DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 52 00—MODIFIED BITUMINOUS SHEET ROOFING

REPORT HOLDER:

SIPLAST, INC.

EVALUATION SUBJECT:

PARADIENE AND VERAL MODIFIED BITUMEN ROOFING MEMBRANES

“2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence”

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

Copyright © 2019 ICC Evaluation Service, LLC. All rights reserved.
DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 52 00—Modified Bituminous Sheet Roofing

REPORT HOLDER:
SIPLAST, INC.

EVALUATION SUBJECT:
PARADIENE AND VERAL MODIFIED BITUMEN ROOFING MEMBRANES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- Other Codes (see Section 8.0)
- 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 Paradiene and Veral modified bitumen roofing membranes are used as roof coverings in Class A or B membrane roof covering systems.

3.0 DESCRIPTION

3.1 General:

The Paradiene modified bitumen roofing membranes consist of fibrous glass and glass scrim mat reinforcement, impregnated and coated with styrene butadiene styrene (SBS) modified bitumen. The Veral fiberglass-reinforced SBS modified bitumen membranes incorporate a factory-applied metal surface on the top ply. Roof covering systems utilizing Siplast roofing membranes consist of single-ply membranes, base and/or ply sheets, with or without approved insulation, flashing, asphalts, and adhesives and/or mechanical fasteners that are installed on a combustible or noncombustible deck. See Table 1 for further product information.

3.2 Roofing Membranes:

3.2.1 *Paradiene 20*: Paradiene 20 is a modified bitumen membrane used as a base sheet in specific systems noted in Tables 2 and 3, or as a top ply in System No. 5 of Table 2. Product designations may include combinations of the following suffixes: TG (torch grade), HT (high tensile), HV (high performance), EG and FR (fire retardant). The Paradiene 20 may also be used as a top ply as noted in System No. 5 of Table 2.

3.2.2 *Paradiene 20 TS*: Paradiene 20 TS is a modified bitumen membrane used as the base ply of the specific systems noted in Tables 2 and 3. The membrane has factory-applied, heat-activated adhesive strips on the back surface of the sheet, covering 50 percent of the membrane surface area.

3.2.3 *Paradiene 30*: Paradiene 30 is a modified bitumen membrane used as the top ply of the Paradiene 20/30 roofing systems noted in Table 2. The sheet is surfaced with ceramic granules. Product designations may include combinations of the following suffixes: TG, HT and FR.

3.2.4 *Paradiene 40 FR*: Paradiene 40 FR is a modified bitumen membrane, surfaced with ceramic granules and used as the top ply of the Paradiene 40 FR System No. 4 noted in Table 2. Paradiene 40 FR must be installed over Parabase or Parabase Plus base sheets.

3.2.5 *Veral Membranes*: Veral Aluminum, Veral Copper, Veral Stainless Steel and Veral White Polar Spectra membranes are fiberglass-reinforced, SBS modified bituminous sheets with a factory-applied metal surface used as the top ply of the Veral roofing systems described in Tables 2 and 3. The metal surface of the Veral White Polar Spectra consists of an aluminum foil surface coated with a factory-applied Kynar 500 paint finish.

3.2.6 *Irex Base Sheets*: Irex 30, Irex 40 and Irex HT are asphalt-coated fiberglass sheets and are used as the base sheet for the Veral systems described in Tables 2 and 3.

3.2.7 *Parabase and Parabase Plus*: Parabase and Parabase Plus are asphalt-coated fiberglass sheets used as base/ply sheets in System Numbers 3, 4 and 8 as described in Table 2.

3.2.8 *Paravent FS*: Paravent FS is a perforated asphalt-coated fiberglass base sheet, for use in certain applications over substrates where spot bonding is required. Paravent FS may be used in addition to, but not in lieu of, any base or ply sheet.

3.3 Insulation:

See Tables 2 and 3 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.
3.4 Fasteners:

3.4.1 Parafast Roofing Fastener: A general-purpose steel roofing screw, precoated with CR-10 corrosion-resistant coating, is used in combination with the Parafast 3-inch Metal Plate to secure insulation and base sheets to steel, wood sheathing and plywood decks. Fastener length must be sufficient to penetrate through the steel deck a minimum of \( \frac{3}{4} \) inch (19.1 mm), and the wood sheathing deck a minimum of 1 inch (25.4 mm). The fasteners must penetrate a minimum of \( \frac{1}{2} \) inch (12.7 mm) beyond the underside of the plywood.

3.4.2 Parafast CD-10 Concrete Fastener: A nonthreaded, hammer-in fastener, precoated with CR-10 corrosion-resistant coating, used in combination with the Parafast 3-inch Metal Plate to secure insulation and base sheets to concrete. Fastener length must be sufficient to penetrate into the concrete deck a minimum of 1 inch (25.4 mm).

3.4.3 Parafast 3-Inch Metal Plate: A 3-inch-diameter (76.2 mm), galvalume-coated steel plate is used in combination with Parafast fasteners to secure insulation and base sheets to the roof deck.

3.5 PA-311 and PA-311C Adhesives:
The PA-311 and PA-311C adhesives are used with specific roofing systems as described in Tables 2 and 3. The adhesives are applied by brush, roller, or squeegee, or by spraying at a rate of \( 1\frac{1}{2} \) gallons per 100 square feet (0.61 L/m²). During application, the adhesive must be maintained at temperatures above 50°F (10°C).

3.6 Impact Resistance:
The Paradiene and Veral modified bitumen roofing membranes described in this report meet requirements for impact resistance based on testing in accordance with FM 4470.

4.0 INSTALLATION

4.1 General:
Installation of the Paradiene and Veral modified bitumen roofing membranes must comply with the IBC, 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 must be a minimum of \( 1\frac{1}{4}:12 \) (2 percent slope) and must not be more than the maximum slope indicated for the particular system as listed in Table 2.

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

4.2 Fire Classification:

4.2.1 New Construction: Roof covering systems described in Table 2, when installed in accordance with this report, are classified as Class A or B roof covering systems in accordance with ASTM E 108 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.

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 systems.
- New insulated systems installed over existing uninsulated systems.

4.3 Wind Uplift Resistance:

4.3.1 New Construction: The allowable wind uplift pressures for the Siplast membrane roof covering systems described in this report are noted in Table 3. Metal edge securement for all roofing systems must be designed in accordance with ANSI/SPRI ES-1, complying with IBC Section 1504.5.

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 modified bitumen roofing membrane roof covering systems described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation of the roof covering systems must comply with the IBC, 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 roof covering systems must be installed only by applicators approved by Siplast, Inc.

5.3 Foam plastic insulation must be separated from the interior of the building by an approved thermal barrier in accordance with IBC Section 2603.4.1.5, except when specifically recognized in an ICC-ES evaluation report as outlined in Footnote 7 to Table 2.

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 E 84, 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 For all above-deck insulations other than foam plastics, the roof covering assembly, including the insulation, must have passed testing in accordance with FM 4450 or UL 1256.

Exception: where a concrete roof deck is used and the above-deck insulation is covered with an approved roof covering.

5.7 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 Table 3.

5.8 The allowable wind uplift pressures listed in Table 3 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.
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 When application is over existing roofs, documentation of the wind uplift resistance of the composite roof construction must be submitted to the code official at the time of permit application.

5.11 The membranes are manufactured in Arkadelphia, Arkansas, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED


7.0 IDENTIFICATION

7.1 Each roll of the membranes, base sheets and ply sheets described in this report is identified with a label noting the product name; the manufacturer’s name (Siplast, Inc.) and address; and the evaluation report number (ESR-1713).

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

Siplast, Inc.
1111 Highway 67 South
Arkadelphia, Arkansas 71923
(870) 246-8094
www.siplast.com

8.0 OTHER CODES

8.1 Evaluation Scope:

In addition to the codes referenced in Section 1.0, the products in this report were evaluated for compliance with the requirements of the following codes:

- 1999 Standard Building Code® (SBC)
- 1997 Uniform Building Code™ (UBC)

8.2 Uses:

See Section 2.0.

8.3 Description:

See Section 3.0.

8.4 Installation:

8.4.1 General: Installation of the Paradiene and Veral modified bitumen roofing membrane roof covering 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 on the jobsite at all times during installation.

The slope of the roof must be a minimum of 1\(\frac{1}{4}:12\) (2 percent slope) and must not be more than the maximum slope indicated for the particular system as listed in Table 2.

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

8.4.2 Fire Classification:

8.4.2.1 New Construction: See Section 4.2.1.

8.4.2.2 Reroofing: Prior to installation of new roof coverings, inspection by and approval from the code official having jurisdiction is required in accordance with Appendix Chapter 15 (UBC only).

See Section 4.2.2 for balance.

8.4.3 Wind Uplift Resistance:

8.4.3.1 New Construction: The allowable wind uplift pressures for the Siplast membrane roof covering systems described in this report are noted in Table 3.

8.4.3.2 Reroofing: See Section 4.3.2.

8.5 Conditions of Use:

The modified bitumen membrane roof covering systems described in this report comply with, or are suitable alternatives to what is specified in, the SBC and UBC, subject to the following conditions:

8.5.1 Installation of the roofing systems must comply with the applicable code, 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.

8.5.2 See Section 5.2.

8.5.3 Foam plastic insulation must be separated from the interior of the building by an approved thermal barrier in accordance with SBC Section 2603.5.1.5 or UBC Section 2602.5.3, as applicable.

8.5.4 See Section 5.4.

8.5.5 See Section 5.7.

8.5.6 The allowable wind uplift pressures listed in Table 3 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 applicable code.

8.5.7 See Section 5.9.

8.5.8 See Section 5.10.

8.5.9 See Section 5.11.

8.6 Evidence Submitted:

See Section 6.0.

8.7 Identification:

See Section 7.0.
<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>DESCRIPTION</th>
<th>PURPOSE</th>
<th>APPLICATION METHOD</th>
<th>UNIT</th>
<th>SIZE (ft. by ft.)</th>
<th>COVERAGE (sq. ft.)</th>
<th>MIN. WEIGHT (lbs. per sq.)</th>
<th>MIN. THICKNESS (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paradiene 20</td>
<td>Asphalt elastomer sheet; random glass mat reinforced.</td>
<td>First ply of Paradiene 20/30 composite.</td>
<td>Type IV Asphalt or PA-311 Adhesive</td>
<td>Roll</td>
<td>3.28 × 50</td>
<td>150</td>
<td>60</td>
<td>0.087</td>
</tr>
<tr>
<td>Paradiene 20 TG</td>
<td>Asphalt elastomer sheet; random glass mat reinforced; torching grade asphalt on bottom face.</td>
<td>First ply of Paradiene 20/30 (TG Series) composite.</td>
<td>Torch Roll</td>
<td></td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>70</td>
<td>0.106</td>
</tr>
<tr>
<td>Paradiene 20 HT</td>
<td>Asphalt elastomer sheet; fiberglass scrim reinforced.</td>
<td>First ply of Paradiene 20/30 composite. For high tensile requirements.</td>
<td>Type IV Asphalt or PA-311 Adhesive</td>
<td>Roll</td>
<td>3.28 × 50</td>
<td>150</td>
<td>60</td>
<td>0.087</td>
</tr>
<tr>
<td>Paradiene 20 HTT G</td>
<td>Asphalt elastomer sheet; fiberglass scrim reinforced; torching grade asphalt on bottom face.</td>
<td>First ply of Paradiene TG Series composite. For high tensile requirements.</td>
<td>Torch Roll</td>
<td></td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>70</td>
<td>0.106</td>
</tr>
<tr>
<td>Paradiene 20 EG</td>
<td>Heavy-duty asphalt elastomer sheet; fiberglass scrim reinforced.</td>
<td>Used in conjunction with Paradiene systems requiring extended warranties.</td>
<td>Type IV Asphalt or PA-311 Adhesive</td>
<td>Roll</td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>90</td>
<td>0.114</td>
</tr>
<tr>
<td>Paradiene 20 EGTG</td>
<td>Heavy-duty asphalt elastomer sheet; fiberglass scrim reinforced.</td>
<td>Used in conjunction with Paradiene (TG Series) systems requiring extended warranties.</td>
<td>Torch Roll</td>
<td></td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>98</td>
<td>0.134</td>
</tr>
<tr>
<td>Paradiene 20 HV</td>
<td>Heavy-duty asphalt elastomer sheet; random glass mat reinforced.</td>
<td>Used in conjunction with Paradiene systems requiring extended warranties.</td>
<td>Type IV Asphalt or PA-311 Adhesive</td>
<td>Roll</td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>90</td>
<td>0.114</td>
</tr>
<tr>
<td>Paradiene 20 HVTG</td>
<td>Heavy duty asphalt elastomer sheet; random glass mat reinforced; torching grade asphalt on bottom face.</td>
<td>Used in conjunction with Paradiene (TG Series) systems requiring extended warranties.</td>
<td>Torch Roll</td>
<td></td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>98</td>
<td>0.134</td>
</tr>
<tr>
<td>Paradiene 20 TS</td>
<td>Asphalt elastomer sheet; random fibrous glass mat.</td>
<td>First ply of paradiene TS/Paradiene 30 systems.</td>
<td>Torch Roll</td>
<td></td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>74</td>
<td>0.087</td>
</tr>
<tr>
<td>Paradiene 30</td>
<td>Asphalt elastomer sheet with mineral surfacing; random glass mat reinforced.</td>
<td>Top ply of Paradiene 20/30 composite.</td>
<td>Type IV Asphalt or PA-311 Adhesive</td>
<td>Roll</td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>90</td>
<td>0.094</td>
</tr>
<tr>
<td>Paradiene 30 FR</td>
<td>Fire-rated asphalt elastomer sheet with mineral surfacing; random glass mat reinforced.</td>
<td>Top ply of Paradiene 20/30 FR composite.</td>
<td>Type IV Asphalt or PA-311 Adhesive</td>
<td>Roll</td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>90</td>
<td>0.094</td>
</tr>
<tr>
<td>Paradiene 30 TG</td>
<td>Asphalt elastomer sheet with mineral surfacing; random glass mat reinforced; torching grade asphalt on bottom face.</td>
<td>Top ply of Paradiene 20/30 (TG Series) composite.</td>
<td>Torch Roll</td>
<td></td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>100</td>
<td>0.114</td>
</tr>
<tr>
<td>Paradiene 30 FRTG</td>
<td>Fire-rated asphalt elastomer sheet with mineral surfacing; random glass mat reinforced; torching grade asphalt on bottom face.</td>
<td>Top ply of Paradiene 20/30 FR (TG Series).</td>
<td>Torch Roll</td>
<td></td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>100</td>
<td>0.114</td>
</tr>
<tr>
<td>Paradiene 30 HT</td>
<td>Asphalt elastomer sheet with mineral surfacing; fiberglass scrim reinforced.</td>
<td>Top ply of Paradiene 20/30 composite. For high tensile requirements.</td>
<td>Type IV Asphalt or PA-311 Adhesive</td>
<td>Roll</td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>90</td>
<td>0.094</td>
</tr>
<tr>
<td>Paradiene 30 HTT G</td>
<td>Asphalt elastomer sheet with mineral surfacing; fiberglass scrim reinforced; torching grade asphalt on bottom face.</td>
<td>Top ply of Paradiene (TG Series) composite. For high tensile requirements.</td>
<td>Torch Roll</td>
<td></td>
<td>3.28 × 33.5</td>
<td>100</td>
<td>100</td>
<td>0.114</td>
</tr>
<tr>
<td>PRODUCT</td>
<td>DESCRIPTION</td>
<td>PURPOSE</td>
<td>APPLICATION METHOD</td>
<td>UNIT</td>
<td>SIZE (ft. by ft.)</td>
<td>COVERAGE (sq. ft.)</td>
<td>MIN. WEIGHT (lbs. per sq.)</td>
<td>MIN. THICKNESS (inch)</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------</td>
<td>------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Paradiene 30</td>
<td>Fire-rated asphalt elastomer sheet with mineral surfacing; fiberglass scrim reinforced</td>
<td>Top ply of Paradiene 20/30 FR composite. For high tensile requirements</td>
<td>Type IV asphalt or PA-311 adhesive</td>
<td>Roll</td>
<td>3.28 x 33.5</td>
<td>100</td>
<td>90</td>
<td>0.094</td>
</tr>
<tr>
<td>Paradiene 30</td>
<td>Fire-rated asphalt elastomer sheet with mineral surfacing; fiberglass scrim reinforced; torching grade asphalt on bottom face</td>
<td>Top ply of Paradiene TG Series composite. For high tensile requirements</td>
<td>Torch</td>
<td>Roll</td>
<td>3.28 x 33.5</td>
<td>100</td>
<td>100</td>
<td>0.114</td>
</tr>
<tr>
<td>Paradiene 40</td>
<td>Asphalt elastomer sheet with mineral surfacing; fiberglass scrim reinforced</td>
<td>Top ply of Paradiene 40 system</td>
<td>Type IV asphalt or PA-311 adhesive</td>
<td>Roll</td>
<td>3.28 x 26</td>
<td>75</td>
<td>112</td>
<td>0.126</td>
</tr>
<tr>
<td>Parabase</td>
<td>Asphalt-coated fiberglass base sheet</td>
<td>Mechanically fastened underlayment ply</td>
<td>Mechanically fastened</td>
<td>Roll</td>
<td>3 x 108</td>
<td>300</td>
<td>24</td>
<td>0.040</td>
</tr>
<tr>
<td>Parabase Plus</td>
<td>Modified asphalt-coated fiberglass base sheet</td>
<td>Mechanically fastened underlayment ply</td>
<td>Mechanically fastened</td>
<td>Roll</td>
<td>3.28 x 99.5</td>
<td>300</td>
<td>28</td>
<td>0.040</td>
</tr>
<tr>
<td>Paravent FS</td>
<td>Asphalt-coated fiberglass base sheet with perforations of approximately 1.5 inches in diameter</td>
<td>Apply dry to roof deck prior to application of membrane to provide controlled spot bonding</td>
<td>Dry</td>
<td>Roll</td>
<td>3 x 108</td>
<td>300</td>
<td>24</td>
<td>0.040</td>
</tr>
<tr>
<td>PA-311 and</td>
<td>Blend of adhesive asphalts and solvents</td>
<td>Adhesive for Paradiene or Parafor 50 LT roof systems</td>
<td>Brush, roller, squeegee or spray</td>
<td>Pail or Drum</td>
<td>5 gallon or 55 gallon</td>
<td>Approx. 65 sq. ft. per gallon</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>PA-311C Adhesive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Veral Aluminum</td>
<td>Foil clad, asphalt elastomer sheet; fiberglass scrim/fiberglass mat</td>
<td>Top ply of the Veral/Irex</td>
<td>Torch or Type IV asphalt</td>
<td>Roll</td>
<td>3.28 x 33.5</td>
<td>100</td>
<td>92</td>
<td>0.138</td>
</tr>
<tr>
<td>Veral Copper</td>
<td>Foil clad, asphalt elastomer sheet; fiberglass scrim/fiberglass mat</td>
<td>Top ply</td>
<td>Torch</td>
<td>Roll</td>
<td>3.28 x 25.25</td>
<td>75</td>
<td>109</td>
<td>0.138</td>
</tr>
<tr>
<td>Veral Polar White Spectra</td>
<td>Coated foil, asphalt elastomer sheet; fiberglass scrim/fiberglass mat</td>
<td>Top ply</td>
<td>Torch</td>
<td>Roll</td>
<td>3.28 x 33.5</td>
<td>100</td>
<td>97</td>
<td>0.138</td>
</tr>
<tr>
<td>Veral Stainless Steel</td>
<td>Foil clad, asphalt elastomer sheet; fiberglass scrim/fiberglass mat</td>
<td>Top ply</td>
<td>Torch or Type IV asphalt</td>
<td>Roll</td>
<td>3.28 x 33.5</td>
<td>100</td>
<td>105</td>
<td>0.138</td>
</tr>
<tr>
<td>Irex 30</td>
<td>Asphalt elastomer sheet; random fibrous glass mat</td>
<td>First ply of Veral System</td>
<td>Type IV asphalt or mechanically fastened</td>
<td>Roll</td>
<td>3.28 x 34</td>
<td>100</td>
<td>72</td>
<td>0.091</td>
</tr>
<tr>
<td>Irex 40</td>
<td>Asphalt elastomer sheet; random fibrous glass mat</td>
<td>First ply of Veral System</td>
<td>Type IV asphalt, torch or mechanically fastened</td>
<td>Roll</td>
<td>3.28 x 34</td>
<td>100</td>
<td>85</td>
<td>0.106</td>
</tr>
<tr>
<td>Irex HT</td>
<td>Asphalt elastomer sheet; fiberglass scrim/fiberglass mat</td>
<td>First ply of Veral System</td>
<td>Type IV asphalt, torch or mechanically fastened</td>
<td>Roll</td>
<td>3.28 x 34</td>
<td>100</td>
<td>85</td>
<td>0.106</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb. = 0.45 kg, 1 gallon = 3.785L, 1 ft² = 0.093 m².
### TABLE 2—SIPLAST ROOFING SYSTEMS AND FIRE CLASSIFICATIONS

<table>
<thead>
<tr>
<th>SYSTEM NO.</th>
<th>ROOF CLASS</th>
<th>FINISH MEMBRANE ¹</th>
<th>BASE SHEET ³</th>
<th>INSULATION ²</th>
<th>SUBSTRATE ³</th>
<th>APPLICATION ⁴</th>
<th>MAXIMUM ROOF SLOPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 A</td>
<td></td>
<td>Paradiene 30 FR or 30 HT FR (including TG grades)</td>
<td>Paradiene 20 or 20 HT or 20 EG or 20 HV or 20 TS² (including TG grades)</td>
<td>Polysocyanurate, 1.4-inch minimum thickness</td>
<td>¹⁵/₃₂-inch plywood</td>
<td>Insulation and base sheet adhered. Membrane adhered.</td>
<td>¹⁄₁₂:12</td>
</tr>
<tr>
<td>2 B</td>
<td></td>
<td>Paradiene 30 FR or 30 HT FR (including TG grades)</td>
<td>Paradiene 20 or 20 HT or 20 EG or 20 HV or 20 TS² (including TG grades)</td>
<td>(Optional) Polysocyanurate, 1.4-inch minimum</td>
<td>Noncombustible</td>
<td>Insulation and base sheet mechanically fastened or adhered. Membrane adhered.</td>
<td>²¹⁄₂:12</td>
</tr>
<tr>
<td>3 B</td>
<td></td>
<td>Paradiene 30 FR or 30 HT FR (including TG grades)</td>
<td>Paradiene 20 or 20 HT and Parabase (including TG grades)</td>
<td>None</td>
<td>¹⁵/₃₂-inch plywood</td>
<td>Parabase base sheet and Paradiene 20 or 20 HT plysheet adhered. Membrane adhered.</td>
<td>²¹⁄₂:12</td>
</tr>
<tr>
<td>4 A</td>
<td></td>
<td>Paradiene 40 FR</td>
<td>Parabase or Parabase Plus</td>
<td>Polysocyanurate, 1.4-inch minimum thickness, with joints offset 6 inches from joints in deck</td>
<td>¹⁵/₃₂-inch plywood</td>
<td>Insulation and base sheet adhered. Membrane adhered.</td>
<td>1:12</td>
</tr>
<tr>
<td>5 A</td>
<td></td>
<td>Paradiene 20</td>
<td>Parabase 20 or 20 TG or 20 TS³</td>
<td>Expanded polystyrene or extruded polystyrene, any thickness, with slipsheet and vapor barrier</td>
<td>Noncombustible</td>
<td>Insulation and base sheet mechanically fastened or adhered. Membrane adhered. Crushed stone (¹/₂-1½ inch) or river bottom stone (¹/₄-1½ inch) loose laid at a rate of 600 pounds per 100 square feet.</td>
<td>2:12</td>
</tr>
<tr>
<td>6 A</td>
<td></td>
<td>Veral Aluminum, Copper, White Polar Spectra or Stainless Steel</td>
<td>Irex 30, 40 or HT</td>
<td>Polysocyanurate, 3-inch maximm</td>
<td>Noncombustible</td>
<td>Insulation mechanically fastened. Base sheet and membrane adhered.</td>
<td>Unlimited</td>
</tr>
<tr>
<td>7 B</td>
<td></td>
<td>Veral Aluminum, Copper, White Polar Spectra or Stainless Steel</td>
<td>Irex 30, 40 or HT</td>
<td>Polysocyanurate, 3-inch maximum, ¹/₂-inch minimum</td>
<td>¹⁵/₃₂-inch plywood</td>
<td>Insulation mechanically fastened. Base sheet and membrane adhered.</td>
<td>Unlimited</td>
</tr>
<tr>
<td>8 B</td>
<td></td>
<td>Veral Aluminum, Copper, White Polar Spectra or Stainless Steel</td>
<td>One layer of Irex 20, 40 or HT and one layer of Parabase</td>
<td>None</td>
<td>¹⁵/₃₂-inch plywood</td>
<td>Parabase sheet mechanically attached. Irex base sheet and membrane adhered.</td>
<td>Unlimited</td>
</tr>
<tr>
<td>9 B</td>
<td></td>
<td>Veral Aluminum, Copper, White Polar Spectra or Stainless Steel</td>
<td>Irex 30, 40 or HT</td>
<td>None</td>
<td>¹⁵/₃₂-inch plywood</td>
<td>Base sheet mechanically attached. Membrane adhered.</td>
<td>Unlimited</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm; 1 lb. = 0.45 kg; 1 square foot = 0.0920 m².

¹Product designations including “TG” (torch grade) may be applied by torch in lieu of adhesive for base sheets and membranes only.
²All foam plastic insulation shall be UL-classified foam plastic for roofing systems, and shall be limited to the maximum thickness in accordance with Sections 5.4 and 8.4.4 of this report or the maximum thickness in accordance with this table, whichever is less.
³Noncombustible includes concrete and minimum No. 22 gage steel. Combustible wood decks must be minimum ¹⁵/₃₂-inch-thick (11.9 mm) plywood, ¹/₁₆-inch-thick (11.1 mm) nonveneer, APA-rated oriented strand board or ¹/₄-inch-thick (19 mm) sheathing boards.
⁴Materials may be adhered with Type IV roofing asphalt, Siplast PA-311 or PA-311C cold-applied adhesive. See Section 3.5.
⁵For use on primed concrete decks only.
⁶Polysocyanurate foam plastic insulation board must comply with ASTM C 1289. Extruded polystyrene (XPS) and expanded polystyrene (EPS) foam plastic insulation boards must comply with ASTM C 578.
⁷Foam plastic insulation may be installed over a steel deck without a thermal barrier when installed in accordance with an ICC-ES evaluation report recognizing direct application of a specific foam plastic insulation.
### TABLE 3—SIPLAST ROOF COVERINGS AND WIND UPLIFT PRESSURE VALUES

<table>
<thead>
<tr>
<th>SYSTEM NUMBER</th>
<th>ALLOWABLE WIND UPLIFT PRESSURE (psf)</th>
<th>DECK</th>
<th>INSULATION</th>
<th>INSULATION FASTENING</th>
<th>COVER BOARD</th>
<th>BASE SHEET</th>
<th>TOP MEMBRANE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1W</td>
<td>75</td>
<td>Concrete</td>
<td>3/4-inch-thick Johns Manville “E’NRG’Y 3”</td>
<td>Fully adhered to deck with hot asphalt at 25 lbs/square</td>
<td>Paradiene 20 fully adhered to cover board with Siplast PA-311 adhesive</td>
<td>Paradiene 30 fully adhered with Siplast PA-311 adhesive</td>
<td></td>
</tr>
<tr>
<td>2W</td>
<td>60</td>
<td>Concrete</td>
<td>3/4-inch-thick Johns Manville “E’NRG’Y 3”</td>
<td>Fully adhered to deck with hot asphalt at 25 lbs/square</td>
<td>Paradiene 20 EG fully adhered to cover board with Siplast PA-311 adhesive</td>
<td>Paradiene 30 fully adhered with Siplast PA-311 adhesive</td>
<td></td>
</tr>
<tr>
<td>3W</td>
<td>90</td>
<td>Concrete</td>
<td>3/4-inch-thick Johns Manville “E’NRG’Y 3” or Atlas Roofing “AC Foam II”</td>
<td>Fully adhered to deck with hot asphalt at 25 lbs/square</td>
<td>—</td>
<td>Paradiene 20, 20 FR, 20 HT, 20 HTFR, 20 EG or 20 HV fully adhered to insulation with Siplast PA-311 adhesive</td>
<td>Paradiene 30, 30 FR, 30 HT or 30 HTFR fully adhered with Siplast PA-311 adhesive</td>
</tr>
<tr>
<td>4W</td>
<td>90</td>
<td>Concrete</td>
<td>3/4-inch-thick Johns Manville “E’NRG’Y 3”</td>
<td>Fully adhered to deck with hot asphalt at 25 lbs/square</td>
<td>—</td>
<td>Paradiene 20 fully adhered through loose laid Paravent to insulation with hot asphalt at 25 lbs/square</td>
<td>Paradiene 30 fully adhered with hot asphalt at 25 lbs/square</td>
</tr>
<tr>
<td>5W</td>
<td>120</td>
<td>Concrete</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>Paradiene 20 fully adhered through loose laid Paravent to deck with hot asphalt at 25 lbs/square</td>
<td>Paradiene 30 TG torch adhered</td>
</tr>
<tr>
<td>6W</td>
<td>45</td>
<td>Steel</td>
<td>2-inch-thick Johns Manville “E’NRG’Y 3”</td>
<td>Insul-Fixx, Tru-Fast, Olympic or Dekfast plates and fasteners at 4 ft² per fastener</td>
<td>—</td>
<td>Paradienne 20, 20 FR, 20 HT, 20 HTFR, 20 EG or 20 HV fully adhered to insulation with Siplast PA-311 adhesive</td>
<td>Paradienne 30, 30 FR, 30 HT or 30 HTFR fully adhered with Siplast PA-311 adhesive</td>
</tr>
<tr>
<td>7W</td>
<td>120</td>
<td>Concrete</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>Paradiene 20 TS torch adhered to concrete</td>
<td>Paradiene 30 TG, 30 FR TG, 30 HT TG or 30 HTFR TG torch adhered</td>
</tr>
<tr>
<td>8W</td>
<td>45</td>
<td>Concrete</td>
<td>3/4-inch-thick perlite</td>
<td>Fully adhered to deck with hot asphalt at 25 lbs/square.</td>
<td>—</td>
<td>Irex 30, 40 or HT fully adhered to insulation with hot asphalt at 25 lbs/square</td>
<td>Any of Veral membranes® torch adhered</td>
</tr>
<tr>
<td>9W</td>
<td>45</td>
<td>Concrete</td>
<td>3/4-inch-thick Atlas Roofing “AC Foam II”</td>
<td>Fully adhered to deck with hot asphalt at 25 lbs/square.</td>
<td>—</td>
<td>Irex 30, 40 or HT fully adhered to insulation with hot asphalt at 25 lbs/square</td>
<td>Any of Veral membranes® torch adhered</td>
</tr>
<tr>
<td>10W</td>
<td>45</td>
<td>Concrete</td>
<td>3/4-inch-thick fiberglass</td>
<td>Fully adhered to deck with hot asphalt at 25 lbs/square.</td>
<td>—</td>
<td>Irex 30, 40 or HT fully adhered to insulation with hot asphalt at 25 lbs/square</td>
<td>Any of Veral membranes® torch adhered</td>
</tr>
<tr>
<td>11W</td>
<td>45</td>
<td>Concrete</td>
<td>1-inch-thick wood fiber</td>
<td>Fully adhered to deck with hot asphalt at 25 lbs/square.</td>
<td>—</td>
<td>Irex 30, 40 or HT fully adhered to insulation with hot asphalt at 25 lbs/square</td>
<td>Any of Veral membranes® torch adhered</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm; 1 ft = 0.3 m; 1 psf = 48 Pa; 1 square = 0.29 m².

1Insulation, fasteners, adhesives, base sheets, ply sheets and membranes must be FM-approved.

2All foam plastic insulation must be UL-classified foamed plastic for roofing systems, and must be limited to the maximum thickness in accordance with Sections 5.4 and 8.4.4 of this report or the maximum thickness in accordance with this table, whichever is less.

3Steel deck must be minimum No. 22 gage galvanized steel [base-metal thickness 0.030 inch (0.76 mm)]. Concrete must have a minimum compressive strength (fc) of 2500 psi. [minimum of 24 MPa is required under ADIBC Appendix L, Section 5.1.1]. See Sections 5.8 and 8.4.6 of this report.

4Para diene 20/30 two-ply roof cover systems may be substituted for the Irex/Veral systems used in System Nos. 7W through 10W. Each ply must be fully adhered with hot asphalt at the rate of 25 lbs/square.

5Perlite board must comply with ASTM C 728. Wood fiberboard must comply with ASTM C 208. Polyisocyanurate foam plastic insulation board must comply with ASTM C 1289.