



Material Safety Data Sheet

Bamboo Flooring Products

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This Material Safety Data Sheet (MSDS) applies to Teragren LLC Signature Colors, bamboo flooring.

1. Product Identification

Product	Manufacturing Location
Prefinished Vertical Grain Bamboo Flooring Prefinished Flat Grain Bamboo Flooring	USA Headquarters – Bainbridge Island, WA.

Synonyms: Bamboo Flooring System

2. Hazardous Ingredients/Identity Information

Name	CAS#	Percent	Agency	Exposure Limits	Comments
Bamboo ¹	None	94-95	OSHA OSHA ACGIH ACGIH	PEL-TWA 15 mg/m ³ PEL-TWA 5 mg/m ³ TLV-TWA 3 mg/m ³ TLV-STEL 10 mg/m ³	Total dust Respirable dust fraction Respirable dust fraction Inhalable particles
Urea formaldehyde resin solids ²	9011-05-6	4-5	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
UV Finish Polymerized polyurethane	None	0-1	OSHA ACGIH	PEL-TWA None TLV-TWA None	None None
Stain	None	0-1	OSHA ACGIH	PEL-TWA None TLV-TWA None	None None

¹ Bamboo is a member of the grass family which has distinct anatomical differences from that of wood. Therefore, bamboo would be regulated as an organic dust in a category known as "Particulates Not Otherwise Regulated" (PNOR), or Nuisance Dust by OSHA. The ACGIH classifies dust or particulate in this category as "Particulates Not otherwise Specified".

² Contains less than 0.1% free formaldehyde

3. Hazard Identification

Appearance and Odor: A matrix of natural/blonde or caramel colored interlocking bamboo fibers bonded with low-fuming urea formaldehyde resin having a slightly aromatic odor.

3. Hazard Identification (cont.)

Primary Health Hazards: The primary health hazards posed by these products are thought to be due to exposure to dust generated when machining this product (e.g. sanding, sawing, routing and or planing) and to a much lesser extent free gaseous formaldehyde.

Primary Route(s) of Exposure:

- () Ingestion:
- (X) Skin: Dust
- (X) Inhalation: Dust or gas

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

Chronic Health Hazards: Bamboo dust has not been associated with any long term health effects including cancer in animals as well as humans.

Carcinogenicity Listing:

- (X) NTP: Formaldehyde, Group 2, A & B
- (X) IARC Monographs: Formaldehyde, Group 2A;
- (X) OSHA Regulated: Formaldehyde

NTP - Group 2: Reasonably anticipated to be a carcinogen. **A)** Limited evidence of carcinogenicity from studies in humans which indicates that causal relationship is credible.

B) Sufficient evidence of carcinogenicity from studies in experimental animals

IARC - Group 2A: Probably carcinogenic to humans; limited human evidence and sufficient evidence in experimental animals. Studies of cancer incidence among workers in a wide variety of occupations have failed to convincingly show carcinogenic activity of formaldehyde in humans. Gaseous formaldehyde has been shown to cause cancer in certain laboratory animals after long-term exposure to very high concentrations (14+ ppm), far above the levels of formaldehyde gas emitted by this product.

4. Emergency and First-Aid Procedures

Ingestion: Not applicable under normal use.

Eye Contact: Dust 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: Although not applicable for this product in its purchased form, high concentrations of gaseous formaldehyde may cause allergic contact dermatitis in sensitized individuals resulting in redness, itching, and occasionally, hives. Frequent handling of dust or product in its manufactured form may cause some minor drying of the skin, mechanical abrasion, cuts or slivers. Wash hands after handling and obtain medical help if rash or irritation occurs.

Skin Absorption: Not known to occur under normal use.

Inhalation: Although not applicable for this product in its purchased form (actual formaldehyde gas release levels from Teragren LLC Signature Colors Flooring Products are < 0.015 ppm). However, gaseous formaldehyde may cause respiratory difficulties for sensitized/allergic individuals. Bamboo dust may cause obstruction in the nasal passages, resulting in dryness of nose, dry cough and sneezing. 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:

- LEL: NAP
- UEL: NAP

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

Autoignition Temperature: Variable [typically 400-500oF (204-260oC)]

Special Firefighting Procedures: None

Unusual Fire and Explosion Hazards: None

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 of products may be vacuumed or shoveled for recovery or disposal. Avoid dusty conditions and provide good ventilation. A NIOSH-approved dust respirator should be worn if dust exposure limits are exceeded.

7. Handling and Storage

Precautions to be Taken In Handling and Storage: No special handling precautions are required for products in purchased form. This product will release small quantities of gaseous formaldehyde (<0.015 ppm in accordance with ASTM E1333 test methods). Keep in cool, dry place away from open flame. Store in well ventilated area.

8. Exposure Control Measures

Personal Protective Equipment:

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

PROTECTIVE GLOVES -- Not required. However, cloth, canvas, or leather gloves are recommended to minimize potential mechanical irritation slivers from handling and machining 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

Boiling Point (@ 760 mm Hg):	NAP
Vapor Pressure (mm Hg):	NAP
Vapor Density (air = 1; 1 atm):	NAP
Specific Gravity (H₂O = 1):	0.58 g/ml
Melting Point:	NAP
Evaporation Rate (Butyl acetate = 1):	NAP
Solubility in Water (% by weight):	<0.1
% Volatile by Volume [@ 70°F (21°C)]:	0
pH:	NAP

9. Physical/Chemical Properties (cont.)

Oil-water distribution coefficient: NAP
Odor threshold: ND

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

None available for product in purchased form.

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 300ug/m³ produced nose and CNS results; LC50 (rat, inhalation) = 1,000 mg/m³/30 minutes; LC50 (mice, inhalation) = 400mg/m³/2 hours.

Sources: Lewis, R.J., Sr. 1992 *Sax's Dangerous Properties of Industrial Materials*, Eighth Edition, Van Nostrand Reinhold, NY.; *NIOSH Registry of Toxic Effects of Chemical Substances (RTECS)*, 1983-1984 Cumulative Supplement to 1981-1982 Edition and May 1995; *OSHA Regulated Hazardous Substances*, Government Institutes, Inc., February 1990.

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) regulations.

15. Regulatory Information

TSCA

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.
Chemicals listed:

Formaldehyde CAS# 50-00-0

DSL

All ingredients are listed or are not required to be listed under the Canadian Domestic Substance List.

Chemicals listed:

Formaldehyde CAS# 50-00-0

WHMIS Classification

Not a controlled product

STATE RIGHT-TO KNOW

- California Prop 65 –This product contains formaldehyde which depending on temperature and humidity may be emitted from the product. Formaldehyde is a compound that is known in the State of California to cause cancer. Teragren has evaluated formaldehyde emission rates from its products and have found these rates to be below the no significant risk level that would require product warnings.
- New Jersey - Not listed
- Pennsylvania –This product contains formaldehyde which depending on temperature and humidity may be emitted from the product.

SARA 313 Information

This product contains formaldehyde at a concentration that subjects the chemical to SARA Title III Section 313 supplier notification requirements. However, the emissions characteristics and concentrations have been measure using ASTM E1333 test methods (typical average concentration of 0.015 ppm equates to a yearly emission rate of 0.01 lbs/yr). This emission rate falls well below the Threshold Planning Requirement for Formaldehyde of 500 lbs.

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 – dust only
- A delayed (chronic) health hazard - no
- A fire hazard - no
- A reactivity hazard - no
- A sudden release hazard - no

16. Additional Information

Date Prepared: 07/28/03

Date Revised: 11/28/07

Prepared By: Van Fidino CIH

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 most up-to-date issue.

16. Additional Information (cont.)

Definition of Common Terms:

ACGIH	= American Conference of Governmental Industrial Hygienists
C	= Ceiling Limit
CAS#	= Chemical Abstracts System Number
DSL	= Canadian Domestic Substance List
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
ND	= Not Determined
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
PPM	= Parts of gas or vapor per million parts of air
RCRA	= Resource Conservation and Recovery Act
STEL	= Short-Term Exposure Limit (15 minutes)
TDG	= Canadian Transportation of Dangerous Goods
TCLo	= Lowest concentration in air resulting in a toxic effect
TDLo	= Lowest dose resulting in a toxic effect
TLV	= Threshold Limit Value
TSCA	= Toxic Substance Control Act
TWA	= Time-Weighted Average (8 hours)
WHMIS	= Workplace Hazardous Materials Information System