Material Safety Data Sheet
Bamboo Paneling Products
Kirei USA
412 N. Cedros Ave.
Solana Beach, CA 92075
Additional Information: 619-236-9924
Email: info@kireiusa.com

This Material Safety Data Sheet (MSDS) applies to all Kirei™ bamboo panels and 4 x 8 x .6mm™ bamboo veneer products.

1. Product Identification

Product Manufacturing Location

| Unfinished Vertical Grain Panels | USA Headquarters – Solana Beach, CA |
| Unfinished Flat Grain Panels |

Synonyms: Furniture grade bamboo paneling, architectural woodwork, casework and countertops

2. Hazardous Ingredients/Identity Information

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>%</th>
<th>Agency</th>
<th>Exposure Limits</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bamboo(1)</td>
<td>N/A</td>
<td>88-89%</td>
<td>OSHA</td>
<td>PEL-TWA 15 mg/m3, PEL-TWA 5mg/M3, TLV-TWA 3mg/m3, TLV-STEL 10mg/m3</td>
<td>Total Dust, Respirable Dust Fraction, Respirable Dust Fraction, Inhalable Particles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OSHA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urea (2)</td>
<td>9011-05-6</td>
<td>10-11</td>
<td>OSHA</td>
<td>PEL-TWA 0.75 ppm, PEL-STEL 2 ppm, TLV- Ceiling 0.3 ppm</td>
<td>Free gaseous formaldehyde, Free gaseous formaldehyde, Free gaseous formaldehyde</td>
</tr>
<tr>
<td>Formaldehyde Solids</td>
<td></td>
<td></td>
<td>OSHA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

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 planning) and to a much lesser extent free gaseous formaldehyde.

3. Hazard Identification (cont.)

Primary Route(s) of Exposure:
(X) 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 longterm 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® Panel Products are < 0.03 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 400-500°F (204-260°C)]
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. Keep in cool, dry place away from open flame. This product will release small quantities of gaseous formaldehyde (<0.03 ppm in accordance with ASTM E1333 test methods). 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

**Oil-water distribution coefficient:** NAP

**Odor threshold:** ND

**10. Stability and Reactivity**

**Stability:** ( ) Unstable (x) 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 (x) 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 TECAL of 8 ppm reported but response not specified; human inhalation TECAL of 17/mg/m3 for 30 minutes produced eye and pulmonary results; human inhalation TECAL of 300ug/m3 produced nose and CNS results; LC50 (rat, inhalation) = 1,000 mg/m3/30 minutes; LC50 (mice, inhalation) = 400mg/m3/2 hours.

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

**15. Regulatory Information (cont.)**
**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 LLC has evaluated formaldehyde emission rates from its products (typical range of 0-0.03ppm) 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: 1/2/2008
Date Revised: 1/2/2008
Prepared By:
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