



TECHNICAL GUIDE

STRUCTURAL PERFORMANCE AND FIRE RESISTANCE IN THE SAME PANEL



LP® FLAMEBLOCK® FIRE-RATED OSB SHEATHING: BUILD ON OUR STRENGTH, COUNT ON OUR FIRE RESISTANCE

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LP® FLAMEBLOCK® FIRE-RATED OSB SHEATHING FEATURES A PROPRIETARY NON-COMBUSTIBLE, FIBERGLASS-REINFORCED PYROTITE® TREATMENT.

LOOK BENEATH THE IGNITION-RESISTANT PYROTITE TREATMENT AND YOU'LL FIND THE STRENGTH AND CONSISTENCY OF LP® OSB.

PRODUCT DESCRIPTION

LP® FlameBlock® Fire-Rated OSB Sheathing is a code-compliant oriented strand board (OSB) panel with a fire-resistant Pyrotite® treatment covering one or both sides. The Pyrotite treatment consists of a layer of fiberglass-reinforced magnesium oxide cement tightly bonded to the OSB surface. In addition to providing burnthrough resistance and a Class A Flame Spread rating, this layer reinforces the OSB substrate, resulting in full standard load/span ratings and shear design values for each thickness category. LP FlameBlock panels install with standard tools, methods and fasteners, and are highly resistant to cracking or damage from impact.





SIZE/LENGTH

LP FlameBlock sheathing is available in standard thickness and performance categories, including Struct-1 performance grade, and in nominal dimensions of 4' x 8', 4' x 9', and 4' x 10'.

COMMON APPLICATIONS

- Roof decks, for vertical continuity of firewalls
- Exterior walls located near property lines
- Load-bearing party walls
- Exterior walls in Type III buildings
- Exterior walls and eaves in wildfire zones

CODE COMPLIANCE AND FIRE PERFORMANCE

- ICC certified (ESR-1365, <u>Click here for online listing</u>) for a range of roof deck and wall applications in various building categories
- Class A Flame Spread Rating (ASTM E84, UL723, <u>Click here</u> for online listing)
- Meets requirements for 15-minute thermal barriers

• CALFIRE/OSFM code-approved (CBC Chapter 7A) for use in exterior walls, eaves and soffits in California WUI Zones

- Relevant Listings/Assemblies:
 - Roof Decking to Satisfy Vertical Continuity Requirements
 for Fire Walls
 - Bearing And Non-Bearing Exterior Walls For Type III Construction
 - UL Listing BXUV.U349
 - UL Listing BXUV.W408
 - UL Listing BXUVC.W324
 - Load-Bearing Common Walls
 - UL Listing BXUV.U350
 - UL Listing BXUVC.W325
 - Load-Bearing 1-Hour Fire-Rated Exterior Walls For Type V Construction
 - Intertek Listing LPB/WA-60-01
 - UL Listing BXUV.U348
 - UL Listing BXUVC.W323













WEATHER RESISTANCE

With LP FlameBlock sheathing's water-resistant adhesives and durable Pyrotite treatment, each panel carries an Exposure 1 classification, so it can withstand exposure to moisture during normal construction delays. As with similarly classified panels, installation of building wrap is required for weather protection during construction.

STABILITY

LP FlameBlock sheathing won't cup, warp, split or delaminate. You can count on consistent quality, without core voids and knots. Each panel is uniform, strong, dense, and easy to work with. LP FlameBlock sheathing is designed to be installed with standard tools (carbide saw blades recommended) and fasteners, using the same procedures and safety precautions applicable to LP OSB. See installation instructions on page 14 for details.

WARRANTY

20-Year Transferable Limited Warranty. For full warranty information, please visit LPCorp.com.

DISPOSAL AND WASTE

The use of LP FlameBlock sheathing in fire-rated bearing walls reduces overall material usage and waste when compared to gypsum-plussheathing applications. Panels contain no harmful chemicals.



STRUCTURAL PERFORMANCE

The fiberglass reinforcement within the Pyrotite treatment of LP FlameBlock sheathing increases the shear capacity, bending performance, and impact resistance of the underlying OSB substrate. Structural design properties are identical to those of standard, PS2-certified wood structural panels in the same thickness category, with no deductions as a result of the treatment. (See Figure 1 and Figure 2.) Structural performance and compliance with other PS2 standards are certified by P.E.I., an independent ISO-certified testing laboratory.

FIGURE 1. RECOMMENDED UNIFORM ROOF LIVE LOADS FOR LP FLAMEBLOCK FIRE-RATED SHEATHING^(C) AND RATED SUBFLOOR WITH STRENGTH AXIS PERPENDICULAR TO SUPPORTS^(C)

Panel Span	Performance	Maximum Span (in.)		Allowable Live Loads (psf) ^(b)										
Rating	Rating Category** With Edge Support (a) Without Edge Support					Spacing of Supports Center-to-Center (in.)								
Rated Sheathing ^(c)			12	16	20	24	32	40	48	60				
24/16	7/16	24	24	190	100	65	40							
32/16	15/32, 1/2	32	28	325	180	120	94	30						
40/20	19/32, 5/8	40	32	-	305	205	151	60	30					
48/24	23/32, 3/4	48	36	-	-	280	175	95	45	35				
60/32	7/8	60	40	-	-	-	305	165	100	70	32			
60/48	1-1/8	60	48	-	-	-	305	165	100	70	35			
Rated Subfloor ^(c)			12	16	20	24	32	40	48	60				
16 oc	19/32, 5/8	24	24	185	100	65	40							
20 oc	19/32, 5/8	32	32	270	150	100	60	30						
24 oc	23/32, 3/4	48	36	-	240	160	100	50	30	25				
32 oc	7/8	48	40	-	-	295	185	100	60	40				
48 oc	1-3/32, 1-1/8	60	48	-	-	-	290	160	100	65	40			

(a) Tongue and groove edges, panel edge clips (one midway* between each support, except two equally spaced between supports 48 in. on center or greater), lumber blocking, or other.
(b) 10 psf dead load assumed (c) Applies to panels 24 in. or wider applied over two or more spans. *No established tolerance.

**Performance Category replaces the fractional nominal thickness used in PS2 and is consistent with the panel thickness used in the U.S. model building codes.

FIGURE 2. ALLOWABLE SHEAR (POUNDS PER FOOT) FOR PANEL SHEAR WALLS WITH FRAMING OF DOUGLAS-FIR, LARCH, OR SOUTHERN PINE^(a) OR WIND OR SEISMIC LOADING^(b,f,g,h,j) (See also 2006 IBC Table 2306.4.1)

			Panels Applied Direct to Framing					Panels Applied Over 1/2" or 5/8" Gypsum Sheathing					
Panel Grade	Performance Category**	Minimum Nail Penetration in Framing (in.)	Nail Size (Common or Galvanized Box)	Nail Spacing at Panel Edge (in.)				Nail Size (Common or	Nail Spacing at Panel Edges (in.)				
				6	4	3	2 ^(e)	Box)	6	4	3	2 ^{(e)(d)}	
Structural 1 Grades	7/16	1-3/8	8d	255	395	505	670 ^(c)	10d	280	430	550 ^(e)	730	
	15/32			280	430	550	730						
	15/32	1-1/2	10d	340	510	665 ^(e)	870		-	-	-	-	
Rated Sheathing	7/16	1 2/0	8d	240	350	450	585 ^(c)	10d	260	380	490 ^(e)	640	
	15/32	1-5/6		260	380	490	640						
	15/32	1 1/2	104	310	460	600 ^(e)	770		-	-	-	-	
	5/8	1-1/2	iud	340	510	665 ^(e)	870		-	-	-	-	

ROOF DECKING TO SATISFY VERTICAL CONTINUITY REQUIREMENTS FOR FIRE WALLS

REFERENCE DOCUMENTS: 2009 AND 2012 IBC SECTION 706.6 AND ESR 1365, SECTION 4.2A

Examples: Roof decks over interior or exterior fire walls in single family, multifamily and townhomes.

Framing: As required by the pertinent fire wall and roof assemblies and in accordance with local building code.

Exterior: Minimum 7/16 category LP FlameBlock with Pyrotite treatment facing the interior, fastened to supports with minimum 1¹/₆" 6d nails, spaced 6" o.c. on the perimeter and 12' o.c. in the field, for a distance of 4 feet on both sides of the wall. Minimum Class B roof covering installed per design.

Interior: Per building design

Fire wall with the adjacent trusses and code-compliant roof deck



REFERENCE DESIGN: INTERTEK LPB/WPPS 60-01 BTC/WA 60-01

<u>Click here for online listing.</u> Fire Rating: 1 hour from both sides

BEARING WALL - MAXIMUM LOADING OF 2,145 LBS. PER STUD

Examples: Single and multifamily buildings close to lot lines.

Framing: Nominal 2" x 6" framing, spaced 16" o.c., with two top plates and one bottom plate. Mineral wool insulation, nominal 2.5 pcf and 5½" thick, pressure fit in the cavities between studs. Mineral wool insulation is required for 1-hour fire rating from exterior side.

Exterior: Minimum 7/16 category LP FlameBlock with Pyrotite treatment facing the exterior, fastened to studs with minimum 1%" 6d nails, spaced 6" o.c. on perimeter and 12" in the field. Horizontal joints are to be staggered with those of interior GWB. Code-compliant building wrap installed per manufacturer's instructions. Wood, wood composite, fiber cement, stucco or steel exterior facing options per Intertek listing, installed per manufacturers instructions.

Interior: Any classified 5/8" Type X GWB, applied vertically and nailed to studs with minimum 1%" drywall nails or code-compliant screws, spaced 8" o.c. Wallboard joints must be covered with tape and joint compound, and fastener heads covered with joint compound.



REFERENCE DESIGN: BXUV.U348/BXUVC.W323

<u>Click here for online listing.</u> Fire Rating: 1 hour from interior side only Finish Rating: 23 minutes

BEARING WALL

Examples: Multifamily/senior living and commercial Type V property where a fire rating from the exterior is not required.

Framing: Nominal 2" x 4" framing, spaced 16" o.c. or 2" x 6" framing, spaced 24" o.c., with two top plates and one bottom plate. Faced or unfaced mineral fiber insulation, nominal 3.0 pcf, or fiberglass insulation, nominal 0.9 pcf, pressure fit in the cavities between wall framing.

Exterior: Minimum 7/16 category LP FlameBlock with Pyrotite treatment facing wall cavity, fastened to studs with minimum 1%" 6d nails, spaced 6" o.c. on perimeter and 12" in the field. Code-compliant building wrap installed per manufacturer's instructions. Wide range of exterior facings accepted, installed per manufacturer's instructions.

Interior: Any classified 5/8" Type X GWB, applied vertically and nailed to studs with minimum 1%" drywall nails or code-compliant screws, spaced 7" o.c. Wallboard joints covered with tape and joint compound. Fastener heads covered with joint compound.



REFERENCE DESIGN: BXUV.U349/BXUVC.W324

<u>Click here for online listing.</u> Fire Rating: 2 hours from interior side only Finish Rating: 55 minutes

BEARING WALL

Examples: Type III buildings (5 & 6 stories) mixed use/multifamily residential buildings with adequate fire separation distance.

Framing: Nominal 2" x 4" framing, spaced 16" o.c. or 2" x 6" framing, spaced 24" o.c., with two top plates and one bottom plate, OR minimum No. 20 MSG corrosion-protected steel studs, minimum 3½" deep. Maximum spacing 16" o.c., attached to floor and ceiling tracks with minimum 1/2" Type S-12 steel screws or bolted or welded per AISI specifications. Faced or unfaced glass fiber insulation, nominal 0.25 pcf and 3½" thick, or mineral wool insulation, 3.0 pcf and 3½" thick, pressure fit in the cavities between studs.

Exterior: Minimum 7/16 category LP FlameBlock with Pyrotite treatment on both sides, fastened to studs with minimum 1%" 6d nails (screws when steel studs are used), spaced 6" o.c. on perimeter and 12" in the field. Code-compliant building wrap installed per manufacturer's instructions. Wide range of exterior facings accepted, installed per manufacturer's instructions.

Interior: Two layers of any classified 58" Type X GWB, applied vertically with joints staggered. Base layer nailed to studs with minimum 1%" drywall nails or code-compliant screws, 7" o.c. Face layer fastened to studs and bearing plated with 8d cement-coated drywall nails or screws, spaced 8" o.c. Face layer wallboard joints covered with tape and joint compound. Fastener heads covered with joint compound. For securement to steel studs and track, Type S or S-12 steel screws, 1" for base layer and 1%" long for face layer, with spacing same as that for nails.



REFERENCE DESIGN: BXUV.W408

Click here for online listing.

Fire Rating: 2 hours from interior side, 1 hour from exterior side Finish Rating: 50 minutes on interior face, 17 minutes on exterior face

BEARING WALL

Examples: Type III buildings (5 & 6 stories) mixed use/multifamily residential buildings.

Framing: Nominal 2" x 4" framing, spaced 16" o.c. or 2" x 6" framing, spaced 24" o.c., with two top plates and one bottom plate. Faced or unfaced glass fiber insulation, nominal 0.25 pcf and 3 ½" thick, or mineral wool insulation, 3.0 pcf and 3 ½" thick, pressure fit in the cavities between studs. Mineral wool insulation is required for 1-hour fire rating from exterior side.

Exterior: Minimum 7/16 category LP FlameBlock with Pyrotite treatment on both sides, fastened to studs with minimum 1⁷/₈ "6d nails, spaced 6" o.c. on perimeter and 12" in the field. Code-compliant building wrap installed per manufacturer's instructions. Wood, wood composite, stucco, and fiber cement exterior facing options per UL listing, installed per manufacturer's instructions.

Interior: Two layers of any classified 58" Type X GWB, applied vertically with joints staggered. Base layer nailed to studs with minimum 1%" drywall nails or code-compliant screws, 7" o.c. Face layer fastened to studs and bearing plated with 8d cement-coated drywall nails or screws, 8" o.c. Face layer wallboard joints covered with tape and joint compound. Fastener heads covered with joint compound.

Notes:

- A: When nominal 4" brick is installed as the exterior facing, fiberglass insulation may be used in the wall cavities while maintaining the 1-hour fire rating from the exterior. See report <u>LP10288-05</u> for more information.
- **B:** Fire resistance rating may be increased to 2 hours from both sides of the wall by addition of one layer of 5/8" Type X exterior gypsum or 7/8" 3-coat stucco to the exterior face of the LP FlameBlock panels. See reports <u>LP10288-05 and 10288-09</u>.



REFERENCE DESIGN: BXUV.U350/BXUVC.W325

<u>Click here for online listing.</u> Fire Rating: 2 hours from both sides Finish Rating: 23 minutes

BEARING WALL

STC RATINGS: CONFIGURATION A: 61

Examples: Walls between living units, 2-hour chase walls, or between living units and corridors/stairs.

Framing: Nominal double row of 2" x 4" framing, spaced 16" o.c. or 2" x 6" framing, spaced 24" o.c., with two top plates and one bottom plate, with studs effectively fire stopped. Opposite stud rows spaced a minimum of 1" apart (allowing for wall sheathing, if applicable), and opposing studs staggered 8" o.c. Faced or unfaced fiberglass insulation, nominal 0.25 pcf and 3 1/2" thick, or mineral wool insulation, nominal 3.0 pcf and 3 1/2" thick, pressure fit in the cavities between studs.

Living Space Side:

Configuration A – Minimum 7/16 category LP FlameBlock with Pyrotite treatment facing the stud cavities, fastened to studs with minimum 17/8[°] 6d nails, spaced 6[°] o.c. on perimeter and 12[°] in the field. 5/8[°] Type X GWB, applied vertically and fastened to wall studs, with joints staggered with those of FlameBlock sheathing.

Configuration B – (Required for STC rating: Resilient channel of 25 MSG galvanized steel, installed horizontally and spaced vertically 24" o.c., secured to studs with min. 11/4" diamondshaped point, double lead Phillips head steel screws.) 58" Type X GWB, applied vertically and fastened with minimum 1" self-drilling, selftapping Type S or S-12 steel screws.

Concealed Space Side:

Configuration A – No sheathing required. Fire blocking per code requirements.

Configuration B – Minimum 7/16 category LP FlameBlock with Pyrotite treatment facing the stud cavities, fastened to studs with minimum 17/8[°] 6d nails, spaced 6[°] o.c. on perimeter and 12[°] in the field. Fire blocking per code requirements.

CONFIGURATION B: 56



REFERENCE DOCUMENTS: CALIFORNIA WUI ZONE EXTERIOR WALL TEST PROTOCOL 12-7A-1

<u>Click here for online listing.</u> Cal-Fire/OSFM Listing Nos 8140-2027:0005 and 8140-2027:0006 Western Fire Center Test Report No. 10023.1

Examples: Single and multifamily homes in areas designated as high wildfire hazard.

Exterior: Minimum 15/32 category LP FlameBlock with Pyrotite treatment facing the exterior, fastened to studs with minimum 1%[°] 6d nails, spaced 6[°] o.c. on perimeter and 12[°] in the field. Exterior cladding of LP SmartSide Precision Series lap or panel siding, cedar shingles of nominal ½[°] butt thickness or less, or plain bevel wood siding of cedar and other species in various widths. Cladding material installed in accordance with manufacturer's instructions.

Framing and Insulation: Per building design and in accordance with California Building Code

Interior Finish: Per building design and in accordance with California Building Code



REFERENCE DOCUMENTS: CALIFORNIA WUI ZONE TEST PROTOCOL 12-7A-3

Click here for online listing. Cal-Fire/OSFM Listing No. 8160-2027:0007 Western Fire Center Test Report No. 10085

Examples: Closed soffit in single and multifamily homes in areas designated as high wildfire hazard.

Exterior: Minimum 7/16 category LP FlameBlock with Pyrotite treatment facing the exterior, fastened to supports with minimum 1%" 6d nails, spaced 6" o.c. on perimeter and 12" in the field. Exterior cladding (soffit ceiling) of cedar or redwood T&G cladding boards of nominal 58" thickness and greater. Cladding material installed in accordance with manufacturer's instructions.



REFERENCE DESIGN: CALIFORNIA WUI ZONE GUIDELINES FOR UNDER EAVE CONSTRUCTION (IGNITION-RESISTANT CONSTRUCTION)

Click here for CBC 707A.4 information.

2013 California Building Code Section 707A.4

Examples: Open eaves in single and multifamily homes in areas designated as high wildfire hazard.

Roof Decking: Minimum 15/32 category LP FlameBlock with Pyrotite treatment facing downward and coated with exterior-grade paint.

Framing: Exposed rafter tails and cross-blocking of minimum nominal 2" lumber.



GENERAL REQUIREMENTS

- · Comply with local safety regulations when installing roof, wall, or subfloor sheathing.
- Comply with the following manufacturer's instructions and with APA's Engineered Wood Construction Guide Form E30U (September 2007) or the current equivalent.

STORAGE AND HANDLING

- Store panels in clean, dry areas off the ground. If possible, store indoors. If stored outside, cover with plastic sheets, tarps or the LP FlameBlock Fire-Rated OSB Sheathing unit cover. Keep cover open and away from the sides and bottom of panels to allow for air circulation.
- Additional protective measures may be necessary during extended adverse weather conditions.

ROOF INSTALLATION

- Place the skid-resistant side up with the white fire-resistant surface facing down and wear skid-resistant shoes when installing LP FlameBlock Fire-Rated OSB Sheathing as roof sheathing on either side of a partition wall in multi-family residential buildings, or in any application where reducing the spread rate of an interior fire is the intent of the code requirement. Install LP FlameBlock Fire-Rated OSB Sheathing with the white Pyrotite side facing upwards when used under EPDM roof membranes and in other applications where reducing the spread rate of fire from an exterior source is the intent.
- Install with the long dimension or strength axis of the panel across supports and with the panel continuous over two or more spans.
- Provide 1/8" space at panel ends and edges. Use a spacer tool (i.e. 10d box nail) to ensure accurate and consistent spacing.
- Panel end joints shall occur over framing. Stagger end joints in each succeeding row.
- For panels in the 7/16 and 15/32 category, provide additional panel stiffness by installing panel edge clips mid-span on all unsupported edges.
- Nail 6" o.c. along supported panel ends and edges and 12" o.c. at intermediate supports. Fasten panels 38" from panel edges. Use 8d common nails for panels up to 1" thickness. For panels over 1" use 8d ring-shank or 10d common nails. Other code-approved fasteners may be used.
- Cover roof sheathing as soon as possible with roofing felt or shingle underlayment for protection against excessive moisture prior to roofing. If any edge swelling occurs prior to roof underlayment installation, the exposed wood substrate side of panels with raised joints should be sanded flat.
- Remove wrinkles and flatten surface of shingle underlayment before installing shingles. High performance shingle underlayment is recommended for better results.
- Heavier weight and/or textured shingles are recommended to better mask imperfections in roofing assembly.
- When installed as roof deck in open eaves, the exposed underside of panels, as well as any exposed edges, must be coated with exterior-grade paint.

NOTE: Check with your local building department before deciding on an installation method.

WALL INSTALLATION

- LP FlameBlock Fire-Rated OSB Sheathing panels should be installed as specified in the relevant fire-rated assembly. In the absence of a listed fire-rated assembly, panels should be installed vertically, with the horizontal joints blocked.
- When installing LP FlameBlock Fire-Rated OSB Sheathing in walls, consult approved construction plans to determine the proper orientation of the white, fire-resistant panel surface.
- Provide 1/8" space between panel ends and edges. Use a spacer tool (i.e. 10d box nail) to ensure accurate and consistent spacing.
- At minimum, nail 6" o.c. along supported panel ends and edges and 12" o.c. at intermediate supports. Fasten panels 38" from panel edges. Use 6d common nails for panels up to 1" thickness. For panels over 1" use 8d ring-shank or 8d common nails. Other code-approved fasteners may be used.

NOTE: For shear walls, use the fastener type and spacing specified in approved construction documents.





LPCorp.com/FlameBlock BUILD WITH US:

LP® FlameBlock® Fire-Rated OSB Sheathing helps you meet fire codes while reducing dead load and wall thickness versus common alternatives. It offers higher design values than FRT plywood at the same thickness and provides a better substrate for securely fastening exterior facing. Choose LP FlameBlock sheathing for your next project. DRIVING INNOVATION IN FIRE-RESISTANT CONSTRUCTION



For more information about LP FlameBlock Fire-Rated OSB Sheathing, including our Technical Guide, call 1-888-820-0325 or visit LPCorp.com/FlameBlock

LPCorp.com/FlameBlock Phone: 1-888-820-0325 Fax: 1-877-523-7192 Email: Customer.Support@LPCorp.com

Cal. Prop 65 Warning: Use of this product may result in exposure to wood dust, known to the State of California to cause cancer.



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