

Material Safety Data Sheet

Engineered Hardwood Flooring –

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1. Product Identification

Product

Engineered Hardwood Flooring – Unfinished, Urethane Finished, Natural Hard-Wax Oil Finish

2. Composition / Information on Ingredients

Name	Cas #	Percent	Agency	Exposure Limit PEL	Comments
Core: -Hardwood Plywood - Formaldehyde ²	9055-05-6	65 - 70 <1	OSHA OSHA ACGIH ACGIH ACGIH Recommended ¹ Recommended ¹ Recommended ¹ OSHA OSHA ACGIH	TWA 15 mg/m ³ PEL-TWA 5mg/m ³ TLV-TWA 5mg/m ³ TLV-STEL 10mg/m ³ TLV-TWA 1mg/m ³ PEL-TWA 5mg/m ³ PEL-STEL 10mg/m ³ PEL-TWA 2.5mg/m ³ PEL-TWA .75 ppm PEL-STEL 2 ppm TLV-STEL C 0.3 ppm	Total dust Respirable dust fraction Softwood total dust Softwood total dust Selected hardwood total dust (beech, oak, others) Softwood or Hardwood total dust Softwood or Hardwood total dust Western red cedar total dust Free gaseous formaldehyde Free gaseous formaldehyde Free gaseous formaldehyde
Wood		28 - 33	OSHA OSHA ACGIH ACGIH ACGIH Recommended ¹ Recommended ¹ Recommended ¹	TWA 15 mg/m ³ PEL-TWA 5mg/m ³ TLV-TWA 5mg/m ³ TLV-STEL 10mg/m ³ TLV-TWA 1mg/m ³ PEL-TWA 5mg/m ³ PEL-STEL 10mg/m ³ PEL-TWA 2.5mg/m ³	Total dust Respirable dust fraction Softwood total dust Softwood total dust Selected hardwood total dust (beech, oak, others) Softwood or Hardwood total dust Softwood or Hardwood total dust Western red cedar total dust
Adhesive: -Adhesives -Diphenylmethane Diisocyanate	101-68-8	1 - 2 <1	OSHA ACGIH OSHA ACGIH	None None PEL-TWA 0.02ppm TLV-TWA 0.005ppm	
Finish: -Sealer -Proprietary Inert -Proprietary Inert -Proprietary Inert -Coating -Proprietary Inert -Top Coat -Proprietary Inert -Proprietary Inert -Proprietary Addit -Proprietary Inert -Proprietary Inert	Supplier Trade Secret Supplier Trade Secret Supplier Trade Secret	.0017 .0017 .0017	OSHA OSHA ACGIH OSHA OSHA OSHA OSHA OSHA OSHA OSHA OSHA	TWA 5 mg/m ³ TWA 15 mg/m ³ TLV-STEL 10 mg/m ³ TWA 2 mg/m ³ TWA 5 mg/m ³ TWA 15 mg/m ³ TWA 5 mg/m ³ TWA 15 mg/m ³ PEL-TWA 0.05ppm TWA 10 mg/m ³ TWA 10 mg/m ³	Respirable fraction. Total dust. The value is for particulate matter containing no asbestos and <1% crystalline silica. Respirable fraction. The value is for particulate matter containing no asbestos and <1% crystalline silica. Respirable fraction. Total dust. Respirable fraction. Respirable fraction. Total dust. The value is for particulate matter containing no asbestos and <1% crystalline silica.

1. Legno Bastone 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 into 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. Contains less than 0.1% free formaldehyde.

3. Hazards Identification

Appearance and Odor: Flooring boards with a variety of grain patterns and hues. The products have a slight aromatic odor. Wood component may contain alder, ash, aspen, basswood, beech, birch, bubinga, cherry, chestnut, cottonwood, cypress, elm, fir, gum, hemlock, hickory, koa, mahogany (true and false), mansonia, maple, oak (red and white), pine poplar, spruce, teak, walnut, and/or Western red cedar.

Primary Health Hazards: The primary health hazards posed by this product are thought to be due to exposure to dust generated from sawing, sanding, drilling, or routing this product, or exposure to free gaseous formaldehyde.

Primary Route(s) of Exposure:

- Ingestion:
- Skin: Dust
- Inhalation: Dust

Medical Conditions Generally Aggravated by Exposure: Gaseous formaldehyde or wood dust may aggravate preexisting respiratory conditions or allergies.

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: Formaldehyde, Groups 2A and 2B
- IARC Monographs: Formaldehyde, Group 2A: Wood dust, Group 1
- OSHA Regulated Formaldehyde

Gaseous formaldehyde has been shown to cause cancer in certain laboratory animals after long-term exposure to very high concentrations (14+ ppm), far above those normally found in the workplace with this product.

IARC - 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.

IARC - Group 2A: Probably Carcinogenic to Humans: limited evidence of carcinogenicity to humans; sufficient evidence of carcinogenicity in experimental animals.

NTP - Groups 2A and 2B: The National Toxicology Program (NTP) has reported formaldehyde is reasonably anticipated to be a carcinogen, meaning there is limited evidence of carcinogenicity from human studies (Group 2A) or sufficient evidence of carcinogenicity from studies in experimental animals (Group 2B).

4. First Aid Measures

Ingestion: Not applicable under normal use.

Eye Contact: Gaseous formaldehyde may cause temporary irritation or a temporary burning sensation. Wood, paper, or plastic dust(s) may cause mechanical irritation. Treat dust in eye as foreign object. Flush with water to remove dust particles. Get medical help if irritation persists.

Skin Contact: High concentrations of gaseous formaldehyde may cause allergic contact dermatitis in sensitized individuals resulting in redness, itching, and occasionally, hives. Wood dust(s) of certain species may elicit allergic contact dermatitis in sensitized individuals, as well as mechanical irritation resulting in hives. Get medical help if rash, irritation or dermatitis occurs.

Skin Absorption: Not known to occur under normal use.

Inhalation: High concentrations of gaseous formaldehyde may cause temporary irritation to the nose and throat. Wood, paper, or plastic dust(s) 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 Fighting Measures

Flash Point (Method Used): NAP

Flammable Limits:

LEL: See below under "Unusual Fire and Explosion Hazards"

UEL: NAP

Extinguishing Media: Water, carbon dioxide, sand, dry chemical

Autoignition Temperature (F or C): 400o-500oF (204o-260oC) for wood

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 dust.

6. Accidental Release Measures

Steps to be Taken In Case Material Is Released or Spilled: Not applicable for product in purchased form. Dust generated from sawing, sanding, drilling, or routing this product may be vacuumed or shoveled for recovery or disposal. Avoid dusty conditions and provide good ventilation.

Other Precautions: A NIOSH/MSHA-approved full-face respirator or half-mask respirator with chemical goggles should be worn when the formaldehyde and/or wood dust allowable exposure limits may be exceeded. It is recommended that the full-face and half-mask respirators have a combination formaldehyde and dust cartridge.

7. Handling and Storage

Precautions to be taken In Handling and Storage: No special handling precautions are required for product in purchased form. Keep in cool, dry place away from open flame. This product may release small quantities of gaseous formaldehyde. Store in well-ventilated area.

8. Exposure Control / Personal Protection

Personal Protective Equipment:

RESPIRATORY PROTECTION - - Not applicable for product in purchased form. A NIOSH/MSHA-approved 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 dust settles to avoid excessive accumulation of this combustible material. Minimize blow-down 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 and Chemical Properties

Boiling Point (@ 760 mm Hg):	NAP
Vapor Pressure (mm Hg):	NAP
Vapor Density (air = 1; 1 atm):	NAP
Specific Gravity (H₂O = 1):	Variable for wood; depends on species and moisture content
Melting Point:	NAP
Evaporation Rate (Butyl acetate = 1):	NAP
Solubility in Water (% by weight):	Insoluble
% Volatile by Volume [@ 70oF (21oC)]:	0
pH:	NAP

10. Stability and Reactivity

Stability: () Unstable (x) Stable

Conditions to Avoid: Avoid open flame. Product may ignite at temperatures in excess of 400oF (204oC).

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

Hazardous Decomposition or By-Products: Depending on moisture content, availability of oxygen, and temperature, thermal decomposition products include carbon monoxide, water, various aldehydes (both aliphatic and aromatic), tars, and carbon.

Hazardous Polymerization: () May occur (x) Will not occur

11. Toxicological Information

No information available for product in purchased form. Individual component information is listed below if available:

Wood: 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).

Paper (cellulose): LD50 (rat, inhalation) = 5,800 mg/m³/4 hours.

Plastic: None.

Resin solids: None.

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 TCLo of 8 ppm reported but response not specified; human inhalation TCLo of 17/mg/m³ for 30 minutes produced eye and pulmonary results; human inhalation TCLo of 300 ug/m³ produced nose and central nervous system results; LC50 (rats, inhalation) = 1,000 mg/m³/30 minutes; LC50 (mice, inhalation) = 400 mg/m³/2 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); *Lewis, R.J. Sr. 1992. Sax's Dangerous Properties of Industrial Materials, Eighth Edition, Van Nostrand Reinhold, NY.*

12. Ecological Information

No information available at this time.

13. Disposal Considerations

Waste Disposal Method: Dry land disposal is acceptable in most states if disposed of or discarded in its purchased form. It is, however, the user's responsibility to determine at the time of disposal whether the product meets EPA RCRA criteria for hazardous waste. Follow applicable federal, state, and local regulations.

14. Transport Information

Not regulated as a hazardous material by U.S. Department of Transportation.

15. Regulatory Information

It is the user's responsibility to determine what regulatory information is relevant to the usage of this product.

16. Other Information

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Prepared By: Corporate Safety & Health

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 this information is suitable for their applications and to follow safety precautions as may be necessary. The user has the responsibility to make sure that this sheet is the current revision.

Definition of Common Terms:

ACGIH	American Conference of Governmental Industrial Hygienists
C	Ceiling Limit
C.A.S #	Chemical Abstracts System Number
EPA	U.S. Environmental Protection Agency
IARC	International Agency for Research on Cancer
LCLo	Lowest concentration in air resulting in death
LC50	Concentration in air resulting in death to 50% of experimental animals
LDLo	Lowest dose resulting in death
LD50	Administered dose resulting in death to 50% of experimental animals
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
STEL	Short-Term Permissible Exposure Limit (15 minutes)
TCLo	Lowest concentration in air resulting in a toxic effect
TDLo	Lowest dose resulting in a toxic effect
TLV	Threshold Limit Value
TWA	Time-Weighted Average (8 hours)
WHMIS	Workplace Hazardous Materials Information System