

**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

**MANUFACTURER'S NAME AND ADDRESS:**

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**SECTION II - HAZARDOUS INGREDIENTS**

COMPONENT	CAS #	OSHA EXPOSURE LIMIT	ACGIH EXPOSURE LIMIT
Formaldehyde **	50-00-0	0.75 ppm; 8-hr TWA 2.0 ppm; 15-min STEL	0.3 ppm; Ceiling*
PNOR- (Wood Dust/Wood Fiber/Ligno-cellulosic Fibers, etc.) (1,2,3)	None	15.0 mg/m <sup>3</sup> Total Dust 5.0 mg/m <sup>3</sup> Respirable fraction	Wood-All other species 1.0 mg/m <sup>3</sup> Inhalable particulate mass  Western Red Cedar 0.5 mg/m <sup>3</sup> Inhalable particulate mass

(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. The 1989 PELs were: TWA-5.0 mg/m<sup>3</sup>; STEL (15 min.) & 10.0 mg/m<sup>3</sup> (all soft and hard woods, except Western red cedar); Western red cedar: TWA - 2.5 mg/m<sup>3</sup>.

(2) Wood dust is regulated by OSHA as an organic dust under Particulates Not Otherwise Regulated (PNOR) or Inert or Nuisance Dust categories utilizing the PELs in Section II. Some States have incorporated provisions of the 1989 standard in their state plans. Additionally, OSHA has announced that they 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 location of the manufacturing facility and available wood species. The ACGIH TLV for western red cedar is 0.5 mg/m<sup>3</sup> inhalable particulate mass. The ACGIH TLV for all other wood species is 1.0 mg/m<sup>3</sup> inhalable particulate mass. The Company does not intentionally use western red cedar in the manufacturing process. Various hardwoods are used at some manufacturing locations.

\* NOTE: Based on transient irritant effect.

\*\* 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/lingo 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.

**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 (H<sub>2</sub>O) (% 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 foam should be considered. Seek professional fire fighting help as necessary.

**Unusual Fire And Explosion Hazards** - This product does not present a fire or explosion hazard. Sawing, drilling, sanding, or machining this product could result in the creation of wood dust and or lingo-cellulosic fibers/dust. Wood dust may present a strong to sever 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 seek medical attention.

**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. If irritation persists, seek medical attention. **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.

**EXPOSURE, ACUTE AND CHRONIC (continued)**

**Formaldehyde Gas/Vapor:** May cause transient irritation of the skin, eyes, or respiratory system. If irritation persists seek medical attention.

**Signs and Symptoms of Exposure to Formaldehyde- Acute** - May cause transient irritation of skin, eyes, or respiratory system. If irritation persists seek medical attention. **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.

**EXPOSURE AND PERSONAL PROTECTION INFORMATION**

**Engineering Controls- Wood Dust** - 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 PEL. Employ good safety and personal hygiene practices. **Formaldehyde** - Provide adequate general and local ventilation to maintain exposure levels below the OSHA PEL. Employ good safety and personal hygiene 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 an approximately 150 pound person. Activities that 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. All applicable provisions of the OSHA formaldehyde standard should be implemented. Good Industrial Hygiene procedures should be implemented.

**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 produce 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, provincial and federal regulations.

**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, etc. Any disposal must comply with all applicable requirements (see above).

**SECTION VIII - SPECIAL PROTECTION INFORMATION****RESPIRATORY PROTECTION**

**Respirator**- The wearing of NIOSH approved breathing protection for exposure to wood dust/fiber and or formaldehyde 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. As necessary to maintain contaminant levels below applicable levels.

**Mechanical:** As necessary to remove and or reduce contaminate levels below applicable levels. Ventilate to assure formaldehyde concentration is less than the OSHA PEL.

**EYE PROTECTION**

**Eye Protection-** Wear appropriate eye protection or safety goggles to prevent potential contaminate exposure.

**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 stored and or 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.

**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.