



ICC-ES Evaluation Report ESR-2831

Reissued August 2023

This report is subject to renewal August 2025.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 54 00—Thermoplastic Membrane Roofing
Section: 07 54 23—Thermoplastic-Polyolefin Roofing

REPORT HOLDER:

HOLCIM SOLUTIONS AND PRODUCTS US, LLC

ADDITIONAL LISTEE:

GENFLEX ROOFING SYSTEMS

EVALUATION SUBJECT:

ELEVATE ULTRAPLY™ TPO, ULTRAPLY™ TPO PLATINUM, ULTRAPLY™ TPO XR, ULTRAPLY™ TPO SA AND ULTRAPLY™ TPO FLEX ADHERED SINGLE-PLY ROOFING MEMBRANES

ADDITIONAL LISTEE PRODUCT NAMES: GENFLEX EZ TPO, EZ FLEECE BACKED TPO AND EZ TPO PEEL AND STICK SINGLE-PLY ROOFING MEMBRANES

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)

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see [ESR-2831 LABC Supplement](#).

Properties evaluated:

- Roof covering classification
- Weather resistance
- Wind resistance
- Impact resistance

2.0 USES

Elevate UltraPly™ TPO (thermoplastic polyolefin), UltraPly™ TPO Platinum, UltraPly™ TPO XR UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered single-ply roofing membranes are used as roof coverings in adhered and mechanically fastened membrane roofing systems.

3.0 DESCRIPTION

3.1 General:

The UltraPly™ TPO, UltraPly™ TPO Platinum, UltraPly™ TPO XR UltraPly™ TPO SA, and UltraPly™ TPO Flex Adhered Membrane Roofing Systems described in this report consist of single-ply roofing membranes complying with ASTM D6878, insulation where used, barrier board or slip sheet where used, flashing, mechanical fasteners and adhesives that are installed on a combustible or noncombustible deck. The corresponding names for GenFlex Roofing Systems products are specified in Table 1 of this report.

3.2 Membranes:

3.2.1 UltraPly™ TPO: A flexible thermoplastic polyolefin roofing membrane that is produced with a polyester weft inserted reinforcement. The membrane is available in white (tan or gray on special orders) and is available in nominal thicknesses of in 45-mil [0.045-inch (1.1 mm)] and 60-mil [0.06-inch (1.5 mm)].

3.2.2 UltraPly TPO Platinum: A flexible thermoplastic polyolefin roofing membrane that is produced with a polyester weft inserted reinforcement. The membrane is available in white (tan or gray on special orders) and has a nominal thickness of 80-mil [0.08-inch (2 mm)].

3.2.3 UltraPly™ TPO XR: Ultraply™ TPO XR 100, Ultraply™ TPO XR 115 and Ultraply™ TPO XR 135 are flexible thermoplastic polyolefin roofing membranes that are produced with a polyester weft inserted reinforcement and an 8-ounce, polyester backing. The membranes are available in white. Ultraply™ TPO XR 100 has a nominal thickness of 45-mil [0.045 inch (1.1 mm)], Ultraply™ TPO XR 115 has a nominal thickness of 60-mil [0.06-inch (1.5 mm)] and Ultraply™ TPO XR 135 has a nominal thickness of 80-mil [0.08 inch (2 mm)].

3.2.4 UltraPly™ TPO SA: A flexible thermoplastic polyolefin membrane that is produced with a polyester weft inserted reinforcing and a factory applied pressure sensitive adhesive. The membrane is available in white, tan or gray and is available in nominal thicknesses of 45-mil [0.045 inch (1.1 mm)] and 60-mil [0.06 inch (1.5 mm)].

3.2.5 UltraPly™ TPO Flex Adhered: A flexible thermoplastic polyolefin membrane that is produced with a polyester weft inserted reinforcement. The membrane is available in white and has a nominal thickness of 60-mil [0.06-inch (1.5 mm)].

3.3 Insulation:

Foam plastic insulation, where used, must have 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. Polyisocyanurate and polystyrene rigid-cellular foam plastic thermal insulation specified in Tables 2 through 5 must comply with ASTM C1289 or ASTM C578, respectively. Wood fiberboard insulation must comply with ASTM C208. See Tables 2 through 6 for insulations used with specific roof covering systems.

3.4 Barrier or Cover Board:

Barrier or cover board, where used, may be minimum 1/4-inch-thick (6.4 mm) DensDeck® Roofboard or DensDeck Prime® Roofboard manufactured by Georgia-Pacific Gypsum LLC, , minimum 1/4-inch-thick (6.4 mm) SECUROCK® UltraLight Glass-Mat Roof Board™ manufactured by USG Corporation, minimum 1/2-inch-thick (12.7 mm) Blue Ridge Structodeck High Density Fiberboard Roof Insulation manufactured by Blue Ridge Fiberboard, Inc., minimum 1/2-inch-thick (12.7 mm) gypsum board, minimum 1/2-inch-thick (12.7 mm) Elevate ISOGARD HD, or Elevate V-Force Vapor Barrier.

3.5 Fasteners, Plates, Bars:

Fasteners and stress plates used to attach barrier or cover board layer materials, insulation boards and the roof covering membrane must be corrosion-resistant. Fasteners may be any of the insulation and membrane fasteners and plates summarized in this section (Section 3.5) or shown in Tables 4 through 6.

3.5.1 Elevate All-Purpose Fastener: An epoxy-coated steel screw used in combination with the Elevate Insulation Fastening Plate to attach roofing insulation and base sheets to steel and wood substrates. Fastener length must be sufficient to penetrate through the steel deck a minimum of 3/4 inch (19 mm), and into the wood deck a minimum of 1 inch (25.4 mm).

3.5.2 Elevate Heavy-Duty: An epoxy-coated steel screw used in combination with the Elevate Insulation Fastening Plate to attach roofing insulation and base sheets to steel, wood and concrete decks. Fastener length must be sufficient to penetrate through the steel deck a minimum of 3/4 inch (19 mm), and into the wood or concrete deck a minimum of 1 inch (25.4 mm).

3.5.3 Elevate Heavy Duty Plus: An epoxy-coated steel screw used in combination with the Elevate HD Plus Seam Plate to attach roofing insulation and base sheets to steel decks. Fastener length must be sufficient to penetrate through the steel deck a minimum of 1 inch (25.4 mm).

3.5.4 Elevate Concrete Drive Fastener: A nonthreaded hammer-in fastener, epoxy-coated, used with Elevate Insulation Plates to attach roofing insulation, base sheets and other accessories to structural concrete substrates. Fastener length must be sufficient to penetrate into the concrete deck a minimum of 1 1/4 inches (32 mm).

3.5.5 Elevate HD HailGard Fastener: An epoxy-coated steel screw used in roofing applications where HailGard insulation or an OSB or plywood overlay is used and fastened into steel, concrete or wood deck. Fastener length must be sufficient to penetrate through the steel deck a minimum of 3/4 inch (19 mm), and into the wood or concrete deck a minimum of 1 inch (25.4 mm).

3.5.6 Elevate Insulation Fastening Plate: A 3-inch-diameter (76 mm) galvalume plate used in combination with fasteners, acceptable to Holcim, to secure insulation and base sheets to the roof deck.

3.5.7 Elevate HD Seam Plate: A 2 3/8-inch-diameter (60 mm) galvalume plate used in combination with Elevate Heavy-Duty Fasteners to secure TPO membranes to the roof deck.

3.5.8 Elevate HD Plus Seam Plate: A 2 3/4-inch-diameter (70 mm) galvalume plate used in combination with Elevate Heavy Duty Plus Fasteners to secure TPO membranes to the roof deck.

3.5.9 Elevate UltraPly™ TPO InvisiWeld Plate: A 3-inch diameter adhesive coated galvalume plate securing underlying insulation layer(s) to the roof deck with Elevate Heavy-Duty Fasteners, which uses a RF frequency bonding tool to bond the UltraPly™ TPO and UltraPly™ TPO Platinum membrane to the plate.

3.5.10 Elevate Coiled Metal Batten Strip: A 1-inch wide (25.4 mm) by 220-ft long (67.06 m), galvalume AZ 55, batten strip used in combination with fasteners, acceptable to Firestone (see manufacturer's published product sheet).

3.5.11 Elevate UltraPly™ TPO InvisiWeld-S Plate: A 3-inch (76.2 mm) diameter adhesive coated galvalume plate securing underlying insulation layer(s) to the roof deck with Elevate Heavy-Duty Fasteners, which use an RF frequency bonding tool to bond the UltraPly™ TPO and UltraPly™ TPO Platinum membrane to the plate.

3.6 Adhesives:

3.6.1 Elevate UltraPly™ Bonding Adhesive: A solvent-based contact adhesive designed for bonding Elevate UltraPly™ TPO and UltraPly™ TPO Platinum membranes to approved insulations, wood, metal, masonry and other acceptable substrates. Unless specified differently in Table 4, the adhesive is applied to both the substrate and the underside of the membrane with coverage of approximately 45 to 60 square feet (4.18 to 5.58 m²) per gallon (3.78 L), total, for both the substrate and the membrane.

3.6.2 Elevate Single-Ply LVOC Bonding Adhesive 1168: A bonding adhesive designed for bonding UltraPly™ TPO and UltraPly™ TPO Platinum roofing membrane and flashing to insulation, wood, metal, masonry and other substrates. Unless specified differently in Table 4, the adhesive is applied to both the substrate and the underside of the membrane with coverage of approximately 45 to 60 square feet (4.18 to 5.58 m²) per gallon (3.78 L), total, for both the substrate and the membrane.

3.6.3 Elevate Single-Ply LVOC Bonding Adhesive: A bonding adhesive designed for bonding UltraPly™ TPO and UltraPly™ TPO Platinum roofing membrane and flashing to wood, metal, masonry and other substrates. Unless specified differently in Table 4, the adhesive is applied to both the substrate and the underside of the membrane with coverage of approximately 45 to 60 square feet (4.18 to 5.58 m²) per gallon (3.78 L), total, for both the substrate and the membrane.

3.6.4 Elevate Jet Bond Spray Adhesive: A bonding adhesive formulated for two-sided spray application designed for bonding UltraPly™ TPO, UltraPly™ TPO Platinum, UltraPly™ TPO XR roofing membrane, and flashing to approved substrates in both horizontal and vertical applications. Unless specified differently in Table 4, the adhesive is applied to UltraPly™ TPO and UltraPly™ TPO Platinum at a rate of 1.75 to 2.2 lbs/sq (0.09 to 0.11 kg/m²) with a 2 inch (50.8 mm) overlap to both the bottom surface of the roof cover and top surface of the substrate for a total of 3.5 to 4.4 lbs/sq (0.17 to 0.22 kg/m²). The adhesive is applied to UltraPly™ TPO XR 100,

UltraPly™ TPO XR 115 and UltraPly™ TPO XR 135 at a rate of 2.5 to 2.7 lbs/sq (0.12 to 0.13 kg/m²) with a 6 inch (152.4 mm) overlap to both the bottom surface of the roof cover and top surface of the substrate for a total of 5.0 to 5.4 lbs/sq (0.25 to 0.27 kg/m²).

3.6.5 Elevate XR Bonding Adhesive: A contact adhesive designed for bonding Elevate UltraPly™ TPO XR membranes to approved insulations, wood, metal, masonry and other acceptable substrates. Unless specified differently in Table 4, the adhesive is applied to the substrate only, at a nominal rate of 70 to 90 square feet (6.51 to 8.37 m²) per gallon (3.78 L).

3.6.6 Elevate I.S.O. Stick Insulation Adhesive: A two-component, low-rise, polyurethane insulation adhesive applied in beads designed for bonding roof insulations to allowable deck types in accordance with the application rates specified in Table 4.

3.6.7 Elevate I.S.O. Twin-Pack Insulation Adhesive: A two-component, low-rise, polyurethane insulation adhesive designed for bonding roof insulations, in accordance with Table 4.

3.6.8 Elevate I.S.O. Fix II Insulation Adhesive: A single component, moisture cured, polyurethane adhesive designed to attach approved roof insulation to approved substrates, in accordance with the application rates specified in Table 4.

3.6.9 Elevate Water Based Bonding Adhesive-P: A bonding adhesive designed for bonding UltraPly™ TPO and UltraPly™ TPO Platinum roofing membrane and flashing to wood, metal, masonry and other substrates. Unless specified differently in Table 4, the adhesive is applied to both the substrate and the underside of the membrane with coverage of approximately 100 to 120 square feet (4.18 to 5.58 m²) per gallon (3.78 L), total, for both the substrate and the membrane.

3.6.10 Elevate I.S.O. Spray R: A two-component low rise polyurethane adhesive engineered to anchor approved roof insulation to approved substrates, adhere multiple layers of insulation, or adhere fleece backed UltraPly™ TPO XR membrane to approved substrates, in accordance with the application rates specified in Table 4.

3.6.11 Elevate XR Stick: A two-component low rise polyurethane adhesive designed to adhere fleece backed UltraPly™ TPO XR membrane to approved substrates, in accordance with the application rates specified in Table 4.

3.6.12 Elevate Twin Jet: A two-component, low-rise polyurethane adhesive designed for bonding of roof insulations or adhered fleece backed UltraPly™ TPO XR membrane to approved substrates, in accordance with the application rates specified in Table 4.

3.7 Seam Accessories and Primers:

3.7.1 Elevate UltraPly™ QuickSeam R.M.A. Strips: A 10-inch-wide (254 mm) TPO membrane with two 3-inch-wide (76.2 mm) strips of QuickSeam Tape laminated to it along its length. Used in mechanically fastened assemblies as additional reinforcement.

3.7.2 Elevate Single-Ply QuickPrime Primer: A solvent-based primer designed for cleaning and priming membranes prior to the application of QuickSeam accessories. The primer is applied at a rate of 200 to 250 square feet per gallon (5 to 6 square meters per liter) for a one-sided application.

3.7.3 Elevate Single-Ply LVOC Primer: A solvent-based primer designed for cleaning and priming membranes prior to the application of QuickSeam accessories. The primer is applied at a rate of 200 to 250 square feet per gallon (5 to 6 square meters per liter) for a one-sided application.

3.7.4 Elevate SA-Solvent Based (SB) Primer: A solvent-based primer designed for cleaning and preparing substrate prior to the application of V-Force vapor barrier membrane. Application rate is dependent on substrate type (see manufacturer's published instruction guide). The primer is available in 5 gallon pails and has a shelf-life of 2 years when stored in unopened containers between 50°F and 80°F (10°C and 27°C).

3.8 Impact Resistance:

The Elevate UltraPly™ TPO, UltraPly™ TPO Platinum, UltraPly™ TPO XR, UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered Membrane Roofing Systems described in this report comply with requirements for impact resistance in accordance with Section 4.6 of FM 4470.

4.0 INSTALLATION

4.1 General:

Installation of the UltraPly™ TPO, UltraPly™ TPO Platinum, UltraPly™ TPO XR, UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered roofing membranes described in this report must comply with the applicable code, the manufacturer's published installation instructions and this report. The manufacturer's published installation instructions must be available on the jobsite at all times during installation.

The slope of the roof on which the single-ply membranes are installed must be a minimum of 1/4:12 (2 percent slope) and must not be more than the maximum slope indicated for the particular assembly as listed in Tables 2 and 3.

Penetrations and terminations of the roof covering must be flashed and made weathertight in accordance with the requirements of the membrane manufacturer and IBC Section 1503.2 and IRC Section R903.2.

4.2 Fire Classification:

4.2.1 New Construction: Roof covering systems described in Tables 2 and 3, when installed in accordance with this report, are classified as Class A or B roof covering systems in accordance with ASTM E108 or UL 790.

4.2.2 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.

Class A, B, or C roof covering systems may be installed over existing classified roof covering systems under the following conditions without additional roof classification tests, provided the resulting classification is the lower of the new and existing roofing classification:

- New uninsulated systems installed only over existing uninsulated assemblies
- New insulated systems installed over existing uninsulated systems only

4.3 Wind Uplift Resistance:

4.3.1 New Construction: The allowable wind uplift pressures for the single-ply roof covering systems described in this report are noted in Tables 4 through 6. Metal edge

securement systems must be listed in accordance with the 2011 edition of ANSI/SPRI/FM4435 ES-1, and designed and installed for wind loads in accordance with 2021 IBC Section 1504.6 (2018, 2015, 2012, 2009 and 2006 IBC Section 1504.5) and IBC Chapter 16.

4.3.2 Reroofing: 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. Since the composition and/or condition of any particular underlying existing roofing material may vary widely, reroofing with adhered systems is outside the scope of this report.

5.0 CONDITIONS OF USE

The single-ply roofing membranes described in this report comply with, or are suitable alternatives to what is specified in, those codes indicated in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation of the roofing systems must comply with the IBC and IRC, the manufacturer's published installation instructions and this report. The instructions within this report govern if there are any conflicts between the manufacturer's published installation instructions and this report.
 - 5.2 The single-ply roof covering systems must be installed only by applicators approved by Holcim Solutions and Products US, LLC.
 - 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 listed in an ICC-ES evaluation report as outlined in Footnote 2 to Table 2 and 3.
 - 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 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 Table 1508.2 of the IBC.
 - 5.6 Design wind uplift pressure on any roof area, including edge and corner zones, must not exceed the allowable wind pressure for the system installed in that particular area. Refer to the allowable wind uplift pressure for roof coverings as listed in Tables 4 through 6.
 - 5.7 The allowable wind uplift pressures listed in Tables 4 through 6 are for the roof covering only. The deck and framing to which the roof covering is attached must be designed for the applicable components and cladding wind loads in accordance with the IBC and IRC.
- 5.8 When application is over existing roofs, documentation of the wind uplift resistance of the composite roof construction must be submitted to the code official for approval at the time of permit application.
 - 5.9 Calculations demonstrating that the required wind resistance is less than the allowable wind resistance must be submitted to the code official.
 - 5.10 UltraPly™ TPO and UltraPly TPO Platinum roofing membranes are manufactured in Tuscumbia, Alabama and Wellford, South Carolina under a quality control program with inspections by ICC-ES.
 - 5.11 UltraPly™ TPO XR, UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered roofing membranes are manufactured in Tuscumbia, Alabama, under a quality control program with inspections by ICC-ES.

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 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-2831) 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 roof covering membranes (UltraPly™ TPO, UltraPly™ TPO Platinum, UltraPly™ TPO XR, UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered) are identified with a label indicating the company name (Holcim Solutions and Products US, LLC, or GenFlex Roofing Systems), the product name, and the evaluation report number (ESR-2831).

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

HOLCIM SOLUTIONS AND PRODUCTS US, LLC
26 CENTURY BOULEVARD, SUITE 205
NASHVILLE, TENNESSEE 37214
(800) 428-4442
www.holcimelevate.com

7.4 The Additional Listees' contact information is the following:

GENFLEX ROOFING SYSTEMS,
26 CENTURY BOULEVARD, SUITE 205
NASHVILLE, TENNESSEE 37214
(800) 428-4442
www.genflex.com

TABLE 1—PRODUCT TRADE NAMES

HOLCIM SOLUTIONS AND PRODUCTS US	GENFLEX ROOFING SYSTEMS
MEMBRANES	
UltraPly™ TPO	EZ TPO
UltraPly™ TPO Platinum	EZ TPO Plus
UltraPly™ TPO XR	EZ Fleece Backed TPO
UltraPly™ TPO SA	EZ TPO Peel and Stick
UltraPly™ TPO Flex Adhered	-
INSULATION BOARDS	
ISO 95+ GL	GenFlex ISO Insulation
ISO 95+ GL (tapered)	GenFlex ISO Insulation(tapered)
ISOGARD GL	GenFlex GL ISO
ISOGARD GL (tapered)	GenFlex GL ISO (tapered)
ISOGARD HD	GenFlex HD ISO
ISOGARD HD Composite	GenFlex HD Composite ISO
RESISTA	Coated Glass Facer (flat)
RESISTA (tapered)	Coated Glass Facer (tapered)
ISOGARD CG	GenFlex CG ISO
ISOGARD CG (tapered)	GenFlex CG ISO (tapered)
FASTENING COMPONENTS	
UltraPly Bonding Adhesive	EZ TPO Bonding Adhesive
Single-Ply LVOC Bonding Adhesive 1168	EZ TPO Bonding Adhesive LVOC 1168
Single-Ply LVOC Bonding Adhesive	EZ TPO Bonding Adhesive LVOC
Elevate XR Bonding Adhesive	GenFlex Fleece Backed Bonding Adhesive
Elevate XR Stick Membrane Adhesive	EZ TPO FB Stick Adhesive
Elevate I.S.O. Twin-Pack Insulation Adhesive	GenFlex One Step Insulation Adhesive
Elevate I.S.O. Stick™ Insulation Adhesive	GenFlex I.S.O. Bond Insulation Adhesive
Elevate Twin Jet	GenFlex Quick Dual
Jet Bond Spray Adhesive	Quick Jet Spray Adhesive
Elevate All-Purpose Fastener	GenFast AP Fastener
Elevate Heavy-Duty	GenFlex Heavy Duty
Elevate Heavy-Duty Plus	GenFlex Heavy Duty Plus
Elevate Concrete Drive Fastener	GenFast Concrete Drive
Elevate HD HailGard Fastener	GenFast HailGard Fastener
Elevate Insulation Fastening Plate	GenFast 3" Round Insulation Plate
Elevate HD Seam Plate	GenFlex HD Seam Plate
Elevate HD Plus Seam Plate	GenFlex HD Plus Seam Plate
OTHER	
Elevate QuickSeam R.M.A. Strips	GenFlex TPO Peel & Stick RMA
Elevate Single-Ply QuickPrime Primer	GenFlex Clear Primer
Elevate Single-Ply LVOC Primer	GenFlex All-Purpose LVOC Primer

TABLE 2—FIRE CLASSIFICATION ASSEMBLIES —ADHERED ROOF COVERING SYSTEMS⁵

SYSTEM NO.	ROOF CLASS	DECK ³	MAX. ROOF SLOPE	INSULATION ²	BARRIER OR COVER BD./ BASE/PLY SHEET	MEMBRANE ⁴
1	A	Noncombustible	1/4:12	(Optional) UL-classified polyisocyanurate, any thickness	1/2-inch thick ISOGARD HD	UltraPly™ TPO or UltraPly™ TPO Platinum
2	A	Noncombustible	1/4:12	(Optional) Min. 1-inch to max. 4-inch-thick ISO 95 + GL	---	UltraPly™ TPO or UltraPly™ TPO Platinum
3	A	Combustible	2 1/2:12	(Optional) Min. 1 1/2-inch thick ISO 95+ GL	1/2-inch thick DensDeck	UltraPly™ TPO or UltraPly™ TPO Platinum
4	A	Noncombustible	1:12	---	---	UltraPly™ TPO XR ³
5	A	Combustible	1:12	(Optional) UL-classified foam plastic insulation, any thickness	Min. 1/4-inch thick DensDeck, DensDeck Prime or DensDeck DuraGuard	UltraPly™ TPO XR
6	B	Combustible	1/4:12	(Optional) Min. 1-inch-thick ISO 95 + GL or ISOGARD GL™	1/2-inch thick ISOGARD HD	UltraPly™ TPO or UltraPly™ TPO Platinum
7	B	Noncombustible	1:12	UL-classified foam plastic insulation, any thickness	Min. 7/16-inch thick APA-rated OSB	UltraPly™ TPO XR
8	B	Noncombustible	1:12	Min. 1-inch-thick ISO 95 + GL or ISOGARD GL™	Two plies, Type G2 MB Base Sheet, 1 ply APP 170, 1 ply APP 180FR	UltraPly™ TPO XR
9	Existing Class A, B or C system to retain existing classification.	Combustible	1/2:12	Existing Class A, B or C uninsulated BUR system (mineral surfaced cap sheet)	---	UltraPly™ TPO XR
10	A	Combustible	1/4:12	(Optional) ISO 95+ GL or ISOGARD GL™ any thickness	Min. 1-inch-thick ISOGARD HD (offset 6 inches from joints in deck) or min. 1-inch-thick RESISTA or ISOGARD CG	UltraPly™ TPO or UltraPly™ TPO Platinum
11	A	Noncombustible	Unlimited	(Optional) UL-classified foam plastic insulation, any thickness	Min. 1/4-inch thick “DensDeck” or “DensDeck Prime”	UltraPly™ TPO Flex Adhered,

TABLE 2—FIRE CLASSIFICATION ASSEMBLIES —ADHERED ROOF COVERING SYSTEMS⁵ (Continued)

SYSTEM NO.	ROOF CLASS	DECK ³	MAX. ROOF SLOPE	INSULATION ²	BARRIER OR COVER BD./ BASE/PLY SHEET	MEMBRANE ⁴
12	A	Noncombustible	Unlimited	(Optional) UL-classified foam plastic insulation, any thickness	Min. 1/4-inch thick "DensDeck" or "DensDeck Prime"	UltraPly™ TPO Flex Adhered,
13	A	Noncombustible	1 1/4:12	ISO 95+ GL, any thickness	---	UltraPly™ TPO Flex Adhered
14	A	Noncombustible	3/4:12	ISO 95+ GL, ISOGARD GL, RESISTA, ISOGARD CG, ISOGARD HD or ISOGARD HD Composite Board", any thickness	---	UltraPly™ TPO Flex Adhered
15	B	Noncombustible	1 1/4:12	ISO 95+ GL, any thickness		UltraPly™ TPO Flex Adhered
16	A	Noncombustible	1/2:12	UL-classified foam plastic insulation, any thickness	Min. 1/4-inch thick "DensDeck"	UltraPly™ TPO XR
17	B	Noncombustible	1/4:12	ISO 95+ GL, ISOGARD GL, RESISTA, ISOGARD CG, ISOGARD HD or ISOGARD HD Composite Board, any thickness	---	UltraPly™ TPO , UltraPly™ TPO Platinum or UltraPly™ TPO XR
18	A	Noncombustible	2:12	(Optional) UL-classified foam plastic insulation, any thickness	Min. 1/4-inch thick "DensDeck Prime"	UltraPly™ TPO SA
19	A	Noncombustible	1/4:12	ISO 95+ GL or RESISTA, any thickness	---	UltraPly™ TPO SA
20	B	Noncombustible	3:12	(Optional) UL-classified foam plastic insulation, any thickness	Min. 1/4-inch thick "DensDeck Prime"	UltraPly™ TPO SA

For SI: 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 psf = 47.88 Pa.

¹All foam plastic insulation must be UL classified and 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.

²Foam 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 specified foam plastic for direct-to-deck applications. See Section 5.3 and 5.4 of this report for conditions of use.

³Wood deck must be minimum 15/32-inch-thick (11.9 mm) plywood. Steel deck must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)]. Concrete must have a minimum compressive strength (*f_c*) of 2500 psi.

⁴Membrane to be adhered directly to structural concrete with hot asphalt.

⁵Adhesive and adhesive application rate to be as specified in Section 3.6.

TABLE 3—FIRE CLASSIFICATION ASSEMBLIES—MECHANICALLY FASTENED ROOF COVERING SYSTEMS

SYSTEM NO.	ROOF CLASS	DECK ³	MAX. ROOF SLOPE	INSULATION ²	BARRIER OR COVER BD./ BASE/PLY SHEET	MEMBRANE
1	A	Combustible	4:12	(Optional) ISO 95 + GL, any thickness	Min. 1/4-inch thick DensDeck or SECUROCK UltraLight Glass-Mat Roof Board	UltraPly™ TPO or UltraPly™ TPO Platinum
2	A	Noncombustible	1/2:12	Min. 1-inch-thick ISO 95+GL or ISOGARD GL	(Optional) 1/2-inch-thick ISOGARD HD	UltraPly™ TPO or UltraPly™ TPO Platinum
3	A	Noncombustible	3/4:12	(Optional) UL-classified foam plastic insulation, any thickness.	1/2-inch thick ISOGARD HD	UltraPly™ TPO or UltraPly™ TPO Platinum
4	B	Combustible	1/2:12	(Optional) Min. 1-inch-thick ISO 95 + GL or ISOGARD GL	1/2-inch thick ISOGARD HD	UltraPly™ TPO or UltraPly™ TPO Platinum
5	A	Combustible	1/2:12	---	1/2-inch-thick ISOGARD HD	UltraPly™ TPO or UltraPly™ TPO Platinum
6	A	Combustible	1/4:12	(Optional) ISO 95+ GL or ISOGARD GL, any thickness	Min. 1-inch-thick RESISTA or ISOGARD CG	UltraPly™ TPO or UltraPly™ TPO Platinum
7	A	Noncombustible	2 1/2:12	2-inch-thick ISO 95+ GL	1/4-inch thick DensDeck	UltraPly™ TPO Flex Adhered
8	A	Noncombustible	2 1/2:12	1 1/2-inch-thick ISO 95+ GL	1/4-inch thick DensDeck Prime	UltraPly™ TPO XR
9	A	Noncombustible	2 1/2:12	1 1/2-inch-thick ISO 95+ GL	1/4-inch thick DensDeck Prime	UltraPly™ TPO or UltraPly™ TPO Platinum

For SI: 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 psf = 47.88 Pa.

¹All foam plastic insulation must be UL classified and 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.

²Foam 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 specified foam plastic for direct-to-deck applications. See Section 5.3 and 5.4 of this report for conditions of use.

³Wood deck must be minimum 1 5/32-inch-thick (11.9 mm) plywood. Steel deck must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)]. Concrete must have a minimum compressive strength (*f_c*) of 2500 psi.

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
W-1	Wood	(a) Min. 1.2-inch to max. 4-inch-thick ISO 95 + GL or ISOGARD GL or (b) min. 2-inch to max. 4-inch-thick Elevate HailGard	(a) Loose-laid or (b) HD HailGard fastener at 2.6 ft ² per fastener	⁷ / ₁₆ -inch-thick OSB (Omit for HailGard insulation)	HD HailGard fastener at 2.6 ft ² per fastener	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive or Single-Ply LVOC Bonding Adhesive 1168	45
W-2	Wood	---	---	Min. ¹ / ₄ -inch thick DensDeck Prime or min. ¹ / ₄ -inch thick SECUROCK®	Heavy-duty Fastener & Insulation Fastening Plate at 1 per 1.33 ft ²	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive or Single-Ply LVOC Bonding Adhesive, Water Based Bonding Adhesive P, Single-Ply LVOC 1168	60
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R ³ / ₄ -inch to 1-inch ribbons at 12 inches o.c., XR Bonding Adhesive, PermaMop at 20-25 lbs./100 ft ² , or hot asphalt	
						UltraPly™ TPO SA	Self-adhered	
						UltraPly™ TPO XR	Twin Jet ³ / ₄ -inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	
Twin Jet ³ / ₄ -inch to 1-inch ribbons at 12 inches o.c. or spatter applied at a rate of 0.318 gal./sq.								
				Min. ¹ / ₄ -inch-thick to max. ⁵ / ₈ -inch thick DensDeck Prime				
				Min. ¹ / ₄ -inch thick SECUROCK®				

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
W-3	Wood	-	-	Min. 1/4-inch-thick DensDeck Prime or min 1/4-inch-thick SECUROCK®	I.S.O. Fix II applied in 1.5-inch wide ribbons spaced at 6 inches o.c. or I.S.O. Spray R applied in 3/4-inch to 1-inch wide ribbons at 12 inches o.c.	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly Bonding Adhesive, Single-Ply LVOC Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168	53
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, 3/4-inch to 1-inch ribbons at 12 inches o.c., XR Bonding Adhesive at 70-90 ft² per gallon, PermaMop at 20-25 lbs/100 ft², or hot asphalt	
						UltraPly™ TPO SA	Self-adhered	
						UltraPly™ TPO XR	Twin Jet 3/4-inch to 1-inch ribbons at 12 inches o.c. or spatter applied at a rate of 0.318 gal.sq.	
				Min 1/4-inch-thick SECUROCK®			Twin Jet 3/4-inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal.sq.	
W-4	Wood	Min. 1-inch-thick RESISTA or ISOGARD CG or min. 1 1/2-inch-thick "ISO 95+ GL" or ISOGARD GL	All-Purpose Fastener and Insulation Fastening Plate at 1.33 ft² per fastener	—	—	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168, or Single-Ply LVOC Bonding Adhesive	53
						UltraPly™ TPO XR	XR Stick 3/4-inch to 1-inch ribbons at 6 inches oc. or I.S.O. Spray R, 3/4-inch to 1-inch ribbons at 12 inches o.c.	
						UltraPly™ TPO SA	Self-adhered	
						UltraPly™ TPO XR	Twin Jet 3/4-inch to 1-inch ribbons at 6 inches o.c or spatter applied at a rate of 0.318 gal/sq.	
		Min. 1-inch-thick RESISTA or ISOGARD CG					Twin Jet 3/4-inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	
		Min. 1 1/2-inch-thick to max 36 inch-thick ISO 95+ GL or ISOGARD GL						

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
W-5	Wood	Min. 1-inch-thick RESISTA or ISOGARD CG, or min. 1½-inch-thick ISO 95+ GL of ISOGARD GL	All-Purpose Fastener and Insulation Fastening Plate at 1.78 ft ² per fastener	—	—	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168, or Single-Ply LVOC Bonding Adhesive	38
						UltraPly™ TPO XR	XR Stick ¾-inch to 1-inch ribbons at 6 inches o.c. or I.S.O. Spray R, ¾-inch to 1-inch ribbons at 12 inches o.c.	
						UltraPly™ TPO SA	Self-adhered	
		UltraPly™ TPO XR				Twin Jet ¾-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.		
Twin Jet ¾-inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal./sq.								
W-6	Wood	—	—	Min. ¼-inch-thick DensDeck Prime or min. ¼-inch-thick SECUROCK®	All-Purpose Fastener and Insulation Fastener Plate at 1.6 ft ² per fastener	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive, or Single-Ply LVOC Bonding Adhesive 1168	45
						UltraPly™ TPO XR	XR Stick ¾-inch to 1-inch ribbons at 6 inches o.c. or I.S.O. Spray R, ¾-inch to 1-inch ribbons at 12 inches o.c. or XR Bonding Adhesive, Owens Corning PermaMop at 20-25 lbs/100 ft ² , or hot asphalt	
						UltraPly™ TPO SA	Self-adhered	
						UltraPly™ TPO XR	Twin Jet ¾-inch to 1-inch ribbons at 4-inches o.c. or spatter applied at a rate of 0.318 gal./sq.	
Twin Jet ¾-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.								
		Min. ¼-inch-thick to max. ⅝-inch thick DensDeck Prime						
		Min. ¼-inch-thick SECUROCK®						

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
W-7	Wood	—	—	Min. 1/2-inch-thick DensDeck Prime or min. 1/2-inch-thick SECUROCK®	All-Purpose Fastener and Insulation Fastener Plate at 1.78 ft ² per fastener	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168	45
						UltraPly™ TPO XR	XR Stick 3/4-inch to 1-inch ribbons at 6 inches o.c. or I.S.O. Spray R, 3/4-inch to 1-inch ribbons at 12 inches o.c. or XR Bonding Adhesive, Owens Corning PermaMop at 20-25 lbs/100 ft ² , or hot asphalt	
				UltraPly™ TPO SA		Self-adhered		
				UltraPly™ TPO XR		Twin Jet 3/4-inch to 1-inch ribbons at 4-inches o.c. or spatter applied at a rate of 0.318 gal./sq.		
Twin Jet 3/4-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.								
W-8	Wood	—	—	Min. 1/2-inch-thick to max. 5/8-inch thick DensDeck Prime	All-Purpose Fastener and Insulation Fastening Plate at 1.45 ft ² per fastener	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Water Based Bonding Adhesive P	60
						UltraPly™ TPO XR	XR Stick or Twin Jet 3/4-inch to 1-inch ribbons at 6 inches o.c. or I.S.O. Spray R, 3/4-inch to 1-inch ribbons at 12 inches o.c. or XR Bonding Adhesive, Owens Corning PermaMop at 20-25 lbs/100 ft ² , or hot asphalt or Twin Jet applied at a rate of 0.318 gal./sq.t	
				UltraPly™ TPO SA			Self-adhered	
			Min. 1/2-inch-thick SECUROCK®					

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
W-9	Wood	—	—	Min. 1/4-inch-thick SECUROCK®	I.S.O. Spray R, 3/4-inch to 1-inch wide ribbons at 6 inches o.c.	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Water Based Bonding Adhesive	90
						UltraPly™ TPO XR	I.S.O. Spray R, 3/4-inch to 1-inch ribbons at 12 inches o.c. or XR Bonding Adhesive, Owens Corning PermaMop at 20-25 lbs/100 ft ² , or hot asphalt	
						UltraPly™ TPO SA	Self-adhered	
W-10	Wood	Min. 2-inch-thick RESISTA or ISOGARD CG, ISO 95+ GL, or ISOGARD GL	Heavy Duty Fasteners and Insulation Fastening Plates at 4 ft ² per fastener	—	—	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168, or Water Based Bonding Adhesive P	45
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, 3/4-inch to 1-inch ribbons at 12 inches o.c.	
		Min. 2-inch-thick RESISTA or ISOGARD CG				UltraPly™ TPO SA	Self-adhered	
		Min. 2-inch-thick to max. 36 inch ISO 95+ GL or ISOGARD GL				UltraPly™ TPO XR	Twin Jet 3/4-inch to 1-inch ribbons at 12 inches o.c. or spatter applied at a rate of 0.318 gal./sq. Twin Jet 3/4-inch to 1-inch ribbons at 4-inches o.c. or spatter applied at a rate of 0.318 gal.sq.	
W-11	Wood	Min. 1 1/2-inch-thick ISOGARD HD Composite	All-Purpose Fastener and Insulation Fastening Plate at 2.67 ft ² per fastener	—	—	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168, or Single-Ply LVOC Bonding Adhesive	45
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, 3/4-inch to 1-inch ribbons at 12 inches o.c.	
						UltraPly™ TPO SA	Self-adhered	

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
W-12	Wood	V-Force, self-adhered on primed deck with SA-Solvent Based (SB) Primer applied at a rate of 200 ft ² /gal. followed by a layer of insulation Min. 1 1/2-inch thick "ISO 95+ GL", ISOGARD GL, ISOGARD CG or RESISTA	Insulation layer attached with I.S.O. Twin Pack Insulation Adhesive, I.S.O. Stick, Twin Jet or I.S.O. Spray R 3/4-inch to 1-inch wide ribbons at 12 inches o.c.	Min. 1/4-inch-thick ISOGARD HD, ISOGARD HD Composite, DensDeck Prime or SECUROCK®	I.S.O. Twin Pack Insulation Adhesive, I.S.O. Stick, Twin Jet or I.S.O. Spray R 3/4-inch to 1-inch wide ribbons at 12 inches o.c.	UltraPly™ TPO XR	Twin Jet, 1 1/2-inch wide ribbons at 12 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	60
W-13	Wood	V-Force, self-adhered on primed deck with SA-Solvent Based (SB) Primer applied at a rate of 200 ft ² /gal. followed by a layer of insulation Min. 1-1/2-inch thick ISO 95+ GL, ISOGARD GL, ISOGARD DG or RESISTA	Insulation layer attached with I.S.O. Twin Pack Insulation Adhesive, I.S.O. Stick, Twin Jet or I.S.O. Spray R 3/4-inch to 1-inch wide ribbons at 12 inches o.c.	Min. 1/4-inch-thick DensDeck Prime	I.S.O. Twin Pack Insulation Adhesive, I.S.O. Stick, Twin Jet or I.S.O. Spray R 3/4-inch to 1-inch wide ribbons at 12 inches o.c.	UltraPly™ TPO XR	XR Stick, I.S.O. Spray R, Twin Jet 3/4-inch to 1-inch ribbons at 12 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	67.5
W-14	Wood	V-Force, self-adhered on primed deck with SA-Solvent Based (SB) Primer applied at a rate of 200 ft ² /gal. followed by a layer of insulation Min. 1 1/2-inch thick ISO 95+ GL, ISOGARD GL, ISOGARD CG or RESISTA	Insulation layer attached with I.S.O. Twin Pack Insulation Adhesive, I.S.O. Stick, Twin Jet or I.S.O. Spray R 3/4-inch to 1-inch wide ribbons at 12 inches o.c.	Min. 1/4-inch-thick ISOGARD HD	I.S.O. Twin Pack Insulation Adhesive, I.S.O. Stick, Twin Jet or I.S.O. Spray R 3/4-inch to 1-inch wide ribbons at 12 inches o.c.	UltraPly™ TPO XR	Twin Jet, 1.5-inch wide ribbons at 12 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	67.5

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
S-1	Steel	Min. 1½-inch to max. 4-inch-thick ISOGARD HD Composite	All-Purpose Fastener & Insulation Fastening Plate at 1.33 ft² per fastener	---	---	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Single-Ply LVOC Bonding Adhesive to substrate and underside of membrane at 120 ft² per gallon	90
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, ¾-inch to 1-inch ribbons at 12 inches o.c.	
						UltraPly™ TPO SA	Self-adhered	
S-2	Steel	Min. 1½-inch to max 4-inch thick ISO 95 +GL,	All-Purpose Fastener & Insulation Fastening Plate at 1.33 ft² per fastener	-	-	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Single-Ply LVOC Bonding Adhesive to substrate and underside of membrane at 120 ft² per gallon	90
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, ¾-inch to 1-inch ribbons at 12 inches o.c. or Twin Jet ¾-inch to 1-inch ribbons at 6-inches o.c.	
						UltraPly™ TPO SA	Twin Jet spatter applied at a rate of 0.318 gal./sq. Self-adhered	
S-3	Steel	Min. 1½-inch to max 4-inch thick = RESISTA or ISOGARD CG	All-Purpose Fastener & Insulation Fastening Plate at 1.33 ft² per fastener	-	-	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Jet Bond Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Single-Ply LVOC Bonding Adhesive to substrate and underside of membrane at 120 ft² per gallon	90
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, or Twin Jet ¾-inch to 1-inch ribbons at 12 inches o.c.	
						UltraPly™ TPO SA	Twin Jet spatter applied at a rate of 0.318 gal./sq. Self-adhered	

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
S-4	Steel	Min 1½-inch-thick ISOGARD HD Composite	All-Purpose Fastener & Insulation Fastening Plate at 1.6 ft² per fastener	---	---	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Single-Ply LVOC Bonding Adhesive	75
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, ¾-inch to 1-inch ribbons at 12 inches o.c.	
						UltraPly™ TPO SA	Self-adhered	
S-5	Steel	Min. 2-inch to max. 4-inch-thick ISO 95+ GL or ISOGARD GL	All-Purpose Fastener & Insulation Fastening Plate at 1.6 ft² per fastener	-	-	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Single-Ply LVOC Bonding Adhesive	75
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, ¾-inch to 1-inch ribbons at 12 inches o.c. or Twin Jet ¾-inch to 1-inch ribbons at 6-inches o.c	
							Twin Jet spatter applied at a rate of 0.318 gal/sq.	
S-6	Steel	Min. 2-inch to max. 4-inch-thick Elevate RESISTA or ISOGARD CG	All-Purpose Fastener & Insulation Fastening Plate at 1.6 ft² per fastener	-	-	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Single-Ply LVOC Bonding Adhesive	75
						UltraPly™ TPO XR	XR Stick or I.S.O. Spray R, or Twin Jet ¾-inch to 1-inch ribbons at 12 inches o.c	
							Twin Jet. or spatter applied at a rate of 0.318 gal./sq	
						UltraPly™ TPO SA	Self-adhered	

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
S-7	Steel	Min. 1½-inch to max. 4-inch-thick ISO 95+ GL ISOGARD GL, RESISTA or ISOGARD CG	All-Purpose Fastener & Insulation Fastening Plate at 2 ft² per fastener	Min. ¼-inch thick or SECUROCK®	I.S.O. Twin Pack Insulation Adhesive ½- to ¾-inch beads, or I.S.O. Fix II, I.S.O. Stick, Twin Jet, or I.S.O. Spray R ¾-inch to 1-inch beads at 12 inches o.c.	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly Bonding Adhesive, Jet Bond Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or, Water Based Bonding Adhesive P	45
						UltraPly™ TPO XR	Jet Bond Adhesive, XR Stick, Twin Jet or I.S.O. Spray R, ¾-inch to 1-inch ribbons at 12 inches o.c. or XR Bonding Adhesive, Owens Corning PermaMop at 20-25 lbs/100 ft², or hot asphalt, or Twin Jet applied at a rate of 0.318 gal./sq.	
						UltraPly™ TPO SA	Self-adhered	
S-8	Steel	Min. ½-inch ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	Loose Laid	Min. ½-inch DensDeck Prime or SECUROCK®	All-Purpose Fastener or All-Purpose S Fastener & Insulation Fastening Plate at 2.67 ft² per fastener	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168	45
						UltraPly™ TPO XR	Jet Bond Adhesive, XR Stick or I.S.O. Spray R, ¾-inch to 1-inch ribbons at 12 inches o.c. or XR Bonding Adhesive, Owens Corning PermaMop at 20-25 lbs/100 ft², or hot asphalt	
				UltraPly™ TPO SA		Self-adhered	45	
				UltraPly™ TPO XR		Twin Jet ¾-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.		
				Min. ½-inch to max ⅝-inch thick DensDeck Prime		UltraPly™ TPO XR	Twin Jet ¾-inch to 1-inch ribbons at 12 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	45
				Min. ½-inch thick SECUROCK®				45
S-9	Steel	Min. 2½-inch-thick ISO 95+ GL, ISOGARD GL, RESISTA, ISOGARD GL or ISOGARD HD Composite	All-Purpose Fastener & Insulation Fastening Plate at 1.14 ft² per fastener	---	---	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive or Single-Ply LVOC Bonding Adhesive 1168	112.5

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	VAPOR BARRIER	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
			TYPE ^{1,2}	ATTACHMENT ¹	TYPE ¹	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
C-1	Concrete	Elevate SBS PolyTorch or Glass Torch Base, torch adhered.	One or 2 layers of 1½-inch-thick ISO 95 + GL, ISOGARD GL, RESISTA or ISOGARD CG	I.S.O. Twin Pack Insulation Adhesive ½- to ¾-inch ribbons at 12 inches o.c.	Min. ¼-inch-thick DensDeck Prime, or SECUROCK®	I.S.O. Twin Pack Insulation Adhesive ½ to ¾-inch, I.S.O. Fix II, Twin Jet or I.S.O. Stick ¾ to 1-inch ribbons at 12 inches o.c	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive 1168, Water Based Bonding Adhesive P or Single-Ply LVOC Bonding Adhesive	232
							UltraPly™ TPO XR	XR Stick ¾ to 1-inch ribbons at 6 inches o.c. or XR Bonding Adhesive, Owens Corning PermaMop at 20-25 lbs/100 ft², or hot asphalt	
							UltraPly™ TPO XR	Jet Bond Spray Adhesive	
							UltraPly™ TPO SA	Self-adhered	
						Twin Jet ¾-inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal./sq.			
						Twin Jet ¾-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.			

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	VAPOR BARRIER	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
			TYPE ^{1,2}	ATTACHMENT ¹	TYPE ¹	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
C-2	Concrete	---	Min. 1½-inch to max. 4-inch-thick ISO 95 + GL, ISOGARD GL, RESISTA or ISOGARD CG	I.S.O. Twin Pack Insulation Adhesive ½- to ¾-inch ribbons at 12 inches o.c.	---	---	UltraPly™ TPO and UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Single-Ply LVOC Bonding Adhesive	165
								UltraPly™ XR Stick ¾ to 1-inch ribbons at 6 inches o.c. or I.S.O. Spray R ¾ to 1-inch ribbons at 12 inches o.c.	
								UltraPly™ TPO XR Jet Bond Spray Adhesive	
			UltraPly™ TPO SA Self-adhered						
			UltraPLY™ TPO XR				Twin Jet ¾-inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal./sq.		
							Twin Jet ¾-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.		

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
C-3	Concrete	Min. 1½-inch to max. 4-inch-thick ISO 95 + GL, ISOGARD GL, RESISTA or ISOGARD CG	Hot asphalt, full mopping	Min. ¼-inch-thick DensDeck Prime, or SECUROCK®	Hot asphalt, full mopping	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive or Single-Ply LVOC Bonding Adhesive 1168	195
						UltraPly™ TPO XR	XR Stick ¾ to 1-inch ribbons at 6 inches o.c. or XR Bonding Adhesive, PermaMop at 20-25 lbs/100 ft², or hot asphalt	
						UltraPly™ TPO XR	Jet Bond Spray Adhesive	
						UltraPly™ TPO SA	Self-adhered	
						UltraPly™ TPO XR	Twin Jet ¾-inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	
							Twin Jet ¾-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	
C-4	Concrete	Min. 1½-inch to max. 4-inch-thick Elevate ISO 95 + GL, ISOGARD GL, RESISTA or ISOGARD CG	Hot asphalt, full mopping	---	---	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive 1168 or Single-Ply LVOC Bonding Adhesive	180
						UltraPly™ TPO XR	XR Stick ¾ to 1-inch ribbons at 6 inches o.c. or I.S.O. Spray R ¾ to 1-inch ribbons at 12 inches o.c.	
		UltraPly™ TPO SA				Self-adhered		
		UltraPly™ TPO XR				Twin Jet ¾-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.		
		Min. 1½-inch to max. 4-inch-thick RESISTA or ISOGARD CG						

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	VAPOR BARRIER	INSULATION		COVER BOARD			MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
			TYPE ^{1,2}	ATTACHMENT ¹	TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹		
C-5	Primed concrete	Elevate V-Force, self-adhered over deck primed with SA-Solvent Based (SB) Primer	Min. 1 1/2-inch-thick ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	I.S.O. Stick or Twin Jet in continuous 3/4-1-inch-wide ribbons at 12 inches o.c. or Elevate I.S.O. TwinPack Adhesive in continuous 1/2 to 3/4-inch-wide ribbons at 12 inches o.c.	(Optional) Min. 1-or 1 1/2-inch-thick "ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	(For optional cover board) I.S.O. Stick, or Twin Jet in continuous 3/4 to 1-inch-wide ribbons at 12 inches o.c.	UltraPly™ TPO XR	XR Bonding Adhesive or XR Stick 3/4 to 1-inch ribbons at 6 inches o.c.	113	
							UltraPly™ TPO XR	Jet Bond Adhesive Spray		
							UltraPly™ TPO SA	Self-adhered		
							UltraPly™ TPO XR	Twin Jet 3/4-inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal./sq.		
Twin Jet 3/4-inch to 1-inch ribbons at 6 inches o.c. or spatter applied at a rate of 0.318 gal./sq.										
C-6	Primed concrete	Elevate V-Force, self-adhered over deck primed with SA-Solvent Based (SB) Primer	Min. 1 1/2-inch-thick ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	I.S.O. Stick or Twin Jet in continuous 3/4-1-inch-wide ribbons at 12 inches o.c. or Elevate I.S.O. TwinPack Adhesive in continuous 1/2 to 3/4-inch-wide ribbons at 12 inches o.c.	I.S.O. Stick or Twin Jet in continuous 3/4-1-inch-wide ribbons at 12 inches o.c. or Elevate I.S.O. TwinPack Adhesive in continuous 1/2-3/4-inch-wide ribbons at 12 inches o.c.	(Optional) Min. 1-or 1 1/2-inch-thick ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	(For optional cover board) I.S.O. Stick or Twin Jet in continuous 3/4 to 1-inch-wide ribbons at 12 inches o.c.	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive or Single-Ply LVOC Bonding Adhesive 1168	278
								UltraPly™ TPO XR	I.S.O. Spray R 3/4 to 1-inch ribbons at 12 inches o.c.	
								UltraPly™ TPO SA	Self-adhered	

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	VAPOR BARRIER	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)	
			TYPE ^{1,2}	ATTACHMENT ¹	TYPE ¹	ATTACHMENT ¹	TYPE	ATTACHMENT ¹		
C-7	Concrete	---	---	---	---	---	---	UltraPly™ TPO XR	Hot asphalt at 20 to 40 lbs per sq.	500
C-8	Concrete	---	---	---	---	---	---	UltraPly™ TPO XR	XR Bonding Adhesive	470
C-9	Primed Concrete	V-Force, self-adhered over deck primed with SA-Solvent Based (SB) Primer or 1 to 2 ply of Ply IV or VI in hot asphalt or APP 80 Glass Torch Base, SBS Glass FR Torch, or SBS Poly Torch Base torch adhered	Min 1½-inch to max. 4-inch ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG followed by (Optional) Tapered ISO GL+ 95, Tapered ISOGARD GL, Tapered RESISTA or Tapered ISOGARD CG	I.S.O. Stick (with V-Force only) or Twin Jet (with V-Force only) I.S.O. Spray R in continuous ¾- to 1-inch-wide ribbons or I.S.O. Twin Pack Insulation Adhesive (not with V-Force) in ½ to ¾-inch wide ribbons at 12 inches o.c	(Optional) Min. ¼-inch DensDeck Prime or SECUROCK®	(For optional cover board) I.S.O. Stick, Twin Jet or I.S.O. Spray R in continuous ¾ to 1-inch ribbons or I.S.O. Twin Pack Insulation Adhesive in ½- to ¾-inch-wide ribbons at 12 inches o.c	UltraPly™ TPO or UltraPly™ TPO Platinum	UltraPly™ Bonding Adhesive, Single-Ply LVOC Bonding Adhesive, Water Based Bonding Adhesive P or Single-Ply LVOC Bonding Adhesive 1168	263	
							UltraPly™ TPO XR	XR Bonding Adhesive at 70-90 ft² per gallon or Owens Corning PermaMop or hot asphalt as 20-25 lbs/100 ft²		
							UltraPly™ TPO SA	Self-adhered		
C-10	Concrete	-	Min 1 inch thick ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG, or min. ½-inch to max 1-inch thick ISOGARD HD	I.S.O. Twin Pack Insulation Adhesive ¾-inch to 1-inch ribbons spaced 6 inches o.c.	-	-	UltraPly™ TPO XR	Twin Jet ¾-inch to 1-inch ribbons at 4 inches o.c. or spatter applied at a rate of 0.318 gal./sq.	413	
C-11	Concrete	---	Min. 1½-inch thick ISO 95+ GL, ISOGARD G,r RESISTA or ISOGARD CG	Twin Jet or I.S.O Stick 1-inch to 1¼-inch ribbons at 12 inches o.c.	---	---	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive, Water Based Bonding Adhesive P or Single-Ply LVOC Bonding Adhesive 1168	187.5	
C-12	Concrete	---	---	---	---	---	UltraPly™ TPO, UltraPly™ TPO Platinum or UltraPly™ TPO Flex Adhered	UltraPly™ Bonding Adhesive, Jet Bond Spray Adhesive, Single-Ply LVOC Bonding Adhesive or Single-Ply LVOC Bonding Adhesive 1168	205	
							UltraPly™ TPO SA or UltraPly™ TPO Flex Adhered	Self-adhered		

TABLE 4—WIND RESISTANCE—ADHERED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	SUPPLEMENTAL LIGHTWEIGHT CONCRETE ATTACHMENT ¹	INSULATION		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
			TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
LC-1	Cellular lightweight concrete, 200 psi, on structural concrete.	---	---	---	UltraPly™ TPO XR	XR Bonding Adhesive	467
LC-2	Cellular lightweight concrete, 300 psi, on steel deck.	Heavy-Duty Fasteners with Insulation Fastening Plates at 2 ft ² per fastener	---	---	UltraPly™ TPO XR	XR Bonding Adhesive	75
LC-3	Celcore lightweight concrete, 300 psi, on steel deck.	Heavy-Duty Fasteners with Insulation Fastening Plates at 2 ft ² per fastener	---	---	UltraPly™ TPO XR	XR Bonding Adhesive	90
LC-4	Celcore lightweight concrete, 300 psi, on steel deck.	---	---	---	UltraPly™ TPO XR	XR Bonding Adhesive	45
LC-5	Celcore lightweight concrete, 430 psi, on steel deck.	---	Min. ½-inch thick ISO 95+ GL or ISOGARD GL	QuickSeam R.M.A Strips spaced 72 inches o.c. and secured 6 inches o.c. with two 3-¼ inch Trufast VERSA-FAST Fasteners installed in each Trufast VERSA-FAST Plates	UltraPly™ TPO or UltraPly™ TPO Platinum	Backside of TPO primed with QuickPrime Plus Primer at a rate of 200-250 ft ² /gal. at the bonding area to the QuickSeam R.M.A. strip; QuickSeam R.M.A. self-adhered to membrane 2 inches wide side laps sealed with 1-½ inch heat weld	45

For SI: 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 psf = 47.88 Pa; 1 gal = 3.785 L.

¹Insulation, adhesive, fasteners, vapor barriers, ply sheets and base sheets must be FM-approved.

²All 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.

³Wood deck must be minimum 5/32-inch-thick (11.9 mm) plywood. Steel deck must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)]. Concrete must have a minimum compressive strength (*f_c*) of 2500 psi, unless otherwise noted. See Section 5.9 of this report.

TABLE 5—WIND RESISTANCE—WELDED ROOF COVERING SYSTEMS

SYSTEM NO.	DECK ³	THERMAL BARRIER	INSULATION		COVER BOARD		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
			TYPE ^{1,2}	ATTACHMENT ¹	TYPE ¹	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
WW-1	Wood	(Optional) Min. 1/4-inch-thick DensDeck or DensDeck Prime	Min. 1 1/2-inch-thick ISO 95+GL, ISOGARD GL, RESISTA or ISOGARD CG	Loose-laid	Min. 1/2-inch-thick ISOGARD HD or min. 1/4-inch-thick DensDeck or DensDeck Prime or Min. 1/2-inch thick SECUROCK®	InvisiWeld or InvisiWeld S Plates and Heavy-Duty Fasteners at 5.3 ft ² per fastener	UltraPly™ TPO or UltraPly™ TPO Platinum	Bonded to InvisiWeld or InvisiWeld S Plates	45
WSC-1	Steel or concrete	(Optional) Min. 1/4-inch-thick DensDeck or DensDeck Prime	(Optional) (Min. 1 1/2-inch-thick ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	Loose-laid	Min. 1/2-inch-thick ISOGARD HD or min. 1/4-inch-thick DensDeck or DensDeck Prime or Min. 1/2-inch thick SECUROCK®	InvisiWeld or InvisiWeld S Plates and Heavy-Duty Fasteners (through steel) or Concrete Drive Fasteners (through concrete) at 5.3 ft ² per fastener	UltraPly™ TPO or UltraPly™ TPO Platinum	Bonded to InvisiWeld or InvisiWeld S Plates	45
WSC-2	Steel or concrete	---	(Optional) Min. 1 1/2-inch-thick ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	Loose-laid	Min. 1/2-inch-thick ISOGARD HD or min. 1/4-inch-thick DensDeck or DensDeck Prime or Min. 1/2-inch thick SECUROCK®	InvisiWeld or InvisiWeld S Plates and Heavy-Duty Fasteners (through steel) or Concrete Drive Fasteners (through concrete) at 4 ft ² per fastener	UltraPly™ TPO or UltraPly™ TPO Platinum	Bonded to InvisiWeld or InvisiWeld S Plates	60
WSC-3	Steel or concrete	---	(Optional) Min. 1 1/2-inch-thick ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	Loose-laid	Min. 1/2-inch-thick ISOGARD HD or min. 1/4-inch-thick DensDeck or DensDeck Prime or Min. 1/2-inch thick SECUROCK®	InvisiWeld or InvisiWeld S Plates and Heavy-Duty Fasteners (through steel) or Concrete Drive Fasteners (through concrete) at 2.7 ft ² per fastener	UltraPly™ TPO or UltraPly™ TPO Platinum	Bonded to InvisiWeld or InvisiWeld S Plates	75
WSC-4	Steel or concrete	---	(Optional) Min. 1 1/2-inch-thick ISO 95+ GL, ISOGARD GL, RESISTA or ISOGARD CG	Loose-laid	Min. 1/2-inch-thick ISOGARD HD or min. 1/4-inch-thick DensDeck or DensDeck Prime or Min. 1/2-inch thick SECUROCK®	InvisiWeld or InvisiWeld S Plates and Heavy-Duty Fasteners (through steel) or Concrete Drive Fasteners (through concrete) at 2 ft ² per fastener	UltraPly™ TPO or UltraPly™ TPO Platinum	Bonded to InvisiWeld or InvisiWeld S Plates	105

For SI: 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 psf = 47.88 Pa; 1 gal = 3.785 L.

¹Insulation, adhesive and fasteners must be FM-approved.

²All 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.

³Wood deck must be minimum 15/32-inch-thick (11.9 mm) plywood. Steel deck must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)]. Concrete must have a minimum compressive strength (f_c) of 2500 psi, unless otherwise noted. See Section 5.9 of this report.

TABLE 6—WIND RESISTANCE—MECHANICALLY FASTENED ROOF COVERING SYSTEMS

SYSTEM NO.	DECK ³	INSULATION		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
SC-1	Steel or concrete	Min. 1½-inch to max. 4-inch-thick ISO 95 + GL or ISOGARD GL	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	Heavy-Duty Plus Fasteners with HD Plus Seam Plates (steel) or Concrete Drive Fasteners with HD Seam Plates (concrete), fastener rows at 142 inches o.c., 12 inches o.c. along side laps	30
SC-2	Steel or concrete	Min. 1½inch to max. 4-inch-thick Elevate ISO 95 + GL or ISOGARD GL	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	Heavy-Duty Plus Fasteners with HD Plus Seam Plates (steel) or Concrete Drive Fasteners with HD Seam Plates (concrete), fastener rows at 142 inches o.c., 6 inches o.c. along side laps	60
SC-3	Steel or concrete	Min. 1½-inch to max. 4-inch-thick ISO 95 + GL or ISOGARD GL	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	Heavy-Duty Plus Fasteners with HD Plus Seam Plates (steel) or Concrete Drive Fasteners with HD Seam Plates (concrete), fastener rows at 114 inches o.c., 6 inches o.c. along side laps	68
SC-4	Steel or concrete	Min. 1½-inch to max. 4-inch-thick ISO 95 + GL or ISOGARD GL	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	Heavy-Duty Fasteners with HD Seam Plates, fastener rows at 142 inches o.c., 6 inches o.c. along side laps	52
SC-5	Steel or concrete	Min. 1½inch thick ISO 95+ GL or ISOGARD GL	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	Heavy-Duty Fasteners with 2⅜ HD Seam Plates, fastener rows at 6 ft o.c., 18 inches o.c. along side laps	30

TABLE 6—WIND RESISTANCE—MECHANICALLY FASTENED ROOF COVERING SYSTEMS (Continued)

SYSTEM NO.	DECK ³	INSULATION		MEMBRANE		ALLOWABLE WIND UPLIFT PRESSURE (psf)
		TYPE ^{1,2}	ATTACHMENT ¹	TYPE	ATTACHMENT ¹	
SC-6	Steel or concrete	Min. 1.4-inch to max. 4-inch-thick ISO 95 + GL or ISOGARD GL	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	Heavy-Duty Fasteners with 2 ³ / ₈ HD Seam Plates, fastener rows at 9 ft-6 inches o.c., 6 inches o.c. along side laps	38
SC-7	Steel or concrete	Min. 1 ¹ / ₂ -inch thick ISO 95+ GL or ISOGARD GL	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	Heavy-Duty Plus Fasteners with HD Seam Plates, fastener rows at 7 ft-6 inches o.c., 12 inches o.c. along side laps	45
MS-1	Steel	Min. 1 ¹ / ₂ -inch to max. 4-inch-thick, any FM-approved foam plastic insulation	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	Heavy-Duty Plus Fasteners with HD Plus Seam Plates, fastener rows at 9 ft-6 inches o.c., 12 inches o.c. along side laps	45
MS-2	Steel	Min. 1 ¹ / ₂ -inch to max. 4-inch-thick Elevate ISO 95 + GL or ISOGARD GL	Preliminarily attached	UltraPly™ TPO or UltraPly™ TPO Platinum	QuickSeam R.M.A. Strips at 10 ft o.c. with Coiled Metal Batten Strips and Heavy-Duty Fasteners along strips at 6 inches o.c.; Single-Ply Quick Prime or Single-Ply LVOC Primer to underside of membrane at strip locations	45

For SI: 1 inch = 25.4 mm; 1 ft = 0.305 m; 1 psf = 47.88 Pa.

¹Insulation and fasteners must be FM-approved.

²All 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.

³Wood deck must be minimum 1⁵/₃₂-inch-thick (11.9 mm) plywood. Steel deck must be minimum No. 22 gage galvanized steel [0.030 inch (0.76 mm)]. Concrete must have a minimum compressive strength (*f_c*) of 2500 psi, unless otherwise noted. See Section 5.9 of this report.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 54 00—Thermoplastic Membrane Roofing
Section: 07 54 23—Thermoplastic-Polyolefin Roofing

REPORT HOLDER:

HOLCIM SOLUTIONS AND PRODUCTS US, LLC

ADDITIONAL LISTEE:

GENFLEX ROOFING SYSTEMS

EVALUATION SUBJECT:**ELEVATE ULTRAPLY™ TPO, ULTRAPLY™ TPO PLATINUM, ULTRAPLY™ TPO XR , ULTRAPLY™ TPO SA, AND
ULTRAPLY™ TPO FLEX ADHERED SINGLE-PLY ROOFING MEMBRANES****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that Elevate UltraPly™ TPO, UltraPLY™ TPO Platinum, UltraPly™ TPO XR , UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered Single-ply Roofing Membranes, described in ICC-ES evaluation report [ESR-2831](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2020 *City of Los Angeles Building Code* (LABC)
- 2020 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The Elevate UltraPly™ TPO, UltraPLY™ TPO Platinum, UltraPly™ TPO XR , UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered Single-ply Roofing Membranes, described in Sections 2.0 through 7.0 of the evaluation report [ESR-2831](#), comply with the LABC Chapters 7A and 15, LARC Section R337, and LARC Chapter 9, and are subjected to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Firestone UltraPly™ TPO, UltraPLY™ TPO Platinum, UltraPly™ TPO XR UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered Single-ply Roofing Membranes, described in this evaluation report must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-2831](#).
- The design, installation, conditions of use and identification are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-2831](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17 or LARC Chapter 3, as applicable.
- The Elevate UltraPly™ TPO, UltraPLY™ TPO Platinum, UltraPly™ TPO XR , UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered Single-ply Roofing Membranes must not be installed over existing wood shakes or wood shingles in accordance with LABC Section 1511 or CRC Section R908, as applicable.
- The installation of the Elevate UltraPly™ TPO, UltraPLY™ TPO Platinum, UltraPly™ TPO XR, UltraPly™ TPO SA and UltraPly™ TPO Flex Adhered Single-ply Roofing Membranes must comply with City of Los Angeles Information Bulletin P/BC 2020-16, “Dwellings in High Wind Velocity Areas (HWA)”.

- Reroofing applications must comply with Sections 4.2.2, 4.3.2 and 5.8 of the evaluation report [ESR-2831](#) and LABC Section 1511 or LARC Section R908, as applicable. Where spaced sheathing exists, a minimum of $\frac{15}{32}$ -inch-thick (11.9 mm) plywood shall be installed prior to roofing installations.
- Where moderate or heavy foot traffic occurs for maintenance of equipment, the roof covering shall be adequately protected.
- The Building Inspector shall be notified 24 hours in advance prior to installation of the roof membranes.

This supplement expires concurrently with the report, reissued August 2023.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 54 00—Thermoplastic Membrane Roofing
Section: 07 54 23—Thermoplastic-Polyolefin Roofing

REPORT HOLDER:

HOLCIM SOLUTIONS AND PRODUCTS US, LLC

EVALUATION SUBJECT:

ELEVATE ULTRAPLY™ TPO, ULTRAPLY™ TPO PLATINUM, ULTRAPLY™ TPO XR , ULTRAPLY™ TPO SA AND ULTRAPLY™ TPO FLEX ADHERED SINGLE-PLY ROOFING MEMBRANES

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that Elevate UltraPly™ TPO, UltraPly™ TPO Platinum, UltraPly™ TPO XR, UltraPly™ TPO SA, and UltraPly™ TPO Flex Adhered single-ply roofing membranes, described in ICC-ES evaluation report ESR-2831, have 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 Elevate UltraPly™ TPO, UltraPly™ TPO Platinum, UltraPly™ TPO XR, UltraPly™ TPO SA, and UltraPly™ TPO Flex Adhered single-ply roofing membranes, described in Sections 2.0 through 7.0 of the evaluation report ESR-2831, comply with CBC Chapter 15, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 15, 16 and 26, as applicable.

The classified Class A roof covering systems 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 Elevate UltraPly™ TPO, UltraPly™ TPO Platinum, UltraPly™ TPO XR, UltraPly™ TPO SA, and UltraPly™ TPO Flex Adhered single-ply roofing membranes, described in Sections 2.0 through 7.0 of the evaluation report ESR-2831, comply with CRC Chapter 9, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CRC Chapters 9, as applicable.

The classified Class A roof covering systems 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 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 August 2023.