 Galvalume plate. They are designed for use in lightweight concrete decks.

3.6.6 Polygrip Hex Plates: These are 2 7/8-inch-by-3 1/4-inch (73 mm by 83 mm), 0.018-inch-thick (0.46 mm) hexagonal steel and have an AZ-50 Galvalume coating complying with ASTM A792.

3.6.7 Polygrip 2 1/2" HS Membrane Plates: These are 2 1/2-inch-diameter (64 mm), 0.036-inch-thick (0.9 mm) steel and have an AZ-50 Galvalume coating complying with ASTM A792.

3.6.8 IF/IG 70×70 Plates: These are 2 3/4-inch-by-2 3/4-inch (70 mm by 70 mm), 0.042-inch-thick (1.1 mm) steel and have an AZ50 Galvalume coating complying with ASTM A792.

3.6.9 IF-50 Plates: These are 2-inch-diameter (51 mm) nylon with 16 barbs on the underside.

3.7 Asphalt:

The asphalt primer must meet ASTM D41 specifications. The asphalt must meet ASTM D312, Type III or IV, specifications.

3.8 Impact Resistance:

The modified bitumen roofing membrane roof coverings described in this report meet requirements for impact resistance based on testing in accordance with Section 4.6 of FM 4470.

4.0 INSTALLATION

4.1 General:

Installation of the Polyglass USA, Inc., modified bitumen roofing membranes must comply with the IBC, the report holder's published installation instructions and this report. The report holder's published installation instructions must be available at all times on the job site during installation.

The slope of the roof on which the Polyglass USA, Inc. modified bitumen roofing membrane is installed must be minimum 1/4:12 (2-percent slope) and must not be more than the maximum slope indicated for the particular assembly as listed in Table 2.

Penetrations and terminations of the roof covering must be flashed and made weather tight in accordance with the requirements of the membrane manufacturer and IBC Section 1503.2.

4.2 Fire Classification:

The Polyglass USA, Inc., modified bitumen membrane roofing systems installed in accordance with this report are classified as Class A, B or C roof covering systems in accordance with ASTM E108 or UL790, as noted in Table 2.

4.3 Wind Resistance:

The allowable wind uplift pressures for the Polyglass USA, Inc., modified bitumen roofing systems described in this report are noted in Table 3 and 4. Metal edge securement systems must be listed in accordance with 2011 edition of ANSI/SPRI/FM 4435 ES-1, and designed and installed for wind loads in accordance with IBC Section 1504.5 and IBC Chapter 16.

4.4 Reroofing:

Prior to installation of new roof coverings, inspection in accordance with 2021 IBC Section 1512 [2018 and 2015 IBC Section 1511 or (2012, 2009 or 2006 IBC Section 1510)]. Roof covering systems employing mechanical fasteners must be qualified to the satisfaction of the code official as to the adequacy of fasteners penetrating through existing roof coverings into structural substrates.

surface is coated with mineral granules, and the bottom surface is either smooth or finished with fine sand. Material thickness is nominally 177 mils [0.18 (4.5 mm)]. Nominal weight of the membranes per 100 square feet (9.3 m^2) of coverage is 108 pounds. Roll size is 32.83 feet by 3.28 feet (10 m by 1 m).

3.2.3.7 Elastobase V / Elastobase P: Elastobase V complies with ASTM D6163, Type I and is a fiberglass reinforced SBS modified bituminous membrane. Elastobase P complies with ASTM D6164, Type I and is a polyester reinforced SBS modified bituminous membrane. The top and bottom surfaces are finished with either fine sand or polyolefin film. The roll thickness is 79 mils [0.08 inch (2 mm)]. Nominal weight of the membranes per 100 square feet (9.3 m^2) is 50 pounds. The roll dimension is 65. 67 feet by 3.28 feet (20 m by 1 m) with an approximate coverage of 200 ft^2.

3.2.4 SBS SA Self-adhered:

3.2.4.1 Elastoflex SA (Self-adhered): Elastoflex SA V PLUS, Elastoflex SA V PLUS FR, and Elastoflex SA V, Elastoflex SA V FR, are modified bitumen base sheet or ply sheet membranes utilizing a styrene butadiene styrene (SBS) modified compound on the top, a self-adhesive compound on the bottom, and a fiberglass reinforcement. Elastoflex SA V PLUS, and Elastoflex SA V PLUS FR, comply with ASTM D6163 as Grade S (smooth surface) products and are finished on the top surface with a polyolefin film, and have a nominal thickness of 80 mils [0.08 inch (2 mm)] and a nominal weight of 48 pounds per 100 square feet (9.3 m^2). Elastoflex SA V and Elastoflex SA V FR base sheets comply with ASTM D6163 and have a nominal thickness of 60 mils [0.60 inch (1.5 mm)] and a nominal weight of 45 pounds per 100 square feet (9.3 m^2). All Elastoflex SA V products are finished on the bottom surface with a split/perforated release film, which protects the underside adhesive compound and is removed during installation. Roll size is 66.7 feet by 3.28 feet (20 m by 1 m).

3.2.4.2 Elastoflex SA P: Elastoflex SA P and Elastoflex SA P FR, membranes comply with ASTM D6164, Type I, and are modified bitumen membranes utilizing an SBS modified compound on the top, a self-adhesive compound on the bottom, and a polyester reinforcement. Elastoflex SA P and Elastoflex SA P FR are Grade G (granule surface) products that are finished on the top surface with mineral granules and have a nominal thickness of 130 mils [0.13 inch (3.3 mm)]. Elastoflex SA P membrane products are finished on the bottom surface with a split/perforated release film, which protects the underside adhesive compound and is removed during installation. Nominal weight of the membranes per 100 square feet (9.3 m^2) of coverage is 95 pounds. Roll size is 32.80 feet by 3.28 feet (10 m by 1 m).

3.2.4.3 Polyfresko G SBS SA: Polyfresko G SBS SA and Polyfresko G SBS SA FR are identical to the Elastoflex SA P and Elastoflex SA P FR, respectively, except the top surfaces of both the Polyfresko G SBS SA and Polyfresko G SBS SA FR are colored white.

3.3 Insulation Boards:

See Tables 2 through 4 for insulations for use with specific roofing systems. Foam plastic insulation, where used, must have a flame-spread index of not more than 75 when tested at the maximum thickness intended for use in accordance with ASTM E84 or UL 723. Polyisocyanurate and polystyrene foam plastic insulation boards must comply with ASTM C1289 and ASTM C578, respectively. Wood fiberboard insulation boards must comply with ASTM C208. Perlite insulation boards must comply with ASTM C728.

3.4 Barrier or Cover Board:

Barrier or cover board, where used, must be either minimum 1/4-inch-thick (6.35 mm) DensDeck or DensDeck Prime® Roof Board manufactured by Georgia-Pacific Gypsum LLC, 1/4-inch-thick (6.35 mm) SECUROCK® Gypsum-Fiber Roof Board manufactured by USG Corporation, 1/2-inch-thick (13 mm) Structodek® High Density Fiberboard manufactured by Blue Ridge Fiberboard, Inc. or minimum 5/8-inch-thick (15.8 mm) Type X gypsum board unless otherwise stated in Table 2, 3 or 4 of this report.

3.5 Base Sheet, Slip Sheet and Ply Sheet:

Unless otherwise stated in Table 2, 3 or 4, the base, slip and ply sheets must be either Elastobase V or Elastobase P as described in Section 3.2.3.6; a membrane described in Section 3.2; any ASTM D4601, Type II, base sheet; or any UL-classified Type G2 base sheet.

3.6 Fasteners:

Fasteners and plates, used to mechanically fasten insulation and membranes to the roof deck, must be corrosion-resistant and must be one of the fasteners listed in Sections 3.6.1 through 3.6.9 or noted in Tables 3 and 4. The length of fasteners varies and must be sufficient for the fastener to protrude through steel and wood decks a minimum of 3/4 inch (19.1 mm). For concrete decks, 3/16-inch-diameter (5 mm) holes must be predrilled and at least 1 inch (25.4 mm) of the screw must penetrate into the concrete deck.

3.6.1 Polygrip #12: These are corrosion-resistant, Sentri-coated, carbon steel, self-drilling screws with a 0.167-inch (4.2 mm) shank diameter, 0.448-inch (11.3 mm) head diameter and a No. 3 Phillips recess. The screws are for installation in wood and steel decks and for use with Polygrip Hex Plates, IF/IG-70×70 plates or IF-50 plates.

3.2.1.2 Polybase V: Polybase V complies with ASTM D6509 and is an APP modified bitumen membrane with a fiberglass reinforcement. The top and bottom surfaces are finished with polyolefin film and have a nominal thickness of 80 mils [0.08 inch (2 mm)]. Nominal weight of the membranes is 80 pounds per 100 square feet (9.3 m^2). Roll size is 65.67 feet by 3.28 feet (20 m by 1 m).

3.2.2 APP Self-adhered:

3.2.2.1 Polyflex SA (Self-adhered): Polyflex SA P and Polyflex SA P FR, comply with ASTM D6222, Type I, and are modified bitumen membranes utilizing an APP modified compound on the top, a self-adhesive compound on the bottom, and a polyester reinforcement. Polyflex SA P and Polyflex SA P FR are Grade G products that are finished on the top surface with mineral granules and have a nominal thickness of 140 mils [0.14 inch (3.6 mm)]. All Polyflex SA P products are finished on the bottom surface with a split/perforated release film, which protects the underside adhesive compound and is removed during installation. Nominal weight of the membranes is 95 pounds per 100 square feet (9.3 m^2). Roll size is 32.80 feet by 3.28 feet (10 m by 1 m).

3.2.2.2 Polyflex SA Base: Polyflex SA Base complies with ASTM D4601 and is a fiberglass reinforced mineral surfaced APP modified bitumen membrane with a self-adhesive compound on the bottom, and has a nominal thickness of 60 mils [0.06 inch (1.5 mm)]. Nominal weight of 70 lbs per 100 square feet (9.3 m^2). Roll size is 66.7 feet by 3.28 feet (20 m by 1 m).

3.2.2.3 Polyfresko G SA: Polyfresko G SA and Polyfresko G SA FR are identical to the Polyflex SA P and Polyflex SA P FR, respectively, except the top surfaces of both the Polyfresko G SA and Polyfresko G SA FR are colored white.

3.2.2.4 PolyKool: PolyKool complies with ASTM D6222, Type I, and is a modified bitumen membrane utilizing an APP modified compound on the top, a self-adhesive compound on the bottom, and a polyester reinforcement. PolyKool is a Grade S product that is finished on the top surface with a reflective white film and has a nominal thickness of 140 mils [0.14 inch (3.6 mm)]. PolyKool is finished on the bottom surface with a split/perforated release film which protects the underside adhesive compound and is removed during installation. Nominal weight of the membrane per 100 square feet (9.3 mm) of coverage is 85 pounds. Roll size is 32.80 feet by 3.28 feet (10 m by 1 m).

3.2.2.5 Polybianko: Polybianko is identical to the PolyKool, except the top surface of the Polybianko is colored white.

3.2.3 SBS Conventional:

3.2.3.1 Elastoflex S6 and Elastoflex VP: Elastoflex S6 and Elastoflex VP membranes comply with ASTM D6164, Type I, and is a bituminous membrane utilizing an SBS modified compound and a polyester reinforcement. The membrane consists of a sanded top surface and a bottom surface that is either sand-backed for use with hot asphalt and cold process adhesive applications or a burn-off polyethylene layer for torch applications. Material thickness is nominally 120 mils [0.12 inch (3 mm)]. Nominal weight of the membrane is 80 pounds per 100 square feet (9.3 m^2). Roll size is 32.83 feet by 3.28 feet (10 m by 1 m).

3.2.3.2 Elastoflex S6 G: Elastoflex S6 G and Elastoflex S6 G FR membranes comply with ASTM D6164, Type I, and are bituminous membranes utilizing an SBS modified compound and a polyester reinforcement. The membrane consists of a sanded top surface and a bottom surface that is either sand-backed for hot asphalt and cold process adhesive applications or burn-off polyethylene for torch applications. Material thickness is nominally 138 mils [0.14 inch (3.5 mm)]. Nominal weight of the membranes per 100 square feet (9.3 m^2) of coverage is 110 pounds. Roll size is 32.83 feet by 3.28 feet (10 m by 1 m).

3.2.3.3 Elastoflex V: Elastoflex V membrane complies with ASTM D6163, Type I, and is a bituminous membrane utilizing an SBS modified compound and a fiberglass reinforcement. The top surface consists of sand and the bottom surface is either sand-backed for hot asphalt and cold process adhesive applications or burn-off polyethylene for torch applications. Material thickness is nominally 90 mils [0.09 inch (2.2 mm)]. Nominal weight of the membrane per 100 square feet (9.3 m^2) of coverage is 85 pounds. Roll size is 49.2 feet by 3.28 feet (15 m by 1 m).

3.2.3.4 Elastoflex V G: Elastoflex V G and Elastoflex V G FR membranes comply with ASTM D6163, Type I, and are bituminous membranes utilizing an SBS modified compound and a fiberglass reinforcement. The top surface is coated with mineral granules, and the bottom surface is either sand-backed for hot asphalt and cold process adhesive applications or burn-off polyethylene for torch applications. Material thickness is nominally 138 mils [0.14 inch (3.5 mm)]. Nominal weight of the membranes per 100 square feet (9.3 m^2) of coverage is 98 pounds. Roll size is 32.83 feet by 3.28 feet (10 m by 1 m).

3.2.3.5 Polyfresko G SBS: Polyfresko G SBS and Polyfresko G SBS FR are identical to the Elastoflex S6 G and Elastoflex S6 G FR, respectively, except the top surfaces of both the Polyfresko G SBS and Polyfresko G SBS FR are colored white.

3.2.3.6 Elastoshield TS G: Elastoshield TS G and Elastoshield TS G FR membranes comply with ASTM D6164, Type I, and are bituminous membranes utilizing an SBS modified compound and a polyester reinforcement. The top

ICC-ES Evaluation Report

ESR-2018

Reissued September 2023

This report also contains:

- CBC Supplement

Subject to renewal September 2025

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION **Section: 07 52 00—Modified Bituminous Sheet Roofing**	**REPORT HOLDER: POLYGLASS USA, INC.** **ADDITIONAL LISTEE: MULE-HIDE PRODUCTS CO., INC.**	**EVALUATION SUBJECT:** **MODIFIED BITUMEN ROOFING MEMBRANES: APP CONVENTIONAL, APP SELF-ADHERED, SBS CONVENTIONAL AND SBS SELF-ADHERED**	

1.0 EVALUATION SCOPE

Compliance with the following code:

- 2021, 2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)†

†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Weather resistance
- Fire classification
- Wind uplift resistance
- Impact resistance

2.0 USES

Polyglass USA, Inc., modified bitumen roofing membranes are used as roof coverings in Class A, B or C membrane roofing systems.

3.0 DESCRIPTION

3.1 General:

The Polyglass USA, Inc., modified bitumen roofing systems consist of a Polyglass single-ply membrane (with or without multiple underlayments), insulation where used, barrier board where used, flashing, mechanical fasteners, and asphalt that are installed on a combustible or noncombustible deck. See Table 1 for Polyglass USA product trade names with corresponding product names for Mule-Hide Products Co.

3.2 Membranes:

3.2.1 APP Conventional:

3.2.1.1 Polyflex: Polyflex, Polyflex G, and Polyflex G FR (Fire Retardant) comply with ASTM D6222, Type I, and are modified bitumen membranes utilizing atactic polypropylene (APP) as the modifier and polyester as the reinforcement. Material thickness is nominally 157 mils [0.16 inch (4.0 mm)] for Polyflex and 177 mils [0.18 inch (4.5 mm)] for Polyflex G and Polyflex G FR. For Polyflex G and Polyflex G FR, the top surface is coated with mineral granules, and for Polyflex it is smooth; the bottom surface of both membranes is burn-off polyethylene. Nominal weight of the membranes per 100 square feet (9.3 m^2) of coverage is 90 pounds for Polyflex, 105 pounds for Polyflex G, and 110 pounds for Polyflex G FR. Roll size is 32.67 feet by 3.28 feet (10 m by 1 m). **Polyfresko G:** Polyfresko G and Polyfresko G FR are identical to the Polyflex G and Polyflex G FR, respectively, except that the top surfaces of both the Polyfresko G and Polyfresko G FR are colored white.