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NEMO EVALUATION REPORT (NER)

SOPREMA, Inc.
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SUBJECT:	**SOPRASEAL® Water-Resistive Barriers and Air Barriers**
SCOPE:	This NEMO Evaluation Report (henceforth 'NER') is issued under ISO/IEC 17065 via NEMO|cert. NEMO Evaluations has evaluated the product described herein for compliance with the Code sections noted herein.
CODE:	2021 International Building Code (IBC) 2021 International Residential Code (IRC)
NEMO CATEGORY:	Barrier
CSI DIVISION:	07 00 00 Thermal and Moisture Protection 07 25 00 Water-Resistive Barriers / Weather Barriers 07 27 00 Air Barrier
EVALUATED PROPERTIES:	Physical properties Water resistance Air leakage Heat-release, heat-of-combustion characteristics Surface-burning characteristics
COMPLIANCE STATEMENT:	**SOPRASEAL® Water-Resistive Barriers and Air Barriers**, as produced by **SOPREMA, Inc.**, have demonstrated compliance with the Code sections noted herein through testing in accordance with the referenced Standards, rational analysis and an ongoing quality assurance program. Compliance is subject to the Installation Requirements and Limitations of Use set forth herein.
QUALITY ASSURANCE:	Evidence of current quality assurance shall be listing and labeling in accordance with the requirements of NEMO|cert.
CONTINUED COMPLIANCE:	The NEMO Evaluation Report (henceforth 'NER') is valid until such time the named product(s) change, the referenced Quality Assurance changes, or the evaluated Code provisions change. NEMO Evaluations requires, at minimum, a complete review of this NER with each 3-year Code Cycle.
BUILDING PERMIT REQUIREMENTS:	As required by the Building Official or Authority Having Jurisdiction to evaluate the installation of this product.
ADVERTISEMENT:	"NEMO Evaluated" may be displayed in advertising literature. If any portion of the NER is displayed, it shall be displayed in its entirety.
CERTIFICATION OF INDEPENDENCE:	✓ NEMO CERT, LLC has not, nor does it intend to acquire or will they acquire, a financial interest in any company manufacturing or distributing products it evaluates. ✓ NEMO CERT, LLC is not owned, operated, or controlled by any company manufacturing or distributing products it evaluates. ✓ This is a building code evaluation. NEMO CERT, LLC is not, in any way, the Designer of Record for any project on which this NER, or previous versions thereof, is/was used for permitting or design guidance

1. CODES, PROPERTIES AND STANDARDS:

CODE	SECTION	PROPERTY	STANDARD
2021 International Building Code (IBC) 2021 International Residential Code (IRC)	104.11, R104.11, 1403.2(4), R703.2(4)	Provision for alternative materials; Water-resistive barrier	ICC-ES AC38, AC212
	1402.5	Combustibility	NFPA 285
	1402.5(2)	Heat and visible smoke release rates	ASTM E1354
	1402.5(2)	Surface burning characteristics	ASTM E84
2021 International Energy Conservation Code (IECC)	C402.5.1.3	Air leakage	ASTM E2178

2. PRODUCTS:

TABLE 1A: EVALUATED SOPREMA COMPONENTS
(NEMO Certified. Consult Directory of Certified Products for production location(s))

TYPE	PRODUCT	EVALUATION STANDARD	DESCRIPTION	USE
BARRIER, LIQUID-APPLIED:	SOPRASEAL® LM 204 VP	ICC-ES AC212 (June 2024)	Liquid applied STPE polymer water- and air-barrier membrane	The liquid-applied membrane serves as an alternative to the water-resistive barrier specified in IBC 1402.5, 1403.2(4), 2510.6.1(2) and 2510.6.2(1) and IRC R703.2(4), R703.7.3.1(2) and R703.7.3.2(1).
BARRIER, SHEET-APPLIED:	SOPRASEAL® Stick VP-UV	ICC-ES AC38 (July 2021)	Sheet-applied membrane comprised of tri-laminate composite, vapor-permeable facer and bottom side surfaced with a pressure-sensitive adhesive (PSA) and release film	The sheet-applied membrane serves as an alternative to the water-resistive barrier specified in IBC 1402.5 (Exceptions 1 and 2), 1403.2(4), 2510.6.1(2) and 2510.6.2(1) and IRC R703.2(4), R703.7.3.1(2) and R703.7.3.2(1).
JOINT-TREATMENT / FLASHING:	SOPRASEAL® Liquid Flashing	ICC-ES AC212 (June 2024)	Elastomeric joint sealant and flashing	Accessory product for use in conjunction with SOPRASEAL® LM 204 VP and SOPRASEAL® Stick VP-UV.
SEALANT:	SOPRASEAL® Sealant	ASTM C920 (partial)	Low VOC, solvent-free polyether sealant	Accessory product for use in conjunction with SOPRASEAL® LM 204 VP and SOPRASEAL® Stick VP-UV.

TABLE 1B: TYPICAL NOMINAL PROPERTIES
SOPRASEAL® LM 204 VP

PROPERTY		STANDARD	RESULTS	
Tensile bond	to CMU block	ASTM C297	83	psi
	to OSB		42	psi
	to plywood		77	psi
	to glass-faced gypsum board		26 to 38	psi
Water resistance *(joint treated with SOPRASEAL Liquid Flashing)*		ASTM D2247	Pass	No deleterious effects
Water Vapor *(@ 20-mil)*	Transmission (WVTR)	ASTM E96, Procedure B (water)	169	g/m²-24 hrs.
	Permeance (WVP)		26	perms
Water Vapor *(@ 36-mil)*	Transmission (WVTR)		113	g/m²-24 hrs.
	Permeance (WVP)		17	perms
Hydrostatic Head after Weathering Test	Weathered (per AC212, 4.8)	AC212, Section 4.8 / AATCC TM 127	Pass	No leakage on underside of specimens at 55-cm hydrostatic head for 5-hours
Surface burning characteristics *(@ 20-mils)*	Flame-spread index	ASTM E84	25	Class A
	Smoke developed index		0	Class A
Air leakage rate	@ 20-mil	ASTM E2178	0.002	L/(s·m²) @75 Pa
	@ 36-mils		0.000	L/(s·m²) @75 Pa

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TABLE 1C: TYPICAL NOMINAL PROPERTIES SOPRASEAL® STICK VP-UV				
PROPERTY		STANDARD	RESULTS	
Thickness		TAPPIT 441	16	mils
Dry breaking force	MD	ASTM D5034	125	lbf
	XMD		98	lbf
Water resistance	Control	AATCC TM 127	Pass	No leakage on underside of specimens at 55-cm hydrostatic head for 5-hours
	Weathered (per AC38, 4.1)		Pass	
Water Vapor	Transmission	ASTM E96, Procedure A (desiccant)	77	grams/m² per 24 hrs.
	Permeance		11	perms
Water Vapor	Transmission	ASTM E96, Procedure B (water)	101	grams/m² per 24 hrs.
	Permeance		15	perms
Surface burning characteristics	Flame-spread index	ASTM E84	0	Class A
	Smoke developed index		50	Class A
Fire response characteristics	Heat release	ASTM E1354	133	kW/m²
	Total heat released		7	MJ/m²
	Effective heat of combustion		7	MJ/kg
Air leakage rate	*As air barrier material*	ASTM E2178	0.00	L/(s·m²) @75 Pa
90° Peel adhesion *(control condition)*	to anodized aluminum	ASTM E3330, Method F	7.9	lbf/in.
	to glass-faced gypsum-board		5.1	
	to OSB		1.9	
	to plywood		6.6	
	to vinyl		2.7	
	to itself		7.2	

3. INSTALLATION:

3.1 General:

3.1.1 **SOPRASEAL® Water-Resistive Barriers and Air Barriers** shall be installed in accordance with **SOPREMA, Inc.** published installation instructions, subject to the Limitations of Use noted herein. Published installation instructions and a copy of this NER shall be available onsite at all times during installation.

3.1.2 Surface Preparation:

The substrate bonding surface shall be clean, dry, free of voids, oils, wax, dust or other bond-breaking substances. Consult **SOPREMA** for appropriate surface treatment options when deemed appropriate by the installer or Authority Having Jurisdiction.

Cracks, corners, joints, fasteners, vertical-to-horizontal junctures and penetrations of the walls to which **SOPRASEAL® Water-Resistive Barriers and Air Barriers** is applied shall be made watertight in accordance with the applicable code, to the satisfaction of **SOPREMA** and the Authority Having Jurisdiction, prior to installation.

3.1.3 Sequencing:

SOPRASEAL® Water-Resistive Barriers and Air Barriers is installed after wall sheathing is installed and before windows and doors are installed. The water-resistive barrier shall be covered with an exterior wall covering in accordance with the applicable Code to the satisfaction of the Authority Having Jurisdiction.

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3.2 SOPRASEAL® LM 204 VP:

3.2.1 **SOPRASEAL® LM 204 VP** shall be installed in compliance with requirements for an approved water-resistive barrier material in IBC 1402.5, 1403.2(4), 2510.6.1(2) and 2510.6.2(1) and IRC R703.2(4), R703.7.3.1(2) and R703.7.3.2(1) for the type of exterior wall covering to be installed, subject to the Limitations of Use herein and the manufacturer's published installation instructions.

3.2.2 Flashings and Sealants:

For flashing joints, penetrations and transitions and pre-treating fastener-heads, voids and wall-board joints, edges and corners, pre-apply **SOPRASEAL® Liquid Flashing** using a sausage-pack sealant gun. Use a flat blade putty knife / scraper and spread uniformly to the thickness required for each respective **SOPREMA** detail before applying **SOPRASEAL® LM 204 VP**.

For joints, edges and details, pre-apply **SOPRASEAL® Sealant** using a 10 oz. sealant gun.

Allow minimum 30-minutes for flashings and sealants to fully skin-over before applying **SOPRASEAL® LM 204 VP**.

3.2.3 Wall Substrate Application:

Use a wet-mil thickness gauge during application of **SOPRASEAL® LM 204 VP** to ensure consistent application thickness.

Apply **SOPRASEAL® LM 204 VP** using a ½ nap roller, paint brush or spray equipment to the desired wet-mil thickness; minimum 20-wet mils. Maximum thickness per lift is 40-wet mils. When desired thickness exceeds 40-wet mils, apply in two (2) equal lifts, allowing sufficient cure-time between applications, but not more than 72 hours between lifts.

3.3 SOPRASEAL® Stick VP-UV:

3.3.1 **SOPRASEAL® Stick VP-UV** shall be installed in compliance with requirements for an approved water-resistive barrier material in IBC 1402.5 (Exceptions 1 and 2), 1403.2(4), 2510.6.1(2) and 2510.6.2(1) and IRC R703.2(4), R703.7.3.1(2) and R703.7.3.2(1) for the type of exterior wall covering to be installed, subject to the Limitations of Use herein and the manufacturer's published installation instructions.

3.3.2 Wall Substrate Application:

Starting at the low point of the wall area, position the sheet in place on the prepared wall substrate, ensuring sheets are aligned with adjacent sheets to provide min. 2-inch side-laps and min. 3-inch end-laps.

Partially remove the release film from the back side and adhere the leading edge in place. Slowly remove the release film while applying pressure to the surface of the sheet, preventing air pockets from forming beneath the sheet.

Once the sheet is in place, use a hard-roller to roll-in the entire sheet and remove all residual air bubbles and wrinkles.

3.3.3 Flashings and Sealants:

Post-apply **SOPRASEAL® Liquid Flashing** using a sausage-pack sealant gun at all **SOPRASEAL® Stick VP-UV** sheet terminations within 24-hours, and before exposure to inclement weather.

Leave min. 1-inch of wall substrate exposed where the **SOPRASEAL® Stick VP-UV** terminates. Apply **SOPRASEAL® Liquid Flashing** in a zig-zag pattern spanning the sheet-edge and the adjacent exposed wall substrate, and use a flat blade putty knife / scraper to spread uniformly to the thickness required for each respective **SOPREMA** detail; minimum 20-wet mils. Ensure **SOPRASEAL® Liquid Flashing** overlaps min. 3-inches onto the **SOPRASEAL® Stick VP-UV** surface.

Apply **SOPRASEAL® Sealant** using a 10 oz. sealant gun to seal edges of **SOPRASEAL® Stick VP-UV** at all reverse / back-water laps and any non-vertical transition surfaces.

4. LIMITATIONS OF USE:

4.1 Evaluation Scope:

4.1.1 This is a building code evaluation. NEMO CERT, LLC is not, in any way, the Designer of Record for any project on which this NER, or previous versions thereof, is/was used for permitting or design guidance. NERs are not to be construed as representing any attributes not specifically listed, nor are NERs to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by NEMO CERT, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

4.1.2 In the event of conflict between this NER and the manufacturer's published instructions, this report governs.

4.1.3 The NER scope is limited to the water-resistive barrier material.

4.1.4 Quality Assurance: All components in the wall assembly shall have quality assurance surveillance to the satisfaction of the Authority Having Jurisdiction. For Florida Product Approval, this shall be in accordance with **F.A.C. Rule 61G20-3**. For components listed herein that are produced by a manufacturer other than the report holder on Page 1 of this NER, refer to the supporting evidence held by the component manufacturer.

4.2 SOPRASEAL® LM 204 VP:

4.2.1 **SOPRASEAL® LM 204 VP** serves as an alternative to the water-resistive barriers specified in IBC 1402.5, 1403.2(4), 2510.6.1(2) and 2510.6.2(1) and IRC R703.2(4), R703.7.3.1(2) and R703.7.3.2(1).

4.2.2 Application Temperature:

Environmental conditions such as sun, cloud cover, wind, humidity, and shade impact the application and cure time. Monitor project conditions and adjust application methods as necessary to accommodate changing weather conditions.

SOPRASEAL® LM 204 VP is to be applied only when ambient air and surface temperatures are above 25°F. Maintain materials at or above 70°F during cold-weather applications.

SOPRASEAL® LM 204 VP cures faster and skins-over quickly when materials and substrates are exposed to high temperatures and humidity. Store materials in cool, shaded areas away from direct sunlight during hot/humid weather applications.

4.2.3 Allowable Substrates:

TABLE 2: ALLOWABLE SUBSTRATES
SOPRASEAL LM 204 VP

BARRIER		SUBSTRATE	
PRODUCT	APPLICATION	TYPE	MATERIAL
SOPRASEAL® LM 204 VP and/or SOPRASEAL Liquid Flashing	Liquid-applied	Wall / sheathing	• CMU block • fiberglass-faced gypsum sheathing meeting ASTM C1177, • Oriented strand board (OSB) meeting U.S. DOC PS-2 or • Plywood, Exposure 1 exterior grade meeting U.S. DOC PS-1

4.2.4 Combustibility / Height Limitations (IBC 1402.5):

When used in buildings of Types I, II, III or IV construction, the maximum height above grade-plane shall be 40 feet, unless:

- the water-resistive barrier is the only combustible component in the wall assembly and the exterior wall has a wall covering of brick, concrete, stone, terra cotta, stucco or steel, as permitted **IBC 1402.5, Exception 1**,
- when using one of the assemblies set forth in Table 3A of this report,

  or
- when using one of the assemblies set forth in the 3rd party evaluation reports referenced in Table 3B of this report.

TABLE 3A: ASSEMBLIES FOR USE IN TYPE I TO IV CONSTRUCTION USING SOPRASEAL LM 204 VP WITH EVIDENCE OF COMPLIANCE WITH NFPA 285[1]	
COMPONENT	**OPTIONS**
Interior Sheathing:	1. Min. 5/8-inch thick ASTM C1396 Type X gypsum board
Structural Framing: *Interior and/or exterior sheathing not required for options 1 or 2.*	1. Concrete wall
	2. CMU block
	3. Min. 20 ga. x 3 5/8-inch deep steel studs max. 24-inch o.c. with lateral bracing 4-ft o.c. vertically
Floor-Line Firestopping:	1. Min. 4 pcf mineral wool in each stud cavity at each floor line installed with Z-clips or equivalent
Cavity Insulation:	1. None
	2. Fiberglass batt or mineral wool insulation (faced or unfaced), ASTM E84 Class A
	3. Any non-combustible insulation (faced or unfaced) per ASTM E136
Exterior Sheathing:	1. None (only over Structural Framing 1 or 2)
	2. Min. ½-inch thick, exterior grade gypsum sheathing (for use with Exterior Insulation 3 or 4)
	3. Min. 5/8-inch thick, exterior grade gypsum sheathing (for use with Exterior Insulation 1 or 2)
Water-Resistive Barrier (WRB):	1. **SOPRASEAL® LM 204 VP**
Exterior Insulation:	**For Exterior Claddings 1 through 5**
	1. Min. 1-inch to max. 4 ¾-inch thick Kingspan Kooltherm® K5, K8, K10, K12, K15 or K20
	2. Min. 1-inch, min. 4 pcf density unfaced mineral wool, non-combustible per ASTM E136.
	For Exterior Claddings 1 through 10
	3. Min. 1-inch to max. 3-inch thick Kingspan Kooltherm® K5, K8, K10, K12, K15 or K20
	4. Min. 1-inch, min. 4 pcf density unfaced mineral wool, non-combustible per ASTM E136.
Sealing Material for Exterior Insulation:	1. (Optional) SOPRESEAL® Liquid Flashing or SOPRASEAL® Sealant to seal insulation joints and/or veneer tie penetrations.
Exterior Cladding:	1. Brick: nominal 4-inch thick clay brick with max. 2-inch air gap behind brick, installed with brick veneer ties/anchors, max. 24-inch o.c.
	2. Concrete: Min. 2-inch thick with max. 2-inch air gap behind concrete.
	3. CMU Block: Min. 4-inch thick with max. 2-inch air gap behind CMU blocks.
	4. Stone Veneer: Min. 2-inch thick limestone or natural stone veneer or min. 1 ½-inch thick simulated stone veneer meeting ASTM C1670.
	5. Stucco: Min. ¾-inch thick 2- or 3-coat stucco over metal lath. Note: A secondary mechanically attached WRB meeting IBC 1403.2 may be installed between the insulation and lath.
	6. Metal Composite Material: Any MCM system having evidence of NFPA 285 compliance when tested with a comparable thickness of foam-plastic insulation.
	7. Uninsulated Sheet Metal Cladding: Min. 0.080-inch aluminum, min. 0.0216-inch copper or min. 0.0149-inch steel panels.
	8. Fiber Cement: Min. ¼-inch thick fiber cement panels meeting ASTM C1186 Type A with max. 1 ½-inch air gap behind the fiber cement panels.
	9. Terracotta Cladding: Min. 1 ¼-inch thick
	10. Thin Brick: Min. ¾-inch thick clay brick fully-adhered with cementitious mortar (standard or polymer-modified) to min. ½-inch thick ASTM C1325 Type A cement backer board or ASTM C1177 gypsum-sheathing.

[1] *Based on professional thermal engineering analysis by Priest and Associates; Report 10773.R3 dated 09/16/2021.*

TABLE 3B: REFERENCE ASSEMBLIES FOR USE IN TYPE I TO IV CONSTRUCTION USING SOPRASEAL LM 204 VP WITH EVIDENCE OF COMPLIANCE WITH NFPA 285[2]			
REFERENCE NO.	EXTERIOR INSULATION		EVALUATION REPORT
	BY	PRODUCTS	
REF-1.	Atlas Roofing Corporation	EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro or EnergyShield XR	1306-03
REF-2.	Hunter Panels, LLC	Xci CG Class A, Xci Ply Class A, Xci Foil Class A, Xci Foil Class A Plus or Xci 286	1402-01
REF-3a.	Rmax	ECOMAXci FR or ECOMAXci FR WHITE, Thermasheath or TSX-8500, TSX-8510	1309-03
REF-3b.		ECOMAXci Ply	1504-04
REF-3c.		ECOMAXci FR Ply	1811-02

4.2.5 Exterior Plaster Applications (IBC 2510.6.2 and IRC R703.7.3):

When used over wood based sheathing in exterior plaster applications, the water-resistive barrier shall be separated from the stucco by:

For Dry-Climate Zones: a non-water-absorbing layer or a drainage space in accordance with IBC 2510.6.1(2) or IRC R703.7.3.1(2)

For Moist- or Marine-Climate Zones: a drainage space or drainage material in accordance with IBC 2510.6.2(1) or IRC R703.7.3.2(1)

4.2.6 Air Barrier Material (C402.5.1.3):

SOPRASEAL® LM 204 VP has an air leakage rate not exceeding 0.02 L/s/m^2 at 75 Pa (0.004 cfm/ft^2 at 1.57 psf), and has qualified as an air barrier material in accordance with IECC C402.5.1.3.

4.2.7 Maximum Exposure:

SOPREMA limits the exposure of **SOPRASEAL® LM 204 VP** to max. 180-days after installation.

4.3 SOPRASEAL® Stick VP-UV:

4.3.1 **SOPRASEAL® Stick VP-UV** serves as an alternative to the water-resistive barriers specified in IBC 1402.5 (Exceptions 1 and 2), 1403.2(4), 2510.6.1(2) and 2510.6.2(1) and IRC R703.2(4), R703.7.3.1(2) and R703.7.3.2(1).

4.3.2 Application Temperature:

The membrane is to be applied only when ambient air and surface temperatures are above 19°F and below 104°F.

SOPRASEAL® Stick VP-UV has qualified "Level 3" (176°F) through the elevated temperature exposure tests set forth in Section 6 of AAMA 711.

4.3.3 Allowable Substrates:

TABLE 4: ALLOWABLE SUBSTRATES SOPRASEAL STICK VP-UV			
BARRIER		SUBSTRATE	
PRODUCT	APPLICATION	TYPE	MATERIAL
SOPRASEAL® Stick VP-UV	self-adhered	Barrier	SOPRASEAL® Stick VP-UV
		Wall / sheathing	• fiberglass-faced gypsum sheathing meeting ASTM C1177, • Oriented strand board (OSB) meeting U.S. DOC PS-2 or • Plywood, Exposure 1 exterior grade meeting U.S. DOC PS-1
		Windows / flashings	• aluminum (anodized) or • Rigid vinyl

[2] *Based on Certification by DrJ Engineering, LLC; ANAB Certificate of Accreditation #1131.*

4.3.4 Combustibility / Height Limitations (IBC 1402.5):

When used in buildings of Types I, II, III, or IV construction, the maximum height above grade-plane shall be 40 feet, unless the water-resistive barrier is the only combustible component in the wall assembly, as permitted **IBC 1402.5, Exceptions 1 and 2**.

4.3.5 Exterior Plaster Applications (IBC 2510.6.2 and IRC R703.7.3):

When used over wood based sheathing in exterior plaster applications, the water-resistive barrier shall be separated from the stucco by:

For Dry-Climate Zones: a non-water-absorbing layer or a drainage space in accordance with IBC 2510.6.1(2) or IRC R703.7.3.1(2)

For Moist- or Marine-Climate Zones: a drainage space or drainage material in accordance with IBC 2510.6.2(1) or IRC R703.7.3.2(1)

4.3.6 Air Barrier Material (C402.5.1.3):

SOPRASEAL® Stick VP-UV has an air leakage rate not exceeding 0.02 L/s/m^2 at 75 Pa (0.004 cfm/ft^2 at 1.57 psf), and has qualified as an air barrier material in accordance with IECC C402.5.1.3.

4.3.7 Maximum Exposure:

SOPREMA limits the exposure of **SOPRASEAL® Stick VP-UV** to max. 180-days after installation.

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