

# UL Evaluation Report

## UL ER21-01

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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

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### 1. SUBJECT: Asphalt Shingles

Timberline® HDZ™, Timberline® UHDZ™, Timberline® Ultra HDZ™, Timberline® AH,  
Timberline® CS

### 2. SCOPE OF EVALUATION

- 2021, 2018, 2015, 2012, 2009, and 2006 *International Building Code*® (IBC)
- 2021, 2018, 2015, 2012, 2009, and 2006 *International Residential Code*® (IRC)
- ICC ES Acceptance Criteria for Quality Documentation (AC10)



## The products were evaluated for the following properties:

- Exterior Fire Exposure (UL790)
- Wind Resistance (ASTM D3161, ASTM D7158)
- Physical Properties (ASTM D3462)

### 3. REFERENCED DOCUMENTS

- UL790, Standard Test Methods for Fire Tests of Roof Coverings
- ASTM D3161, Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method)
- ASTM D7158, Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance)
- ASTM D3462, Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules
- ICC ES Acceptance Criteria for Quality Documentation (AC10)

### 4. USES

GAF asphalt shingles are used as roof coverings for new and existing roofs.

### 5. PRODUCT DESCRIPTION

GAF asphalt shingles are roof covering materials complying with the following properties when installed as described in this report. The products are laminated shingles and are available in metric sizes.

**Fire Classification:** GAF asphalt shingles covered under this Report have been tested for fire classification Class A in accordance with UL790 . Shingles tested in accordance with UL790 qualify for use under Section 1505.1 of the IBC and Section R902.1 of the IRC.

**Wind Resistance:** GAF asphalt shingles covered under this Report have been tested for wind resistance in accordance with ASTM D3161 and ASTM D7158.

Shingles tested in accordance with ASTM D3161 are classified as Class F and qualify for use under the exception to Section 1504.2 of the 2021 IBC, Section 1504.1.1 of the 2018, 2015 IBC, Section 1507.2.7.1 of the 2012, 2009 and Section 1504.1.1 of the 2006 IBC, or the exception to Section R905.2.4.1 of the IRC.

Shingles tested in accordance with ASTM D7158 are classified as Class H and qualify for use under Section 1504.2 of the 2021 IBC in locations as shown in Table 1504.2, Section 1504.1.1 of the 2018, 2015 IBC in locations as shown in Table 1504.1 1, Section 1507.2.7.1 of the 2012 and 2009 IBC in locations as shown in Table 1507.2.7.1 (1) or under Section R905.2.4.1 of the IRC in locations as shown in Table R905.2.4.1, where the maximum basic wind speed is 150 mph (67 m/s) or less with 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 Section 1507.2.6 of the 2021 and 2018 IBC, Section 1507.2.7 of the 2015, 2012, 2009 and 2006 IBC or Section R905.2.6 of the IRC, as applicable.

**Physical Properties:** GAF asphalt shingles covered under this Report have been tested for physical properties in accordance with ASTM D3462. Shingles tested in accordance with ASTM D3462 qualify for use under Section 1507.2.4 of the 2021 and 2018 IBC, Section 1507.2.5 of 2015, 2012, 2009 and 2006 IBC or Section R905.2.4 of the IRC. When installed on new construction in accordance with this report and the GAF installation instructions, the shingles are a Class A roof covering. When the shingles are installed over existing roof coverings, the Class A fire classification is maintained.

**5.1 Laminated Shingles – Timberline® HDZ™, Timberline® UHDZ™, Timberline® Ultra HDZ™, Timberline® AH, Timberline® CS:**

Timberline® HDZ™, Timberline® UHDZ™, Timberline® Ultra HDZ™, Timberline® AH and Timberline® CS are laminated shingles manufactured with a double layer of fiberglass mats coated with asphalt on all sides, and surfaced on the weather-exposed side with mineral granules. See [Table 2](#) for product dimensions and manufacturing location.

## **6. INSTALLATION**

GAF asphalt shingles must be installed in accordance with the applicable code, this report and the manufacturer's published installation instructions. The shingles must be installed in accordance with Section 1507.2 of the IBC or Section R905.2 of the IRC, as applicable, except as noted in this report.

The manufacturer's published installation instructions must be available at all times on the jobsite during installation.

Minimum roof slopes must be 2:12 (16.67% slope) for the laminated shingles described in Section 5.1 of this Report.

**6.1 Underlayment and Ice Barriers:**

For roof slopes greater than 4:12, the roof deck must be covered with a minimum of one layer of underlayment as described in Sections 7.2 and 7.3 of this Report.

For roof slopes between 2:12 and 4:12, two layers of the underlayment described in Section 7.2 or one layer of the self-adhering polymer modified bitumen sheet in Section 7.3 of this Report are required.

Underlayment application and installation must be in accordance with Section 1507.1.1 and Tables 1507.1.1(2) and 1507.1.1(3) of the 2021 and 2018 IBC, Section 1507.2.8 of the 2015, 2012, 2009 and 2006 IBC or Section R905.1.1 and Tables R905.1.1(2) and R905.1.1(3) of the 2021, 2018, 2015 IRC, Section R905.2.7 of the 2012, 2009 and 2006 IRC, as applicable.

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 Section 1507.1.2 of the 2021 and 2018 IBC, Section 1507.2.8.2 of the 2015, 2012, 2009 and 2006 IBC or Section R905.1.2 of the 2021, 2018, 2015 IBC, Section R905.2.7.1 of the 2012, 2009 and 2006 IRC, as applicable.

**6.2 Starter Shingle:**

A starter course, as described in Section 7.4 of this Report, must be attached to the eave edge using fasteners described in Section 7.5 of this Report, located 3 to 4 inches (76 to 102 mm) from the eave edge and spaced 1 inch (25.4 mm) and 12 inches (305 mm) from each end, for a total of four fasteners per shingle. The starter strip must overhang the eave and rake edges by 1/4 to 3/8 inch (6.5 to 9.5 mm).

### **6.3 Asphalt Shingles:**

The first course of field shingles must be installed over the starter course described in Section 7.4 of this Report.

Shingles must be installed with vertical joints offset a minimum of 4 inches (102 mm) from adjacent courses.

#### **6.3.1 Laminated Shingles – Timberline® HDZ™, Timberline® UHDZ™, Timberline® Ultra HDZ™, Timberline® AH, Timberline® CS:**

For roof slopes of 2:12 up to 21:12 (16.67% to 175% slope), each shingle must be fastened to the roof deck using a minimum of four fasteners, spaced as shown in [Table 2](#).

For roof slopes over 21:12 (175% slope), six fasteners must be used, spaced as shown in [Table 2](#).

Fasteners must be located 5-13/16 - 7-5/8 inches (148 - 194 mm) above the butt edge of the shingles.

Maximum exposure to the weather must be 5-5/8 inches (143 mm).

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 1-inch diameter (25 mm) spots of cement should be placed under the exposed portion of the shingle 1-inch (25 mm) and 13-inch (330 mm) in from each side and 1-inch (25 mm) up from bottom of the shingle.

### **6.4 Valley Construction and Other Flashing:**

Valleys must consist of woven, open valley or closed-cut construction and must be flashed in accordance with Section 1507.2.8.2 of the 2021 and 2018 IBC, Section 1507.2.9.2 of the 2015, 2012, 2009 and 2006 IBC or Section R905.2.8.2 of the IRC. Other flashings must be in accordance with Sections 1503.2 and 1507.2.8 of the 2021 and 2018 IBC, Sections 1503.2 and 1507.2.9 of the 2015, 2012, 2009 and 2006 IBC, or Sections R903.2 and 905.2.8 of the IRC, as applicable.

### **6.5 Hip and Ridge Application:**

Hip and ridge shingles must be placed evenly over hips and ridges, starting at the bottom of the hip or from the end of the ridge opposite the direction of the prevailing wind. Field-cut three-tab shingles must be fastened to the roof deck using two fasteners, one located on either side of the shingle, 5-1/2 inches (140 mm) from the exposed end, and 1 inch (25.4 mm) in from the edge. Prefabricated hip and ridge shingles must be installed with minimum two fasteners in accordance with the manufacturer's installation instructions. Fasteners must be 1/4 inch (6.4 mm) longer than those used in the field of the roof, as specified in Section 7.5 of this report.

## **6.6 Reroofing:**

The existing asphalt shingle roof covering must be inspected in accordance with the provisions and limitations of Section 1512 of the 2021 IBC, Section 1511 of the 2018 and 2015 IBC, Section 1510 of the 2012, 2009 and 2006 IBC or Section 908 of the 2021, 2018 and 2015 IRC, Section R907 of the 2012, 2009 and 2006 IRC, as applicable. Prior to the reroofing, hip and ridge coverings must be removed.

Except as noted in this section, the shingles must be installed in accordance with Section 6.3 and 6.5 of this Report. Fasteners must be of sufficient length to penetrate 3/4 inch (19.1 mm) into the sheathing, or through the sheathing where the sheathing is less than 3/4 inch (19.1 mm) thick. Flashing and edging must comply with Section 6.4 and with Section 1512.5 of the 2021 IBC, Section 1511.6 of the 2018 and 2015 IBC, Section 1510.6 of the 2012, 2009 and 2006 IBC and Section R908.6 of the 2021, 2018 and 2015 IRC, Section R907.6 of the 2012, 2009 and 2006 IRC, as applicable.

## **7. INSTALLATION MATERIALS**

### **7.1 Sheathing:**

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

### **7.2 Underlayment:**

The underlayment must comply with ASTM D226, Type I (minimum), ASTM D4869, Type I (minimum), ASTM D6757 as specified in Section 1507.1.1 of the 2021 and 2018 IBC, Section 1507.2.3 of the 2015, 2012, 2009 and 2006 IBC or Section R905.1.1 of the 2021, 2018 and 2015 IRC, Section R905.2.3 of the 2012, 2009 and 2006 IRC.

GAF's RoofPro™ SBS Modified All-Purpose Underlayment, DeckArmor™ Premium Breathable Underlayment, or TigerPaw™ Roof Deck Protection are acceptable alternates to the underlayment specified in Section 1507.1.1 of the 2021 and 2018 IBC, Section 1507.2.3 of the 2015, 2012, 2009 and 2006 IBC or Section R905.1.1 of the 2021, 2018 and 2015 IRC, Section R905.2.3 of the 2012, 2009 and 2006 IRC.

### **7.3 Self-adhering Polymer Modified Bitumen Sheet:**

The self-adhering polymer modified bitumen sheet must comply with ASTM D1970 as specified under the Exception 1 to Section 1507.1.1 of the 2021 and 2018 IBC, Section 1507.2.4 of 2015, 2012, 2009 and 2006 IBC or under the Exception 1 to Section R905.1.1 of the 2021, 2018 and 2015 IRC, Section R905.2.3 of 2012, 2009 and 2006 IRC.

### **7.4 Starter Shingles:**

The starter course shingle consists of either GAF's Pro-Start™ Starter Strip Shingles or WeatherBlocker™ Premium Eave/Rake Starter Strip Shingles, or a self-sealing three-tab shingle. If self-sealing three-tab shingles are used, remove the exposed tab portion and install with factory-applied sealant adjacent to the eaves.

## **7.5 Fasteners:**

Fasteners must be minimum No. 12 gage [0.105 inch (2.7 mm)], 3/8-inch diameter head (9.5 mm), galvanized, stainless steel, aluminum or copper corrosion-resistance nails. Fasteners must be of sufficient length to penetrate into the sheathing 3/4-inch (19.1 mm), or through the sheathing, where the sheathing is less than 3/4-inch (19.1 mm) thick. Fasteners must comply with ASTM F1667.

## **7.6 Asphalt Cement:**

Asphalt cement must comply with ASTM D4586, Type I, Class I.

## **8. CONDITIONS OF USE**

The GAF Timberline® HDZ™, Timberline® UHDZ™, Timberline® Ultra HDZ™, Timberline® AH and Timberline® CS asphalt shingles described in this Report comply with, or are suitable alternatives to, what is specified in those codes listed in Section 2 of this Report, subject to the following conditions:

- 8.1** Materials and methods of installation shall comply with this Report and the manufacturer's published installation instructions. In the event of a conflict between the installation instructions and this Report, this Report governs.
- 8.2** See UL Product iQ™ database for Prepared Roof-Covering Materials ([TFWZ](#)), File R21.
- 8.3** See UL Product iQ™ database for Prepared Roof-covering Materials, Asphalt Shingle Wind Resistance ([TGAH](#)), File R21.
- 8.4** See UL Product iQ™ database for Prepared Roofing Accessories ([TGDY](#)), File R10689.
- 8.5** The products are manufactured at the locations listed in [Table 1](#) of this report under the UL LLC Listing/Classification and Follow-Up Service Program, which includes regular audits in accordance with quality elements of ICC-ES Acceptance Criteria for Quality Documentation, AC10.

## **9. SUPPORTING EVIDENCE**

- 9.1** Manufacturer's descriptive product literature, including installation instructions.
- 9.2** UL test reports and Listing in accordance with UL790, Class A. See UL Product Certification Category for Prepared Roof-Covering Materials (TFWZ).
- 9.3** UL test reports and Classification in accordance with ASTM D7158, Class H. See UL Product Certification Category for Prepared Roof-Covering Materials (TGAH).
- 9.4** UL test reports and Classification in accordance with ASTM D3161, Class F. See UL Product Certification Category for Prepared Roof-Covering Materials (TFWZ).
- 9.5** UL test report and Classification in accordance with ASTM D3462. See UL Product Certification Category for Prepared Roof Covering Materials (TFWZ).
- 9.6** UL test report and Classification in accordance with UL790. See UL Product Certification Category for Prepared Roofing Accessories (TGDY).

**9.7** Quality Documentation in accordance with ICC-ES Acceptance Criteria for Quality Documentation, AC10.

## **10. IDENTIFICATION**

GAF Timberline® HDZ™, Timberline® UHDZ™, Timberline® Ultra HDZ™, Timberline® AH and Timberline® CS asphalt shingles described in this Evaluation Report are identified by a marking on each package bearing the report holder's name (GAF), the plant identification, the product name, the UL Listing/Classification Mark and the evaluation report number UL ER21-01. The validity of this Evaluation Report is contingent upon this identification appearing on the package. The UL Listing/Classification Mark shall indicate the following additional information:

- a. UL790 - Class A external fire classification
- b. ASTM D3161 – Class F wind resistance
- c. ASTM D7158 – Class H wind resistance

## **11. USE OF UL EVALUATION REPORT**

- 11.1** The approval of building products, materials or systems is under the responsibility of the applicable authorities having jurisdiction.
- 11.2** UL Evaluation Reports shall not be used in any manner that implies an endorsement of the product, material or system by UL.
- 11.3** The current status of this report, as well as a complete directory of UL Evaluation Reports may be found at UL.com via our UL Product iQ™ database:

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**Table 1 – Manufacturing Location**

<b>LISTEE</b>	<b>LOCATION</b>	<b>FACTORY ID</b>
GAF	4602 STILLMAN BLVD TUSCALOOSA, AL 35401-2580	TU
GAF	1500 PONCA ST BALTIMORE MD 21224-5818	BA
GAF	2600 SINGLETON BLVD DALLAS TX 75212-3738	DA
GAF	202 CEDAR RD PO BOX 500 ENNIS TX 75120-0500	EN
GAF	SOUTHWEST INDUSTRIAL PARK 11800 INDUSTRY AVE FONTANA CA 92337-6936	FO
GAF	505 N ROESKE AVE MICHIGAN CITY IN 46360-2668	MC
GAF	50 LOWRY AVE N MINNEAPOLIS MN 55411-1620	MN
GAF	401 WEAVERTOWN RD PO BOX 228 MYERSTOWN PA 17067-0228	MY
GAF	6200 S ZERKER RD SHAFTER CA 93263-9612	SF
GAF	5138 MADISON AVE TAMPA FL 33619-9641	TA



**Table 2 – Timberline® HDZ™, Timberline® UHDZ™, Timberline® Ultra HDZ™,  
Timberline® AH, Timberline® CS Shingles**

Dimensions	13-1/4" x 39-3/8"
Plant Location	Tuscaloosa, AL; Baltimore, MD; Dallas, TX; Ennis, TX; Fontana, CA; Michigan City, IN; Minneapolis, MN; Myerstown, PA; Shafter, CA; Tampa, FL
Fastening Pattern	<p style="text-align: center;">For slopes of 2:12 up to 21:12</p>
Fastening Pattern	<p style="text-align: center;">For slopes greater than 21:12</p>

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