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ICC-ES Evaluation Report
ESR-1184

Reissued March 2023

This report is subject to renewal March 2025.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 53 23—Ethylene-Propylene-Diene-Monomer Roofing
Section: 07 54 23—Thermoplastic-Polyolefin Roofing

REPORT HOLDER:

CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC

EVALUATION SUBJECT:

CARLISLE BALLASTED SINGLE-PLY ROOFING SYSTEMS MEMBRANES—EPDM AND TPO

ADDITIONAL LISTEES:

VERSICO ROOFING SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC

WEATHERBOND, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC

MULE-HIDE PRODUCTS COMPANY, INCORPORATED

ROOFING PRODUCTS INTERNATIONAL, INC.

1.0 EVALUATION SCOPE

Compliance with the following code:

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

The Carlisle ethylene propylene diene monomer (EPDM) and thermoplastic polyolefin (TPO) single-ply membranes are used in ballasted single-ply membrane roofing systems.

3.0 DESCRIPTION

3.1 General:

The Carlisle Ballasted Single-ply Membrane Roofing System consists of single-ply EPDM or TPO membranes, insulation where used, flashing, ballast, splicing cement and splice tape that are installed on a combustible or noncombustible deck.

Information in this report pertaining to the Carlisle Ballasted Roofing System is also applicable to the Versico, WeatherBond, Mule-Hide and Roofing Products International, Inc. Ballasted Roofing Systems. See Table 1 for corresponding product names.

3.2 Single-ply Membranes:

3.2.1 EPDM Membrane: The Carlisle Sure-Seal and Sure-Tough EPDM membranes are reinforced or nonreinforced roof coverings available in thicknesses ranging from 45 mils (0.045 inch [1.14 mm]) to 90 mils (0.090 inch [2.29 mm]).

3.2.2 TPO Membrane: The Carlisle Sure-Weld membranes consists of a polyester reinforcement encapsulated between two layers of TPO and is available in thicknesses ranging from 45 mils (0.045 inch [1.14 mm]) to 80 mils (0.080 inch [2.03 mm]).

3.3 Insulation:

See Table 2 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.

3.4 Flashing:

Flashing must be provided in accordance with IBC Section 1503.2 or IRC Section R903.2, as appplicable. Where flashing is of metal, the metal must be corrosion-resistant, minimum No.26 gage [base-metal thickness 0.019 inch (0.483 mm)] galvanized steel.

3.5 Ballast:

Under the 2021 IBC and IRC, ballast must comply with 2021 IBC Section 1507.12.3 and ANSI/SPRI RP-4 with stone ballast complying with ASTM D448 or ASTM D7655. Under the 2018, 2015, 2012 and 2009 IBC and IRC, ballast must be provided in accordance with IBC Section 1504.8 and ANSI/SPRI RP-4. Under the 2021, 2018 and 2015 IBC and IRC, nominally $1^1/_2$-inch or $2^1/_2$-inch smooth river bottom stone must be as specified in ASTM D448 or ASTM D7655. Under the 2012 and 2009 IBC and IRC, nominally $1^1/_2$-inch or $2^1/_2$-inch smooth river bottom stone must be as specified in ASTM D448. Pavers may be substituted in accordance with ANSI/SPRI RP-4.

3.6 Splicing Cement, Tape or Welding:

3.6.1 Sure-Seal EP-95 Splicing Cement: Sure-Seal EP-95 Splicing Cement is a high-strength, solvent-based contact cement used for seaming EPDM membranes together. The splicing cement is supplied in 1-gallon (3.78 L) cans and has a shelf life of one year.

3.6.2 Sure-Seal SecurTAPE: Sure-Seal SecurTAPE is a pressure-sensitive splice tape used for seaming EPDM membranes together. The splice tape is supplied in cartons of two or four rolls each and has a shelf life of one year.

3.6.3 Welding: Adjoining sheets of Sure-Weld TPO membrane are overlapped and joined together with a minimum 1½-inch-wide heat weld.

3.7 Impact Resistance:

The EPDM and TPO roofing membranes described in this report meet requirements for impact resistance in 2021 IBC Section 1504.8 (2018, 2015, 2012 and 2009 Section 1504.7), based on testing in accordance with the "Resistance to Foot Traffic Test" in Section 4.6 of FM 4470.

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of the Carlisle ballasted EPDM and TPO membrane roofing systems must comply with the applicable code, the manufacturer's published installation instructions and this report. The manufacturer's published installation instructions must be available at all times on the jobsite during installation. Typical installation details are shown in Figure 1.

Ballasted membrane roof-covering systems must be designed in accordance with 2021 IBC Section 1504.5 or 2018, 2015, 2012 and 2009 IBC Section 1504.4, as applicable, and ANSI/SPRI RP-4. The design of roof-covering systems in accordance with ANSI/SPRI RP-4 must be determined using the appropriate wind speeds (ultimate or basic) referenced in the applicable code.

Under the 2021 IBC and IRC, installation of aggregate-surfaced roofs must be in accordance with 2021 IBC Section 1504.9.

The slope of the roof on which the Carlisle single-ply membranes are installed must be a minimum of $^1/_4$:12 (2 percent slope) and must not be more than 2:12 (17 percent slope).

Penetrations and terminations of the roof covering must be flashed and made weather-tight in accordance with the requirements of the membrane manufacturer and the applicable code.

4.2 Fire Classification:

Carlisle ballasted single-ply membrane roofing systems installed in accordance with this report are classified as Class A roof coverings as noted in Table 2.

4.3 Wind Uplift Resistance:

The Carlisle ballasted single-ply membrane roofing systems must be designed for wind resistance in accordance with ANSI/SPRI RP-4 Wind Design Guide and 2021 IBC Sections 1504.5 and 1504.9 or 2018, 2015, 2012 and 2009 IBC Sections 1504.4 and 1504.8, as applicable.

Metal edge securement for roofing systems must be listed in accordance with ANSI/SPRI ES-1 and designed and installed for wind loads in accordance with IBC Chapter 16 and 2021 IBC Section 1504.6 or 2018, 2015, 2012 and 2009 IBC Section 1504.5.

4.4 Reroofing:

The existing deck must be inspected to verify that the structure to be reroofed is structurally sound and adequate to support and secure the roofing membrane. Prior to installation of new roof coverings, inspection by and written approval from the code official having jurisdiction must be required.

The Carlisle EPDM and TPO ballasted roof covering systems described in Table 2 are classified as Class A roof assemblies when installed over existing classified roof assemblies.

5.0 CONDITIONS OF USE

The EPDM and TPO membranes 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 Installation must comply with the applicable code, the manufacturer's published installation instructions and this report. If there are any conflicts between the manufacturer's instructions and this report, this report governs.

5.2 The Carlisle Ballasted Single-Ply Membrane Roofing Systems must be installed by professional roofing contractors trained and approved by the manufacturer.

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.

5.4 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 in accordance with ASTM E84 or UL 723 at the maximum thickness intended for use, subject to the approval of the code official.

5.5 The ballasted roofing system must be designed for wind resistance in accordance with the ANSI/SPRI RP-4 Wind Design Guide for Ballasted Single-Ply Roofing Systems. Design drawings must be prepared, signed and sealed by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed, and submitted to the code official for approval.

5.6 Design wind uplift pressure on any roof area, including edge and corner zones, must not exceed the allowable wind-uplift pressure for the system installed in that particular area.

5.7 The structural roof system to which the ballasted membrane is to be applied must be certified as being capable of sustaining the construction, membrane, ballast, and ancillary material loads that will be encountered during and subsequent to membrane application. This certification must be provided by a registered design professional.

5.8 The membranes are manufactured at Carlisle, Pennsylvania; Greenville, Illinois; Senatobia,

Mississippi; and Tooele, Utah, under a quality control program with inspections by ICC-ES.

5.9 For buildings under the IBC, above-deck thermal insulation board must comply with the applicable standards listed in IBC Table 1508.2.

6.0 EVIDENCE SUBMITTED

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

7.0 IDENTIFICATION

7.1 EPDM and TPO membrane product labeling shall include, the name of the report holder or listee, and the ICC-ES mark of conformity. The listing or evaluation report number (ICC-ES ESR-1184) may be used in lieu of the mark of conformity. Each roll or package of rolls of EPDM and TPO membrane must bear a label noting the product name, the report holder's name (Carlisle SynTec Systems) or the name of the additional listee (Versico Roofing Systems**;** WeatherBond; Mule-Hide Products Company, Incorporated; or Roofing Products International, Inc.), the manufacturer's address or plant code, and the evaluation report number (ESR-1184) when used in a ballasted roof system. The roof membranes shown in Table 1 shall be identified in accordance with evaluation report ESR-1463 when used in a non-ballasted roof system. Product labels may contain both evaluation report numbers.

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

CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC
POST OFFICE BOX 7000
CARLISLE, PENNSYLVANIA 17013
(717) 245-7000
www.carlislesyntec.com

7.3 The Additional Listees' contact information is the following:

VERSICO ROOFING SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC
POST OFFICE BOX 1289
CARLISLE, PENNSYLVANIA 17013

WEATHERBOND, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC
POST OFFICE BOX 251
PLAINFIELD, PENNSYLVANIA 17081

MULE-HIDE PRODUCTS COMPANY, INCORPORATED
1195 PRINCE HALL DRIVE
BELOIT, WISCONSIN 53511

ROOFING PRODUCTS INTERNATIONAL, INC.
57460 DEWITT STREET
ELKHART, INDIANA 46517

TABLE 1—CORRESPONDING ROOF COVERING PRODUCT NAMES

CARLISLE PRODUCT NAME	VERSICO PRODUCT NAME	WEATHERBOND PRODUCT NAME	MULE-HIDE PRODUCT NAME	ROOFING PRODUCT INTERNATIONAL PRODUCT NAME
Sure-Seal EPDM	VersiGard Non-Reinforced EPDM	WeatherBond EPDM Non-Reinforced	Mule-Hide Standard Black EPDM	Royal Edge Non-Reinforced EPDM
Sure-Seal FR EPDM	VersiGard FR Non-Reinforced EPDM Membrane	WeatherBond FR EPDM Non-Reinforced	Mule-Hide FR EPDM	Royal Edge Non-Reinforced FR EPDM
Sure-Seal EPDM FleeceBACK	VersiFleece EPDM	WeatherBond EPDM Fleece	-	Royal Edge EPDM FleeceBACK
Sure-Seal EPDM AFX	VersiFleece AC EPDM	WeatherBond AC EPDM Fleece	-	-
Sure-Tough EPDM	VersiGard Reinforced EPDM	WeatherBond Standard Reinforced EPDM	Mule-Hide Standard Reinforced EPDM	Royal Edge reinforced EPDM
Sure-White EPDM	VersiGard White Standard	WeatherBond White EPDM	Mule-Hide White-on-Black EPDM	Re-Flex White EPDM
Sure-White FleeceBACK	-	-	-	Re-Flex White EPDM FleeceBACK
Sure-Weld TPO	VersiWeld Reinforced TPO	WeatherBond TPO	Mule-Hide TPO-c	Re-Flex TPO
Sure-Weld HS TPO	VersiWeld HS/ES	WeatherBond High Slope TPO	Mule-Hide TPO-c FR	Re-Flex TPO HS
Sure-Weld TPO FleeceBACK	VersiFleece TPO	WeatherBond TPO Fleece	Mule-Hide TPO-c Fleece Back	Re-Flex TPO FleeceBACK
Sure-Weld TPO AFX	VersiFleece AC TPO	WeatherBond TPO AC Fleece	Mule-Hide TPO-c Fleece Back Plus	-
EP-95 Splicing Cement	Splice Adhesive	Splice Adhesive	Mule-Hide Splice Adhesive	Royal Edge Splice Adhesive
SecurTAPE	Quick-Applied Seam Tape	WeatherBond Peel & Stick Seam Tape	Mule-Hide EPDM In-Seam Tape	Royal Edge Seam Tape

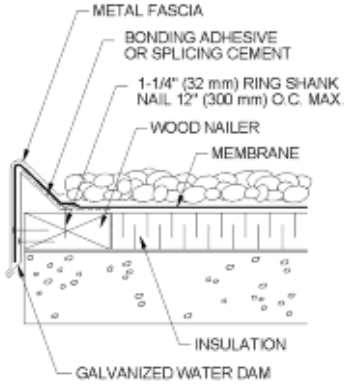
[1]These products specified in Table 1 may also be used in non-ballasted roof systems when installed in accordance with ESR-1463. For additional details regarding product specifications and identification, see ESR-1463.

TABLE 2—FIRE CLASSIFICATION ASSEMBLIES—BALLASTED ROOFING SYSTEMS[1]

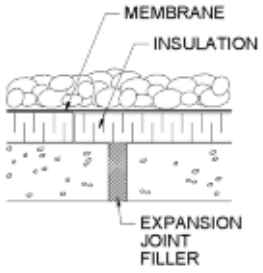
SYSTEM NO.	ROOF CLASS	ROOF DECK	MAXIMUM ROOF SLOPE	INSULATION[1,2]	COVER BOARD	MEMBRANE[1]
1	A	Combustible or Noncombustible	2:12	Any UL classified insulation, any thickness, any combination	-	EPDM or TPO membrane

For **SI:** 1inch = 25.4 mm.

[1]Insulation and membrane are laid loosely and surfaced with river-bottom stones, nominally 1 1/2 inches in diameter, at 1000 lbs. per square (min.). Suitable alternates are size Nos. 1, 2, 3, 4 and 24 (as per ASTM D448), also at 1000 lbs/sq min. In addition, concrete pavers or crushed stone may be used. Pavers must weight 1000 lbs/sq min and spaced no more than 1/8 in. apart and the crushed stone must meet the above size and weight requirements.
[2]All foam plastic insulation must be UL-classified foamed plastic for roofing systems, and must conform to ASTM C578 or ASTM C1289 specifications.



GRAVEL STOP



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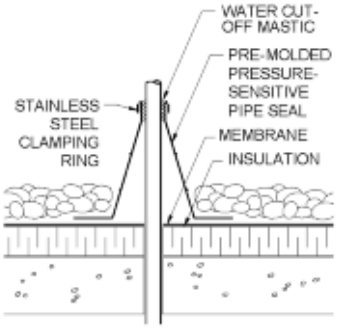
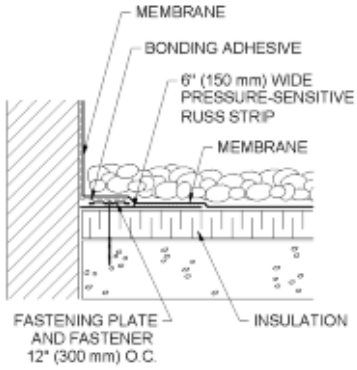


PIPE FLASHING



PARAPET FLASHING

FIGURE 1

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 53 23—Ethylene-Propylene-Diene-Monomer Roofing
Section: 07 54 23—Thermoplastic-Polyolefin Roofing

REPORT HOLDER:

CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC

EVALUATION SUBJECT:

CARLISLE BALLASTED SIGNLE-PLY ROOFING SYSTEMS MEMBRANES—EPDM AND TPO

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Carlisle Ballasted Single-ply Roofing Systems Membranes—EPDM and TPO, described in ICC-ES evaluation report ESR-1184, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 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 the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Carlisle Ballasted Single-ply Roofing Systems Membranes—EPDM and TPO, described in Sections 2.0 through 7.0 of the evaluation report ESR-1184, 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.

2.2 CRC:

The Carlisle Ballasted Single-ply Roofing Systems Membranes—EPDM and TPO, described in Sections 2.0 through 7.0 of the evaluation report ESR-1184, comply with CRC Chapter 9, provided the design and installation are in accordance with the 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report and the additional requirements of CRC Chapter 9, as applicable.

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