

MEDIUM DENSITY FIBERBOARD (MDF)

MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: Medium Density Fiberboard (MDF)

TRADE NAME: MDF

SYNONYMS: N/A

CHEMICAL FAMILY: N/A

CHEMICAL FORMULA: N/A

CAS NUMBER: None

EMERGENCY TELEPHONE NUMBER: 936-829-5511 (Monday-Friday, 8am – 5pm) Central Time

DATE PREPARED OR REVISED: January 2009

SECTION II - HAZARDOUS INGREDIENTS

COMPONENT	CAS #	EXPOSURE LIMIT (OSHA)*	EXPOSURE LIMIT (ACGIH)
Formaldehyde *** (1,2)	50-00-0	0.75 ppm; 8-hr TWA 2 ppm; 15-min STEL	0.3 ppm; Ceiling**
Wood Fiber/Ligno-cellulosic Fibers (1,2,3)	None	5 mg/m ³ ; 8-hr TWA 10 mg/m ³ ; 15-min STEL	Softwood 5 mg/m ³ ; 8-hr TWA 10 mg/m ³ ; 15-min STEL

(1) In AFL-CIO v. OSHA 965 F. 2d 962 (11th Cir. 1992), the court overturned OSHA's 1989 Air Contaminants Rule, including the specific PELs for wood dust that OSHA had established at that time. The 1989 PELs were: TWA-5.0 mg/m³; STEL (15 min.) - 10.0 mg/m³ (all soft and hard woods, except Western red cedar); Western red cedar: TWA - 2.5 mg/m³.

(2) Wood dust is now officially regulated as an organic dust under the Particulates Not Otherwise Regulated (PNOR) or Inert or Nuisance Dust categories at PELs noted under Section II of this MSDS. However, a number of states have incorporated provisions of 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 non-compliance with the 1989 PELs.

(3) The Company manufactures this product using locally available materials. The composition of wood types will vary depending on the manufacturing facility and the wood species available. The ACGIH has different TLV for different wood species: softwood, 5.0 mg/m³ TWA & 10 mg/m³ STEL; certain hardwoods such as beech and oak, 1.0 mg/m³ TWA and western red cedar, 2.5 mg/m³ TWA. The Company does not intentionally use western red cedar in the manufacturing process. Various hardwoods are used at some manufacturing locations.

* NOTE: Although Agency and Court decision(s) could affect exposure limits, the Company will continue to utilize these limits as a PEL.

** NOTE: Based on sensory exposure.

*** NOTE: Formaldehyde gas may be emitted from the board product in very small quantities (fractional part per million (ppm) levels).

SECTION III - PHYSICAL PROPERTIES

DESCRIPTION

Composite panel product composed of resin, wax and wood fibers/ligno cellulosic fibers of varying percents (dependent on properties and thickness) pressed into panels of various sizes (normally 4 ft. X 8 ft.). Light tan to dark brown and may be colored due to the addition of wood coloring dye during manufacture.

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PHYSICAL DATA

Boiling Point - Not Applicable

Specific Gravity - < 1

Vapor Density - Not Applicable

% Volatiles by Volume - Not Applicable

Melting Point - Not Applicable

Vapor Pressure - Not Applicable

Solubility in Water (H₂O) (% BY WT.) - Insoluble

Evaporation Rate (Butyl Acetate = 1) - Not Applicable

pH - Not Applicable

Appearance And Odor - Light to dark colored solid. Color and odor are dependent on the wood species and time since board was manufactured and if any dye is present.

SECTION IV - FIRE AND EXPLOSION DATA

Flash Point - Not Applicable

Auto Ignition Temperature - 425 - 475 degrees F

Flammable Limits – Wood Panel, Piloted flame ~500 degrees F.

Fire Extinguishing Media - Water Spray, Carbon Dioxide

Special Fire Fighting Procedures – Use Class A fire fighting procedures for an incipient fire. Fire fighting procedures for wood products are well known. Water and Class A foams should be considered. Seek professional fire fighting help as necessary.

Unusual Fire And Explosion Hazards – Medium density fiberboard (MDF) does not present a fire or explosion hazard. Sawing, drilling, sanding, or machining particleboard could result in the creation of wood dust and or lingo-cellulosic fibers/dust. Wood dust may present a strong to severe explosion hazard if a dust cloud contacts an ignition source. According to data contained in NFPA Standards, 0.04 ounce of wood flour per cubic foot of air is the minimum explosive concentration.

SECTION V - HEALTH HAZARD DATA

EXPOSURE, ACUTE AND CHRONIC

Wood Dust/Fiber: May cause nasal dryness, irritation and mucostasis. Coughing, wheezing, sneezing, sinusitis and prolonged colds have also been reported. Depending on wood species may cause respiratory sensitization and/or irritation. If irritation persists consult a physician.

Signs and Symptoms of Exposure to Wood Dust- Acute- May cause eye irritation, nasal dryness, irritation and obstruction. Certain species may cause allergic dermatitis to certain individuals. **Chronic**-Depending on species of wood, wood dust may cause allergic dermatitis from repetitive contact at elevated levels. Certain elevated levels and prolonged exposures to wood dust have been associated with nasal cancer. IARC classifies wood dust, depending on species, as a carcinogen to humans (group 1). 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. NTP classifies wood dust as a known human carcinogen.

Formaldehyde Gas/Vapor: May cause temporary irritation of the skin, eyes, or respiratory system.

Signs and Symptoms of Exposure to Formaldehyde- Acute - May cause temporary irritation of skin, eyes, or respiratory system. If irritation persists consult a physician. **Chronic** – Numerous epidemiological studies have failed to demonstrate a relationship between formaldehyde exposure and nasal or pulmonary cancer or pulmonary diseases such as lung cancer and emphysema. Rats exposed to 14 ppm formaldehyde in laboratory studies developed nasal cancer. Exposure at 6 ppm did not develop statistically significant data linking formaldehyde to nasal cancer in rats. The NCI epidemiology study of 26,000 workers found little, if any, evidence linking formaldehyde exposure to cancer. The EPA has classified formaldehyde a B-1 Probable Human Carcinogen. Formaldehyde is listed by the NTP as an animal carcinogen and is reasonably anticipated to be a human carcinogen. The IARC monograph lists formaldehyde as a group 1 carcinogen to humans. This IARC determination is based on the work product of a working group that concluded that sufficient evidence exists that formaldehyde causes nasopharyngeal cancer in humans. Nasopharyngeal cancer is rare in developed countries.

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EXPOSURE AND PERSONAL PROTECTION INFORMATION

Engineering Controls- Due to the potential explosive nature of wood dust/fiber when suspended in air, adequate precautions should be taken during pneumatic/conveyor moving, sawing, sanding, drilling, machining, etc. of wood products to prevent sparks or other sources of ignition near these activities. Provide adequate general and local ventilation to keep airborne contaminant concentration levels below the OSHA PELs and good safety practices.

Respiratory protection- Use of a NIOSH/MSHA approved respirator when the permissible exposure limits to formaldehyde and/or wood dust may be exceeded.

Eye Protection- Wear side shield safety glasses or goggles during handling or remanufacturing this product.

Skin Protection- Wear gloves when handling this product. Wear protective clothing/outer garments as needed to prevent exposure.

General Hygiene- Practice proper personal hygiene.

EMERGENCY FIRST AID PROCEDURES

Inhalation- Remove to fresh air. If irritation or other symptoms persist, seek medical attention.

Eyes- Wash material from eyes with clean running water. If irritation persists, seek medical attention.

Skin - If skin is abraded, utilize proper first aid procedures and seek medical attention.

Ingestion - N/A

TOXICOLOGICAL

Wood Dust- OSHA hazard rating for oral ingestion is moderately toxic for both softwood and hardwood. The OSHA suggested oral lethal dose is 0.5 to 5 g/kg or about 1 pound (dry) for a 150 pound person. Activities which could generate wood dust (sawing, drilling, grinding, sanding, machining, etc.) should be avoided and or dust control methods employed. If wood dust is generated, steps should be taken to reduce exposure. Good Industrial Hygiene procedures should be implemented.

Formaldehyde- OSHA hazard rating for systemic acute and chronic exposures is highly toxic. Concentrated formaldehyde when exposed to the intact skin causes irritation. Some exposure panels exposed to concentrations of approximately 0.3 ppm have failed to produce irritation. Odor threshold for some data sources indicate an odor threshold of 0.3 ppm.

SECTION VI – REACTIVITY AND STABILITY DATA

Stability - Stable

Conditions To Avoid – Avoid product contact with any temperature sources that could induce thermal decomposition. High relative humidity and high temperature increases the rate of formaldehyde emissions from medium density fiberboard.

Incompatibility (materials to avoid) - Strong oxidizing agents, strong acids

Hazardous Decomposition Products - Thermal and/or thermal-oxidative decomposition can product irritating and potentially toxic fumes and gases, including carbon monoxide, hydrogen cyanide, polynuclear aromatic hydrocarbons, aldehydes and organic acids.

Hazardous Polymerization - Will not occur

SECTION VII – HANDLING AND STORAGE

STORAGE

Storage- This product should not be stored where exposure to water could occur or near a source of ignition. Avoid storing in areas of high relative humidity and temperature. High temperature and inadequate ventilation could allow the development of formaldehyde vapors in the storage area. It is recommended that the product be stored in an area that reflects the temperature and relative humidity of the end use of this product.

HANDLING

Precautions and Safe Handling: Provide adequate ventilation to reduce the possible build-up of formaldehyde vapors.

Steps to Be Taken If Spilled or Released: See storage and recycle/disposal section.

Waste Disposal Method: Incinerate or landfill in accordance with local, state, and federal regulations.

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RECYCLE/DISPOSAL CONSIDERATIONS

Recycle- This panel product is recyclable.

Disposal- It is the user's responsibility to determine whether your product meets any applicable criteria for waste disposal, whether hazardous or non-hazardous. All recycle/disposal activities must meet applicable Federal, Provincial, State and Local regulations.

ACCIDENTAL RELEASE

Steps To Be Taken If Product Is Spilled Or Released – Should not be applicable for product in purchased form. Dust/fibers generated from any remanufacturing activity should be vacuumed, etc. and recycled or used for energy recovery. Any disposal must comply with all applicable requirements.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

Respirator- The wearing of NIOSH approved breathing protection for exposure to wood dust/fiber may be necessary. Respirators are required if air contaminants exceed OSHA PEL.

VENTILATION

Local Exhaust- Necessary to remove dust/fiber in sanding, sawing, drilling, machining, etc. processes.

Mechanical: Ventilate to assure formaldehyde concentration is less than the OSHA PEL.

EYE PROTECTION

Eye Protection- Wear appropriate eye protection or safety goggles if wood dust/fiber exposure is likely.

SECTION IX - REGULATORY INFORMATION

TSCA- This product complies with TSCA inventory requirements.

H.U.D. - The HUD regulation of 24 CFR Part 3280 provides for third party certification of particleboard manufactured with urea-formaldehyde resin for formaldehyde emissions. Maximum level is 0.3 ppm (large chamber test method).

OSHA- While the panel product does not meet the criteria of 29 CFR 1910.1200 (Hazcom), wood dust/fiber and formaldehyde emissions from this product when the product is sanded, sawed, drilled, broken, machined, etc. may be hazardous by definition and trigger Hazcom requirements. It is the responsibility of the purchaser and subsequent users/remanufactures to determine applicability.

WHMIS- This product is not considered a controlled product.

DOT (Department of Transportation) - The user should comply with all applicable DOT requirements, Federal, Provincial, State, Local regulations and labels.

SARA/CERCLA - This product does not contain chemical(s) in concentrations that should require reporting under SARA 313.

ODS- During the manufacture of this product there is no intended use of listed ozone depleting chemicals as defined in applicable EPA regulations.

CALIFORNIA PROPOSITION 65 - Safe Drinking Water and Toxic Enforcement Act: Title 22 California Code of Regulations California Proposition 65 provides for labeling and disclosure of the presence of a chemical(s) known to the State of California to cause cancer or reproductive toxicity. This product contains Formaldehyde in extremely low levels and may, depending on conditions, emit Formaldehyde. Based on a preponderance of data and the recognition by OSHA that 0.75 ppm TWA is a safe employee exposure level, this product should not present a significant risk to users.

MINNESOTA- Minnesota Statutes require that all particleboard and medium density fiberboard used in newly constructed housing units or sold to the public as building materials meet the HUD formaldehyde emission standard.

NEW JERSEY- Formaldehyde is a substance which appears on the States Environmental Hazardous Substance List. Low levels of Formaldehyde may be emitted from this product.

PENNSYLVANIA- Formaldehyde and Wood Dust are substances that appear on the States, Appendix A- Hazardous Substance List. This product may emit low levels of formaldehyde and handling, remanufacturing, nailing, drilling, sanding, etc. may release wood dust.

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IMPORTANT: *Temple-Inland believes the information contained in this MSDS to be accurate at the time of preparation and has been compiled using sources believed to be reliable. It is based on available data and is believed to be correct. However, no warranty, merchantability or fitness for use is expressed or implied regarding the accuracy of this data, the results to be obtained from the use thereof, the potential hazards connected with the use of the material, or that any such use will not infringe any patent. Since the information contained herein may be applied under conditions beyond our control, and with which we may be unfamiliar, we do not assume any responsibility resulting from its use. This information is furnished upon the condition that the person receiving and using it shall make a determination of the suitability of the material for a particular use.*

It is the responsibility of the user to comply with all Local, State, Provincial, or Federal regulations concerning use of this product. It is the further responsibility of the buyer to research and understand safe methods of use, storage, handling, and disposal of this product.