



Phenol Formaldehyde (PF) Or Phenol-Resorcinol Formaldehyde (PRF) Bonded Products

Weyerhaeuser Company
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1. Product Identification

Product	Manufacturing Location(s)
Microllam® Laminated Veneer Lumber (LVL)	USA: Albany, OR; Buckhannon, WV; Castleberry, AL; Eugene, OR; Junction City, OR; Nachitoches, LA; Simsboro, LA; Stayton, OR; Valdosta, GA.
Parallam® Parallel Strand Lumber (PSL)	USA: Buckhannon, WV; Colbert, GA. Canada: Vancouver, BC.
Open-Web Trusses	USA: Chino, CA; Delaware, OH; Hillsboro, OR. Canada: Claresholm, AB.
Glulam Beams™	USA: Vaughn, OR.

Synonyms: Header, Phenol Formaldehyde/Resorcinol Formaldehyde Bonded Product.

2. Hazardous Ingredients/Identity Information

Name	CAS#	Percent	Agency	Exposure Limits	Comments
Wood	None	90-99	OSHA OSHA ACGIH ACGIH Recommended ^A Recommended ^A Recommended ^A	PEL-TWA 15 mg/m ³ PEL-TWA 5 mg/m ³ TLV-TWA 0.5 mg/m ³ TLV-TWA 1 mg/m ³ PEL-TWA 5 mg/m ³ PEL-STEL 10 mg/m ³ PEL-TWA 2.5 mg/m ³	Total dust Respirable dust fraction Inhalable, Western red cedar Inhalable, All other species Softwood or hardwood total dust Softwood or hardwood total dust Western red cedar total dust
Phenol formaldehyde or Phenol-resorcinol formaldehyde resin solids ^{B, C}	None	1-9	OSHA OSHA ACGIH	PEL-TWA 0.75 ppm PEL-STEL 2 ppm TLV-Ceiling 0.3 ppm	Free gaseous formaldehyde Free gaseous formaldehyde Free gaseous formaldehyde
Paraffin wax ^B	8002-74-2	0-2	OSHA ACGIH	PEL-TWA 2 mg/m ³ TLV-TWA 2 mg/m ³	Paraffin wax fume Paraffin wax fume

2. Hazardous Ingredients/Identity Information (cont'd.)

^A Weyerhaeuser recommended exposure limits based on 1989 OSHA PELs. In 1992, the U.S. Court of Appeals for the Eleventh Circuit Court overturned OSHA's 1989 Air Contaminants Rule, which included specific PELs for wood dust established by OSHA at that time. Wood dust is now officially regulated as an organic dust in a category known as "Particulates Not Otherwise Regulated" (PNOR), or Nuisance Dust. However, a number of states have incorporated the OSHA PELs from the 1989 standard in their state plans. Additionally, OSHA has announced that it may cite companies under the OSH Act general duty clause under appropriate circumstances for noncompliance with the 1989 PELs.

^B The VOC content of adhesives and sealants used are equal or less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168, AND all sealants used as fillers meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.

^C These products contain less than 0.05% free formaldehyde and contain no urea-formaldehyde resins. Phenol formaldehyde resin is used in face/surface material and/or center/core material.

3. Hazard Identification

Appearance and Odor: Laminated product with a slightly aromatic resinous odor and natural wood color. The wood component of these products may consist of aspen, douglas fir, western hemlock, southern yellow pine or yellow poplar.

Primary Health Hazards: The primary health hazard posed by these products is thought to be due to inhalation of wood dust.

Primary Route(s) of Exposure:

- Ingestion:
- Skin: Dust
- Inhalation: Dust
- Eye: Dust

Medical Conditions Generally Aggravated by Exposure: Wood dust may aggravate pre-existing respiratory conditions or allergies.

Signs and Symptoms of Exposure:

Acute Health Hazards: Wood dust can cause eye irritation. Certain species of wood dust can elicit allergic contact dermatitis in sensitized individuals. Wood dust may cause respiratory irritation, nasal dryness, coughing, sneezing, wheezing as a result of inhalation.

Chronic Health Hazards: Wood dust, depending on the species, may cause allergic contact dermatitis and respiratory sensitization with prolonged, repetitive contact or exposure to elevated dust levels. Prolonged exposure to wood dust has been reported by some observers to be associated with nasal cancer.

Carcinogenicity Listing:

- NTP: Wood dust, *Known to be a Human Carcinogen. Formaldehyde gas, Reasonably Anticipated to be a Human Carcinogen.*
- IARC Monographs: Wood dust, Group 1 – Carcinogenic to humans. Formaldehyde, Group 1 – Carcinogenic to humans.
- OSHA Regulated: Formaldehyde gas, potential carcinogen for exposures exceeding 0.5 ppm.

NTP:

Wood Dust

According to its *Tenth Report on Carcinogens*, NTP states, "Wood dust is known to be a human carcinogen based on sufficient evidence of carcinogenicity from studies in humans. An association between wood dust exposure and cancer of the nose has been observed in many case reports, cohort studies, and case-control studies that specifically addressed nasal cancer. Strong and consistent associations with cancer of the nasal cavities and paranasal sinuses were observed both in studies of people whose occupations are associated with wood dust exposure and in studies that directly estimated wood dust exposure."

Formaldehyde

According to its *Tenth Report on Carcinogens*, NTP states, "Formaldehyde (gas) is reasonably anticipated to be a human carcinogen based on limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals (IARC 1982, 1987, 1995)."

3. Hazard Identification (cont'd.)

IARC:

Wood Dust

Group 1 (Carcinogenic to humans; sufficient evidence of carcinogenicity). This classification is primarily based on studies showing an association between occupational exposure to wood dust and adenocarcinoma of the nasal cavities and paranasal sinuses. IARC did not find sufficient evidence of an association between occupational exposure to wood dust and cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum.

Formaldehyde

Group 1 (Carcinogenic to humans; sufficient evidence of carcinogenicity). A working group of IARC has determined that there is sufficient evidence that formaldehyde causes nasopharyngeal cancer in humans, a rare cancer in developed countries.

4. Emergency and First-Aid Procedures

Ingestion: Not applicable under normal use.

Eye Contact: Wood dust may cause mechanical irritation. Treat dust in eye as foreign object. Flush with water to remove dust particles. Seek medical help if irritation persists.

Skin Contact: Wood dust of certain species can elicit allergic contact dermatitis in sensitized individuals, as well as mechanical irritation resulting in erythema and hives. Seek medical help if rash, irritation or dermatitis persists.

Skin Absorption: Not known to occur under normal use.

Inhalation: Wood dust may cause unpleasant obstruction in the nasal passages, resulting in dryness of nose, dry cough, sneezing and headaches. Remove to fresh air. Seek medical help if persistent irritation, severe coughing or breathing difficulty occurs. Provide medical personnel a copy of this Material Safety Data Sheet.

Note to Physician: None

5. Fire and Explosion Data

Flash Point (Method Used): NAP

Flammable Limits:

LFL = NAP

UFL = NAP

Extinguishing Media: Water, carbon dioxide, sand

Autoignition Temperature: Variable [typically 400°-500°F (204°-260°C)].

Special Firefighting Procedures: None

Unusual Fire and Explosion Hazards: Depending on moisture content and more importantly, particle diameter, wood dust may explode in the presence of an ignition source. A concentration of 40 grams (40,000 mg) of dust per cubic meter of air is often used as the LEL for wood dusts.

NFPA Rating (Scale 0-4):

Health = 1

Fire = 1

Reactivity = 0

6. Accidental Release Measures

Steps to be Taken In Case Material Is Released or Spilled: Not applicable for products in purchased form. Wood dust generated from sawing, sanding, drilling, or routing of these products may be vacuumed or shoveled for recovery or disposal. Avoid dusty conditions and provide good ventilation. Use NIOSH-approved respirator and goggles where ventilation is not possible and the allowable exposure limits may be exceeded.

7. Handling and Storage

Precautions to be Taken In Handling and Storage: No special handling precautions are required for products in purchased form. Avoid repeated or prolonged breathing of wood dust. These products may release very small quantities of formaldehyde in gaseous form. Under foreseeable conditions of use, these products release less than 0.050 ppm of formaldehyde gas in standard large chamber test conditions. Store in well-ventilated, cool, dry place away from heat, flames, sparks and other sources of ignition.

8. Exposure Control Measures, Personal Protection

Personal Protective Equipment:

RESPIRATORY PROTECTION – Not applicable for product in purchased form. A NIOSH-approved dust respirator is recommended when allowable exposure limits may be exceeded.

PROTECTIVE GLOVES – Not required. However, cloth, canvas, or leather gloves are recommended to minimize potential mechanical irritation from handling product.

EYE PROTECTION – Not applicable for product in purchased form. Goggles or safety glasses are recommended when machining this product.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT – Not applicable for product in purchased form. Outer garments may be desirable in extremely dusty areas.

WORK/HYGIENE PRACTICES – Follow good hygienic and housekeeping practices. Clean up areas where wood dust settles to avoid excessive accumulation of this combustible material. Minimize blowdown or other practices that generate high airborne-dust concentrations.

Ventilation:

LOCAL EXHAUST – Provide local exhaust as needed so that exposure limits are met.

MECHANICAL (GENERAL) – Provide general ventilation in processing and storage areas so that exposure limits are met.

SPECIAL – None

OTHER – None

9. Physical/Chemical Properties

Physical Description: Laminated product with a slightly aromatic resinous odor and natural wood color. The wood component of these products may consist of aspen, douglas fir, western hemlock, southern yellow pine or yellow poplar.

Boiling Point (@ 760 mm Hg):	NAP
Evaporation Rate (Butyl Acetate = 1):	NAP
Freezing Point:	NAP
Melting Point:	NAP
Molecular Formula:	NAP
Molecular Weight:	NAP
Oil-water Distribution Coefficient:	NAP
Odor Threshold:	NAV
pH:	NAP
Solubility in Water (% by weight):	<0.1
Specific Gravity (H₂O = 1):	Variable; depends on wood species and moisture
Vapor Density (air = 1; 1 atm):	NAP
Vapor Pressure (mm Hg):	NAP
Viscosity:	NAP
% Volatile by Volume [@ 70°F (21°C)]:	0

10. Stability and Reactivity

Stability: Unstable Stable

Conditions to Avoid: Avoid open flame. Product may ignite at temperatures in excess of 400°F (204°C).

Incompatibility (Materials to Avoid): Avoid contact with oxidizing agents.

Hazardous Decomposition or By-Products: Thermal decomposition products include carbon monoxide, carbon dioxide, aliphatic aldehydes, rosin acids, terpenes, and polycyclic aromatic hydrocarbons.

Hazardous Polymerization: May occur Will not occur

Sensitivity to Mechanical Impact: NAP

Sensitivity to Static Discharge: NAP

11. Toxicological Information

Toxicity Data: None available for product in purchased form. Individual component information is listed below if available.

Components:

Wood dust (softwood or hardwood)

OSHA Hazard Rating = 3.3; moderately toxic with probable oral lethal dose to humans being 0.5-5 g/kg (about 1 pound for a 70 kg or 150 pound person). Wood dust – generated from sawing, sanding or machining the product – may cause nasal dryness, irritation, coughing and sinusitis. NTP and IARC classify wood dust as a human carcinogen (IARC Group 1). This classification is based primarily on increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. The evaluation did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum with exposure to wood dust. Source: *OSHA Regulated Hazardous Substances*, Government Institutes, Inc., February 1990.

Formaldehyde

These products may release very small quantities of formaldehyde in gaseous form. Under foreseeable conditions of use, these products release less than 0.050 ppm of formaldehyde gas in standard large chamber test conditions.

OSHA Hazard Rating = 3 for local and systemic acute and chronic exposure; highly toxic, irritation studies: human skin, 150 ug/3 days, intermittent exposure produced mild results; human eye; 1 ppm/6 minutes produced mild results. Toxicity studies: human inhalation TC_{LO} of 8 ppm reported, but response not specified; human inhalation TC_{LO} of 17 mg/m³ for 30 minutes produced eye and pulmonary results; human inhalation TC_{LO} of 300 ug/m³ produced nose and central nervous system results; LC₅₀ of (rat, inhalation) = 1,000 mg/m³, 30 minutes; LC₅₀ (mice, inhalation) = 400 mg/m³, 2 hours.

Exposure to gaseous formaldehyde may cause temporary irritation to the nose and throat as well as lead to respiratory disorders. However, in a thorough review of sensory/respiratory irritation studies of formaldehyde from the standpoint of occupational exposure, an expert panel has observed exposure up to concentrations of 0.3 ppm failed to produce irritation. With regard to respiratory disorders, studies had concluded the threshold for long-term chronic pulmonary effects is between 0.4 and 3 ppm and for chronic obstructive pulmonary disease is 2 ppm. Pre-existing respiratory disorders may be aggravated by exposure.

11. Toxicological Information (cont'd.)

Epidemiology studies of workers exposed to formaldehyde have failed to consistently identify an association between formaldehyde exposure and cancer. In animal studies, rats and mice exposed to high levels of formaldehyde developed nasal cancer while hamsters did not. These exposure levels are far above those levels normally found in the workplace. Formaldehyde is listed by IARC as Carcinogenic to Humans (Group 1). A working group of IARC has determined that there is sufficient evidence that formaldehyde causes nasopharyngeal cancer in humans, a rare cancer in developed countries. NTP included formaldehyde in the annual report on carcinogens. OSHA regulated formaldehyde as a potential carcinogen for exposures exceeding 0.5 ppm.

Source: *OSHA Regulated Hazardous Substances*, Government Institutes, Inc., February 1990; *Registry of Toxic Effects of Chemical Substances (RTECS)*, National Institute for Occupational Safety and Health (provided by Canadian Centre for Occupational Health and Safety, CCINFO May 1995).

Target Organs: None for product in purchased form.

12. Ecological Information

Environmental Fate: No information available at this time.

Environmental Toxicity: No information available at this time.

13. Disposal Considerations

Waste Disposal Method: If disposed of or discarded in its purchased form, incineration is preferable.

Dry land disposal is acceptable in most states. It is, however, the user's responsibility to determine at the time of disposal whether your product meets RCRA criteria for hazardous waste. Follow applicable federal, state, and local regulations.

14. Transport Information

Mode: (Air, Land, water) Not regulated as a hazardous material by the U.S. Department of Transportation. Not listed as a hazardous material in Canadian Transportation of Dangerous Goods (TDG) regulations.

Proper Shipping Name:	NAP
Hazard Class:	NAP
UN/NA ID Number:	NAP
Packing Group:	NAP
Information Reported for Product/Size:	NAP

15. Regulatory Information

TSCA: The following ingredients are on the TSCA inventory.

Formaldehyde (CAS# 50-00-0)

Paraffin wax (CAS# 8002-74-2)

CERCLA: The following ingredient is on the SARA Section 302 EHS, 304 EHS and CERCLA Lists:

Formaldehyde (CAS# 50-00-0)

DSL: The following ingredients are on the Canadian Domestic Substance List (DSL) inventory.

Formaldehyde (CAS# 50-00-0)

Paraffin wax (CAS# 8002-74-2)

OSHA: Wood products are not hazardous under the criteria of the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, formaldehyde emissions from this product and wood dust generated by sawing, sanding or machining this product may be hazardous.

15. Regulatory Information (cont'd.)

STATE RIGHT-TO-KNOW: This product is known to contain substances subject to the disclosure requirements of:

California Prop 65 – This product contains the following ingredient known to the State of California to cause cancer:

Formaldehyde gas (CAS#50-00-0). Weyerhaeuser has evaluated formaldehyde emission rates from its products and has found these rates to be below the "no significant risk level" that would require product warnings.

New Jersey – This product contains the following ingredient listed on New Jersey's Environmental Hazardous Substance List:

Formaldehyde (CAS# 50-00-0)

Pennsylvania – This product contains the following ingredients listed on Pennsylvania's Hazardous Substance Lists:

Formaldehyde (CAS# 50-00-0)

Paraffin Wax (CAS# 8002-74-2)

Wood Dust

Minnesota – NAP

SARA 313 Information: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA 311/312 Hazard Category: This product has been reviewed according to the EPA "Hazard Categories" promulgated under SARA Title III Sections 311 and 312 and is considered, under applicable definitions, to meet the following categories:

An immediate (acute) health hazard:	Yes
A delayed (chronic) health hazard:	Yes
A fire hazard:	No
A reactivity hazard:	No
A sudden release hazard:	No

FDA: NAP

WHMIS Ingredient Disclosure List: Formaldehyde (CAS# 50-00-0)

16. Additional Information

Date Prepared: 7/27/89

Date Revised: 03/06/2006

Prepared By: Weyerhaeuser Company, Corporate Environment, Health & Safety

Weyerhaeuser MSDS available on: <http://www.weyerhaeuser.com/environment/msds/default.asp>

User's Responsibility: The information contained in this Material Safety Data Sheet is based on the experience of occupational health and safety professionals and comes from sources believed to be accurate or otherwise technically correct. It is the user's responsibility to determine if the product is suitable for its proposed application(s) and to follow necessary safety precautions. The user has the responsibility to make sure that this sheet is the most up-to-date issue.

Definition of Common Terms:

ACGIH = American Conference of Governmental Industrial Hygienists
C = Ceiling Limit
CAS# = Chemical Abstracts System Number
DOT = U. S. Department of Transportation
DSL = Domestic Substance List
EC50 = Effective concentration that inhibits the endpoint to 50% of control population

16. Additional Information (cont'd)

EPA	= U.S. Environmental Protection Agency
IARC	= International Agency for Research on Cancer
IATA	= International Air Transport Association
IMDG	= International Maritime Dangerous Goods
LC50	= Concentration in air resulting in death to 50% of experimental animals
LCLo	= Lowest concentration in air resulting in death
LD50	= Administered dose resulting in death to 50% of experimental animals
LDLo	= Lowest dose resulting in death
LEL	= Lower Explosive Limit
LFL	= Lower Flammable Limit
MSHA	= Mine Safety and Health Administration
NAP	= Not Applicable
NAV	= Not Available
NIOSH	= National Institute for Occupational Safety and Health
NPRI	= Canadian National Pollution Release Inventory
NTP	= National Toxicology Program
OSHA	= Occupational Safety and Health Administration
PEL	= Permissible Exposure Limit
RCRA	= Resource Conservation and Recovery Act
STEL	= Short-Term Exposure Limit (15 minutes)
STP	= Standard Temperature and Pressure
TCLo	= Lowest concentration in air resulting in a toxic effect
TDG	= Canadian Transportation of Dangerous Goods
TDLo	= Lowest dose resulting in a toxic effect
TLV	= Threshold Limit Value
TSCA	= Toxic Substance Control Act
TWA	= Time-Weighted Average (8 hours)
UFL	= Upper Flammable Limit
WHMIS	= Workplace Hazardous Materials Information System