

<p style="text-align: center;"><b>DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT</b> Housing - Federal Housing Commissioner</p> <p><b>TO: DIRECTORS, SINGLE FAMILY HOCs</b> <b>DIRECTORS, MULTIFAMILY HUBs</b></p>	<p><b>Series and Series Number:</b> <b>MATERIALS RELEASE NO: 9251</b> (Supersedes issue dated December 7, 2006)</p>
	<p><b>ISSUE DATE</b> October 10, 2007</p>
	<p><b>REVIEW DATE</b> October 10, 2010</p>
<p><b>SUBJECT: 1. Product</b> Microllam<sup>®</sup> Laminated Veneer Lumber (LVL)</p> <p><b>2. Name and address of Manufacturer</b> Weyerhaeuser P. O. Box 8449 Boise, ID 83707</p>	

Data on the nonstandard product described herein have been reviewed by the Department of Housing and Urban Development (HUD) and determination has been made that it is considered suitable from a technical standpoint for the use indicated herein. This Release does not purport to establish a comparative quality or value rating for this product as compared to standard products normally used in the same manner.

This Materials Release cannot be used as an indication of endorsement or approval by HUD of the described product, and any statement or representation, however made, indicating such approval or endorsement by HUD is unauthorized. See Code 18, U.S.C. 709.

Any reproduction of this Release must be in its entirety.

USE:

General Framing Lumber

DESCRIPTION:

Microllam<sup>®</sup> LVL is manufactured by laminating veneer sheets of a single wood species, or species combinations, coated with an exterior type adhesive, in specific lay-up patterns, in a continuous press with all grain oriented parallel with the length of the member. The wood species, species combinations, lay-up patterns and adhesives used are as specified in the Weyerhaeuser “Microllam<sup>®</sup> LVL Manufacturing Standard.” Microllam LVL is available in thicknesses from 3/4 inch to 3-1/2 inches, depths from 2-1/2 inches to 48 inches and lengths up to 80 feet. Microllam LVL is produced by Weyerhaeuser manufacturing plants with quality control inspections by PFS Corporation.

### REQUIREMENTS:

Microllam LVL shall meet the requirements of this MR.

1. Manufacturing tolerances shall be as specified in the applicable product manufacturing standards of Weyerhaeuser.
2. Adhesives shall be as specified in the applicable product manufacturing standards of Weyerhaeuser. Each plant shall maintain a list of all approved adhesive suppliers and the adhesives for which they are approved.
3. The veneer specification shall be as specified in the applicable product manufacturing standards of Weyerhaeuser.
4. End and edge sealants and other additives used in the product manufacture shall be as specified in the applicable product manufacturing standards of Weyerhaeuser.

### DESIGN AND ALLOWABLE STRESSES:

The structural performance of the finished member is assured by sampling and testing in accordance with the quality control performance procedures in the product manufacturing standard. The service conditions for the structural composite lumber described in this MR shall be in a covered dry condition of use. Dry conditions of use are those environmental conditions represented by sawn lumber at which the equilibrium moisture content is less than 16 percent.

Allowable unit stresses, fastener capacities, and allowable load capacities noted in this MR are applicable for loading conditions of “normal” duration when the materials have not been treated with fire retardant or preservatives. Duration of load adjustments, as provided for wood members and their connections, are permitted in accordance with the limitations specified in the applicable code.

Microllam LVL allowable unit stresses shall be in accordance with Table 1. The design practices for sawn lumber apply to Microllam LVL.

Microllam LVL lateral nail resistance and nail withdrawal values shall be as provided in the applicable code for Douglas fir-larch (minimum specific gravity  $SG = 0.50$ ).

Nails installed perpendicular to the glue lines on the wide face of material shall be installed in accordance with the applicable code. Spacing of nails installed parallel to the glue lines on the narrow face of material shall be limited as follows:

Microllam LVL Dimensions	Fastener (installed parallel to glue lines on narrow face of material)	Minimum Spacing (inches)
Minimum 3/4 inch thick and 3-1/2 inches deep	8d box, 8d common, 10d box Nails	3
	12d box, 10d common, 12d common, 16d box (3-1/4 inch long) sinker Nails and No. 14 gauge staples	4
Minimum 1-1/2 inches thick and 3-1/2 inches deep	16d common Nails	8

Bolt design values shall be as provided in the applicable code for Douglas fir-larch (minimum specific gravity  $SG = 0.50$ ). Specific approval shall be required for nail and bolt connections not herein prescribed.

The fire resistance of Microllam LVL is considered to be equivalent to that of sawn lumber of equal depth and width when used in heavy timber construction, in accordance with the applicable code.

**Table 1. Microllam<sup>®</sup> LVL FRAMING LUMBER DESIGN STRESSES<sup>1,2</sup>**  
**(POUNDS PER SQUARE INCH)**

BILLET MATERIAL THICKNESS	GRADE SPECIES <sup>4</sup>	AXIAL		JOIST/BEAM			PLANK			
		Ft <sup>4</sup>	Fc	Fb <sup>5,6</sup>	Fv <sup>7</sup>	M O	FcL <sup>8</sup>	Fb <sup>9</sup>	Fv	FcL <sup>8</sup>
3/4 inch to 3-1/2 inch	1.6 DF/LP/WH	1240	2100	2140	285	1.6	750	2530	190	480
	1.8 DF/LP/WH	1450	2375	2445	285	1.8	750	2890	190	480
	1.9 DF/LP/WH	1555	2510	2600	285	1.9	750	3075	190	480
	2.0 DF/LP/WH	1660	2635	2750	285	2.0	750	3255	190	480
	2.0 DF/LP/WH <sup>10</sup>	1660	2635	2900	285	2.0	750	3430	190	480
	2.2 DF/LP/WH	1865	2870	3060	285	2.2	750	3615	190	480
	2.4 DF/LP/WH	2075	3080	3365	285	2.4	750	3980	190	480
	2.6 DF/LP/WH	2285	3270	3675	285	2.6	750	4345	190	480
3/4 inch to 3-1/2 inch	1.8 SP/EUC	1575	2375	2445	285	1.8	880	2890	190	525
	1.9 SP/EUC	1690	2510	2600	285	1.9	880	3075	190	525
	2.0 SP/EUC	1805	2635	2750	285	2.0	880	3255	190	525
	2.2 SP/EUC	2030	2870	3060	285	2.2	880	3615	190	525
	2.4 SP/EUC	2260	3080	3365	285	2.4	880	3980	190	525
	2.6 SP/EUC	2485	3270	3675	285	2.6	880	4345	190	525
3/4 inch to 3-1/2 inch	1.6 YP	1350	2100	2140	285	1.6	880	2530	190	670
	1.8 YP	1575	2375	2445	285	1.8	880	2890	190	670
	1.9 YP	1690	2510	2600	285	1.9	880	3075	190	670
	2.0 YP	1805	2635	2750	285	2.0	880	3255	190	670
	2.2 YP	2030	2870	3060	285	2.2	880	3615	190	670
3/4 inch to 1-3/4 inch	2.0E-2925Fb SP	1805	3030	2925	285	2.0	880	3455	190	525

- Allowable stresses are based on covered, dry conditions of use. Dry conditions of use are those environmental conditions represented by sawn lumber at which the moisture content is less than 16%.
- For uniformly loaded simple span beams, deflection is calculated as follows:

$$\Delta = \frac{270WL^4}{Ebd^3} + \frac{28.8WL^2}{Ebd}$$

where: W = Uniform load, plf      b = Beam width, inches

$\Delta$  = Deflection, inches      d = Beam depth, inches

L = Span, feet      E = Modulus of Elasticity, psi

- DF = Douglas fir-larch; LP = lodgepole pine; WH = western hemlock; SP = southern pine; YP = yellow poplar. EUC = Eucalyptus, DF, LP and WH are permitted to be combined as Western Species (WS). SP and YP, or SP & EUC are permitted to be combined as Eastern Species (ES). When using the species group designations WS or ES, the allowable stresses must be the lower values for the species in the group.
- The F<sub>i</sub> values in the table are reduced to reflect the volume effects of length, width and thickness for a range of common application conditions. Therefore the F<sub>i</sub> values in the Table do not apply to Microllam LVL when used as a component of engineered products manufactured by Weyerhaeuser which are listed in other evaluation reports.
- Fb includes allowances for variations in span to depth ratio and method of loading and must be used without further adjustment except as noted below. For depths other than 12 inches, regardless of thickness, table values must be multiplied by (12/d)<sup>0.156</sup>. Adjustments for common depths are shown below. For depths less than 3.5 inches, the factor for the 3.5 inch depth must be used.

Depth	3.5	5.5	7.25	9.25	12	16	20	24
Multiplier	1.18	1.11	1.07	1.04	1.00	0.96	0.93	0.91

- When structural members qualify as repetitive members in accordance with the building code, a four percent increase is permitted, in addition to the increases permitted in Footnote 5, above. This increase does not apply to field assembled multi-member beams.
- For simplicity, use 285 psi for depths up to 24 inches and 260 psi for depths greater than 24 inches. When a more accurate analysis is desired, the allowable horizontal shear for all depths greater than 12 inches is Fv = 285 (12/d)<sup>0.065</sup>.
- Compression perpendicular to grain values (Fc<sub>⊥</sub>) may not be increased for duration of load.
- Values shown are for thicknesses up to 3.5 inches.
- Used in header or beam applications.

INSTALLATION AND LIMITATIONS:

Installation shall be in strict accordance with HUD Minimum Property Standards (MPS) and the applicable code for sawn lumber construction. Microllam LVL shall be stored and handled in accordance with established recommendations for plywood.

MANUFACTURING PLANTS:

Microllam LVL covered by this MR shall be produced at the following locations:

Weyerhaeuser 100 TJM Drive Buckhannon, WV 26201 Brian Wilson (304) 473-5415	Weyerhaeuser 195 N. Bertelsen Road Eugene, OR 97402 Jeff Gottfried (541) 607-8325	Weyerhaeuser 162 North Jackson St. Hwy 31 S Castleberry, AL 36432 Cameron Knapp (251) 966-4900
Weyerhaeuser 1826 Clay Road Valdosta, GA 31601 Rick Karr (912) 333-7000	Weyerhaeuser 234 Industrial Avenue Natchitoches, LA 71457 Greg Gordon (318) 354-5103	Weyerhaeuser 2345 Deschutes Drive Stayton, OR 97383 Neil Prien (503) 769-8164
Weyerhaeuser 2812 Old Salem Road NE Albany, OR 97321 Chris Hollandsworth (541) 812-3414	Weyerhaeuser 252 Duraflake Road Simsboro, LA 71275 Shay Nichols (318) 247-9909	

CERTIFICATION AND IDENTIFICATION:

Weyerhaeuser shall certify that Microllam LVL conforms to the requirements of this MR. PFS Corporation shall validate the manufacturer's certification that Microllam LVL meets the requirements of this MR. Quality control test records shall be made available for inspection by HUD upon request.

Microllam LVL certified as conforming to this MR shall be identified with a stamp noting the name and plant number of the manufacturer, the product trade name, production date, the grade, species or species designation group, "HUD 925", and the name or logo of the quality control agency, PFS Corporation.

**SAMPLE STAMP**



**WARRANTY:**

Weyerhaeuser warrants Microllam<sup>®</sup> LVL against any defect due to faulty material and workmanship in the manufacturing process for a period of 20 years from the date of installation. The liability under this warranty of Weyerhaeuser shall be limited to replacement of any defective materials and the cost of installation or, at the option of Weyerhaeuser, equal payment thereof.

This warranty is limited and applies to any material failure due to manufacture only and does not cover, nor will the manufacturer be liable for, any defects or damages due to misuse, improper installation, or damages resulting from fire, lighting, or other causes beyond the manufacturer's control.

The manufacturer's warranty does not, in any way, relieve the builder of responsibility under the terms of the Builder's Warranty required by the National Housing Act or under any provisions applicable to any other housing program. A copy of the manufacturer's warranty shall be furnished by the builder to the owner upon completion of the property.

**MANUFACTURER'S RESPONSIBILITIES:**

Issuance of this Materials Release (MR) commits the manufacturer to fulfill as a minimum, the following:

1. Produce, label and certify the material, product or system in strict accordance with the terms of this MR.
2. Provide necessary corrective action in a timely manner for all cases of justified complaint, poor performance or failure reported by HUD.

3. When requested, provide the Office of Regulatory Affairs and Manufactured Housing, Office of Manufactured Housing Programs, HUD Headquarters, with a representative list of properties in which the material, product or system has been used, including complete addresses or descriptions of locations and dates of installation.
4. Inform HUD, in advance, of changes in production facilities, methods, design of the product, company name, ownership or mailing address.

EVALUATION:

This MR shall be valid for a period of three years from the date of initial issuance or most recent renewal or revision, whichever is later. The holder of this MR shall apply for renewal or revision 90 days prior to the Review Date printed on this MR. Submittals for renewal or revision shall be sent to:

U. S. Department of Housing and Urban Development  
FHA Standards, Office of Manufactured Housing Programs  
451 Seventh Street, SW, Room 9168  
Washington, DC 20410-8000

Appropriate User Fee shall be sent to:

U. S. Department of Housing and Urban Development  
Miscellaneous Income - Technical Suitability of Products Fees  
Bank of America  
P. O. Box 198762  
Atlanta, GA 30384-8762

The holder of this MR may apply for revision at any time prior to the Review Date. Minor revisions may be in the form of a supplement to this MR.

If the Department determines that a proposed renewal or supplement constitutes a revision, the appropriate User Fee for a revision will be need to be submitted in accordance with in accordance with Code of Federal Regulations 24 CFR 200.934, "User Fee System for the Technical Suitability of Products Program," and current User Fee Schedule.

CANCELLATION:

Failure to apply for a renewal or revision shall constitute a basis for cancellation of the MR. HUD will notify the manufacturer that the MR may be canceled when:

1. conditions under which the document was issued have changed so as to affect production of, or to compromise the integrity of the accepted material, product, or system;

2. the manufacturer has changed its organizational form without notifying HUD; or,
3. manufacturer has not complied with responsibilities it assumed as a condition of HUD's acceptance.

However, before cancellation, HUD will give the manufacturer a written notice, of the specific reasons for cancellation, and the opportunity to present views on why the MR should not be canceled. No refund of fees will be made on a canceled document.

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This Materials Release is issued solely for the captioned firm, and is not transferable to any person or successor entity.

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