Material Safety Data Sheet

Weyerhaeuser

Plywood

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1. Product Identification

Product	Manufacturing Location(s)
Plywood	**USA:** Chester, SC; Dodson, LA; Emerson, AR; Foster, OR; Moncure, NC; Mountain Pine, AR; Springfield, OR; Pine Hill, AL; Wright City, OK; Zwolle, LA; **Canada:** Hudson Bay, SK

Synonyms: Plywood

2. Hazardous Ingredients/Identity Information

Name	CAS#	Percent	Agency	Exposure Limits	Comments
Wood	None	84-99	OSHA	PEL-TWA 15 mg/m^3	Total dust
			OSHA	PEL-TWA 5 mg/m^3	Respirable dust fraction
			ACGIH	TLV-TWA 5 mg/m^3	Softwood total dust
			ACGIH	TLV-STEL 10 mg/m^3	Softwood total dust
			ACGIH	TLV-TWA 1 mg/m^3	Selected hardwood total dust (beech, oak, others)
			Recommended[1]	PEL-TWA 5 mg/m^3	Softwood or hardwood total dust
			Recommended[1]	PEL-STEL 10 mg/m^3	Softwood or hardwood total dust
			Recommended[1]	PEL-TWA 2.5 mg/m^3	Western red cedar total dust
Phenol formaldehyde resin solids[2]	None	1-15	OSHA	PEL-TWA 0.75 ppm	Free gaseous formaldehyde
			OSHA	PEL-STEL 2 ppm	Free gaseous formaldehyde
			ACGIH	TLV-Ceiling 0.3 ppm	Free gaseous formaldehyde

[1] 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.

[2] These products contain less than 0.05 ppm free formaldehyde.

3. Hazard Identification

Appearance and Odor: Plywood is a 3 to 9 ply-veneer product with a slightly aromatic resinous odor and natural wood color. The wood component of these products may consist of alder, aspen, beech, birch, cottonwood, fir, gum, hemlock, hickory, maple, oak, pecan, pine, poplar, spruce, walnut, and/or western red cedar.

Primary Health Hazards: The primary health hazard posed by this product is thought to be due to exposure to 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 and wheezing as a result of inhalation. Formaldehyde may cause temporary irritation of skin, eyes, or respiratory system. Formaldehyde may cause sensitization in susceptible individuals. However, the potential is negligible for formaldehyde to off-gas from products made with phenol-formaldehyde resin.

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. Formaldehyde is classified by OSHA and NTP as a probable or potential carcinogen. IARC has classified formaldehyde as carcinogenic to humans.

Carcinogenicity Listing:

- ☒ NTP: Wood dust, *Known Human Carcinogen*. Formaldehyde, *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

NTP: 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."

IARC - Group 1: (Wood dust) 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.

IARC - Group 1: (Formaldehyde) Carcinogenic to Humans. 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. However, numerous epidemiological studies have failed to demonstrate a relationship between formaldehyde exposure and nasal cancer or pulmonary diseases such as emphysema or lung cancer. Universities Associated for Research and Education in Pathology Inc. (UAREP) concluded that there was no "convincing evidence" that formaldehyde exposure causes cancer in humans. Rats exposed to 14 ppm of formaldehyde for 24 months in the laboratory developed nasal cancer. Exposure of 6 ppm did not result in statistically significant levels. The NCI epidemiology study of 26,000 workers found little evidence linking formaldehyde exposure to cancer.

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 particle. Get 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. Get 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. Get medical help if persistent irritation, severe coughing or breathing difficulty occurs.

5. Fire and Explosion Data

Flash Point (Method Used): NAP.
Flammable Limits: **LFL =** See below under "Unusual Fire and Explosion Hazards" **UFL =** NAP
Extinguishing Media: Water, carbon dioxide, sand
Autoignition Temperature: Variable [typically 400-500°F (204-260°C)]

5. Fire and Explosion Data (cont'd.)

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. An airborne 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 product in purchased form. Wood dust generated from sawing, sanding, drilling, or routing of this product may be vacuumed or shoveled for recovery or disposal. Avoid dusty conditions and provide good ventilation. Use NIOSH-approved dust 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 in standard large chamber test conditions. Store in well-ventilated, cool, dry place away from open flame.

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.

8. Exposure Control Measures, Personal Protection (cont'd.)

PROTECTIVE GLOVES – Not required. However, cloth, canvas, or leather gloves are recommended to minimize potential slivers or 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

9. Physical/Chemical Properties

Physical Description: Plywood is a 3 to 9 ply-veneer product with a slightly aromatic resinous odor and natural wood color. The wood component of these products may consist of alder, aspen, beech, birch, cottonwood, fir, gum, hemlock, hickory, maple, oak, pecan, pine, poplar, spruce, walnut, and/or western red cedar.

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:	NAP
pH:	NAP
Solubility in Water (% by weight):	<0.1%
Specific Gravity (H_2O = 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, resin 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

Components: Individual component information is listed below if available.
Toxicity Data: None available for product in purchased form.
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). Source: *OSHA Regulated Hazardous Substances*, Government Institutes, Inc., February 1990.
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.
Formaldehyde:
OSHA Hazard Rating = 3 for local and systemic acute and chronic exposures; 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/m^3 for 30 minutes produced eye and pulmonary results; human inhalation TC_{Lo} of 300 ug/m^3 produced nose and central nervous system results; LC_{50} (rat, inhalation) = 1,000 mg/m^3, 30 minutes; LC_{50} (mice, inhalation) = 400 mg/m^3, 2 hours. 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).
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 have 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.
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 classified 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 regulates formaldehyde as a potential carcinogen for exposures exceeding 0.5 ppm.
Target Organs: None

12. Ecological Information

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

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).

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 ingredient is on the TSCA chemical substance inventory:
Formaldehyde, CAS# 50-00-0
CERCLA: NAP
DSL: The following ingredient is listed under the Canadian Domestic Substance List:
Formaldehyde, CAS# 50-00-0
OSHA: Wood products are not hazardous under the criteria of the federal OSHA Hazard Communication Standard 29 CFR 1910.1200. However, wood dust generated by sawing, sanding or machining this product may be hazardous. Workplace exposure to formaldehyde is specifically regulated under 29 CFR, 1910.1048.
STATE RIGHT-TO-KNOW:
California: California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Initiative Measure, Proposition 65): Title 22 California Code of Regulations requires that a clear and reasonable warning be given before exposure to chemicals listed by the State as causing cancer or reproductive toxicity. Formaldehyde is on California's list of chemicals known to the State to cause cancer. Weyerhaeuser has evaluated formaldehyde emission rates from its products and have found these rates to be below the significant risk level that would require product warnings.
New Jersey: This product contains formaldehyde, a substance which appears on New Jersey's Environmental *Hazardous Substance List*.
Pennsylvania: This product contains formaldehyde and wood dust, substances which appear on Pennsylvania's *Appendix A – Hazardous Substance Lists*.
SARA 313 Information: To the best of our knowledge, this product contains formaldehyde at a concentration that subjects the chemical 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 Classification: Not a controlled product

16. Additional Information

Date Prepared: 7/27/89
Date Revised: 11/16/2004
Prepared By: Weyerhaeuser Company, Corporate Environment, Health & Safety

16. Additional Information (cont'd.)

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 MSDS 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
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	=	Mining Safety and Health Administration
NAP	=	Not Applicable
NAV	=	Not Available
NIOSH	=	National Institute for Occupational Safety and Health
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)
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