site operations
MATERIAL SAFETY DATA SHEETS

MSDS INTERIOR MATERIALS + CLEANING PRODUCTS

MSDS ELECTRICAL, MECHANICAL + PLUMBING SYSTEMS

MSDS FIRE SAFETY PRODUCTS

MSDS EXTERIOR + STRUCTURE
Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Paper Faced Gypsum Boards
Product Number: (See product list found in section 16)
Product Use: Products accommodate wide range of wall, floor and ceiling applications and soffit treatments; vary in level of sound, water and fire resistance.
Manufacturer/Supplier: Georgia-Pacific Gypsum LLC
133 Peachtree Street, N.E., Atlanta, GA 30303
Phone Number: (800) 225-6119 (Technical Information)
(404) 652-5119 (MSDS Request)
Emergency Phone: CHEMTREC (800) 424-9300
Date of Preparation: June 8, 2007

Section 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION
Cutting, sanding, or otherwise working with this product may generate large amounts of dust. Dust can be irritating to the eyes, skin, and respiratory system.

Likely Routes of Exposure: Skin contact, eye contact, and inhalation.

Potential Health Effects:
Eye: Dust may cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Skin: Dust may produce itching, rash, and redness. Handling can cause dry skin.
Ingestion: Not applicable under normal conditions of use. May result in obstruction and temporary irritation of the digestive tract.
Inhalation: May cause respiratory tract irritation.

Medical Conditions Aggravated By Exposure: Because of its irritating properties, dust may aggravate preexisting skin, eye, and respiratory conditions.

Target Organs: Skin, eyes and respiratory system.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS #</th>
<th>Wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum (calcium sulfate)</td>
<td>7778-18-9</td>
<td>60 - 100</td>
</tr>
<tr>
<td>Silica, crystalline, quartz</td>
<td>14808-60-7</td>
<td>0.1 - 1</td>
</tr>
</tbody>
</table>

This product is a hazardous chemical as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Gypsum (calcium sulfate) contains naturally occurring silica crystalline (quartz), which is listed as a lung carcinogen. See section 8 for exposure information.

Section 4: FIRST AID MEASURES

Eye Contact: In case of contact, immediately flush eyes with plenty of water. Remove contact lenses, if worn. If irritation persists, get medical attention.

Skin Contact: In case of contact, immediately flush skin with plenty of water. Call a physician if irritation develops and persists.
Inhalation: Remove to fresh air. If symptoms persist, obtain medical attention.
Ingestion: May result in obstruction and irritation if ingested. Get medical attention.

Section 5: FIRE FIGHTING MEASURES

Flammability: Not flammable by OSHA/WHMIS criteria.
Flammable Limits: This product is fire resistant and has the following surface burning characteristics reported by nationally recognized laboratories. Flame Spread, 0 - 25, and Smoke Development, 0.
Means of Extinction:
Suitable Extinguishing Media: Treat for surrounding material.
Unsuitable Extinguishing Media: Not applicable.
Products of Combustion: May include, and are not limited to: calcium oxide and sulfur dioxide.

Explosion Data:
Sensitivity to Mechanical Impact: Not applicable.
Sensitivity to Static Discharge: Not applicable.
Protection of Firefighters: Firefighters should wear full protective clothing including self contained breathing apparatus.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protection recommended in Section 8 and handling recommendation in Section 7. Deny entry to unnecessary personnel.
Environmental Precautions: Keep out of drains, sewers, ditches, and waterways.
Methods for Containment: Pick up large pieces, then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).
Methods for Clean-Up: Scoop up material and place in a disposal container. Utilize wet methods, if appropriate, to minimize dust.

Section 7: HANDLING AND STORAGE

Handling:
Avoid contact with skin and eyes. Do not breathe dust. Use only in well-ventilated areas. Do not use a power saw. Wear appropriate NIOSH approved dust mask or filtering facepiece when permissible exposure limits may be exceeded. When using do not eat or drink. Launder contaminated clothing before reuse.

Storage:
Keep out of the reach of children. Store level and keep dry. Dewpoint or other conditions causing the presence of moisture can damage the product during storage.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS #</th>
<th>OSHA-PEL</th>
<th>Exposure Limits</th>
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</tr>
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<tbody>
<tr>
<td>Gypsum (CaSO₄)</td>
<td>7778-18-9</td>
<td>15 mg/m³ (total); 5 mg/m³ (resp)</td>
<td>10 mg/m³ (total)</td>
<td></td>
</tr>
<tr>
<td>Silica, crystalline, quartz</td>
<td>14808-60-7</td>
<td>((10 \text{ mg/m}^3)/(%\text{SiO}_2+2)) TWA (resp)); ((30 \text{ mg/m}^3)/(%\text{SiO}_2+2)) TWA (total)); ((250)/(%\text{SiO}_2+5)) mppcf TWA (resp))</td>
<td>0.025 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

Page 2 of 6
Engineering Controls: Store and snap method recommended. Do not use power saw. Provide local and general
exhaust ventilation to keep airborne dust concentrations below exposure limits. Use wet methods, if appropriate, to
reduce the generation of dust.

Personal Protective Equipment:

Eye/Face Protection: Safety glasses or goggles are recommended when working with the product.
Ensure compliance with OSHA’s PPE standards (29 CFR 1910.132 (general) and 133 (eye and face
protection)). Safety shower/eye wash fountain must be readily available in the workplace area (29 CFR
1910.151(c)).

Skin Protection: Impervious protective clothing and gloves recommended to prevent drying or irritation
of hands. Ensure compliance with OSHA’s PPE standards (29 CFR 1910.132 (general) and 138 (hand
protection)). Safety shower/eye wash fountain must be readily available in the workplace area (29 CFR
1910.151(c)).

Respiratory Protection: A NIOSH approved dust mask or filtering facepiece is recommended in poorly
ventilated areas or when permissible exposure limits may be exceeded. Respirators should be selected
by and used under the direction of a trained health and safety professional following requirements found
in OSHA’s respirator standard (29 CFR 1910.134) and ANSI’s standard for respiratory protection (Z88.2).

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Paper faced gypsum boards.</td>
</tr>
<tr>
<td>Color:</td>
<td>Facing color varies.</td>
</tr>
<tr>
<td>Odor:</td>
<td>No odor.</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>Not available.</td>
</tr>
<tr>
<td>Physical State:</td>
<td>Solid.</td>
</tr>
<tr>
<td>pH:</td>
<td>7</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Freezing Point:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>Not available.</td>
</tr>
<tr>
<td>Lower Flammability Limit:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Upper Flammability Limit:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Density:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>2.2 - 2.4</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>0.2% @ 22°C</td>
</tr>
<tr>
<td>Coefficient of Water/Oil Distribution:</td>
<td>Not available.</td>
</tr>
<tr>
<td>Auto-ignition Temperature:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Percent Volatile, wt. %:</td>
<td>Not available.</td>
</tr>
<tr>
<td>VOC content, wt. %:</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
Section 10: STABILITY AND REACTIVITY

Stability: Stable under normal storage conditions.

Conditions of Reactivity: Contact with strong acids produces carbon dioxide.

Incompatible Materials: None known.

Hazardous Decomposition Products: May include, and are not limited to: calcium oxide and sulfur dioxide.

Possibility of Hazardous Reactions: No dangerous reaction known under conditions of normal use.

Section 11: TOXICOLOGY INFORMATION

EFFECTS OF ACUTE EXPOSURE

Component Analysis

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>LD₅₀ (oral)</th>
<th>LC₅₀</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum (calcium sulfate)</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Silica, crystalline, quartz</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

EFFECTS OF CHRONIC EXPOSURE

Target Organs: Lungs.

Chronic Effects: Hazardous by OSHA/WHMIS criteria.

Respirable crystalline silica in the form of quartz or cristobalite from occupational sources is listed by the International Agency for Research on Cancer (IARC) and National Toxicology Program (NTP) as a lung carcinogen.

Prolonged exposure to respirable crystalline silica has been known to cause silicosis, a lung disease, which may be disabling. While there may be a factor of individual susceptibility to a given exposure to respirable silica dust, the risk of contracting silicosis and the severity of the disease is clearly related to the amount of dust exposure and the length of time (usually years) of exposure.

Carcinogenicity: Hazardous by OSHA/WHMIS criteria.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Chemical Listed as Carcinogen or Potential Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica, crystalline, quartz</td>
<td>ACGIH - A2 - Suspected human carcinogen;</td>
</tr>
<tr>
<td></td>
<td>IARC - 1 - The agent is carcinogenic to humans;</td>
</tr>
<tr>
<td></td>
<td>NTP - 1 - Known to be carcinogens</td>
</tr>
</tbody>
</table>

Mutagenicity; Reproductive Effects; Teratogenicity; Embryotoxicity; Respiratory Sensitization; Skin Sensitization: Not hazardous by OSHA/WHMIS criteria.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not considered to be harmful to aquatic life.

Freshwater Fish Species Data: 7778-18-9 96 Hr LC50 Lepomis macrochirus: 2980 mg/L (static)

Water Flea Data: 7778-18-9 120 Hr EC50 Nitscherea linearis: 3200 mg/L
Disposal Instructions:
This product, if discarded as supplied, is not considered a hazardous waste under Federal Waste Regulations 40 CFR 261. If processing, use, or contamination alters the material, the waste must be tested using methods described in 40 CFR 261 to determine if it meets applicable definition of hazardous waste.

Section 14: TRANSPORTATION INFORMATION

DOT Classification
Not regulated

TDG Classification
Not regulated

Section 15: REGULATORY INFORMATION

Federal Regulations
Canadian: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.


SARA Title III

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Section 302 (EHS) TPQ (lbs.)</th>
<th>Section 304 EHS RQ (lbs.)</th>
<th>CERCLA RQ (lbs.)</th>
<th>Section 313</th>
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Global Inventories

<table>
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<tr>
<th>Ingredient</th>
<th>Canada DSL/NDSL</th>
<th>USA TSCA</th>
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<td>DSL</td>
<td>Yes.</td>
</tr>
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<td>DSL</td>
<td>Yes.</td>
</tr>
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HMIS - Hazardous Materials Identification System

Health - 1* Flammability - 0 Physical Hazard - 0

NFPA - National Fire Protection Association:

Health - 1 Fire - 0 Reactivity - 0

Hazard Rating: 0 = minimal, 1 = slight, 2 = moderate, 3 = severe, 4 = extreme

WHMIS Classification(s):
Class D2A - Carcinogenicity
Class D2A - Chronic Toxic Effects
WHMIS Hazard Symbols:

![Hazard Symbol]

Section 16: OTHER INFORMATION

Other Information:

Products on this MSDS do not contain asbestos.

Product List:

TOUGHROCK® Gypsum Board
TOUGHROCK® Cameo® Veneer Plaster Base (Blueboard)
TOUGHROCK® MOISTURE-GUARD® (Greenboard)
TOUGHROCK® Gypsum Sheathing (Treated Core)
TOUGHROCK® Gypsum Sheathing (Non-Treated Core)

Disclaimer:

IMPORTANT: The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for you consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Georgia-Pacific and its subsidiaries make no warranty of any kind, expressed or implied, concerning the accuracy or completeness of the information and data herein. The implied warranties of merchantability and fitness for a particular purpose are specifically excluded. Georgia-Pacific and its subsidiaries will not be liable for claims that the information and data are inaccurate, incomplete or otherwise misleading.

Supersedes: 01/01/04

Prepared by: Georgia-Pacific LLC
(404) 652-5119 (MSDS Request)
Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Glass Mat Faced Gypsum Panels
Product Number: (See product list found in section 16)
Product Use: Patented water and mold resistant boards for exterior and interior walls and ceilings, interior floors, countertops, roof decks, elevator shafts and stairwells. FIREGUARD® panels can be used in fire-rated assemblies and area separation walls.
Manufacturer/Supplier: Georgia-Pacific Gypsum LLC
133 Peachtree Street, N.E., Atlanta, GA 30303
Phone Number: (800) 225-6119 (Technical Information)
(404) 652-5119 (MSDS Request)
Emergency Phone: CHEMTREC (800) 424-9300
Date of Preparation: June 8, 2007

Section 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION

Cutting, sanding, or otherwise working with this product may generate large amounts of dust. Dust can be irritating to the eyes, skin, and respiratory system.

Likely Routes of Exposure: Skin contact, eye contact, and inhalation.

Potential Health Effects:

Eye: Dust may cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.

Skin: Dust and glass fibers may produce itching, rash, and redness. Handling can cause dry skin.

Ingestion: Not applicable under normal conditions of use. May result in obstruction and temporary irritation of the digestive tract.

Inhalation: May cause respiratory tract irritation.

Medical Conditions Aggravated By Exposure: Because of irritating properties, dust and glass fibers may aggravate preexisting skin, eye, and respiratory conditions.

Target Organs: Skin, eyes and respiratory system.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

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<td>65997-17-3</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Silica, crystalline, quartz</td>
<td>14808-60-7</td>
<td>0.1 - 1</td>
</tr>
</tbody>
</table>

Gypsum (calcium sulfate) contains naturally occurring silica crystalline (quartz), which is listed as a lung carcinogen. See section 8 for exposure information.
Section 4: FIRST AID MEASURES

Eye Contact: In case of contact, immediately flush eyes with plenty of water. Remove contact lenses, if worn. If irritation persists, get medical attention.

Skin Contact: In case of contact, immediately flush skin with plenty of water. Call a physician if irritation develops and persists.

Inhalation: Remove to fresh air. If symptoms persist, obtain medical attention.

Ingestion: May result in obstruction and irritation if ingested. Get medical attention.

Section 5: FIRE FIGHTING MEASURES

Flammability: Not flammable by OSHA/WHMIS criteria.

Flammable Limits: This product is fire resistant and has the following surface burning characteristics reported by nationally recognized laboratories. Flame Spread, 0 - 25, and Smoke Development, 0 - 20 (ASTH EB4).

Means of Extinction:

Suitable Extinguishing Media: Treat for surrounding material.

Unsuitable Extinguishing Media: Not applicable.

Products of Combustion: May include, and are not limited to: calcium oxide and sulfur dioxide.

Explosion Data:

Sensitivity to Mechanical Impact: Not applicable.

Sensitivity to Static Discharge: Not applicable.

Protection of Firefighters: Firefighters should wear full protective clothing including self contained breathing apparatus.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protection recommended in Section 8 and handling recommendation in Section 7. Maintain appropriate ventilation.

Environmental Precautions: Keep out of drains, sewers, ditches, and waterways.

Methods for Containment: Pick up large pieces, then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

Methods for Clean-Up: Scoop up material and place in a disposal container. Use wet methods, if appropriate, to minimize dust.

Section 7: HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. Do not breathe dust. Use only in well-ventilated areas. Do not use a power saw. Wear appropriate NIOSH approved dust mask or filtering facepiece when permissible exposure limits may be exceeded. When using do not eat or drink. Launder contaminated clothing before reuse.

Storage: Keep out of the reach of children. Store level and keep dry. Dewpoint or other conditions causing the presence of moisture can damage the product during storage.
Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

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<td>10 mg/m³ (total)</td>
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<tr>
<td>Continuous filament glass fibers</td>
<td>65997-17-3</td>
<td>Not available.</td>
<td>1 f/cc TWA (respirable fibers: length &gt; 5 μm, aspect ratio equal to or greater than 3:1, as determined by the membrane filter method at 400-450X magnification (4-mm objective), using phase-contrast illumination.); 5 mg/m³ TWA (inhalable fraction) related to continuous filament glass fibers). 0.025 mg/m³</td>
</tr>
<tr>
<td>Silica, crystalline, quartz</td>
<td>14808-60-7</td>
<td>((10 mg/m³)/(%SiO₂+2) TWA (resp)); ((30 mg/m³)/(%SiO₂+2) TWA (total)); ((250)/(%SiO₂+5) mppcf TWA (resp))</td>
<td></td>
</tr>
</tbody>
</table>
Evaporation Rate: Not available.
Lower Flammability Limit: Not applicable.
Upper Flammability Limit: Not applicable.
Vapor Pressure: Not applicable.
Vapor Density: Not applicable.
Specific Gravity: 2.2 - 2.4
Solubility in Water: 0.2% @ 22°C
Coefficient of Water/Oil Distribution: Not available.
Auto-ignition Temperature: Not applicable.
Percent Volatile, wt. %: Not available.
VOC content, wt. %: Not available.

Section 10: STABILITY AND REACTIVITY

Stability: Stable under normal storage conditions.
Conditions of Reactivity: Contact with strong acids produces carbon dioxide.
Incompatible Materials: None known.
Hazardous Decomposition Products: May include, and are not limited to: calcium oxide and sulfur dioxide.
Possibility of Hazardous Reactions: No dangerous reaction known under conditions of normal use.

Section 11: TOXICOLOGY INFORMATION

EFFECTS OF ACUTE EXPOSURE

Component Analysis

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<td>Silica, crystalline, quartz</td>
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EFFECTS OF CHRONIC EXPOSURE

Target Organs: Lungs.

Chronic Effects: Hazardous by OSHA/WHMIS criteria.
Respirable crystalline silica in the form of quartz or cristobalite from occupational sources is listed by the International Agency for Research on Cancer (IARC) and National Toxicology Program (NTP) as a lung carcinogen.

Prolonged exposure to respirable crystalline silica has been known to cause silicosis, a lung disease, which may be disabling. While there may be a factor of individual susceptibility to a given exposure to respirable silica dust, the risk of contracting silicosis and the severity of the disease is clearly related to the amount of dust exposure and the length of time (usually years) of exposure.

In 1987, IARC classified continuous filament glass fibers as a Group 3 substance, “not classifiable as to its carcinogenicity to humans”. In 2001, IARC reaffirmed this designation. Continuous filament glass fibers are not considered respirable due to their large diameter.

Carcinogenicity: Hazardous by OSHA/WHMIS criteria.
MATERIAL SAFETY DATA SHEET
Glass Mat Faced Gypsum Panels

Ingredient
Silica, crystalline, quartz

Chemical Listed as Carcinogen or Potential Carcinogen
ACGIH - A2 - Suspected human carcinogen;
IARC - 1 - The agent is carcinogenic to humans;
NTP - 1 - Known to be carcinogens

Mutagenicity; Reproductive Effects; Teratogenicity; Embryotoxicity; Respiratory Sensitization; Skin Sensitization: Not hazardous by OSHA/WHMIS criteria.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not considered to be harmful to aquatic life.

Freshwater Fish Species Data:
Gypsum (calcium sulfate) 7778-18-9 96 Hr LC50 Lepomis macrochirus: 2980 mg/L (static)
Water Flea Data:
Gypsum (calcium sulfate) 7778-18-9 120 Hr EC50 Nitscheria linearis: 3200 mg/L

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions:
This product, if discarded as supplied, is not considered a hazardous waste under Federal Waste Regulations 40 CFR 261. If processing, use, or contamination alters the material, the waste must be tested using methods described in 40 CFR 261 to determine if it meets applicable definition of hazardous waste.

Section 14: TRANSPORTATION INFORMATION

DOT Classification
Not regulated

TDG Classification
Not regulated

Section 15: REGULATORY INFORMATION

Federal Regulations

Canadian: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.


SARA Title III

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</tr>
</tbody>
</table>

HMIS - Hazardous Materials Identification System

- Health - 1*
- Flammability - 0
- Physical Hazard - 0

NFPA - National Fire Protection Association:

- Health - 1
- Fire - 0
- Reactivity - 0

Hazard Rating: 0 = minimal, 1 = slight, 2 = moderate, 3 = severe, 4 = extreme

WHMIS Classification(s):
- Class D2A - Carcinogenicity
- Class D2A - Chronic Toxic Effects

WHMIS Hazard Symbols:

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Section 16: OTHER INFORMATION

Other Information:

Products on this MSDS do not contain asbestos.

Product List:

- DensArmor®
- Dens Armor Plus® Abuse Guard ® Paperless Interior Drywall
- DensArmor® FIREGUARD® C DensArmor Plus® Interior Panel
- DensArmor Plus® FIREGUARD® Interior Panel
- DensArmor Plus® FIREGUARD® C Dens-Core®
- DensDeck DuraGuard® Roof Board
- DensDeck® Roof Board
- DensDeck® FIREGUARD® Roof Board DensDeck Prime®
- Roof Board DensGlass Gold® Exterior Sheathing
- DensGlass Gold® FIREGUARD® Exterior Sheathing
- DensGlass Silver® Residential Sheathing DensGlass® Ultra
- Shaftliner™ Guard DensMarine® Bulkhead Panel
- DensShield® FIREGUARD® Tile Guard DensShield® Tile Backer
Disclaimer:
IMPORTANT: The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for you consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Georgia-Pacific and its subsidiaries make no warranty of any kind, expressed or implied, concerning the accuracy or completeness of the information and data herein. The implied warranties of merchantability and fitness for a particular purpose are specifically excluded. Georgia-Pacific and its subsidiaries will not be liable for claims that the information and data are inaccurate, incomplete or otherwise misleading.

Supersedes: 01/14/05

Prepared by: Georgia-Pacific LLC
(404) 652-5119 (MSDS Request)
Material Safety Data Sheet

PRODUCT IDENTIFICATION

Trade Name: NCFI 23-002 Series R
Chemical Name: Mixture
Synonyms: Polyurethane Resin

Chemical Family: Polyol Resin System
Formula: N/A
Date Prepared: 04/13/05

INGREDIENTS-HAZARD CLASSIFICATION

Name: 1,1,1,3,3-Penta Fluoropropane¹ 460-73-1
(CF₃CH₂CHF₂ or HFC-245fa)
Tertiary Amine Catalysts¹

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS NO.</th>
<th>%</th>
<th>PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,3,3-Penta Fluoropropane¹</td>
<td>460-73-1</td>
<td>10</td>
<td>None Established.</td>
</tr>
<tr>
<td>(CF₃CH₂CHF₂ or HFC-245fa)</td>
<td></td>
<td></td>
<td>300 ppm TWA recommended.</td>
</tr>
<tr>
<td>Tertiary Amine Catalysts¹</td>
<td></td>
<td>&lt;1</td>
<td>None Established.</td>
</tr>
</tbody>
</table>

¹ Not listed as a carcinogen (NTA, IARC, OSHA)

SHIPPING INFORMATION

Not regulated when shipped by land, water or air.

PHYSICAL DATA

Boiling Point (°F): CF₃CH₂CHF₂, 60°F
Solubility in Water: Slight
Appearance and Odor: Brown liquid, ethereal odor

Specific Gravity: 1.23
% Volatile by Volume: 10

FIRE AND EXPLOSION HAZARD DATA

Flash Point (test method): After CF₃CH₂CHF₂ evaporation, >200°F (P-M)
Extinguishing Media: Water, dry chemicals, CO₂
Special Fire Fighting Procedures: A self-contained breathing apparatus should be worn to protect against toxic and irritating vapors.
Unusual Fire and Explosion Hazards: Overheated containers may rupture due to pressure produced by CF₃CH₂CHF₂. CF₃CH₂CHF₂ burns to form acids and noxious gases.

REACTIVITY DATA

Stability: Stable
Polymerization: Will not occur
Incompatibility: Isocyanates and other chemicals that react with hydroxyl groups.
Hazardous Decomposition Products: When burned; CO, CO₂, NOₓ, aliphatic fragments, halogens, halogen acids and possibly carbonyl halides.

Flammable Limits (vapor)
Lower: None; Upper: None

Conditions to Avoid: Temperatures over 85°F
Conditions to Avoid: N/A

This information is furnished without warranty, expressed, or implied, except that it is accurate to the best knowledge of NCFI. The data on this sheet relates only to the specific material designated herein. NCFI assumes no legal responsibility for use or reliance upon these data.
Material Data Safety Sheet (MSDS)
Bamboo Flooring

This MSDS relates to Smith & Fong Plyboo bamboo flooring products.
ANSI Format

1. PRODUCT IDENTIFICATION

Manufacturing Location

Unfinished vertical and horizontal grain bamboo flooring   Company headquarters, South San Francisco, CA, USA
Prefinished vertical and horizontal grain bamboo flooring   Company headquarters, South San Francisco, CA, USA
Unfinished bamboo strand flooring   Company headquarters, South San Francisco, CA, USA
Prefinished bamboo strand flooring   Company headquarters, South San Francisco, CA, USA

Product Composition: Timber bamboo (Moso), kiln dried and laminated.

Manufacturer's Information:

Manufacturer Name: Smith & Fong Company, Inc.
Manufacturer Address: 375 Oyster Point Blvd, Suite 3
South San Francisco, CA 94080 USA

Emergency Phone: (650) 872-1184
Additional Phone: (866) 835-9859
Website: www.plyboo.com
Email: dino@plyboo.com

Synonyms: Bamboo flooring

2. HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS#</th>
<th>Percent</th>
<th>Regulatory Agency</th>
<th>Exposure Limits</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bamboo</td>
<td>N/A</td>
<td>99-99.5</td>
<td>OSHA</td>
<td>PEL-TWA 15 mg/m3</td>
<td>Total dust</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PEL-TWA 5 mg/m3</td>
<td>Respiratory dust fraction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TLV-TWA 3 mg/m3</td>
<td>Respiratory dust fraction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TLV-TWA 10 mg/m3</td>
<td>Inhalable particles</td>
</tr>
<tr>
<td>Urea Formaldehyde</td>
<td>9011-</td>
<td>1.05</td>
<td>OSHA</td>
<td>PEL-TWA 0.75 ppm</td>
<td>Free gaseous</td>
</tr>
<tr>
<td>resin (bamboo flooring)</td>
<td>05-6</td>
<td></td>
<td></td>
<td>PEL-STEL 2 ppm</td>
<td>Free gaseous</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol Formaldehyde</td>
<td>N/A</td>
<td>1.0</td>
<td>N/A</td>
<td>TLV-Ceiling 0.3 ppm</td>
<td>Free gaseous</td>
</tr>
<tr>
<td>(bamboo strand flooring)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UV Finish Polyurethane</td>
<td>N/A</td>
<td>0.02</td>
<td>OSHA</td>
<td>PEL-TWA none</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ACGIH</td>
<td>TLV-TWA none</td>
<td>None</td>
</tr>
</tbody>
</table>

3. HAZARD IDENTIFICATION

Appearance and Odor: A natural or amber bamboo fiber with no, to a slight odor.

Primary Health Hazards: The health hazards of primary concern are exposure to dust particulate generated during machining, cutting, sanding, etc.

Primary Route(s) of Exposure: (X) Dust; (X) Inhalation: Dust or gas.

Medical Conditions Generally Aggravated by Exposure: Respiratory conditions or allergies.

Chronic Health Hazards: Bamboo dust has not been associated with long term chronic respiratory conditions.

Carcinogenicity:
( X ) NTP: Formaldehyde, Group 1
( X ) IARC Monographs: Formaldehyde, Group 1
( X ) OSHA Regulated: Formaldehyde

4. EMERGENCY AND FIRST-AID PROCEDURES

Ingestion: Not applicable.

Eye Contact: Dust in eye should be treated as a foreign object; flush with water several times. If irritation persists, seek medical attention.
Skin Contact: Although not typical, contact dermatitis in sensitive individuals can occur. Frequent handling of product can cause skin dryness, slight abrasion, cuts or slivers. Hands should be washed after handling. Seek medical attention if needed.

Skin Absorption: Under normal use, does not occur.

Inhalation: Highly sensitive individuals may experience respiratory difficulties. Bamboo dust can cause nasal irritation, cough or sneezing. Leave area and go to fresh air. Seek medical attention if respiratory difficulties or cough become severe, or nasal irritation persists.

5. FIRE AND EXPLOSION

Flash Point Method: N/A

Flammable Limits: N/A

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

Autoignition Temperature: Variable (400-500 F)

Special Firefighting: None.

Unusual Fire/Explosion Hazards: None.

6. ACCIDENTAL RELEASE MEASURES

Dust generated from cutting, sanding and related machining may be shoveled or vacuumed and properly disposed of. A NOISH-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 required in product purchase form. Product should be kept in cool, dry environment and not exposed to high heat or flame. Store in well-ventilated area.

8. EXPOSURE CONTROL MEASURES

Personal Protective Equipment:

RESPIRATORY PROTECTION: Not required, however a NOISH-approved dust respirator is recommended for high dust producing activities.

PROTECTIVE GLOVES: Not required, however work gloves are recommended to avoid sliver and splinters from machining or handling product.

EYE PROTECTION: Not required, however eye protection when machining or milling any material is highly recommended.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Not required.

WORK/HYGIENE PRACTICES: Clean up dusty areas to avoid excess accumulation. Minimize practices that generate high air-borne dust particles.

Ventilation:

LOCAL EXHAUST: Provide local exhaust as needed.

MECHANICAL: Good ventilation in processing and storage areas should be provided.

9. PHYSICAL/CHEMICAL PROPERTIES

Boiling Point: N/A

Vapor Pressure: N/A

Vapor Density: N/A

Specific Gravity: 0.58g/ml

Melting Point: N/A

Evaporation Rate: N/A

Solubility in Water: <0.1

% Volatile by Vol: 0

Percent Moisture: 6%-9%

10. STABILITY AND REACTIVITY

Stability: (X) Stable

Conditions to Avoid: Excessive moisture, condensation or water vapor. Open flame or conditions above 400 F.

Incompatibility (Materials to Avoid): Oxidizing agents.
MATERIAL SAFETY DATA SHEET

Product Name: SierraPine® Rocklin MDF
Date Prepared: 09/01/05

1. Composite Panel Product and Company Identification

Product Identifier: Unfinished Medium Density Fiberboard (MDF) Panels
General use: Re-manufacturing, construction and furniture processes.
Product Description: A panel product manufactured from ligno-cellulosic materials bonded together with a synthetic resin or other suitable binder, and which may contain additives.

MANUFACTURER: SierraPine
4300 Dominguez Road
Rocklin, CA  95677

EMERGENCY TELEPHONE NUMBERS:
(916) 624-2473

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Wt %</th>
<th>CAS Registry #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ligno-cellulosic Materials</td>
<td>85 - 94</td>
<td>N/A</td>
</tr>
<tr>
<td>Polymerized Urea Formaldehyde Resin</td>
<td>6 - 15</td>
<td>9011-05-6</td>
</tr>
</tbody>
</table>

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200):

- **Formaldehyde CAS Registry # 50-00-0**
  - **EXPOSURE LIMITS**
    - OSHA PEL – TWA: 0.75 PPM
    - OSHA PEL – STEL: 2 PPM
    - ACGIH TLV – Ceiling: 0.30 PPM

- **Wood Dust/Ligno-cellulosic fiber**¹,²
  - **OSHA PEL – TWA 15.0 mg/m³ (total dust)³ 5.0 mg/m³ (respirable fraction)**

- **Wood Dust/Ligno-cellulosic fiber, Inhalable Fraction³**
  - **ACGIH TLV – TWA: 1.0 mg/m³**

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. These were total dust test based limits. A common practice since 1989 has been to meet and exceed the lower 1989 limits which were supported by the wood products industry.

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 in the Composition/Information on Ingredients section 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. Considerable debate continues to surround the inhalable-to-total dust conversion factor. ACGIH has proposed to use a ratio of 2.5 “for interpreting studies with exposure measurements based on total dust sampling” for purposes of defining a TLV for inhalable dust. However, a recent NIOSH paper states "In the case of exposures to wood dust, several studies with side-by-side sampling have revealed that inhalable sampling will increase the apparent dustiness of an atmosphere by between 150 and 400%, with an average closer to the higher end of this range.” [citing Harper (2002), Martin (1998), Tatum (2001), among others].

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:
The product may release small quantities of formaldehyde in gaseous form. Emissions decrease through time as the panels age. Manual or mechanical cutting or abrasion processes performed on the product can result in generation of ligno-cellulosic fibers.

POTENTIAL HEALTH EFFECTS:

ACUTE

INHALATION:
Gaseous formaldehyde may cause temporary irritation to nose and throat. Some reports suggest that formaldehyde may cause respiratory sensitization, such as asthma, and that pre-existing respiratory disorders may be aggravated by exposure. Ligno-cellulosic fibers may cause nasal dryness, irritation and obstruction. Coughing, wheezing, sneezing, sinusitis and prolonged colds have also been reported.

EYE CONTACT:
Gaseous formaldehyde may cause temporary irritation or a burning sensation. Ligno-cellulosic fibers can cause mechanical irritation.

SKIN CONTACT:
Both formaldehyde solutions (liquid) and various species of ligno-cellulosic fibers may evoke allergic contact dermatitis in sensitized individuals.
INGESTION:
Not likely to occur.

CHRONIC

Some reports suggest that formaldehyde may cause respiratory sensitization, such as asthma, and that pre-existing respiratory disorders may be aggravated by exposure. Other studies show no impact on respiratory sensitization. International Agency for Research on Cancer (IARC) classifies formaldehyde as a carcinogen to humans (Group 1). This classification is based primarily on IARC’s evaluation of increased risk in the occurrence of cancers in the nasopharyngeal cavity (NPC) associated with occupational exposure to formaldehyde. The National Toxicology Program (NTP) includes formaldehyde in its Annual Report on carcinogens. OSHA regulates formaldehyde as a potential cancer agent.

In studies involving rats, formaldehyde has been shown to cause nasal cancer after long-term exposure to very high concentrations (14+ PPM), far above those normally found in the workplace.

Ligno-cellulosic fibers, depending on species, may cause respiratory sensitization and/or irritation. IARC classifies wood dust as a carcinogen to humans (Group 1). This classification is based primarily on IARC’s evaluation of increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. IARC did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum with exposure to wood dust. The National Toxicology Program (NTP) includes wood dust in its Annual Report on carcinogens.

**HMIS Ratings:** Health: 1 Fire: 0 Physical Hazard: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

4. FIRST AID MEASURES

INHALATION:
Ligno-cellulosic fibers may cause unpleasant obstruction in the nasal passages, resulting in dryness of nose, dry cough, sneezing and headaches. Remove to fresh air. Get medical attention if irritation persists, severe coughing or breathing difficulty occurs.

EYE CONTACT:
Ligno-cellulosic fibers may cause mechanical irritation. Treat dust in eye as foreign object. Flush eyes with large amounts of water. Remove to fresh air. If irritation persists, get medical attention.
SKIN CONTACT:
Wash affected areas with soap and water. Get medical attention if rash or irritation persists or dermatitis occurs.

INGESTION:
Not Applicable.

5. FIRE FIGHTING MEASURES

FIRE FIGHTING HAZARD:
Wood is classified as a Class A combustible material.

FLASHPOINT AND METHOD:
Not Applicable.

FLAMMABLE LIMITS:
LFL: Ligno-cellulosic fibers: 40 grams per cubic meter of air

AUTOIGNITION TEMPERATURE:
2) Bugbee, 1988, National Fire Protection Association, Quincy, MA.
3) It is difficult to identify the specific ignition temperature of wood because of the large number of variables involved. Source: Essentials of Fire Fighting 4th Fourth Edition, 1998, Edited by Richard Hall and Barbara Adams, Fire Protection Publications, Oklahoma State University, Stillwater, OK.
4) Ignition of wood takes place when wood is subject to sufficient heat and in atmospheres that have sufficient oxygen. Ignition can be of two types: piloted or unpiloted. Piloted ignition occurs in the presence of an ignition source (such as a spark or flame). Unpiloted ignition is ignition that occurs where no pilot source is available. The surface temperature of wood materials has been measured somewhere between 300 C and 400 C (572 F to 752 F) prior to piloted ignition. Unpiloted ignition depends on special circumstances that result in different ranges of ignition temperatures. At this time, it is not possible to give specific ignition data that apply to a broad range of cases. With convection heating of wood, unpiloted ignition has been reported as low as 270 C (518 F) and as high as 470 C (878 F). Source: Wood Handbook Wood as an Engineering Material, 1999, Forest Products Laboratory, U.S. Department of Agriculture, Madison, WI.
FIRE FIGHTING INSTRUCTIONS:
Fire fighting procedures for extinguishing a Class A fire should be followed.  

1) When extinguishing a fire in a ligno-cellulosic fibers or fiber pile care needs to be taken. A direct stream of water, into the pile from a hose, could cause the burning material to become airborne creating a risk in spreading the fire to other areas.  

2) Water is used to quench the burning material below its ignition temperature. The addition of Class A foams (sometimes referred to as wet water) may enhance water’s ability to extinguish Class A fires, particularly those that are deep seated in bulk materials (such as piles of hay bales, sawdust piles, etc.). This is because the Class A foam agent reduces the water’s surface tension, allowing it to penetrate more easily into piles of material. Class A fires are difficult to extinguish using oxygen-exclusion methods like CO₂ flooding or coating with foam because these methods do not provide the cooling effect needed for total extinguishment.  

FIRE FIGHTING EQUIPMENT:
Use recommended Class A fire fighting equipment when fighting an incipient fire.  

UNUSUAL FIRE OR EXPLOSION HAZARDS:
Sawing, sanding or machining can produce ligno-cellulosic fibers as a by-product that may present an explosion hazard.

NFPA Rating for Wood Dust (Scale 0-4):  
Health = 1  
Fire = 1  
Reactivity = 0

Refer to the National Fire Protection Association’s standard 664 “Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities” for more details on wood dust explosions. Copies of this standard are available from the NFPA web site www.nfpa.org)
6. ACCIDENTAL RELEASE MEASURES

LAND SPILL:
Generally not applicable to panel products, however if a spill occurs the applicable federal, provincial, state, and local regulations must be followed.

WATER SPILL:
Generally not applicable to panel products, however if a spill occurs the applicable federal, provincial, state and local regulations must be followed.

7. HANDLING AND 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 concentrations of gaseous formaldehyde in the storage area. Adequate ventilation of the storage area will help reduce the build-up of the gaseous formaldehyde. It is recommended to store product in an area of relative humidity and temperature that approximates end use.


8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Certain activities of the re-manufacturing process of this product could possibly produce ligno-cellulosic fibers or gaseous formaldehyde. Provide adequate general and local exhaust ventilation to keep airborne contaminant concentration levels below the applicable levels.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

RESPIRATOR:
Wear NIOSH/MSHA approved respirator when the allowable exposure limits may be exceeded.
PROTECTIVE CLOTHING:
Wear side shield safety glasses during the re-manufacturing of this product. Other protective equipment such as gloves and outer garments may be needed depending on dust conditions.

GENERAL HYGIENE:
Practice proper personal hygiene.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Description: light to dark colored solid, color and odor are dependent on the wood species.

<table>
<thead>
<tr>
<th>Physical Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
<td>not applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>not applicable</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>not applicable</td>
</tr>
<tr>
<td>Melting Point</td>
<td>not applicable</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>not applicable</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>not applicable</td>
</tr>
<tr>
<td>Oil-Water Distribution Coefficient</td>
<td>not applicable</td>
</tr>
<tr>
<td>pH</td>
<td>not applicable</td>
</tr>
<tr>
<td>Solubility in Water (% by weight)</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>generally &lt; 1</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>not applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>not applicable</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

STABILITY:
Stable under normal conditions.

REACTIVITY:
Avoid product contact with open flame and any temperature sources that could induce thermal decomposition. Avoid product contact with oxidizing agents, drying oils and strong acids. For further information on the reactivity of wood products, refer to Chapter 17 of the Wood Handbook (Wood Handbook Wood as an Engineering Material, 1999, Forest Products Laboratory, U.S. Department of Agriculture, Madison, WI)

HAZARDOUS DECOMPOSITION:
Thermal and/or thermal-oxidative decomposition can produce irritating and toxic fumes and gases, including carbon monoxide, hydrogen cyanide, polynuclear aromatic hydrocarbons, aldehydes and organic acids.
HAZARDOUS POLYMERIZATION:
Will not occur.

11. TOXICOLOGICAL INFORMATION

Wood Dust:
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)). Source: OSHA Regulated Hazardous Substances, Government Institutes, Inc., February 1990.

Wood dust (generated from sawing, sanding or machining the product) may cause nasal dryness, irritation, coughing and sinusitis. National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) classify wood dust as a human carcinogen (IARC Group 1). This classification is based primarily on increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. The evaluation did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon or rectum with exposure to wood dust.

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 produce mild results; human eye, 1 ppm/6 minutes produced mild results. Toxicity studies: human inhalation TC_{LO} of 17 mg/m³ for 30 minutes produced eye and pulmonary results; human inhalation TC_{LO} of 300 ug/m³ produced nose and central nervous system results; LC_{50} (rat, inhalation = 1000 mg/m³, 30 minutes; LC_{50} (mice, inhalation = 400 mg/m³, 120 minutes.

Exposure to gaseous formaldehyde at elevated levels may cause temporary irritation to the nose and throat as well as lead to respiratory disorders. However, in a thorough review of sensory/respiratory irritation studies of formaldehyde from the standpoint of occupational exposure, an expert panel has observed that exposure up to concentrations of 0.3 ppm failed to produce irritation. With regard to respiratory disorders, studies have concluded the threshold for long term chronic pulmonary effects is between 0.4 and 3 ppm and for chronic obstructive pulmonary disease is 2 ppm. Pre-existing respiratory disorders may be aggravated by exposure.

Epidemiology studies of workers exposed to formaldehyde have failed to consistently identify an association between formaldehyde exposure and cancer. In animal studies, rats and mice exposed to high levels of formaldehyde developed nasal cancer while hamsters did not. These exposure levels are far above those levels normally found in the workplace. Formaldehyde is classified by IARC as carcinogenic to humans (Group 1). A working group of IARC has determined that there is sufficient evidence that formaldehyde causes nasopharyngeal cancer in humans, a rare cancer in developed countries. NTP

**Additional Toxicity Date:** See acute and chronic health effects provided in Section 3: Hazard identification.

**Target Organs:** See acute and chronic health effects provided in Section 3: Hazard Identification.

### 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**A. General Product Information**

Not available for product in purchased form. See Component Analysis.

**B. Component Analysis – Aquatic Toxicity Formaldehyde (50-00-0)**

<table>
<thead>
<tr>
<th>Test &amp; Species</th>
<th>Conditions</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>96 Hr LC_{50} fathead minnow</td>
<td>24.1 mg/L</td>
<td>flow through</td>
</tr>
<tr>
<td>96 Hr LC_{50} bluegill</td>
<td>0.10 mg/L</td>
<td>flow through</td>
</tr>
<tr>
<td>5 min EC_{50} photobacterium phosphorium</td>
<td>9.0 mg/L</td>
<td></td>
</tr>
<tr>
<td>15 min EC_{50} photobacterium phosphorium</td>
<td>7.26 mg/L</td>
<td></td>
</tr>
<tr>
<td>25 min EC_{50} photobacterium phosphorium</td>
<td>6.81 mg/L</td>
<td></td>
</tr>
<tr>
<td>96 Hr EC_{50} water flea</td>
<td>20 mg/L</td>
<td></td>
</tr>
</tbody>
</table>

**Environmental Fate**

Not available for product in purchased form.

### 13. DISPOSAL CONSIDERATIONS

**General Product Information**

This panel product is recyclable. It is the user’s responsibility to determine at the time of disposal whether your product meets any applicable criteria for hazardous waste disposal. Disposal must follow applicable federal, provincial, state and local regulations.

**EPA Waste Number & Descriptions**

This product in purchased form is not considered hazardous waste under federal hazardous waste regulations 40 CFR 261. If the product is altered by processing, use or contamination, waste can be tested using methods described in 40 CFR 261 to determine whether the altered product meets the criteria for hazardous waste.
State, provincial and local requirements for waste disposal may be different than U.S. federal regulations.

**Disposal Instructions**
If disposed or discarded in its purchased form, ordinary trash collection is acceptable. It is the user's responsibility to determine at the time of disposal whether your product meets RCRA criteria for hazardous waste. Follow applicable federal, state, provincial and local regulations.

14. **TRANSPORT INFORMATION**

Department of Transportation (DOT): This product is not a DOT hazardous material.

It is the purchaser’s responsibility to see if this product meets any regulations depending on their location.

15. **REGULATORY INFORMATION**

**US Federal Regulations**

A. General Product Information

**OSHA:** Wood products are not hazardous under the criteria of the Federal OSHA Hazard communication Standard 29 CFR 1910.1200. However, formaldehyde emissions and wood dust generated by sawing, sanding or machining this product may be hazardous. This product contains formaldehyde.

**HUD:** The Department of Housing and Urban Development (HUD) regulation 24 CFR 3280 sets emission standards and provides for 3rd party certification of particleboard and MDF formaldehyde emissions.

**ANSI A208.2-2002 MEDIUM DENSITY FIBERBOARD (MDF):** This industry-consensus standard limits formaldehyde emissions from MDF. SierraPine® MDF is voluntarily manufactured and certified to this standard of formaldehyde emissions.

B. Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

**Formaldehyde (50-00-0)**
- **SARA 302:** 500lb. TPQ
- **CERCLA:** 100lb final RQ; 45.4 kg final RQ
State Regulations

Component Analysis – State
The following components appear on one or more of the following state hazardous substances lists and may also appear on similar lists in states not on the chart:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
<th>RI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Wood dust, all soft and hard woods</td>
<td>none</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Additional Regulatory Information

Component Analysis – WHMIS IDL
No components are listed in the WHMIS IDL.

Component Analysis – Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS#</th>
<th>TSCA</th>
<th>CAN</th>
<th>EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

DEFINITIONS OF ACRONYMS:

ACGIH: American Conference of Governmental Industrial Hygienists
ANSI: American National Standards Institute
C: Ceiling Limit
CAS: Chemical Abstract Services Number
CERCLA: Comprehensive Environmental Response Compensation & Liability Act
CFR: Code of Federal Regulations
CWA: Clean Water Act
DOT: Department of Transportation
EC₅₀: Effective concentration that inhibits endpoints for 50% of control population
EPA: Environmental Protection Agency
FDA: Food and Drug Administration
HCS: Hazard Communication Standard
HMIS: Hazard Material Information System
IARC: International Agency for Research on Cancer
LC₅₀: Lowest lethal concentration of a substance
LC₅₀: Concentration of a material expected to kill 50% of an animal text group
LD₅₀: Lowest lethal dose of a material
LD₅₀: Dose of a material expected to kill 50% of an animal text group
LEL: Lower Explosive Limit
LFL: Lower Flammability Limit  
MSHA: Mining Safety and Health Administration  
NA: Not Applicable  
NFPA: National Fire Protection Association  
NPRI: Canadian National Pollution Release Inventory  
NTP: National Toxicology Program  
OSHA: Occupational Safety and Health Administration, U.S. Department of Labor  
PEL: Permissible Exposure Limit  
PPE: Personal Protective Equipment  
RCRA: Resource Conservation and Recovery Act  
RQ: Reportable Quantity  
SARA: Superfund Amendments and Reauthorization Act  
STEL: Short Term Exposure Limit  
STP: Standard Temperature and Pressure  
TC_{LO}: Lowest concentration in air resulting in a toxic effect  
TDG: Canadian Transportation of Dangerous Goods  
TLV: Threshold Limit Value  
TSCA: Toxic Substances Control Act  
TWA: Time-weighted Average  
UFL: Upper Flammable Limit  
WHMIS: Workplace Hazardous Material Information System

DISCLAIMER:

This information was believed to be accurate at the time of preparation, and compiled from sources believed to be reliable. Products and/or articles manufactured from this product may have characteristics that are significantly different; therefore, it is the user’s responsibility to investigate and understand other pertinent information and to comply with all applicable laws and regulations. There is no warranty of any kind, express or implied, concerning product or merchantability or fitness thereof for any purpose. Buyer assumes all risk of use, storage and handling of the product in compliance with applicable Federal, State and local laws and regulations. SierraPine, a California limited partnership, will not be liable for claims relating to any party’s use of or reliance on information and data contained herein regardless of whether it is claimed the information and data are inaccurate, incomplete or otherwise misleading.
Hazardous Decomposition or By-Products: Thermal decomposition by-products include carbon monoxide, carbon dioxide, aliphatic aldehydes, rosin acids, terpenes, and polycyclic aromatic hydrocarbons.

Hazardous Polymerization: Will not occur.

Sensitivity to Mechanical Impact: N/A

Sensitivity to Static Discharge: N/A

11. TOXICOLOGICAL INFORMATION

The product, in finished form, has no reportable toxicological information.

OSHA Formaldehyde Hazard rating = 0.75 ppm for local and systemic acute and chronic exposures; highly toxic. Reference OSHA Regulated Hazardous Substances, Government Institutes, Inc., February 1990.


12. ECOLOGICAL INFORMATION

Bamboo (Moso species) is a rapidly renewable product, and does not contribute to the diminishment of natural wood supplies.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: In purchased product form, incineration is the preferred disposal method. Land disposal should be guided by RCRA criteria and local requirements, and determination made if considered hazardous waste.

14. TRANSPORT INFORMATION

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

Not listed as hazardous material in Canadian Transportation of Hazardous Goods regulations.

15. REGULATORY INFORMATION

Chemicals listed:

IARC Monograph, Formaldehyde CAS # 50-00-0
Canadian Domestic Substance List, Formaldehyde CAS #50-00-0

Not a controlled Workplace Hazardous Material Systems product.

State Right to Know:

- California Prop 65 – This product contains formaldehyde which may be emitted from product. Formaldehyde is a compound that is known in the State of California to cause cancer. Smith & Fong Company has emission-tested its products for formaldehyde, and finds the emissions rates to be well below a significant risk level that would require product warnings.
- Pennsylvania – This product contains formaldehyde which depending on humidity and temperature may be emitted from product.

SARA Section 313 Information:

This product contains formaldehyde at a concentration that lists it with the chemical to SARA Title III, Section 313 supplier notification requirements. This product falls considerably below the Threshold Planning Requirement for Formaldehyde of 500 lbs.

SARA Section 311/312 Hazard Category

Under the above referenced category, and reviewed against definitions, the product meets:

- 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

Prepared by: Smith & Fong Company, Inc.
Date Prepared: 07/01/01
Date Revised: 08/01/06

USER RESPONSIBILITY: The information contained in this MSDS comes from sources believed to be accurate or otherwise technically correct, and information from occupational health and safety professionals, and regulatory agencies. It is the user’s responsibility to determine if this information is suitable for their applications, and to follow safety precautions as necessary. The user has the responsibility to make sure that this sheet is the most up-to-date initial or revision issue.
### Glossary of Acronyms and Terms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>C</td>
<td>Ceiling limit</td>
</tr>
<tr>
<td>CAS#</td>
<td>Chemical Abstracts Numbering System</td>
</tr>
<tr>
<td>DSL</td>
<td>Canadian Domestic Substance List</td>
</tr>
<tr>
<td>EPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>LCLo</td>
<td>Lowest concentration in air resulting in death</td>
</tr>
<tr>
<td>LC90</td>
<td>Administered dose resulting in death to 50% of experimental animals</td>
</tr>
<tr>
<td>LDLo</td>
<td>Lowest dose resulting in death</td>
</tr>
<tr>
<td>MSHA</td>
<td>Mining Safety and Health Administration</td>
</tr>
<tr>
<td>ND</td>
<td>Not determined</td>
</tr>
<tr>
<td>N/A</td>
<td>Not applicable</td>
</tr>
<tr>
<td>NAV</td>
<td>Not available</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Level</td>
</tr>
<tr>
<td>PPM</td>
<td>Parts of gas or vapor per million parts of air</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation and Recovery Act</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-Term Exposure Limit (15 minutes)</td>
</tr>
<tr>
<td>TDG</td>
<td>Canadian Transportation of Dangerous Goods</td>
</tr>
<tr>
<td>TCLo</td>
<td>Lowest concentration in air resulting in a toxic effect</td>
</tr>
<tr>
<td>TDLo</td>
<td>Lowest dose resulting in a toxic effect</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
</tr>
<tr>
<td>TWA</td>
<td>Time-Weighted Average (8 hours)</td>
</tr>
<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
</tr>
</tbody>
</table>
MATERIAL SAFETY DATA SHEET
RICHLITE® Natural Fiber Composite

Section 1: Ingredients
Chemical Family: Cured Phenol-formaldehyde
Product Use: Various within modeling and pattern making industries.
Hazard Statement: This material safety data sheet (MSDS) has been prepared in compliance with the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. This product is not considered to be a hazardous chemical under that standard.

Section 2: Physical Data
Appearance: Tan, odorless flat sheets
Percent Volatile: 0 (zero)
Insoluble in water
Specific Gravity: 1.24

Section 3: Fire and Explosion Data
Extinguishing media: Self extinguishing; remove source of heat.
Special fire fighting procedures: Use self-contained breathing apparatus.
Unusual fire and explosion data: Combustion products may be toxic.

Section 4: Reactivity Data
Stability: Stable
Conditions to Avoid: Excessive Heat for prolonged periods.
Incompatibility: Very strong alkali
Hazardous Polymerization: Will not occur.

Section 5: Health Hazard Data
Primary Routes of Exposure: Eye, dermal, ingestion or inhalation of dust from abraded material.
Threshold Limit Value: Not hazardous
Overexposure effects: Completely crosslinked phenol-formaldehyde resin is inert and non-toxic.
Eye Contact: Dust that contacts the eye may be irritating or cause mechanical injury.
Skin Contact: May cause slight skin irritation.
Ingestion: It is reasonable to anticipate ingestion of the dust would be irritating to the GI tract.
Inhalation: Dust may be irritating to the respiratory tract and cause coughing or sneezing.

Section 6: First Aid Measures
Eyes: Immediately flush eyes with water for at least 15 minutes. See a physician if irritation persists.
Skin: Wash with soap and water. See a physician if irritation persists.
Ingestion: No harmful effects anticipated. See a physician if irritation persists.
Inhalation: No harmful effects are anticipated. If a problem develops, remove the person to fresh air and supply of oxygen if necessary.

Section 7: Special Protection Information
Ventilation: General mechanical and local exhaust in accordance with ACGIH recommendations.
Protective Gloves: Wear gloves as a standard handling procedure.
Eye Protection: Dust-tight goggles are recommended during material abrading operations.
Respiratory Protection: Use NIOSH approved dust mask if required.

Section 8: Special Precautions
Handling precautions: Nuisance dust may be generated during some material machining processes.

Section 9: Regulatory Information
DOT Proper shipping name: Plastic Laminate Sheets
DOT Hazard Class: N/A
RCRA Status: Not a hazardous waste under RCRA (40 CFR 261)
SARA/TITLE III - Toxic chemicals list: This product does not contain a toxic chemical for routine annual toxic chemical release reporting under Sec. 313 (40 CFR 372)

Issued 1/1/98 by R. Snyder, Product Safety Director

Rainier Plywood Co. d.b.a.
RAINIER RICHLITE COMPANY
624 E. 15th Street – Tacoma, WA 98421
(888)383-5533
1. **Product and company identification**

   - **Product name**: CORKLINOLEUM
   - **Manufacturer/supplier**: Forbo Linoleum B.V.
     - **Address**: Industrieweg 12
     - **City**: 1566 JP Assendelft
     - **Telephone**: +31 (0)75 647 7477
     - **Telefax**: +31 (0)75 621 5466

2. **Composition/Information on ingredients**

   - **Composition**: Floor covering based on a binder composed of linseed oil and (natural) rosin, mixed with granulated cork and lime stone and pressed on a jute backing.
   - **Hazardous ingredients**: None.

3. **Hazards identification**

   - **No health danger.**
   - **No environmental effect.**

4. **First-aid measures:**

   - **Eyes**: N.A.
   - **Skin**: N.A.
   - **Inhalation**: N.A.
   - **Ingestion**: N.A.

5. **Fire-fighting measures**

   - **Suitable fire-fighting media**: Water, foam, CO₂, powder.
   - **Specific hazards**: None.

6. **Accidental release measures**

   - **Personal precautions**: N.A.
   - **Environmental precautions**: N.A.
   - **Methods for cleaning up**: N.A.

7. **Handling and storage**

   - **Handling**: No special requirement.
   - **Storage**: No special requirement.

8. **Exposure controls/personal protection**

   - **Personal protective equipment**: N.A.
   - **Respiratory protection**: N.A.
   - **Hand protection**: N.A.
   - **Eye protection**: N.A.
   - **Skin and body protection**: N.A.
9. Physical and chemical properties

- Physical state: Solid.
- Form: Flexible sheet.
- Colour: Various colours.
- Odour: Weak 'linseed oil' smell.
- pH: N.A.
- Decomposition temperature: Approx. 450° C
- Flashpoint: N.A.
- Explosion properties: N.A.
- Density: 0.70 - 0.80 g/cm³.
- Solubility: Not soluble in water or conventional solvents.

10. Stability and reactivity

- Hazardous decomposition products: Product is stable.
- Hazardous reactions: No hazardous reactions.

11. Toxicological information

No toxicological effects on human health.

12. Ecological information

- Ecological effects: No negative ecological effects are known.
- Solubility in water: Insoluble in water.

13. Disposal considerations

In accordance with local or state regulations.

14. Transport information

Product is not considered as dangerous and is not submitted to special transport regulations.

15. Regulatory information

No special information obliged.

16. Further information

Safety data sheet issued by: F.W. Seifert

Fourth version: 14.02.2005

The information in this Safety Data Sheet is based upon present knowledge and experience. The actual facts do not give any information about the qualities and properties of the product.
1. **Product and company identification**

Product name: Marmoleum Click  
Manufacturer/supplier: Forbo Flooring  
Address: Industrieweg 12  
City: 1566 JP ASSENDELFT  
Telephone: +31 75 647 74 77  
Telefax: +31 75 621 54 66

2. **Composition/Information on ingredients**

Composition: Linoleum floor covering laminated to HDF board on a backing of granulated cork sheet

Ingredients:
Linoleum: Linoleum based on a binder composed of linseed oil and (natural) rosin, mixed with woodflour and limestones pressed on a jute backing.
HDF: Mixed softwood 80-85%  
Remainder comprises: polymerised resin, paraffin wax, moisture, free formaldehyde (EN 14041-Class E1)
Cork sheet backing: Granulated cork with polymerised resin

3. **Hazards identification**

Health hazard: Non classifiable
Specific hazards: Not applicable
4. **First-aid measures**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>If particles enter the eyes during processing immediately flush eyes with plenty of water. Seek medical attention if irritation persists.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>In case of irritation from dust generated by processing of HDF, wash with water.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Inhalation of HDF dust can only occur during processing. If inhalation of dust causes adverse effects, remove to fresh air. If discomfort persists, seek medical advise.</td>
</tr>
</tbody>
</table>

5. **Fire-fighting measures**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable fire-fighting media</td>
<td>Water, foam, CO2, powder</td>
</tr>
<tr>
<td>Specific hazards</td>
<td>None</td>
</tr>
</tbody>
</table>

6. **Accidental release measures**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal precautions</td>
<td>N.a.</td>
</tr>
<tr>
<td>Environmental precautions</td>
<td>N.a.</td>
</tr>
<tr>
<td>Methods for cleaning up</td>
<td>N.a.</td>
</tr>
</tbody>
</table>

7. **Handling and storage**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Handling</td>
<td>No special requirements</td>
</tr>
<tr>
<td>7.2 Storage</td>
<td>No special requirements</td>
</tr>
</tbody>
</table>
### 8. Exposure controls/personal protection

**8.1 Exposure control**
During processing, adequate ventilation and/or extraction should be provided to minimise airborne dust from the HDF.

**8.2 Personal protection:**
Dust from the HDF will be created during processing; use appropriate respiratory protection equipment. Wear gloves as required to prevent skin contact. Wear eye protection to prevent dust particles from entering eyes.

### 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Linoleum</th>
<th>HDF</th>
<th>Cork sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid, floor covering laminated</td>
<td>Solid, floor covering laminated</td>
<td>Solid, floor covering</td>
</tr>
<tr>
<td></td>
<td>to HDF board on a backing</td>
<td>to HDF board on a backing</td>
<td>covering</td>
</tr>
<tr>
<td></td>
<td>of granulated cork sheet</td>
<td>of granulated cork sheet</td>
<td>of granulated cork sheet</td>
</tr>
<tr>
<td>Form</td>
<td>Panel and tile</td>
<td>Panel and tile</td>
<td>Panel and tile</td>
</tr>
<tr>
<td>Colour</td>
<td>Various colours and/or patterns</td>
<td>Light green</td>
<td>Brown</td>
</tr>
<tr>
<td>Odour</td>
<td>Weak &quot;linseed oil&quot; smell</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Density</td>
<td>1150 - 1250 kg/m³</td>
<td>800 - 900 kg/m³</td>
<td>220 kg/m³</td>
</tr>
<tr>
<td>Solubility</td>
<td>Linoleum, HDF and cork sheet are not solvable in water or conventional solvents</td>
<td>Linoleum, HDF and cork sheet are not solvable in water or conventional solvents</td>
<td>Linoleum, HDF and cork sheet are not solvable in water or conventional solvents</td>
</tr>
</tbody>
</table>

### 10. Stability and reactivity
Considered stable and inert.

### 11. Toxicological information

No toxicological effects on human health.
### 12. Ecological information

Not solvable in water.  
No negative ecological effects are known.

### 13. Disposal considerations

In accordance with local or state regulations.

### 14. Transport information

The product is not considered as dangerous and is not submitted to transport regulations.

### 15. Regulatory information

Regulations on formaldehyde content.  
The HDF board fulfills the requirement of EN 14041 class E1.  
National regulations may deviate from EN 622-1.  
Marmoleum Click complies with the following national regulations:

- **Denmark:**  

- **Germany:**  
  "Chemikalien verbotsverordnung - ChemVerbots V" (Ordinance on the prohibition of Chemicals). Annex to paragraph 1, clause 3 of 14 October 1993.

### 16. Further information

Safety Data Sheet made by: F.W. Seifert  
First version: 01 June 2005

The information in this Safety Data Sheet is based upon the present knowledge and experience.  
The actual facts do not give any information about the qualities and properties of the product.
MANUFACTURER
C-Cure 6511 Salt Lake Ave., Bell, CA 90201

Emergency Phone: 213-582-0846
Contact Person: Alan Kin

SECTION I - IDENTITY
CURECAULK 986

Chemical Name or Synonyms: Aqueous acrylic latex caulk.
Hazardous Ingredients/Identity Information
Hazardous Components: Acrylic polymer (CAS-Non-Haz)
  OSHA PEL: NE
  ACGIH TLV: NE
Hazardous Components: Titanium dioxide (TD) (CAS-13463-67-7)
  OSHA PEL: NE
  ACGIH TLV: NEmg/m3res, other limits 2.0
Hazardous Components: Inorganic Filler (CAS Mixture) 70%
  OSHA PEL: 15
  ACGIH TLV: 10mg/m3, other limits 10
Hazardous Components: Mineral Spirits (CAS-8032-32-4) 5%
  OSHA PEL: 500
  ACGIH TLV: 100ppm, other limits 200
Hazardous Components: Butyl Benzyl Phtahate (CAS-85-68-7) 15%
  OSHA PEL: NE
  ACGIH TLV: NE, Other Limits NE
Hazardous Components: Water (CAS-Non-Haz) 30%
  OSHA PEL: NE
  ACGIH TLV: NE, Other Limits NE

SECTION II - Physical/Chemical Characteristics
Boiling Point: Variable Specific Gravity: (H2O=<1)
Vapor Pressure: <1 Melting Point: Variable
Vapor Density: (Air=1) >1 Evaporation Rate: >1
Solubility in Water: Dilutable % Volatile: Variable
Appearance and Odor: Milky white paste - mild odor.

SECTION III - Fire and Explosion Hazard Data
Flash Point: NA Flammable: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA
Unusual Fire and Explosion Hazards: Material can splatter above
100/212 F. Polymer film can burn.

SECTION IV - Reactivity Data
Stability - Stable
Incompatibility - NA
Hazardous Decomposition products - NA
Hazardous Polymerization - Will Not Occur
Conditions to Avoid - NA

NA-NOT APPLICABLE     ND=NOT DETERMINED     DATE PREPARED: 1/01/96
SECTION V - Health Hazard Data

Recommended Work Place Exposure Limits: TWA=SEE Section I= 10mg/m3 TD resp; 125 ppm.

Effects of Overexposure:
- Inhalation: Vapor or mist can cause irritation of the nose, throat and lungs & cause headache & nausea.
- Skin Contact: Irritating to skin upon repeated or prolonged contact.
- Eye Contact: Slightly irritating to eyes.

Emergency First Aid Procedures:
- Inhalation: Move subject to fresh air.
- Eyes & Skin Contact: Flush eyes with large amount of water for at least 15 minutes. See a physician if irritation persists. Wash affected skin areas with soap and water.
- Ingestion: If swallowed, dilute by giving 2 glasses of water to drink. See a physician.

Note: Titanium dioxide when formulated as above does not pose a dust hazard unless sanding or grinding of the dry coating takes place.

The TWA for inorganic filler are those for nuisance dust.

SECTION VI - Control and Protective Measures

Respirable Protection: wear suitable respirator (OSHA/NIOSH-approved equivalent). Where exposure limits are determined. Eliminate exposure to dust, use OSHA approved mask for silica dust, if freshly mixed mortar gets into eyes or contacts skin-flush immediately & repeatedly with water & contact physician immediately.

Protective Gloves: Impervious
Eye Protection: Chemical splash goggles (ANSI 2-87.1 or approved equivalent).

Ventilation to be Used: Mechanical local exhaust ventilation at point of contaminant release.

Note to Physician: Petroleum hydrocarbons can cause CNS effects. If swallowed, careful evacuation of the stomach is advisable.

SECTION VII - Precautions for Safe Handling and Use

Spill or Leak Procedure: Keep spectators away. Floor may be slippery, use care to avoid falling. Scoop or shovel solid material into a suitable container for recovery or disposal. Keep spills and cleaning runoffs out of municipal sewers and open bodies of water.
Waste Disposal: When discarded this material contains a listed hazardous ingredient (butyl benzyl phthalate); reportable "Superfund" incinerate the solids at permitted facility according to local, state an federal regulations.

Storage and Handling: Precautionary Labeling: KEEP FROM FREEZING
MATERIAL SAFETY DATA SHEET
Prepared according to 29 CFR 1910.1200

Trade Name: Safecote Safe Seal
Product I.D. # & Color: 3104 Clear
Product Class: Waterborne Acrylic Polymer Emulsion
G.O.T. Labels/Placards Required: No
OSHA Class: 29 CFR 19110.1200 Non-hazardous
SARA TITLE III Emergency & Community Right to Know
Section 311/312 Categorizations (40 CFR 370): Not a hazardous chemical
Section 313 Information (40 CFR 372): This product does not contain a chemical which is listed in Section 313 above de minimis

SECTION 1 - PRODUCT IDENTIFICATION

SECTION 2 - INGREDIENTS

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS #</th>
<th>Weight Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>60 – 65</td>
</tr>
<tr>
<td>Acrylic Copolymer Emulsion</td>
<td>CAS #: Mixture</td>
<td>Weight: 15 – 20</td>
</tr>
<tr>
<td>Dipropylene glycol methyl ether</td>
<td>CAS #: 34590-94-8</td>
<td>Weight Percent: &lt; 3</td>
</tr>
<tr>
<td>NIOSH – 100 ppm (600 mg/m3) (skin)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor Pressure 0.5 mm Hg @ 77 F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin TWA 8 hours - STEL 150 ppm 15 minutes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suspected Cancer Agents: Federal OSHA: No NTP: NO IARC: No

HMIS Codes: H-1 F-0 R-0 P-B

SECTION 3 - PHYSICAL DATA

Physical Description: Viscous liquid, low odor, mildly alkaline.
Boiling Point: .................................................................100 C/212 F
Melting Point: ...............................................................N/A
Vapor Density: ..............................................................Heavier than air
% Volatile by Volume: ..................................................82.46%
LBS/GAL Theoretical: ......................................................8.44 +or – 15
Solubility in Water: ......................................................Dilutable
Vapor Pressure, mmHg @ 20degC: ........................................N/A
Evaporation Rate: ..........................................................Slower than ether
% Volatile by Weight: ....................................................82.00%
Specific Gravity (Water=1): ...........................................1.01
VOC Material: ...............................................................12 gal, 0.10 lb/gal
VOC Material less H2O: ...................................................64 gal, 0.53 lb/gal

SECTION 4 - FIRE & EXPLOSION HAZARD DATA

Flash Point: .................................................................N/A non-combustible
Flammable limits in air, volume % - lower LEL: 1.1 Upper UEL: 3.0
Fire Extinguishing Media: Water, carbon dioxide, dry chemical
Personal Protective Equipment: Self-contained breathing apparatus (pressures-demand MSHA/NIOSH approved or equivalent) and full protective gear may be worn if desired, but not necessary for normal use.
Autoignition Temp: .........................................................N/A
Special Fire Fighting Procedures: Use water (fog) to cool closed containers.
Wear self contained breathing apparatus.
Unusual Fire & Explosion Hazards: Closed containers may explode due to the build up of steam pressure when exposed to extreme heat. Material can splatter above 100°C/212°F. Polymer film can burn.

SECTION 5 - HEALTH HAZARD INFORMATION & FIRST AID

Threshold Limit Value: See Section 2 for hazardous ingredient information
Symptoms of Overexposure:
<table>
<thead>
<tr>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swallowing</td>
</tr>
<tr>
<td>Inhilation</td>
</tr>
<tr>
<td>Eye Contact</td>
</tr>
<tr>
<td>Skin Absorption</td>
</tr>
</tbody>
</table>
Symptoms and Effects of Repeated Overexposure:
| Chronic | None known. |

SECTION 6 - REACTIVITY DATA

Stability: Stable, however avoid temperatures above 177°C/350°F, the onset of polymer decomposition.
Incompatibility (materials to avoid): Avoid materials that are water reactive, highly alkaline or highly acidic.
Hazardous Decomposition by-products: CO, CO2 on combustion
Hazardous Polymerization: Will not occur.

SECTION 7 - SPILL, DISPOSAL PROCEDURES; ENVIRONMENTAL DATA

Steps to be taken in case material is released or spilled: Confine in small area; contain and remove with inert absorbent (sand, earth, etc.). Place in proper container for proper disposal. CAUTION - Keep out of waterways, drains, sewers by digging. Keep spectators away. Floor may be slippery. Use care to avoid falling.
Waste Disposal Method: Place contaminated material in suitable sealed metal containers for disposal. Do not incinerate closed containers. Use non leaking containers, seal tightly and label properly. Do not pour contaminated paint back into unused paint. Do not throw liquid paint into the trash. Where allowed by local laws (check with local regulatory agencies) allow liquid waste materials to dry out before disposing into trash containers. Take all liquid unused paint that cannot be used to approved recycling centers, paint rounds, or county facilities that are approved to take unused paint at collection sites. Contact state, county, city health services or fire departments to find nearest collection centers. Do not dispose of waste into water streams or storm water sewers. Do not mix with other kinds of waste. Dispose all waste in accordance with local, state and federal regulations.
RCRA Classification: As produced, this product is not a waste. If discarded as is, it is not classified a “Hazardous” waste under RCRA. This product is not ignitable, corrosive, reactive, or toxic; therefore it is not defined as hazardous by the EPA.
Environmental Hazards: None known.

SECTION 8 - SPECIAL PROTECTION INFORMATION

Respiratory Protection: If applied by spraying, use an appropriate, properly fitted NIOSH/MSHA approved respirator to remove spray mist. Good room (mechanical) ventilation should be sufficient protection against vapors from product. If further protection is desired or if persons are sensitive to vapors, use a respirator with a NIOSH/MSHA approval number TC-23C-860 or TC-23C-87 or an equivalent. Refer to OSHA 29 CFR 1910.134, “Respiratory Protection”. Ventilation: General (mechanical) room ventilation is expected to be satisfactory.
Protective Gloves: None required under most conditions. If protection is desired, plastic, nitrile or latex rubber will provide adequate protection.
Eye Protection: Safety glasses or goggles with side shields if splashing may occur. Use goggles when spraying, ANSI Z87.1 or approved equivalent.
Other Protection: Eye wash or copious amounts of water as a precautionary measure is suggested. Other equipment not likely to be needed.

SECTION 9 - STORAGE & SPECIAL HANDLING

Storage Temperature: Min. 45degF - Max. 120degF/Indoor and outdoor = OK
This product should be stored at room temperature to prolong shelf life. Keep containers in a cool, dry place. Avoid subjecting this product to extreme temperature variations and freezing. Adverse conditions can cause emulsion coagulation.
KEEP CONTAINER CLOSED. KEEP OUT OF REACH OF CHILDREN. DO NOT TAKE INTERNALLY. DO NOT GET IN EYES. IF PRODUCT IS SPRAYED, PREVENT PROLONGED OR REPEATED BREATHING OF SPRAY MIST. USE ADEQUATE VENTILATION WHEN USING THIS PRODUCT. USE GOOD HYGIENE PRACTICES AND WASH AFTER USING PRODUCT.

NOTICE: The data and recommendations presented herein are based upon our research and the research of others, and are believed to be accurate. No

AlerG.com (888) 760-1900
MATERIAL SAFETY DATA SHEET
Prepared according to 29 CFR 1910.1200
Revised 10/15/98

SECTION 1 - PRODUCT IDENTIFICATION
Trade Name: Safecost Flat Pastel Base Zero VOC
Product I.D.# & Color: 1411 White
Product Class: Waterborne Polymer Emulsion
Supplier's Name: American Formulating & Manufacturing
Address: 3251 Third Avenue, San Diego, CA 92103
Emergency Phone (MSDS Information): (619) 239-0321 or (562) 693-0872
D.O.T. Emergency Phone Number: (562) 693-0872
OSHA Class: 29 CFR 1910.1200 Non-hazardous
SARA TITLE III Emergency & Community Right to Know:
Section 311/312 Categorizations (40 CFR 370): Not a hazardous chemical
Section 313 Information (40 CFR 372): This product does not contain a chemical which is listed in Section 313 above de minimis concentrations.

SECTION 2 - HAZARDOUS INGREDIENTS
This product contains no known hazardous ingredients.
Suspected Cancer Agents: Federal OSHA: No NTP: NO IARC: No None known.

SECTION 3 - PHYSICAL DATA
Physical Description: Viscous liquid, low odor, mildly alkaline, white (if not tinted).
Very mild paint odor.
Boiling Point: ............................................................... (Water) 190-212°F
Melting Point: ............................................................... N/A
Vapor Density: ............................................................... Heavier than air
% Volatile by Volume: .............................................................. 73.00%
LBS/GAL Theoretical: ............................................................... 11.85 +or-.15
Solubility in Water: ............................................................... Dilutable
Vapor Pressure, mmHg @ 20degC:.................................. N/A
Evaporation Rate: ............................................................... Slower than ether
Splash (skin): ............................................................... None known.
Splash (eyes): ............................................................... None known.

SECTION 4 - FIRE & EXPLOSION HAZARD DATA
Flash Point: N/A non-combustible
Flammable limits in air, volume % - lower LEL: N/A Upper UEL: N/A
Fire Extinguishing Media: Water, carbon dioxide, dry chemical
Personal Protective Equipment: Self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear may be worn if desired, but not necessary for normal use.
Autoignition Temp: N/A
Special Fire Fighting Procedures: Use water (fog) to cool closed containers. Wear self contained breathing apparatus.
Unusual Fire & Explosion Hazards: Closed containers may explode due to the build up of steam pressure when exposed to extreme heat. Material can splatter above 100°F/122°C. Polymer film can burn.

SECTION 5 - HEALTH HAZARD INFORMATION & FIRST AID
Threshold Limit Value: See Section 2 for hazardous ingredient information
Symptoms of Overexposure
General: May cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Inhalation: Inhalation of spray mists may cause nausea and vomiting.
Eye Contact: Liquid splashed into the eye may cause transient eye irritation.
Skin Absorption: None known.
Symptoms and Effects of Repeated Overexposure: Chronic - None known.
Medical Conditions Generally Aggravated by Exposure: None known.
Emergency & First Aid Procedures:
Inhalation: Remove from exposure. Provide plenty of fresh air.
Splash (eyes): Flush immediately with large amounts of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Take to a physician for medical treatment.
Splash (skin): Remove with soap and water. Remove contaminated clothing. Supply copious amounts of fresh water to the skin areas to rinse material away.
Ingestion (Swallowing): Consult with physician, hospital emergency room, or poison control center immediately. Only if conscious, give 2 glasses of water to drink.
Notes to Physician: Any treatment that might be required for overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION 6 - REACTIVITY DATA
Stability: Stable, however avoid temperatures above 177°C/350°F, the onset of polymer decomposition.
Incompatibility (materials to avoid): Avoid materials that are water reactive, highly alkaline or highly acidic.
Hazardous Decomposition by-products: CO, CO2 on combustion
Hazardous Polymerization: Will not occur.
Steps to be taken in case material is released or spilled: Confine in small area; contain and remove with inert absorbent (sand, earth, etc.). Place in proper container for proper disposal. CAUTION - Keep out of waterways, drains, sewers by diking. Keep spectators away. Floor may be slippery. Use care to avoid falling.
Waste Disposal Method: Place contaminated material in suitable sealed metal containers for disposal. Do not incinerate closed containers. Use non leaking containers, seal tightly and label properly. Do not pour contaminated paint back into unused paint. Do not throw liquid paint into the trash. Where allowed by local laws (check with local regulatory agencies) allow liquid waste materials to dry out before disposing into trash containers. Take all liquid unused paint that cannot be used to approved recycling centers, paint roundups, or county facilities that are approved to take unused paint at collection sites. Contact state, county, city health services or fire departments to find nearest collection centers. Do not dispose of waste into water streams or storm water sewers. Do not mix with other kinds of waste. Dispose all waste in accordance with local, state and federal regulations.
RCRA Classification: As produced, this product is not a waste. If discarded as is, it is not classified a “Hazardous” waste under RCRA. This product is not ignitable, corrosive, reactive, or toxic; therefore it is not defined as hazardous by the EPA.
Environmental Hazards: None known.

SECTION 7 - SPILL, DISPOSAL PROCEDURES; ENVIRONMENTAL DATA
Steps to be taken in case material is released or spilled: Confine in small area; contain and remove with inert absorbent (sand, earth, etc.). Place in proper container for proper disposal. CAUTION - Keep out of waterways, drains, sewers by diking. Keep spectators away. Floor may be slippery. Use care to avoid falling.
Waste Disposal Method: Place contaminated material in suitable sealed metal containers for disposal. Do not incinerate closed containers. Use non leaking containers, seal tightly and label properly. Do not pour contaminated paint back into unused paint. Do not throw liquid paint into the trash. Where allowed by local laws (check with local regulatory agencies) allow liquid waste materials to dry out before disposing into trash containers. Take all liquid unused paint that cannot be used to approved recycling centers, paint roundups, or county facilities that are approved to take unused paint at collection sites. Contact state, county, city health services or fire departments to find nearest collection centers. Do not dispose of waste into water streams or storm water sewers. Do not mix with other kinds of waste. Dispose all waste in accordance with local, state and federal regulations.

SECTION 8 - SPECIAL PROTECTION INFORMATION
Respiratory Protection: If applied by spraying, use an appropriate, properly fitted NIOSH/MSHA approved respirator to remove spray mist. Good room (mechanical) ventilation should be sufficient protection against vapors from product. If further protection is desired or if persons are sensitive to vapors, use a respirator with a NIOSH/MSHA approval number TC-23C-860 or TC-23C-87 or an equivalent. Refer to OSHA 29 CFR 1910.134, “Respiratory Protection”.
Ventilation: General (mechanical) room ventilation is expected to be satisfactory.
Protective Gloves: None required under most conditions. If protection is desired, plastic, nitrile or latex rubber will provide adequate protection.
Eye Protection: Safety glasses or goggles with side shields if splashing may occur. Use goggles when spraying, ANSI Z87.1 or approved equivalent.
Other Protection: Eye wash or copious amounts of water as a precautionary measure is suggested. Other equipment not likely to be needed.

SECTION 9 - STORAGE & SPECIAL HANDLING
Storage Temperature: Min. 45degF - Max. 120degF/Indoor and outdoor ok
This product should be stored at room temperature to prolong shelf life. Keep containers in a cool, dry place. Avoid subjecting this product to extreme temperature variations and freezing. Adverse conditions can cause emulsion coagulation.
KEEP CONTAINER CLOSED. KEEP OUT OF REACH OF CHILDREN. DO NOT TAKE INTERNALLY. DO NOT GET IN EYES. IF PRODUCT IS SPRAYED, PREVENT PROLONGED OR REPEATED BREATHING OF SPRAY MIST. USE ADEQUATE VENTILATION WHEN USING THIS PRODUCT. USE GOOD HYGIENE PRACTICES AND WASH AFTER USING PRODUCT.

NOTICE: The data and recommendations presented herein are based upon our research and the research of others, and are believed to be accurate. No guarantee of their accuracy is made, however, and the product discussed is distributed without warranty, expressed or implied, and the person receiving such product shall make his own determination of the suitability thereof for his particular purpose.

CU 411
SECTION 1 - PRODUCT IDENTIFICATION

Trade Name: Safecoat Semigloss Pastel Base Zero VOC
Product ID & #: 1412 White
Product Class: Waterborne Polymer Emulsion
Supplier’s Name: American Formulating & Manufacturing
Address: 3251 Third Avenue, San Diego, CA 92103
Telephone #: (619) 239-0321 Fax #: 619-239-0565
Emergency Phone: (619) 239-0321 or (562) 693-0872

SECTION 2 - INGREDIENTS

Acrylic Emulsion Copolymer CAS #: Mixture Weight Percent: 55 – 60
Vapor Pressure 17 mm Hg @ 68 F
Water CAS #: 7732-18-5 Weight Percent: 15 – 20
Titanium Dioxide CAS #: 13463-67-7 Weight Percent: 20 – 25
Suspected Cancer Agents: Federal OSHA: No NTP: NO IARC: No None known.

HMS Codes: H-1 F-0 R-0 P-B

SECTION 3 - PHYSICAL DATA

Physical Description: Viscous liquid, low odor, mildly alkaline, white (if not tinted). Very mild paint odor.
Boiling Point: 100°C/212°F
Melting Point: N/A
Vapor Density: Heavier than air
% Volatile by Volume: 60.35%
LBS/GAL Theoretical: 10.38 ± 0.15
Solubility in Water: Dilutable
Vapor Pressure, mmHg @ 20degC: N/A
Evaporation Rate: Slower than ether
% Volatile by Weight: 48.55%
Specific Gravity (Water=1): 1.25
VOC Material: zero
VOC Material less than 20:

SECTION 4 - FIRE & EXPLOSION HAZARD DATA

Flash Point: N/A non-combustible
Flammable limits in air, volume % - lower LEL: N/A Upper UEL: N/A
Fire Extinguishing Media: Water, carbon dioxide, dry chemical
Personal Protective Equipment: Self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear may be worn if desired, but not necessary for normal use.
Autoignition Temp.: N/A
Special Fire Fighting Procedures: Use water (fog) to cool closed containers. Wear self contained breathing apparatus.
Unusual Fire & Explosion Hazards: Closed containers may explode due to the build up of steam pressure when exposed to extreme heat. Material can splatter above 100°C/212°F. Polymer film can burn.

SECTION 5 - HEALTH HAZARD INFORMATION & FIRST AID

Threshold Limit Value: See Section 2 for hazardous ingredient information
Symptoms of Overexposure
Symptoms and Effects of Short Term Exposure: Acute. Primary route of entry:
Swallowing: May cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Inhalation: Inhalation-spray mists may cause mild respiratory irritation.
Eye Contact: Liquid splashed into the eye may cause transient eye irritation.
Skin Absorption: None known.
Symptoms and Effects of Repeated Overexposure: Chronic - None known.
Medical Conditions Generally Aggravated by Exposure: None known.
Emergency & First Aid Procedures:
Inhalation: Remove from exposure. Provide plenty of fresh air.

SECTION 6 - REACTIVITY DATA

Acid: None known.
Alkali: None known.
Hazardous Decomposition by-products: CO, CO2 on combustion

SECTION 7 - SPILL, DISPOSAL PROCEDURES; ENVIRONMENTAL DATA

Steps to be taken in case material is released or spilled: Confinement in small area; contain and remove with inert absorbent (sand, earth, etc.). Place in proper container for proper disposal. CAUTION - Keep out of waterways, drains, sewers by diking. Keep spectators away. Floor may be slippery. Use care to avoid falling.
Waste Disposal Method: Place contaminated material in suitable sealed metal containers for disposal. Do not incinerate closed containers. Use non leaking containers, seal tightly and label properly. Do not pour contaminated paint back into unused paint. Do not throw liquid paint into the trash. Where allowed by local laws (check with local regulatory agencies) allow liquid waste materials to be dried out before disposing into trash containers. Take all liquid unused paint that cannot be used to approved recycling centers, paint roundups, or county facilities that are approved to take unused paint at collection sites. Contact state, county, city health services or fire departments to find nearest collection centers. Do not dispose of waste into water streams or storm water sewers. Do not mix with other kinds of waste. Dispose all waste in accordance with local, state and federal regulations.
RCRA Classification: As produced, this product is not a waste. If discarded as is, it is not classified a “Hazardous” waste under RCRA. This product is not ignitable, corrosive, reactive, or toxic; therefore is not defined as hazardous by the EPA.
Environmental Hazards: None known.

SECTION 8 - SPECIAL PROTECTION INFORMATION

Respiratory Protection: If applied by spraying, use an appropriate, properly fitted NIOSH/MSHA approved respirator to remove spray mist. Good room (mechanical) ventilation should be sufficient protection against vapors from product. If further protection is desired or if persons are sensitive to vapors, use a respirator with a NIOSH/MSHA approval number TC-23-C-860 or TC-23-C-87 or an equivalent. Refer to OSHA 29 CFR 1910.134, “Respiratory Protection”.
Ventilation: General (mechanical) room ventilation is expected to be satisfactory.
Protective Gloves: None required under most conditions. If protection is desired, plastic, nitrile or latex rubber will provide adequate protection.
Eye Protection: Safety glasses or goggles with side shields if splashing may occur. Use goggles when spraying. ANSI Z87.1 or approved equivalent.
Other Protection: Eye wash or copious amounts of water as a precautionary measure is suggested. Other equipment not likely to be needed.

SECTION 9 - STORAGE & SPECIAL HANDLING

Storage Temperature: Min. 45degF - Max. 120degF/Indoor and outdoor = OK
This product should be stored at room temperature to prolong shelf life. Keep containers in a cool, dry place. Avoid subjecting this product to extreme temperature variations and freezing. Adverse conditions can cause emulsion coagulation.
KEEP CONTAINER CLOSED. KEEP OUT OF REACH OF CHILDREN. DO NOT TAKE INTERNALLY. DO NOT GET IN EYES. IF PRODUCT IS SPRAYED, PREVENT PROLONGED OR REPEATED BREATHING OF SPRAY MIST. USE ADEQUATE VENTILATION WHEN USING THIS PRODUCT. USE GOOD HYGIENE PRACTICES AND WASH AFTER USING PRODUCT.

NOTICE: The data and recommendations presented herein are based upon our research and the research of others, and are believed to be accurate. No guarantee of their accuracy is made, however, and the product discussed is...
SECTION 1 - PRODUCT IDENTIFICATION

Trade Name: Safecoat Transitional Primer
Product ID # & Color: 8090 White
Product Class: Acrylic Pigmented Polymer Emulsion
Supplier's Name: American Formulating & Manufacturing
Telephone #: (619) 239-0321 Fax #: (619) 239-0565
Address: 3251 Third Avenue, San Diego, CA 92103
Emergency Phone (MSDS Information): (619) 239-0321 or (562) 693-0872
D.O.T. Emergency Phone Number: (562) 693-0872
US DOT Hazard Shipping Class: Not regulated - aqueous
D.O.T. Labels/Placards Required: No
OSHA Class: 29CFR 1910.1200 Non-hazardous
SARA TITLE III Emergency & Community Right to Know
Section 311/312 Categorizations (40 CFR 370): Not a hazardous chemical
Section 313 Information (40 CFR 372): This product does not contain a chemical which is listed in Section 313 above de minimis concentrations.

SECTION 2 - INGREDIENTS

Modified Acrylic Emulsion CopolymerCAS #: Mixture Weight Percent: 45 – 50
Nepheline Syenite CAS #: 37244-96-5 Weight Percent: 15 – 20
Water CAS #: 7732-18-5 Weight Percent: 15 – 20
Titanium Dioxide CAS #: 13463-67-7 Weight Percent: 10 – 15

SECTION 3 - PHYSICAL DATA

Physical Description: Viscous liquid, low odor, mildly alkaline, white (if not tinted). Very mild paint odor.
Boiling Point: .................................................................100 C/212 F
Melting Point: ...............................................................N/A
Vapor Density: ..............................................................Heavier than air
% Volatile by Volume: ..................................................56.89%
LBS/GAL Theoretical: ..................................................10.70 +or-.15
Solubility in Water: ..........................................................Dilutable
Vapor Pressure, mmHg @ 20degC: ....................................N/A
Evaporation Rate: .............................................................Slower than ether
% Volatile by Weight: ....................................................44.91%
Specific Gravity (Water=1): ..............................................1.28
VOC Material: ...............................................................9 g/l, 0.08 lb./gal
VOC Material less H20: ....................................................22 g/l, 0.18 lb./gal

SECTION 4 - FIRE & EXPLOSION HAZARD DATA

Flash Point: N/A non-combustible
Flammable limits in air, volume % - lower LEL: N/A. Upper UEL: N/A
Fire Extinguishing Media: Water, carbon dioxide, dry chemical
Personal Protective Equipment: Self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear may be worn if desired, but not necessary for normal use.
Autoignition Temp: ..........................................................N/A
Special Fire Fighting Procedures: Use water (fog) to cool closed containers. Wear self contained breathing apparatus.
Unusual Fire & Explosion Hazards: Closed containers may explode due to the build up of steam pressure when exposed to extreme heat. Material can splatter at temperatures above 100°C/212°F. Polymer film can burn.

SECTION 5 - HEALTH HAZARD INFORMATION & FIRST AID

Threshold Limit Value: See Section 2 for hazardous ingredient information
Symptoms of Overexposure:
Symptoms and Effects of Short Term Exposure: Acute. Primary route of entry:
Swallowing: Unknown.
Inhalation: Inhalation-spray mists may cause mild respiratory irritation.
Eye Contact: Liquid splashed into the eye may cause transient eye irritation.
Skin Absorption: None known.
Symptoms and Effects of Repeated Overexposure: Chronic - None known.
Medical Conditions Generally Aggravated by Exposure: None known.

Emergency & First Aid Procedures:
Inhalation: Remove from exposure. Provide plenty of fresh air.
Splashes (eyes): Flush immediately with large amounts of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Take to a physician for medical treatment.
Splashes (skin): Remove with soap and water. Remove contaminated clothing. Supply copious amounts of fresh water to the skin areas to rinse material away.
Ingestion (Swallowing): Consult with physician, hospital emergency room, or poison control center immediately. Only if conscious, give 2 glasses of water to drink.
Notes to Physician: Any treatment that might be required for overexposure should be directed at the control of symptoms and the clinical conditions.

SECTION 6 - REACTIVITY DATA

Stability: Stable, however avoid temperatures above 177°C/350°F, the onset of polymer decomposition.
Incompatibility (materials to avoid): Avoid materials that are water reactive, highly alkaline or highly acidic.
Hazardous Decomposition by-products: CO, CO2 on combustion
Hazardous Polymerization: Will not occur.
Conditions to Avoid: Excess heat may cause containers to rupture. Avoid temperatures below 45°F or freezing conditions.

SECTION 7 - SPILL, DISPOSAL PROCEDURES, ENVIRONMENTAL DATA

Steps to be taken in case material is released or spilled: Confine in small area; contain and remove with inert absorbent (sand, earth, etc.). Place in proper container for proper disposal. CAUTION - Keep out of waterways, drains, sewers by diking. Keep spectators away. Floor may be slippery. Use care to avoid falling.
Waste Disposal Method: Place contaminated material in suitable sealed metal containers for disposal. Do not incinerate closed containers. Use non leaking containers, seal tightly and label properly. Do not pour contaminated paint back into unused paint. Do not throw liquid paint into the trash. Where allowed by local laws (check with local regulatory agencies) allow liquid waste materials to dry out before disposing into trash containers. Take all liquid unused paint that cannot be used to approved recycling centers, paint roundups, or county facilities that are approved to take unused paint at collection sites. Contact state, county, city health services or fire departments to find nearest collection centers. Do not dispose of waste into water streams or storm water sewers. Do not mix with other kinds of waste. Dispose all waste in accordance with local, state and federal regulations.
RCRA Classification: As produced, this product is not a waste. If discarded as is, it is not classified a “Hazardous” waste under RCRA. This product is not ignitable, corrosive, reactive, or toxic; therefore is not defined as hazardous by the EPA.
Environmental Hazards: None known.

SECTION 8 - SPECIAL PROTECTION INFORMATION

Respiratory Protection: If applied by spraying, use an appropriate, properly fitted NIOSH/MSHA approved respirator to remove spray mist. Good room (mechanical) ventilation should be sufficient protection against vapors from product. If further protection is desired or if persons are sensitive to vapors, use a respirator with a NIOSH/MSHA approval number TC-23C-860 or TC-23C-87 or an equivalent. Refer to OSHA 29 CFR 1910.134, “Respiratory Protection”.
Ventilation: General (mechanical) room ventilation is expected to be satisfactory.
Protective Gloves: None required under most conditions. If protection is desired, plastic, nitrile or latex rubber will provide adequate protection.
Eye Protection: Safety glasses or goggles with side shields if splashing may occur. Use goggles when spraying, ANSI Z87.1 or approved equivalent.
Other Protection: Eye wash or copious amounts of water as a precautionary measure is suggested. Other equipment not likely to be needed.

SECTION 9 - STORAGE & SPECIAL HANDLING

Storage Temperature: Min. 45degF - Max. 120degF/Indoor and outdoor = OK
This product should be stored at room temperature to prolong shelf life. Keep containers in a cool, dry place. Avoid subjecting this product to extreme temperature variations and freezing. Adverse conditions can cause emulsion coagulation.
KEEP CONTAINER CLOSED. KEEP OUT OF REACH OF CHILDREN. DO NOT TAKE INTERNALLY. DO NOT GET IN EYES. IF PRODUCT IS SPRAYED, PREVENT PROLONGED OR REPEATED BREATHING OF SPRAY MIST. USE ADEQUATE VENTILATION WHEN USING THIS PRODUCT. USE GOOD HYGIENE PRACTICES AND WASH AFTER USING PRODUCT.
MSDS: MINERAL OIL

MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION
MINERAL OIL
PRODUCT CODE: HH-MINERAL OIL, REFERENCE #: 77601
PRODUCT NAME: MINERAL OIL CHEMICAL FAMILY: Compound
MANUFACTURER NAME AND ADDRESS: TELEPHONE NUMBERS: DATES:
Farnam Companies, Inc. 24 hour emergency number (602) 285-1660
Date Created: 10/04/1994
301 West Osborn Road Business hours (602) 285-1660
Revision: 04/25/2001
Phoenix, AZ. 85013 Marketing (602) 285-1660
Printed: 01/12/2005

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS
MINERAL OIL
HAZARDOUS COMPONENTS (CHEMICAL NAME) CAS # OSHA PEL ACGIH TLV OTHER LIMITS PERCENTAGE RTECS #
1. MINERAL OIL USP 8042-47-5 90.0-100.0 % PY 8047000

SECTION 3. HAZARDS IDENTIFICATION
MINERAL OIL
EMERGENCY OVERVIEW

ROUTE(S) OF ENTRY: Inhalation? No, Skin? No, Eyes? No, Ingestion? Yes
POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)
Under Manufacturing Conditions: On rare occasions, prolonged and repeated exposure to oil mist poses a risk of pulmonary disease such as chronic lung inflammation. This condition is usually asymptomatic as a result of repeated small aspirations. Shortness of breath and cough are the most common symptoms. Aspiration may lead to chemical pneumonitis which is characterized by pulmonary edema and hemorrhage, and may be fatal. Signs of lung involvement include increased respiration rate, increased heart rate, and a bluish discoloration of the skin. Coughing, choking, and gagging are often noted at the time of aspiration. Gastrointestinal discomfort may develop, followed by vomiting, with a further risk of aspiration.
CARCINOGENICITY: NTP? No, IARC Monographs? No, OSHA Regulated? No
CARCINOGENICITY/OTHER INFORMATION

SIGNS AND SYMPTOMS OF EXPOSURE
May cause slight eye irritation
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
none known

SECTION 4. FIRST AID MEASURES
MINERAL OIL
EMERGENCY AND FIRST AID PROCEDURES
IF INGESTED: Do NOT induce vomiting because of aspiration hazard. If victim is conscious, give 1 to 3 glasses of water or milk and contact physician or Poison Control Center. May act as laxative.
IF INHALED: Remove to fresh air. Administer respiration if indicated. If unconscious, seek medical attention.
IF IN EYES: Immediately flush with large amounts of water and continue flushing for 15 minutes. If material is hot, treat for thermal burns and take patient to hospital immediately.
IF ON SKIN: Remove contaminated clothing. If material is hot, submerge injured area in cold water. If patient is severely burned, remove to a hospital immediately.
NOTE TO PHYSICIAN

SECTION 5. FIRE FIGHTING MEASURES
MINERAL OIL
FLASH PT: 400.00 F METHOD USED: TCC
EXPLOSIVE LIMITS: LEL: NE UEL: NE
AUTOIGNITION PT: N.A.
EXTINGUISHING MEDIA
dry chemical, foam, water spray, or carbon dioxide
FIRE FIGHTING INSTRUCTIONS
Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Water runoff can cause environmental damage. Dike and collect water used to fight fire.
FLAMMABLE PROPERTIES AND HAZARDS
Dense smoke may be generated while burning. Carbon monoxide, carbon dioxide and
other oxides may be generated as products of combustion.

HAZARDOUS COMBUSTION PRODUCTS

SECTION 6. ACCIDENTAL RELEASE MEASURES
MINERAL OIL
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Contain spill immediately. Do not allow spill to enter sewers or watercourses. Remove all sources of ignition. Absorb with appropriate inert material such as sand, clay, etc. Large spills may be picked up using vacuum pumps, shovels, buckets, or other means and placed in drums or other suitable containers.

SECTION 7. HANDLING AND STORAGE
MINERAL OIL
HAZARD LABEL INFORMATION: Avoid exposure to excessive heat  Keep container tightly closed
PRECAUTIONS TO BE TAKEN IN HANDLING
Do not transfer to unmarked containers. Store in closed containers away from heat, sparks, open flame, or oxidizing materials. Flammable and combustible liquids.
PRECAUTIONS TO BE TAKEN IN STORING

OTHER PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
MINERAL OIL
RESPIRATORY EQUIPMENT (SPECIFY TYPE)
none under normal use, NIOSH cert. OVR w/dust & mist filter
EYE PROTECTION
Chemical goggles
PROTECTIVE GLOVES
Impervious gloves
OTHER PROTECTIVE CLOTHING
Clothes to prevent skin contact
ENGINEERING CONTROLS (VENTILATION ETC.)
Local Exhaust: sufficient
Special:
Mechanical (Gen):
Other:
WORK/HYGIENIC/MAINTENANCE PRACTICES
Wash hands before eating, smoking or using restroom.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
MINERAL OIL
PHYSICAL STATES: [ ] Gas , [ X ] Liquid , [ ] Solid
BOILING POINT: 740.00 F
MELTING POINT: N.A.
SPECIFIC GRAVITY (WATER = 1): 0.855 at 77.0 F
VAPOR PRESSURE (VS. AIR OR MM HG):
VAPOR DENSITY (VS. AIR = 1): > AIR
EVAPORATION RATE (VS BUTYL ACETATE=1):
SOLUBILITY IN WATER:
OTHER SOLUBILITY NOTES: Negligible
PERCENT VOLATILE: N.A.
PH:
APPEARANCE AND ODOR
Clear, light colored liquid

SECTION 10. STABILITY AND REACTIVITY
MINERAL OIL
STABILITY: Unstable [ ] Stable [ X ]
CONDITIONS TO AVOID - INSTABILITY
none known
INCOMPATIBILITY - MATERIALS TO AVOID
strong oxidizing agents
HAZARDOUS DECOMPOSITION OR BYPRODUCTS
In fire conditions, CO, CO2, and reactive hydrocarbons may be produced.
HAZARDOUS POLYMERIZATION: Will occur [ ] Will not occur [ X ]
CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION
will not occur

SECTION 11. TOXICOLOGICAL INFORMATION
MINERAL OIL
SECTION 12. ECOLOGICAL INFORMATION
MINERAL OIL

SECTION 13. DISPOSAL CONSIDERATIONS
MINERAL OIL
WASTE DISPOSAL METHOD
Dispose of in accordance with local, State and Federal regulations.

SECTION 14. TRANSPORT INFORMATION
MINERAL OIL
DOT PROPER SHIPPING NAME

DOT HAZARD LABEL: None
UN/NA NUMBER:
ADDITIONAL TRANSPORT INFORMATION

SECTION 15. REGULATORY INFORMATION
MINERAL OIL

SECTION 16. OTHER INFORMATION
MINERAL OIL

NFPA HAZARD RATINGS:
Health:0
Flammability:1
Waste Disposal Method: DO NOT ATTEMPT TO DISPOSE OF RESIDUAL GAS IN CYLINDERS. RETURN CYLINDERS TO AIR PRODUCTS FOR DISPOSAL.
FLAMMABLE GAS. UN 1001.
Precautions-Handling/Storing: USE ONLY IN WELL VENTILATED AREAS. HANDLE CYLINDERS W/CARE. USE A PRESSURE REDUCING REGULATOR SET AT LESS THAN 15 PSIG. NEVER EXPOSE TO HEAT.
Other Precautions: ALWAYS KEEP CYLINDERS UPRIGHT & SECURE CYLINDERS WHEN IN USE. ALWAYS OPEN & CLOSE ACETYLENE VALVES SLOWLY. RETURN CYLINDERS W/ POSITIVE PRESSURE & CYLINDER VALVE CLOSED. AVOID DRAGGING/ROLLING/SLIDING CYLINDERS, EVEN A SHORT DISTANCE. SUPP.

Control Measures

Respiratory Protection: OXYGEN DEFICIENT ATMOSPHERES ARE IN THE FLAMMABLE RANGE. DON'T ENTER. AIR PURIFYING RESPIRATORS WILL NOT FUNCTION. Ventilation: LOCAL EXHAUST/Mechanical (General): AS NECESSARY. Mechanical
Protective Gloves: LEATHER, WELDERS
Eye Protection: SAFETY GLASSES, WELDER GOGGLES
Other Protective Equipment: LEATHER SLEEVES, LEATHER APRON & OTHER STANDARD PROTECTIVE EQUIPMENT FOR CUTTING & WELDING.
Suppl. Safety & Health Data: USE A HAND TRUCK. STORAGE OF 2500 CUBIC FEET OR LESS IS PERMISSIBLE WITHIN BLDGS. STORAGE IN EXCESS OF 2500 CUBIC FEET MUST BE OUTDOORS OR IN WELL VENTILATED SPECIAL ROOMS OR BLDGS. DON'T STORE IN HEAVY TRAFFIC AREAS. VALVE CAPS SHOULD REMAIN ON CYLINDERS NOT CONNECTED FOR USE. SEGREGATE FULL & EMPTY CYLINDERS.

Transportation Data
Instability: 0

Special Hazard:

Minimal: 0
Slight: 1
Moderate: 2
Serious: 3
Extreme: 4

The information and data herein are believed to be accurate and have been compiled from sources believed to be reliable. It is offered for your consideration, investigation and verification.
Murphy® Oil Soap Spray

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

ACUTE HEALTH: 1
FIRE: 0
REACTIVITY: 0

PRODUCT NAME: Murphy® Oil Soap Spray
LABEL CODE: 01010 (22 oz), 01185 (32 oz)
CAS NUMBER: Not applicable - product is a mixture
GENERAL USE: A gentle, multi-purpose cleaner.

COLGATE-PALMOLIVE COMPANY
Institutional Products Division
191 East Hanover Avenue
Morristown, NJ 07960-3151

For consumer information: Call (800) 432-8226
EMERGENCY TELEPHONE NUMBER: For emergency involving spill, leak, fire, exposure or accident, call CHEMTREC: (800) 424-9300, day or night.

THE PITTSBURGH POISON CENTER HAS BEEN PROVIDED SPECIFIC INFORMATION FOR USE IN MEDICAL EMERGENCIES INVOLVING THIS PRODUCT: CALL COLLECT: (412) 692-5596.

2. COMPOSITION/INFORMATION ON INGREDIENTS

OSHA REGULATED COMPONENTS (present at a concentration > or = 1%):

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>%</th>
<th>PEL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>None - not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following components, present at a concentration > or = 0.1%, are listed as carcinogens or potential carcinogens by either the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>%</th>
<th>PEL</th>
<th>TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>None - not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: May cause eye irritation on direct contact, but no permanent eye injury is expected.
SKIN CONTACT: May cause mild skin irritation on prolonged or repeated contact.
INGESTION: May be harmful if swallowed in large quantities. Aspiration of swallowed liquid may cause pneumonitis.
INHALATION: No adverse effects expected.

4. FIRST AID MEASURES

EYE CONTACT: Flush eyes with large amounts of water for 15 minutes. Get medical attention if irritation persists.
SKIN CONTACT: Rinse area with plenty of water. Get medical attention if irritation occurs.
INGESTION: Drink 1-2 glasses of a clear liquid. Get medical attention.
INHALATION: Not applicable.

5. FIRE FIGHTING MEASURES

Flash Point (Method): Not established
Extinguishing Media: CO₂, Water Spray, All-purpose Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES: Self-contained breathing apparatus and protective clothing should be worn when fighting chemical fires.

6. ACCIDENTAL RELEASE MEASURES

Cover with inert, absorbent material and remove to disposal container. Spill area may be slippery. Flush with plenty of water.

7. HANDLING AND STORAGE:

Store in a tightly closed container in a cool, dry, well-ventilated area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONTROLS: Avoid eye contact.
PROTECTIVE CLOTHING: The use of safety goggles and protective gloves is recommended.
SPECIAL PRECAUTIONS: Keep out of the reach of children.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and odor: Light yellow liquid. Citrus odor.
pH: 10.0 ± 0.6
10. STABILITY AND REACTIVITY

GENERAL: This product is stable. Hazardous polymerization will not occur.
INCOMPATIBLE MATERIALS: Avoid strong oxidizing and reducing agents and easily ignitable materials. Avoid prolonged
contact with the more reactive alloys (aluminum, brass, bronze, etc.).
HAZARDOUS DECOMPOSITION: None known.

11. TOXICOLOGICAL INFORMATION
This product has not been tested as a whole. However, this formula was reviewed by expert toxicologists in the Product Safety
Assurance Department of Colgate-Palmolive and is determined to be safe for its intended use. This review has taken into consideration
available safety-related information including information on individual ingredients, similar ingredients, similar formulas and potential
ingredient interactions. This review is a component of the hazard determination used to prepare the statements in Section 3 of the
MSDS.

12. ECOLOGICAL INFORMATION
Not Available.

13. DISPOSAL CONSIDERATIONS
Any disposal practice must be in compliance with local, state, and federal laws and regulations (contact local or state government
agency for specific rules). Do not dump into sewers, any body of water, or onto the ground.

14. TRANSPORTATION
This product is not regulated as a DOT hazardous material.

15. REGULATORY INFORMATION

CLEAN WATER ACT: Not Applicable.
CLEAN AIR ACT: Contains ethanol which is a Section 111 material.
SARA:
Sections 301-304 (Threshold planning quantity – TPQ)
Section 313 (Toxic chemical release reporting)
40 CFR 372: The following chemicals must be reported under
SARA 313: Not Applicable.
CERCLA:
Section 102 (Reportable Quantity – RQ)
40 CFR 302: Not Applicable.
TSCA Section 8(b) INVENTORY STATUS:
All ingredients in this product are listed on the TSCA Inventory or
are not required to be listed on the TSCA Inventory.

NEW JERSEY RIGHT TO KNOW HAZARDOUS SUBSTANCE LIST:
This product contains the following components subject to reporting requirements:
Ethanol

PENNSYLVANIA HAZARDOUS SUBSTANCE LIST:
This product contains the following components subject to reporting requirements: None

MASSACHUSETTS SUBSTANCE LIST:
This product contains the following components subject to reporting requirements:
Ethanol

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):
This product contains the following components subject to reporting requirements: None

CANADA:
Workplace Hazardous Materials Information System (WHMIS)-listed material.
This product contains the following components subject to reporting requirements: None

16. OTHER INFORMATION
Effective Date: January 31, 2002
Supersedes MSDS dated April 19, 2000
MSDS Status: Revised Sections 1, 3, 4, 5, 7, 8, 9, 10, 11, 13, 15

The information on this sheet is limited to the material identified and is believed by the Colgate-Palmolive Company to be correct based
on its knowledge and information as of the date noted. Colgate-Palmolive makes no representation, guarantee or warranty, expressed
or implied, as to the accuracy, reliability or completeness of the information and assumes no responsibility for injury, damage or loss
resulting from the use of the material.
Material Safety Data Sheet

Section 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name/ Trade Name: Orange Glo Wood Cleaner & Polish

HMIS codes H F R P
1 2 0 ND

Supplier: Orange Glo International
PO Box 3998
Littleton, CO 80110 USA

Manufacturer: Northern Labs
4701 Custer St
Manitowoc WI 54221

Emergency Phone: 303-740-1909
ChemTrec 800-424-9300
MSDS preparation date: 14 September 2001
By: L. Brown

Information Phone: 303-740-1909
MSDS Revision date: 14 September 2001
MSDS Reviewed: 14 September 2001

Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

General Description: Non-aerosol liquid wood cleaner and polish. Bitrex has been added to prevent ingestion.

Hazardous Ingredients:

Ingredients not precisely identified are proprietary or nonhazardous

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Chemical name</th>
<th>%’age range</th>
</tr>
</thead>
<tbody>
<tr>
<td>64742-47-8</td>
<td>Petroleum distillates, hydrotreated, light</td>
<td>50-100</td>
</tr>
<tr>
<td>8028-48-6</td>
<td>Cold pressed orange oil</td>
<td>&lt;10%</td>
</tr>
</tbody>
</table>

Section 3: HAZARDS IDENTIFICATION

General: Combustible. Repeated exposure may cause skin dryness or cracking

Emergency: Ingestion - seek immediate medical attention

Primary Route(s) of Entry: Skin contact, eye contact, inhalation, ingestion

Effects of Overexposure:

Inhalation: Respiratory tract irritation, headaches, dizziness, anesthesia, drowsiness, unconsciousness and other central nervous system effects.

Ingestion: Minute amounts may be aspirated into lungs causing mild to severe pulmonary injury

Effects of Overexposure-Eyes: Irritation

Effects of Overexposure-Skin: May cause drying and cracking of skin

Effects of Overexposure-Chronic: Skin contact may aggravate an existing dermatitis

Hazards:

Section 4: FIRST AID MEASURES

- Skin: Rinse well with warm water
- Eyes: Rinse opened eyes with copious amounts of water. If irritation persists, call a physician
- Ingestion: Do not induce vomiting. Call a physician immediately.
Material Safety Data Sheet

- Inhalation: Remove to fresh air. If breathing is irregular or has stopped, administer oxygen and call a physician immediately

Section 5: FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Flashpoint and method used:</th>
<th>Flammable limit:</th>
<th>Flammable limit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>170 deg F/76.4 deg C (TCC)</td>
<td>1 (LEL)</td>
<td>6 (UEL)</td>
</tr>
</tbody>
</table>

Auto-ignition temperature: Product is not self igniting

Extinguishing media: Foam, dry chemical carbon dioxide, ABC type fire extinguishers

Special fire-fighting protective equipment: Self contained positive pressure breathing apparatus and protective clothing should be worn

Unusual fire and explosion hazards: Keep product away from ignitit sources, such as heat, sparks, pilot lights, and open flames.

Explosion data: ND

Section 6: ACCIDENTAL RELEASE MEASURES

Personal protective equipment: In restricted areas, use approved chemical/mechanical filters designed to remove a combination of particles and vapor. In confined area, use approved air line type respirator or hood.

Material release or spill: Shut off and eliminate all ignition sources. Keep people away. Recover free product. Add sand, earth or other suitable absorbent to spill area. Minimize breathing vapors. Minimize skin contact. Ventilate confined spaces. Open all windows and doors. Keep product out of sewers and watercourses by diking or impounding. Advise authorities if product has entered or may enter sewers, watercourses, or extensive land areas.

Other: --

Section 7: HANDLING AND STORAGE

Storage: Store in original container. Do not store above 120 deg F.

Precautions during handling and storage: Ensure adequate ventilation during use. Avoid breathing vapors. Avoid skin and eye contact. Keep out the reach of children and domestic animals.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits: Petroleum distillate OSHA PEL: NE (300 ppm recommended by supplier); ACGIH TLV: NE
Orange Oil: OSHA PEL: not estab; ACGIH TLV: not estab

Engineering controls: To prevent fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Keep containers closed when not in use. Do not store near heat, sparks, flame or strong oxidants.

Eye protection: None under normal use. Use splash goggles or face shield when eye contact may occur.
Material Safety Data Sheet

Protective clothing: None under normal use. Chemical resistant apron or other impervious clothing if needed. Chemical resistant gloves if needed to avoid prolonged or repeated skin contact.

Respiratory protection: Use supplied air respiratory protection in confined or enclosed spaces if needed. Use only with ventilation sufficient to prevent exceeding recommended exposure limit or buildup of explosive concentrations for vapor in air. No smoking or use of flame or other ignition sources.

Other PPE: --

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Slightly viscous clear orange liquid
Odor: Orange
Physical state: Liquid

Boiling point: 400 deg F/204 deg C
Vapor Pressure: ND
Solubility in water: Insoluble
pH: NA
Melting point: NA
% volatile by volume: >90
Partition coefficient: ND
Coefficient of water/oil distribution: ND

Vapor density: <7.3 (est)
Evaporation rate: < 0.01
Viscosity: 4.25 cSt @ 40 deg C
Specific Gravity: 8 lb/gal
Cloud point: ND
Freezing point: ND

Section 10: STABILITY AND REACTIVITY

Stability: Stable
Incompatibility: Strong oxidizers
Conditions to avoid: Application to hot surfaces, exposure to open flame
Hazardous decomposition: Carbon monoxide, sulfur oxides, aldehydes, smoke
Hazardous polymerization: None

Section 11: TOXICOLOGICAL PROPERTIES

Acute oral toxicity: LD50 >5 g/kg Rat
Carcinogenicity: Not recognized as a carcinogen by ACHIG, IARC, NTP, OSHA
Reproductive toxicity/ Teratogenicity: ND
Mutagenicity: ND
Toxicologically synergistic products: ND

Section 12: ECOLOGICAL INFORMATION

Persistence and degradation: ND - product does not contain PCB’s
Toxicity: ND
Other: Do not discharge into municipal sewers or waterways

Section 13: DISPOSAL CONSIDERATIONS

Disposal method: Dispose of in accordance with local, state and federal regulations
Container disposal: Dispose of in accordance with local, state and federal regulations
### Section 14: TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>DOT proper shipping name:</th>
<th>Not hazardous</th>
<th>DOT technical name:</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Hazard class:</td>
<td>NA</td>
<td>Hazard subclass:</td>
<td>NA</td>
</tr>
<tr>
<td>UN Number, proper shipping name:</td>
<td>NA</td>
<td>Packing group:</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Section 15: REGULATORY INFORMATION

- **TSCA:** All ingredients are listed on the TSCA inventory
- **DSL:** ND
- **WHMIS Classification:** ND
- **CERCLA and SARA:** ND

### Section 16: OTHER INFORMATION

- % Volatile Organic Compounds (VOCs): <10%

Legend:  
- **N.D.** Not Determined  
- **N.E.** Not Established  
- **N.A.** Not Applicable

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The information provided has been adapted from the manufacturer supplied MSDS. The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from use of MSDS information.
Always follow label instructions and warnings. Typical use of product is a guideline only.

| Typical Use of Product: | Used to clean and polish wood surfaces. NOT recommended for use on wood floors due to risk of slip accidents. |
**Nanogel® Translucent Aerogel Properties**

**Product Features**

- **Particle Size Range:** ≈ 0.5 to 4.0 mm (0.02 to 0.16 in)
- **Pore Diameter:** ≈ 20 nm
- **Porosity:** > 90%
- **Bulk Density:** 90 to 100 kg/m³ (5.6 – 6.2 lb/ft³)
- **Surface Chemistry:** Fully Hydrophobic
- **Thermal Conductivity:** 0.018 W/m·K at 25°C (0.125 Btu·in/hr·ft²·°F)
- **Surface Area:** 600 to 800 m²/g
- **CAS RN:** 102262-30-6

**Nanogel® Aerogel Flammability Testing**

Flammability of solids – burning rate (fire train test) (Chilworth Technologies)

Result: not readily combustible substance of Division 4.1 (DOT); No smoke


<table>
<thead>
<tr>
<th>Flash Ignition Temp</th>
<th>Self Ignition Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>395°C (750°F)</td>
<td>395°C (750°F)</td>
</tr>
</tbody>
</table>

Minimum Ignition Energy of Dust:
US Bureau of Mines Report of Investigations 5624

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Minimum Ignition Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT</td>
<td>&gt;500 mJ</td>
</tr>
</tbody>
</table>

Caloric Content (ASTM E1354-02):
3.37 MJ/kg: 1451 Btu/lb

Smoke Density (E662): Ds=0.3
The Benefits of Utilizing Nanogel® Translucent Aerogel

- Introduces the best insulation, diffuse light-transmitting technology on the globe.
- Doubles light transmission and thermal insulation over current technologies.
- Ability to meet stringent building codes for thermal insulation and light transmission without trade-offs.
- Improved insulation performance, reduced energy consumption and HVAC costs.
- Better system performance, leads to better daylighting designs, leads to better lives.

State-of-the-Art
Nanogel® Aerogel Technology
Direct Silation of the Hydrogel

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Lead Acid Battery Wet, Filled with Acid

SECTION I

Manufacturer’s Name: East Penn Manufacturing Co., Inc.
Deka Road, Lyon Station, PA 19536
Trade Name: Electric Storage battery, SLI or Industrial battery
Telephone Number for Information: (610) 682-6361
Classification: Battery wet, filled with acid, electric storage
Emergency Telephone Number: CHEMTREC: 1-800-424-9300, UN2794

SECTION II

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<table>
<thead>
<tr>
<th>Hazardous Components</th>
<th>Specific Chemical Identity (Common Name(s))</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>Range Percent By Weight</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead, CAS #7439921</td>
<td>0.05 mg/m³</td>
<td>0.05 mg/m³</td>
<td>43-70</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Sulfuric Acid, CAS #7664939</td>
<td>1.00 mg/m³</td>
<td>1.00 mg/m³</td>
<td>20-44</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Antimony, CAS #7440360</td>
<td>0.50 mg/m³</td>
<td>0.50 mg/m³</td>
<td>0-4</td>
<td>&lt;1</td>
<td></td>
</tr>
<tr>
<td>Arsenic, CAS #7440382</td>
<td>0.01 mg/m³</td>
<td>0.01 mg/m³</td>
<td>&lt;.01</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Polypropylene, CAS #9003070</td>
<td>-</td>
<td>-</td>
<td>5-10</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Calcium, CAS #7440702</td>
<td>1.0 mg/m³</td>
<td>1.0 mg/m³</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td></td>
</tr>
</tbody>
</table>

SECTION III

PHYSICAL/CHEMICAL CHARACTERISTICS

Electrolyte (Sulfuric Acid):
Appearance and Odor: Clear, Odorless, Colorless
Solubility in Water: Completely
Boiling Point: approximately 235° F
Specific Gravity (H₂O=1): 1.220 – 1.325
Evaporation Rate (Butyl Acetate=1): less than 1.0
Vapor Density (AIR=1): N/A
Melting Point: N/A
Vapor Pressure (mm Hg): 13

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): Non-Flammable
Extinguishing Media: Class ABC extinguisher, CO₂
Flammable Limits: *Hydrogen Gas
LEL: 4% UEL: 74%
Special Fire Fighting Procedures: Cool exterior of battery if exposed to fire to prevent rupture. The acid mist and vapors in a fire situation are corrosive. Wear special respiratory protection (SCBA) and clothing.
Unusual Fire and Explosion Hazards: *Hydrogen gas, which may explode if ignited, is produced by this battery, especially when charging. Use adequate ventilation; avoid open flames, sparks, or other sources of ignition.

SECTION V

REACTIVITY DATA

Stability: Stable
Condition to Avoid: Prolonged overcharging, sources of ignition

Incompatibility (Materials to Avoid): Sulfuric Acid: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, strong oxidizers and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

Hazardous Decomposition of By-Products: Sulfuric Acid: Excessive overcharging or fire may create Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen.
Lead Compounds: Contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.
SECTION VI
HEALTH HAZARD DATA

Route(s) of Entry: Not Applicable under normal use. (Inhalation, skin contact, and ingestion)

Health Hazards (Acute and Chronic): Do not open battery, avoid contact with internal components. Internal components are Oxide lead and electrolyte. Short term exposure: Sulfuric acid may cause irritation of eyes, nose, and throat. Prolonged contact may cause severe burns. Long term exposure: Repeated contact causes irritation and skin burns. Repeated exposure to mist may cause erosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat, and bronchial tubes. TARGET ORGAN: (Electrolyte) respiratory system, eyes, skin, and teeth

Carcinogenicity:
Sulfuric Acid: The International Agency for Research on Cancer (IARC) has classified “strong inorganic acid mist containing sulfuric acid” as a Category 1 carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product such as overcharging, may result in the generation of sulfuric acid mist. Lead Compounds: Lead is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present. Arsenic: Listed by National Toxicology Program (NTP), IARC, OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

Signs and Symptoms of Exposure: Acid contact may cause irritation of eyes, nose and throat. Breathing of mist may produce respiratory difficulty. Contact with eyes and skin causes irritation and skin burns. Sulfuric acid is a CORROSIVE chemical.

Medical Conditions Generally Aggravated by Exposure: Sulfuric Acid Mist exposure may aggravate medical conditions such as, pulmonary edema, bronchitis, emphysema, dental erosion, and tracheobronchitis. Pregnant women and children must be protected from lead exposure.

Emergency and First Aid Procedures: (Sulfuric Acid)
1) Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary. Eye wash and/or emergency shower should be readily available.
2) If swallowed, give large volumes of water. DO NOT induce vomiting, obtain medical treatment.

SECTION VII
PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled: SULFURIC ACID: Dilute spill cautiously with five to six volumes of water and gradually neutralize with sodium bicarbonate, soda ash or lime. When exposure level is not known, wear NIOSH approved positive pressure self-contained breathing apparatus. Reference North American Emergency Response Guidebook, #154.

Waste Disposal Method: Lead-acid batteries are completely recyclable. For information on returning batteries to East Penn for recycling, contact your East Penn Representative. Dispose of any collected material in accordance with local, state or applicable federal regulations.

Precautions to be Taken in Handling and Storing: Store away from reactive material as defined in Section V, Reactivity Data. Place cardboard between layers of stacked batteries to avoid damage and short circuit. Do not allow metallic materials to simultaneously contact both terminals.

Other Precautions: Sodium bicarbonate, soda ash, sand, or lime should be kept in same general area for emergency use. Keep away from sources of ignition during charging see Section IV on generation of hydrogen gas. If battery case is broken, avoid direct contact with internal components.

SECTION VIII
CONTROL MEASURES

Respiratory Protection (Specific Type): Respirator required when PEL is exceeded or employee witnesses respiratory irritation. (see Section VI, Health Hazard Data).

Ventilation: Must be provided when charging in an enclosed area. (29CFR1910.178(g) and .305(j)(7)
Mechanical (general): Acceptable at 1 to 4 air exchanges/hour or to maintain air concentrations below the PEL.
Local Exhaust: Preferred
Other: Local building/fire codes may require explosion proof fans and equipment

Protective Gloves: Acid resistant

Eye Protection: Preferred, safety glasses, goggles, face shield

Other Protective Clothing or Equipment: Acid resistant aprons, boots, and protective clothing

Work Hygienic Practices: Good Personal hygiene and work practices are mandatory.
SECTION IX
OTHER REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>NFPA Hazard Rating</th>
<th>Sulfuric Acid</th>
<th>Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health (Blue)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Flammability (Red)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reactivity (Yellow)</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Sulfuric acid is water-reactive if concentrated.

U.S. DOT: Battery Wet, Filled with Acid
- Hazard Class/Division: 8
- ID Number: UN2794
- Packing Group: III
- Label Requirement: Corrosive

RCRA: Spent lead-acid batteries are not regulated as hazardous waste when recycled. Spilled sulfuric acid is a characteristic hazardous waste, EPA hazardous waste number D002 (corrosivity).

CERCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know ACT)
- a) Reportable Quantity (RQ) for spilled 100% sulfuric acid is 1000 lbs.
- b) Sulfuric acid is a listed “Extremely Hazardous Substance” under EPCRA with a Threshold Planning Quantity (TPQ) of 1000 lbs.
- c) EPCRA Section 312 Tier II reporting required for batteries if sulfuric acid is present in quantities of 500 lbs or more and/or lead is present in quantities of 10,000 lbs or more.

California Prop 65: This product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

For additional information concerning East Penn Manufacturing Co., Inc. products or questions concerning the content of this MSDS please contact your East Penn representative.

This information is accurate to the best of East Penn Mfg. Co.’s knowledge or obtained from sources believed by East Penn to be accurate. Before using any product, read all warnings and directions on the label.
Material Safety Data Sheet

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

General Electric Co. GE Plastics Canada, Ltd.
One Plastics Ave. 2300 Meadowvale Blvd.
Pittsfield, MA 01201 Mississauga, ONT L5N 5P2

Visit GE Plastics on the Web at WWW.GEPLASTICS.COM

PHONES NUMBERS

Emergency Medical (24 HOUR) 800/447-4545
Emergency Transportation/CHEMTREC (24 HOUR) 800/424-9300
Other Emergency Information (24 HOUR) 812/831-7001

Non-Emergency Information:

For Resin Products 413/448-5800
For Structured Products 413/448-5400

PRODUCT IDENTIFICATION

PRODUCT IDENTIFIER: LEXAN
HF1110-111
Poly (bisphenol-A-carbonate) [CASRN 111211-39-3]

PRODUCT DESCRIPTION: Synthetic thermoplastic polymer.
PRODUCT USE: Structural foam molding applications.

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Components listed below are physical or health hazards as defined in the Hazard Communication Standard. The quantities represent typical or average values for the materials shown. Additional compositional data are provided in Section 15, REGULATORY INFORMATION, subject to supplier notification requirements.

<table>
<thead>
<tr>
<th>Component Name</th>
<th>%</th>
<th>CAS Number</th>
<th>OSHA PEL</th>
<th>ACGIH TWA</th>
<th>GE Recommended Exp. Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>This product does not contain any reportable hazardous materials.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:
• Pellets with slight or no odor.
• Spilled material may create slipping hazard.
• Can burn in a fire creating dense toxic smoke.
• Molten plastic can cause severe thermal burns.
• Fumes produced during melt processing may cause eye, skin, and respiratory tract irritation. Severe over-exposure may result in nausea, headache, chills, and fever.
• Secondary operations, such as grinding, sanding, or sawing can produce dust which may present an explosion or respiratory hazard.

HMIS Ratings: Health = 0; Flammability = 1; Reactivity = 0; PPE = B

POTENTIAL HEALTH EFFECTS
INGESTION: No hazard in normal industrial use.
SKIN ABSORPTION: No absorption hazard in normal industrial use.
EYE CONTACT: Can cause mechanical irritation if dusts are generated.
SKIN CONTACT: Unlikely to cause irritation even on repeated contact.

CHRONIC / CARCINOGENICITY
NTP: Not Tested.
OSHA: Not Regulated.
IARC: Not Listed.

NOTE: OSHA, IARC and/or NTP have listed carbon black and heavy metals, present in some colorants, as carcinogens. If these colorants are present in this product, they are shown in SECTION 2. These colorants are essentially bound to the plastic matrix and are unlikely to contribute to workplace exposure under recommended processing conditions.

Processing fumes may cause irritation to the eyes, skin, and respiratory tract. In cases of severe exposure, nausea and headache can also occur.

Grease-like processing fume condensates on ventilation ductwork, molds, and other surfaces can cause irritation and injury to skin.

MEDICAL RESTRICTIONS: There are no known human health effects aggravated by exposure to this product. However, certain sensitive individuals and individuals with respiratory impairments may be affected by exposure to components in the processing vapors.

SECTION 4: FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water. Get medical attention if irritation develops or persists. After initial flushing, remove any contact lenses.
SKIN: Wash with soap and water. Get medical attention if irritation develops or persists. For hot product, immediately immerse in or flush affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze and get prompt medical attention.

INGESTION: No hazard in normal industrial use. Do not induce vomiting. Seek medical attention if symptoms develop.

INHALATION: No specific treatment is necessary since this material is not likely to be hazardous by inhalation.

PROCESSING FUMES: Processing fumes inhalation may be irritating to the respiratory tract. If symptoms are experienced remove victim from the source of contamination or move victim to fresh air and obtain medical advice.

SECTION 5: FIRE FIGHTING MEASURES

FIRE FIGHTING: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products.

EXTINGUISHING MEDIA: Water spray and foam. Carbon dioxide and dry chemical are not recommended because their lack of cooling capacity may permit re-ignition.

CONDITIONS OF FLAMMABILITY: Requires a continuous flame source to ignite.

AUTOIGNITION TEMPERATURE: 630 °C (1166 °F), estimated

EXPLOSION DATA: Material not sensitive to mechanical impact but is sensitive to static discharge under dust cloud conditions.

HAZARDOUS COMBUSTION PRODUCTS: Intense heat, smoke, carbon dioxide, carbon monoxide, hydrocarbon fragments

SECTION 6: ACCIDENTAL RELEASE MEASURES

GENERAL: Gather and store in a closed container pending a waste disposal evaluation. Allow molten material to solidify before disposal.

SECTION 7: HANDLING AND STORAGE

HANDLING: Follow recommendations on label and in processing guide. Prevent contact with skin and eyes. Use good industrial hygiene practices. Provide adequate ventilation. Secondary operations such as grinding, sanding, or sawing may produce a dust explosion hazard. Use aggressive housekeeping activities to prevent dust accumulation: employ bonding, grounding, venting, and explosion relief provisions in accordance with accepted engineering practices.

STORAGE: Store in a cool dry place. Avoid excessive heat and ignition sources.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION
ENGINEERING CONTROLS: A continuous supply of fresh air to the workplace together with removal of processing fumes through exhaust systems is recommended. Processing fume condensate may be a fire hazard and toxic; remove periodically from exhaust hoods, ductwork, and other surfaces using appropriate personal protection. Local ventilation requirements must be determined to limit exposure to processing fumes in the workplace.

PERSONAL PROTECTION

EYE/FACE: Wear safety glasses with side shields or chemical goggles. In addition, use full-face shield when cleaning processing fume condensates from hoods, ducts, and other surfaces.

SKIN: When handling pellets or powder, avoid prolonged or repeated contact with skin. Wear long pants, long sleeves, well insulated gloves, and a face shield during melt processing. Appropriate clothing - including chemical resistant gloves - should be worn to prevent contact with processing fumes condensate.

RESPIRATORY: When using this product at elevated temperatures, implement engineering systems, administrative controls, or a respiratory protection program (including a respirator approved for protection from organic vapors, acid gases, and particulate matter) if processing fumes are not adequately controlled or operators experience symptoms of overexposure. If dust or powder are produced from secondary operations such as sawing or grinding, use a respirator approved for protection from dust.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Solid
COLOR: Plastic pellet with slight odor.
MELTING POINT: This product does not exhibit a sharp melting point but softens gradually over a wide range of temperatures.
VAPOR PRESSURE (mmHg): Negligible.
SPECIFIC GRAVITY (WATER = 1): >1
WATER SOLUBILITY: Insoluble
% VOLATILES: Negligible
EVAPORATION RATE: Negligible.
OCTANOL/WATER PARTITION COEFFICIENT: Not established

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable
REACTIVITY: Not reactive under recommended conditions of handling, storage, processing, and use.
CONDITIONS TO AVOID: Do not exceed melt temperature recommendations in product literature. In order to avoid autoignition/hazardous decomposition of hot thick
masses of plastic, purgings should be collected in small, flat, shapes or thin strands to allow for rapid cooling. Quench in water. Do not allow product to remain in barrel at elevated temperatures for extended periods of time: purge with a general purpose resin. (See Section 8 for respiratory protection advice.)

HAZARDOUS DECOMPOSITION PRODUCTS

Processing fumes evolved at recommended processing conditions may include trace levels of the following materials: phenols, alkylphenols, diarylcarbontate

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE HEALTH HAZARDS
ACUTE ORAL: Oral LD50 Rat >=500 mg/kg Oral toxicity is estimated from tests on similar materials.

EYE CONTACT: Product not considered primary eye irritant. When similar products, in finely divided form, were placed into the eyes of rabbits, slight transient redness or discharge occurred. This is consistent with the expected slightly abrasive nature of the resin particles.

SKIN CONTACT: Product not considered primary skin irritant. Draize Skin Primary Irritation Score (rabbit) for similar products, in finely divided form, for a 24-hour exposure is 0. Not expected to be a skin sensitizer based on results of Modified Buehler Guinea Pig Sensitization Test from similar products. Dermal LD50 (rabbit) > 2g/kg, estimated.

SUBCHRONIC HEALTH HAZARDS
SUBCHRONIC TOXICITY: No data available.

CHRONIC HEALTH HAZARDS
CARCINOGENIC PROPERTIES
NTP: Not Tested.
OSHA: Not Regulated.
IARC: Not Listed.

SECTION 12: ECOLOGICAL INFORMATION

GENERAL: This material is not expected to be harmful to the ecology.

SECTION 13: DISPOSAL INFORMATION

WASTE DISPOSAL: Recycling is encouraged. Landfill or incinerate in accordance with federal, state and local requirements. Collected processing fume condensates and incinerator ash should be tested to determine waste classification.

POSSIBLE EPA WASTE CODES: No data.
SECTION 14: TRANSPORTATION INFORMATION

REGULATORY STATUS: Not Regulated.

SECTION 15: REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA): This product is in compliance with all rules and orders of TSCA.

WHMIS PRODUCT CLASSIFICATION: Not a controlled product.

If any components in this product are SARA 313 listed as reportable, they are shown below. The quantities listed for elements represent typical or average values for compounds containing the element.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No SARA 313-listed chemicals in this product.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If any components in this product are known to the State of California to cause cancer and/or are reproductive hazards, they are listed below:

<table>
<thead>
<tr>
<th>Component</th>
<th>Reason Listed</th>
<th>CAS Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 16: OTHER INFORMATION

Prepared by: Product Stewardship

® AVP, COLORXPRESS, CYCOLAC, CYCOLOY, CYTRA, ENDURAN, GELON, GELOY, GEMAX, GTX, LEXAN, LEXGUARD, LOMOD, MAGIX, NORYL, NORYL GTX, NORYL PPX, POLYMERLAND, PPO, PPX, PREVEX, SOLLEX, SUPEC, ULTEM, VALOX, VISUALFX, XENOY and XYLEX are registered or pending trademarks of the General Electric Co.

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EXPRESS OR IMPLIED, INCLUDING AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Each user should read and understand this information and incorporate it into individual site safety programs as required by applicable hazard communication standards and regulations.

ABBREVIATIONS:
- ACGIH: American Conference of Governmental Industrial Hygienists
- CAS: Chemical Abstracts Service
- CFR: Code of Federal Regulations
- CPR: Cardiopulmonary Resuscitation
- EPA: Environmental Protection Agency
- HMIS: Hazardous Material Identification System (National Paint and Coatings Association)
- IARC: International Agency for Research on Cancer
- OSHA: Occupational Health and Safety Administration (U.S.)
- NTP: National Toxicology Program
- PEL: Permissible Exposure Limit
- PPE: Personal Protective Equipment
- SARA 313: Superfund Amendments and Reauthorization Act, Section 313
- TLV: Threshold Limit Value
- TSCA: Toxic Substance Control Act
- WHMIS: Workplace Hazardous Materials Information System (Canada)
MATERIAL SAFETY DATA SHEET
Genetron® 245fa

DELAYED EFFECTS: None known.

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>NTP STATUS</th>
<th>IARC STATUS</th>
<th>OSHA LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>No ingredients listed in this section</em></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

SKIN: Promptly flush skin with water until all chemical is removed. Remove clothing contaminated with liquid and wash before reuse.

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes, lifting eyelids occasionally to facilitate irrigation. Get medical attention.

INHALATION: Immediately remove patient to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. DO NOT give epinephrine (adrenaline). Get medical attention immediately.

INGESTION: Ingestion is an unlikely route of exposure because Genetron 245fa is a low boiling liquid, usually stored in a pressurized container. For that reason, ingestion hazards have not been evaluated. DO NOT induce vomiting unless instructed to do so by a physician. DO NOT give stimulants. Get medical attention immediately.

ADVICE TO PHYSICIAN: Because of possible disturbances of cardiac rhythm, catecholamine drugs such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: None
FLASH POINT METHOD: ASTM D-3828-87 and ASTM D-1310-86
AUTOIGNITION TEMPERATURE: 774°F (412°C) Tested in a 500ml flask
UPPER FLAME LIMIT (volume % in air): None
LOWER FLAME LIMIT (volume % in air): None

FLAME PROPAGATION RATE (solids): Not applicable
OSHA FLAMMABILITY CLASS: Not applicable

EXTINGUISHING MEDIA:
Use any standard agent - choose the one most appropriate for type of surrounding fire (material itself in not flammable)

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Genetron 245fa is not flammable at ambient temperatures and atmospheric pressure. However, based on other HFC response, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources. Contact with certain finely divided reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).
SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:
Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool and to knock down vapors which may result from product decomposition.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)
Immediately evacuate the area and provide maximum ventilation. Try to eliminate all ignition sources. Unprotected personnel should move upwind from spill. Only personnel equipped with proper respiratory and eye/skin protection should be permitted in the area until air has been tested and determined safe, including low lying areas.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)
Avoid breathing vapors or liquid contact with eyes, skin or clothing. Do not puncture or drop containers, expose them to open flame, excessive heat, or direct sunlight. Use approved containers only. Tank cleaning personnel should use only formal tank entry procedure based on recognized safety principles.
Genetron 245fa should not be mixed with air above atmospheric pressure for leak testing or any other purpose. Use dry nitrogen to leak test equipment pressurized with Genetron 245fa.

STORAGE RECOMMENDATIONS:
Due to low boiling of 59.5°F (15°C), store in a cool, well-ventilated area of low fire risk. Protect container and its fittings from physical damage. Storage in subsurface locations should be avoided. Do not heat the container or store at a temperature above 125°F (51.7°C). Close valve tightly and after use and when empty. If container temperature exceeds boiling point, cool the container before opening.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:
Use local exhaust at filling zones and where leakage is probable. Use mechanical (general) ventilation for storage areas. All ventilation should be designed in accordance with OSHA standard (29 CFR 1910.94).

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:
Use protective, impervious gloves and clothing made of neoprene, nitrile or butyl rubber if prolonged or repeated contact with liquid is anticipated. Wash clothing promptly, if wet. Remove any non-impervious clothing and wash before re-use.

EYE PROTECTION:
For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles. Contact lenses should not be worn under such conditions.

RESPIRATORY PROTECTION:
None required for normal work situations where adequate ventilation is provided. Use NIOSH approved self-contained, positive pressure respirators for emergencies and in situations where air may be displaced by vapors.
ADDITIONAL RECOMMENDATIONS:
High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>OTHER LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,1,3,3-Pentafluoropropane</td>
<td>None</td>
<td>None</td>
<td>**300 ppm TWA- 8hrs.</td>
</tr>
</tbody>
</table>

* = Provisional limit established by Honeywell
** = Workplace Environmental Exposure Level (AIHA).
*** = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:
Hydrogen Fluoride: 2 ppm ACGIH ceiling, 0.5 ppm TLV-TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless liquid
PHYSICAL STATE: Liquid
MOLECULAR WEIGHT: 134
CHEMICAL FORMULA: CHF₂CH₂CF₃
ODOR: Faint ethereal and sweetish odor
SPECIFIC GRAVITY (water = 1.0): 1.32 @ 68°F (20°C)
SOLUBILITY IN WATER (weight %): 7.18g/l @ ambient room temperature
pH: Neutral
BOILING POINT: 59.5°F (15°C)
MELTING POINT: Not determined
FREEZING POINT: <-153°F (< -103°C)
VAPOR PRESSURE: 17.8 psia @ 68°F (20°C)
56.3 psia @ 130°F (54.4°C)
VAPOR DENSITY (air = 1.0): 4.6
EVAPORATION RATE: >1 COMPAred TO: Ether = 1
% VOLATILES: 100
FLASH POINT: None
(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):
Product is stable under normal conditions.
Avoid sources of ignition such as sparks, hot spots, welding flames and lighted cigarettes which may yield toxic and/or corrosive decomposition products.
INCOMPATIBILITIES:
Strong acids and alkalis, reactive metals e.g., powdered or freshly abraded aluminum (may cause strong exothermic reaction), sodium, potassium, calcium, magnesium, zinc, molten aluminum, barium and lithium shavings. Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:
Halogen and halogen acids; and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:
Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:
Acute Dermal (rabbit) – LD₅₀ > 2,000 mg/kg
Cardiac Sensitization (dogs) – No effects noted at 35,000 ppm, the threshold for induction of cardiac arrhythmias in the presence of injected adrenalin was 44,000 ppm.
Acute Inhalation (rat): 4-hr. LC₅₀ > 200,000 ppm. No lethality at 200,000 ppm. Evidence of transient anesthetic effect.
Acute Inhalation (mouse): 4-hr. LC₅₀ > 100,000 ppm. No lethality at 100,000 ppm. Evidence of transient underactivity during exposure.

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:
Embryotoxicity (rats): Not a teratogen at 50,000 ppm, the highest level tested.
NOEL (pups): 50,000 ppm
NOEL (dams): 2,000 ppm (due to decrease in bodyweight gains at 10,000 ppm and 50,000 ppm)
2 Generation Inhalation Toxicity (rats): Exposures 6 hrs/day, 7 days/wk at 0(control), 2,000, 10,000 and 50,000 ppm.
Toxicity seen in dams at 10,000 and 50,000 ppm and in pups at 50,000 ppm. Primary effect was increased mortality late in the lactation phase of the study.

28-day Inhalation Study (rats): NOAEL – 50,000 ppm and NOEL – 500 ppm
90-day Inhalation Study (rats): NOAEL – 2,000 ppm
Dose levels: 0, 500, 2,000, 10,000 and 50,000 ppm

Overall, subchronic studies showed dose-related increases in urinary fluoride levels, urine volumes and water consumption. Increases were noted in hematological parameters, BUN levels and serum liver enzyme activities (GOT, GPT). These increases did not follow a dose response; however, they indicate that HFC-245fa is metabolized in the liver. Significant recovery was noted in these parameters following a 2-week, non-exposure period which followed the 28-day exposure period. No histopathological effects were noted in the 28-day study. The 90-day study noted an increase in incidence and severity (trace to moderate) of mycarditis (inflammation of the heart muscle) at 10,000 and 50,000 ppm. This was not noted at the 500 or 2,000 ppm dose levels nor was it seen the the 28-day study at 50,000 ppm.

OTHER DATA:
Genetic studies: In vitro Human Lymphocyte weak positive activation without S9 at 30% v/v; not active with S9 up to 70% v/v.
In Vivo Mouse Micronucleaus – Not active up to 100,000 ppm.
Ames Test: Not active up to 100% v/v with or without S9.

12. ECOLOGICAL INFORMATION

Partition Coefficient: Log P_{OW} = 1.35 @ 21.5°C
Acute toxicity to Daphnia magna (Limit Test): NOEC > 97.9 mg/L; 48 hr. EC₅₀ > 97.9 mg/L
13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Yes
If yes, the RCRA ID number is: Not applicable

OTHER DISPOSAL CONSIDERATIONS:
All spent material must be disposed of in accordance with all applicable Federal and State RCRA Regulations. Consult with appropriate regulatory agencies before disposing of waste material.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT HAZARD CLASS: Not regulated
US DOT ID NUMBER: Not applicable

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed
OTHER TSCA ISSUES: None

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>SARA/CERCLA RQ (lb)</th>
<th>SARA EHS TPQ (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>No ingredients listed in this section</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: IMMEDIATE PRESSURE

SARA 313 TOXIC CHEMICALS:
The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>COMMENT</th>
</tr>
</thead>
</table>
MATERIAL SAFETY DATA SHEET
Genetron® 245fa

*No ingredients listed in this section*

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>WEIGHT %</th>
<th>COMMENT</th>
</tr>
</thead>
</table>
*No ingredients listed in this section*

ADDITIONAL REGULATORY INFORMATION:
Contains HFC-245fa, a greenhouse gas, a substance which may contribute to global warming.
Regulated under Section 612 (SNAP) of the Clean Air Act and 40 CFR Part 82, subpart G.

WHMIS CLASSIFICATION (CANADA):
This product has been evaluated in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

FOREIGN INVENTORY STATUS:
Europe: ELINCS #419 170 6
Japan: MOL 2-(13)-143
Canada: Notified
Australia: Notified

16. OTHER INFORMATION

CURRENT ISSUE DATE: December, 2005
PREVIOUS ISSUE DATE: January 2004

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:
Section 1: Updated medical emergency number
Section 8: Updated ACGIH-TLV for HF decomposition product
Section 11: Additional toxicology information

OTHER INFORMATION:
HMIS Classification: Health – 2, Flammability - 0, Reactivity - 1
NFPA Classification: Health - 2, Flammability - 0, Reactivity - 1
DuPont™ SUVA® 410A Refrigerant

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Product name: DuPont™ SUVA® 410A Refrigerant
Types: ASHRAE Refrigerant number designation: R-410A
Use of the Substance/Preparation: refrigerant

Company: Du Pont de Nemours (Nederland) B.V.
Baanhoekweg 22
NL-3313 LA Dordrecht
The Netherlands

Telephone: +31-78-630.1011
Telefax: +31-78-630.1181

Emergency telephone number: +44-(0)8456-006.640

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Classification</th>
<th>Concentration [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentafluoroethane (R125)</td>
<td>354-33-6</td>
<td>206-557-8</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Difluoromethane (R32)</td>
<td>75-10-5</td>
<td>200-839-4</td>
<td>F++; R12</td>
<td>50</td>
</tr>
</tbody>
</table>

For the full text of the R phrases mentioned in this Section, see Section 16.

3. HAZARDS IDENTIFICATION

Rapid evaporation of the liquid may cause frostbite.
Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

4. FIRST AID MEASURES

General advice: If unconscious place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person. If breathing is irregular or stopped, administer artificial respiration. If symptoms persist, call a physician.

Inhalation: Move to fresh air. Keep patient warm and at rest. Artificial respiration and/or oxygen may be necessary.

Skin contact: Wash off with warm water. Take off all contaminated clothing immediately.

Eye contact: Rinse thoroughly with plenty of water, also under the eyelids. Consult a physician.
Notes to physician
Treatment : Do not give adrenaline or similar drugs.

5. FIRE-FIGHTING MEASURES

Specific hazards during fire fighting : pressure build-up
Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.
Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Evacuate personnel to safe areas. Ventilate the area. Refer to protective measures listed in sections 7 and 8.
Environmental precautions : Should not be released into the environment.
Methods for cleaning up : Evaporates.

7. HANDLING AND STORAGE

Handling
Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8.
Advice on protection against fire and explosion : No special protective measures against fire required.

Storage
Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Store in original container.
Advice on common storage : No materials to be especially mentioned.
German storage class : 2A : Compressed, liquefied or pressurised gas

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment
Respiratory protection : For rescue and maintenance work in storage tanks use self-contained breathing
apparatus. Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Hand protection : heat insulating gloves
Eye protection : safety glasses
Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form : Liquefied gas,
Colour : colourless,
Odour : ether-like,
pH : neutral
Boiling point/range : -51,6 °C at 1 013 hPa
Flash point : does not flash
Lower explosion limit : not applicable
Vapour pressure : 16 530 hPa at 25 °C
Vapour pressure : 30 520 hPa at 50 °C
Density : 1,062 g/cm³ at 25 °C, (as liquid)
Density : 0,0066 g/cm³ at ca. 26 °C (1 013 hPa)

10. STABILITY AND REACTIVITY

Conditions to avoid : The product is not flammable in air under ambient conditions of temperature and pressure. When pressurised with air or oxygen the mixture may become flammable. Certain mixtures of HCFCs or HFCs with chlorine may become flammable or reactive under certain conditions.

Materials to avoid : alkali metals, alkaline earth metals, powdered metals, powdered metal salts

Hazardous decomposition products : hydrogen halides, carbon dioxide (CO2), Carbon monoxide, fluorocarbons, carbonyl halides

11. TOXICOLOGICAL INFORMATION

Acute inhalation toxicity
- Pentfluoroethane (R125) : ALC/ 4 h/ rat : > 3 480 mg/l
- Difluoromethane (R32) : LC50/ 4 h/ rat : 2 158 mg/l
**DuPont™ SUVA® 410A Refrigerant**

Version 2.2
Revision Date 12.04.2006   Ref. 130000000570

<table>
<thead>
<tr>
<th>Carcinogenicity assessment</th>
<th>Did not show carcinogenic effects in animal experiments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to reproduction assessment</td>
<td>Did not show mutagenic or teratogenic effects in animal experiments.</td>
</tr>
<tr>
<td>Human experience</td>
<td>Excessive exposures may affect human health, as follows:</td>
</tr>
<tr>
<td></td>
<td>Inhalation</td>
</tr>
<tr>
<td></td>
<td>severe shortness of breath, narcosis, irregular cardiac activity</td>
</tr>
<tr>
<td>Further information</td>
<td>Rapid evaporation of the liquid may cause frostbite.</td>
</tr>
</tbody>
</table>

### 12. ECOLOGICAL INFORMATION

Global warming potential (GWP): 1 890

### 13. DISPOSAL CONSIDERATIONS

- **Product:** Can be used after re-conditioning.
- **Contaminated packaging:** Empty pressure vessels should be returned to the supplier.

### 14. TRANSPORT INFORMATION

**ADR**
- Class: 2
- Classification Code: 2A
- HI No.: 20
- UN-No.: 1078
- Labelling No.: 2.2
- Proper shipping name: Refrigerant gas, n.o.s. (Pentafluoroethane, Difluoromethane)

**IATA_C**
- Class: 2.2
- UN-No.: 1078
- Labelling No.: 2.2
- Proper shipping name: Refrigerant gas, n.o.s. (Pentafluoroethane, Difluoromethane)

**IMDG**
- Class: 2.2
- UN-No.: 1078
- Labelling No.: 2.2
- Proper shipping name: Refrigerant gas, n.o.s. (Pentafluoroethane, Difluoromethane)

### 15. REGULATORY INFORMATION

Labelling according to EC Directives
The product does not need to be labelled in accordance with EC directives or respective national laws.

**National legislation**

Water contaminating class  :  WGK 1 slightly water endangering  
(Germany)  WGK (DE)  Update: VwVwS, A4

**16. OTHER INFORMATION**

**Text of R phrases mentioned in Section 2**

R12  Extremely flammable.

**Further information**

Before use read DuPont’s safety information., For further information contact the local DuPont office or DuPont’s nominated distributors., ® DuPont’s registered trademark

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
AIR PRODUCTS & CHEMICALS -- ACETYLENE, ETHYNE, ETHINE
MATERIAL SAFETY DATA SHEET

NSN: 683000F002382
Manufacturer's CAGE: 00742
Part No. Indicator: A
Part Number/Trade Name: ACETYLENE, ETHYNE, ETHINE

General Information

Company's Name: AIR PRODUCTS AND CHEMICALS INC
Company's Street: 7201 HAMILTON BLVD
Company's City: ALLENTOWN
Company's State: PA
Company's Country: US
Company's Zip Code: 18195-1501
Company's Emerg Ph #: 215-481-4911
Company's Info Ph #: 215-481-4911 OR FAX 215-481-5900
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 01JUN90
Safety Data Review Date: 11AUG93
Preparer's Company: AIR PRODUCTS AND CHEMICALS INC
Preparer's St Or P. O. Box: 7201 HAMILTON BLVD
Preparer's City: ALLENTOWN
Preparer's State: PA
Preparer's Zip Code: 18195-1501
MSDS Serial Number: BBKVV

Ingredients/Identity Information

Proprietary: NO
Ingredient: ACETYLENE
Ingredient Sequence Number: 01
NIOSH (RTECS) Number: AO9600000
CAS Number: 74-86-2
OSHA PEL: 2500 PPM
ACGIH TLV: SIMPLE ASPHYXIANT

Physical/Chemical Characteristics
Appearance And Odor: PURE ACETYLENE IS COLORLESS/ODORLESS.
Boiling Point: -119F/-84C
Melting Point: -113F/-81C
Vapor Pressure (MM Hg/70 F): 590 PSIA
Vapor Density (Air=1): 0.0681
Specific Gravity: 0.906

Fire and Explosion Hazard Data

Flash Point: 0F/-18C
Flash Point Method: CC
Lower Explosive Limit: 2.5%
Upper Explosive Limit: 100%
Extinguishing Media: CO2, DRY CHEMICAL, HALON
Special Fire Fighting Proc: STOP GLAS FLOW & FIGHT FIRE CONVENTIONALLY.
USE WATER SPRAY TO KEEP CYLINDERS & OTHER CONTAINERS COOL IF EXPOSED TO FIRE. KEEP PERSONNEL AWAY.
Unusual Fire And Expl Hazrds: FLAMMABLE/EXPLOSIVE. MAY DECOMPOSE VIOLENTLY IN ITS FREE STATE UNDER PRESSURE >15 PSIG. BURNS W/HOT FLAME. IGNITES EASILY DUE TO LOW MINIMUM IGNITION ENERGY.

Reactivity Data

Stability: NO
Cond To Avoid (Stability): AVOID MECHANICAL SHOCKS TO CONTAINER OF ACETYLENE. NEVER EXPOSE CYLINDER OR ACETYLENE SYSTEMS TO SOURCES OF HEAT.
Materials To Avoid: OXYGEN & HALOGENS. COPPER/BRASS/COPPER SALTS/MERCURY /
MERCURY SALTS/POTASSIUM/SILVER/SILVER SALTS & NITRIC ACID.
Hazardous Decomp Products: ACETYLENE WILL DECOMPOSE INTO ELEMENTAL CARBON & HYDROGEN.
Hazardous Poly Occur: NO

Health Hazard Data
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACETYLENE IS A SIMPLE ASPHYXIANT, IRRITANT & ANESTHETIC. ABOUT 100 MG PER LITER MAY BE TOLERATED FOR 0.5-1.0 HOUR. THERE IS NO EXPERIMENTAL EVIDENCE OF CHRONIC HARMFUL EFFECTS.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: HEADACHES, DIZZINESS, SHORTNESS OF BREATH & LOSS OF CONSCIOUSNESS MAY OCCUR IF THE GAS IS PRESENT IN QUANTITIES SUFFICIENT TO DILUTE THE OXYGEN CONCENTRATION IN AIR. SYMPTOMS OF ANOXIA OCCUR ONLY WHEN THE GAS CONCENTRATIONS ARE WITHIN THE FLAMMABLE RANGE & THE MIXTURE HAS NOT IGNITED.
Emergency/First Aid Proc: FIRST DEGREE & MINOR SECOND DEGREE THERMAL BURNS FROM FIRES SHOULD BE IMMERSED IN COOL WATER FOR 30 MINUTES. MAJOR SECOND & THIRD DEGREE BURNS SHOULD BE COVERED IN THE CLEANEST MATERIAL AVAILABLE. PERSONS SUFFERING FROM LACK OF OXYGEN SHOULD BE MOVED TO AREAS W/NORMAL ATMOSPHERE. ASSISTED RESPIRATION & SUPPLEMENTAL OXYGEN SHOULD BE GIVEN IF THE VICTIM IS NOT BREATHING. OBTAIN MED ATTN IN ALL CASES

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: VENTILATE AREA TO PREVENT FLAMMABLE MIXTURE FROM FORMING. REMOVE SOURCES OF IGNITION. AVOID ENTERING AREA OF FLAMMABLE ATMOSPHERE. CAREFULLY REMOVE CYLINDERS W/SLOW LEAKS TO A REMOTE, OUTDOOR LOCATION.
Disposal Data

Disposal Data Review Date: 88270
Rec # For This Disp Entry: 01
Tot Disp Entries Per NSN: 001
Landfill Ban Item: YES
Disposal Supplemental Data: BOX 538/ALLENTOWN, PA 18105. IN CASE OF ACCIDENTAL EXPOSURE OR DISCHARGE, CONSULT HEALTH AND SAFETY FILE FOR PRECAUTIONS.
1st EPA Haz Wst Code New: D001
1st EPA Haz Wst Name New: IGNITIBLE
1st EPA Haz Wst Char New: IGNITABILITY
1st EPA Acute Hazard New: NO

Label Data

Label Required: YES
Technical Review Date: 11AUG93
Label Date: 06AUG93
Label Status: F
Common Name: ACETYLENE, ETHYNE, ETHINE
Chronic Hazard: NO
Signal Word: DANGER!
Acute Health Hazard-Severe: X
Contact Hazard-Slight: X
Fire Hazard-Severe: X
Reactivity Hazard-Severe: X
Special Hazard Precautions: ACETYLENE IS A SIMPLE ASPHYXIANT, IRRITANT & ANESTHETIC. ABOUT 100 MG PER LITER MAY BE TOLERATED FOR 0.5-1.0 HOUR. THERE RESPIRATORY SYSTEM. DIGESTIVE TRACTS, LIVER.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: AIR PRODUCTS AND CHEMICALS INC
Label Street: 7201 HAMILTON BLVD
Label City: ALLENTOWN
Label State: PA
Label Zip Code: 18195-1501
Label Country: US
Label Emergency Number: 215-481-4911
Year Procured: UNK
MATERIAL SAFETY DATA SHEET

Section 1. Chemical product and company identification

Product Name: ABC Dry Chemical Fire Extinguishant
Synonym: Multi-purpose Dry Chemical
Manufacturer: AMEREX CORPORATION
Internet Address: www.amerex-fire.com
Address: 7595 Gadsden Highway
P.O. Box 81
Trussville, AL 35173-0081
Telephone: (205) 655-3271
Emergency Contacts: Chemtrec 1(800) 424-9300 or
(703) 527–3887
Revised: August, 2003

Section 2. Hazard identification and emergency overview

Emergency overview: Light yellow, fine solid powder, odorless.

Adverse health effects and symptoms: Irritating to the respiratory system, eyes and skin. Symptoms may include coughing, shortness of breath, and irritation of the lungs, eyes, and skin. Ingestion, although unlikely, may cause cramps, nausea and diarrhea.

Exposure guidelines:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>DFG MAK *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono-ammonium phosphate</td>
<td>PNOC** Total dust, 15 mg/m³&lt;br&gt;Respirable fraction, 5 mg/m³</td>
<td>PNOC Total dust, 10 mg/m³&lt;br&gt;Respirable fraction, 3 mg/m³</td>
<td>PNOC Total dust, 4 mg/m³&lt;br&gt;Respirable fraction, 1.5 mg/m³</td>
</tr>
<tr>
<td>Ammonium sulphate</td>
<td>PNOC Total dust, 15 mg/m³&lt;br&gt;Respirable fraction, 5 mg/m³</td>
<td>PNOC Total dust, 10 mg/m³&lt;br&gt;Respirable fraction, 3 mg/m³</td>
<td>PNOC Total dust, 4 mg/m³&lt;br&gt;Respirable fraction, 1.5 mg/m³</td>
</tr>
<tr>
<td>Mica</td>
<td>6 mg/m³</td>
<td>3 mg/m³</td>
<td>NR</td>
</tr>
<tr>
<td>Attapulgite clay</td>
<td>PNOC Total dust, 15 mg/m³&lt;br&gt;Respirable fraction, 5 mg/m³</td>
<td>PNOC Total dust, 10 mg/m³&lt;br&gt;Respirable fraction, 3 mg/m³</td>
<td>PNOC Total dust, 4 mg/m³&lt;br&gt;Respirable fraction, 1.5 mg/m³</td>
</tr>
<tr>
<td>Silicone oil</td>
<td>NR***</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Name/Compound</td>
<td>Weight %</td>
<td>CAS #</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>----------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>Mono-ammonium phosphate and Ammonium sulphate</td>
<td>94</td>
<td>7722-76-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7783-20-2</td>
<td></td>
</tr>
<tr>
<td>Attapulgite clay or Fullers earth magnesium aluminum silicate-contains &gt;1% crystalline silica (quartz)</td>
<td>&lt;3</td>
<td>12174-11-7</td>
<td></td>
</tr>
<tr>
<td>Mica potassium aluminum silicate</td>
<td>1-2</td>
<td>12001-26-2</td>
<td></td>
</tr>
<tr>
<td>Silicone oil methyl hydrogen polysiloxane</td>
<td>&lt;1</td>
<td>63148-57-2</td>
<td></td>
</tr>
<tr>
<td>Calcium carbonate</td>
<td>&lt;1</td>
<td>1317-65-3</td>
<td></td>
</tr>
<tr>
<td>Amorphous silica precipitated synthetic zeolite</td>
<td>&lt;1</td>
<td>112926-00-8</td>
<td></td>
</tr>
<tr>
<td>Yellow 14 pigment – di-azo dye</td>
<td>&lt;1</td>
<td>5468-75-7</td>
<td></td>
</tr>
</tbody>
</table>

*German regulatory limits  **PNOC = Particulates not otherwise classified (ACGIH) also known as Particulates not otherwise regulated (OSHA) *** NR = Not Regulated. All values are 8 hour time weighted average concentrations.

Hazard symbols: WHMIS (Canadian workplace hazardous materials identification system)

D2B  Product may irritate eyes, skin, or mucous membranes

Section 4. First Aid Measures

Eye Exposure: Irrigate eyes at eye wash station and repeat until pain free. Seek medical attention if irritation develops or persists, or if visual changes occur.
Skin Exposure: In case of contact, wash with plenty of soap and water. Seek medical attention if irritation develops or persists.

Inhalation: If respiratory irritation or distress occurs remove victim to fresh air. Seek medical attention if irritation develops or persists.

Ingestion: If victim is conscious and alert, give 2-3 glasses of water to drink and do not induce vomiting. Seek immediate medical attention. Do not leave victim unattended. To prevent aspiration of swallowed product, lay victim on side with head lower than waist. If vomiting occurs and the victim is conscious, give water to further dilute the chemical.

Medical conditions possibly aggravated by exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema, or bronchitis. Skin contact may aggravate existing skin disease. Chronic overexposure may cause pneumoconiosis (“dusty lung” disease).

Section 5. Fire fighting measures

Extinguishing media: non combustible and non flammable – product is an extinguishing agent.

Unusual fire/explosion hazards: in a fire this material may decompose, releasing oxides of sulfur and carbon (see Section 10).

Insensitive to mechanical impact or static discharge.

HMIS Hazard Ranking:
health = 1, flammability = 0, reactivity = 0, personal protective equipment: ½ mask APR w/HEPA cartridges (see Section 8).

Section 6. Accidental release measures

Clean up released material using vacuum or wet sweep and shovel to minimize generation of dust. Wear appropriate respiratory protection. Bag and drum for disposal. If product is used and/or contaminated, use PPE and containment appropriate to the nature of the mixture. Prevent material from entering waterways.
Section 7. Handling and storage

Avoid skin, eye, or respiratory exposure. Use appropriate PPE when handling or maintaining equipment, and wash thoroughly after handling (see Section 8). Keep product in original container or extinguisher. Contents may be under pressure – inspect for extinguisher rust periodically to insure container integrity. Do not mix with other extinguishing agents.

Section 8. Exposure controls/ personal protection

During the application of this product against fires, exhaust gases and the products of incomplete combustion (PICs) are the principal respiratory hazards. In the manufacture of extinguishers, automated systems and point source ventilation controls sufficiently minimize respiratory exposure. Employers and employees must use their collective judgment in determining occupational settings where the use of a dust mask or air purifying respirator is prudent. The need for respiratory protection is not likely for short-term use in well ventilated areas.

Respiratory protection: use N95 dust mask or air-purifying respirator (APR) with high efficiency particulate air (HEPA) filters.

Eye protection: wear chemical goggles.

Skin protection: use nitrile, latex, or similar gloves and coveralls. Good personal hygiene practices essential, such as avoiding food, tobacco products, or other hand-to-mouth contact when handling. Wash thoroughly after handling.

Section 9. Physical and chemical properties

Appearance: yellow powder, finely divided odorless solid.
Specific gravity: ~ 1.85
Solubility: not soluble in water
Non –flammable
Flash point: none
Vapor pressure: < 1 mm Hg
pH: approximately 4-5
Boiling point: not applicable
No explosive or oxidizing properties

Section 10. Stability and reactivity

Stability: stable

Incompatibles: strong alkalis (bases), magnesium, strong oxidizers such as calcium hypochlorite (pool chlorine) and isocyanuric acids.

Decomposition products: heat of fire may release carbon monoxide, carbon dioxide, and sulfur dioxide. Oxides of phosphorous and ammonia reported.

Possibility of hazardous reactions: none

Section 11. Toxicological information

Acute toxicity: Mono ammonium phosphate $\text{LD}_{50}$ (rat): $> 1000\text{mg/kg body weight}$
Ammonium sulfate $\text{LD}_{50}$ (rat): $2840\text{mg/kg body weight}$
Target organs in man: respiratory system, eyes, skin. This product is an irritant to epithelial tissue, and may aggravate dermatitis. No information was found indicating the product causes sensitization.

Chronic toxicity: Pneumoconiosis, or “dusty lung” disease, may result from chronic exposure to any dust.

Reproductive toxicity: This product’s ingredients are not known to have reproductive or teratogenic effects.

Section 12. Ecological information

Ecotoxicity: negative effects unknown. Provides nutrient nitrogen and phosphorus to plant life.

Persistence/ Degradability: degrades rapidly in humid/wet environment.
Bioaccumulation: extent unknown.

Mobility in soil: slow evaporation rate; water soluble, may leach to groundwater.

Section 13. Disposal considerations

This product is not a RCRA characteristically hazardous or listed hazardous waste. Dispose of according to state or local laws, which may be more restrictive than federal laws or regulations. Used product may be altered or contaminated, creating different disposal considerations.

Section 14. Transportation information

This product is not a hazardous material under U.S. Department of Transportation (DOT) 49 CFR 172, and is not regulated by the DOT or Transport Canada “Transportation of Dangerous Goods” regulations.

Section 15. Regulatory information

International Inventory Status:

All ingredients are on the following inventories

<table>
<thead>
<tr>
<th>Country(ies)</th>
<th>Agency</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States of America</td>
<td>TSCA</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>DSL</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>EINECS/ELINCS</td>
<td>Yes</td>
</tr>
<tr>
<td>Australia</td>
<td>AICS</td>
<td>Yes</td>
</tr>
<tr>
<td>Japan</td>
<td>MITI</td>
<td>Yes</td>
</tr>
<tr>
<td>South Korea</td>
<td>KECL</td>
<td>Yes</td>
</tr>
</tbody>
</table>

European Risk and Safety phrases:

EU Classification: Harmful.

R Phrases: 22 Harmful if swallowed.

36/37/38 Irritating to eyes, respiratory system, and skin.

S Phrases: 26 In case of contact with eyes, rinse immediately with water.
plenty of water and seek medical advice.

36 Wear suitable protective clothing.

Components:

Mono ammonium phosphate:
EU Classification: Harmful.
R Phrases: 22 Harmful if swallowed.
36/37/38 Irritating to eyes, respiratory system, and skin.
S Phrases: 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36 Wear suitable protective clothing.

Ammonium sulfate:
EU Classification: Irritant
R Phrases: 22 Harmful if swallowed.
36/37/38 Irritating to eyes, respiratory system, and skin.
S Phrases: 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36 Wear suitable protective clothing.

U.S. federal regulatory information:

None of the chemicals in this product are under SARA reporting requirements or have SARA threshold planning quantities (TPQs) or CERCLA reportable quantities (RQs), or are regulated under TSCA 8(d).

State regulatory information:

Chemicals in this product are covered under specific State regulations, as denoted below:

- **Alaska** - Designated Toxic and Hazardous Substances: None
- **California** – Permissible Exposure Limits for Chemical Contaminants: None
- **Florida** – Substance List: Mica Dust, Ammonium Sulfate
- **Illinois** – Toxic Substance List: None
- **Kansas** – Section 302/303 List: None
- **Massachusetts** – Substance List: Mica Dust, Ammonium Sulfate
- **Minnesota** – List of Hazardous Substances: None
- **Missouri** – Employer Information/Toxic Substance List: None
- **New Jersey** – Right to Know Hazardous Substance List: None
- **North Dakota** – List of Hazardous Chemicals, Reportable Quantities: None
- **Pennsylvania** – Hazardous Substance List: None
- **Rhode Island** – Hazardous Substance List: Mica Dust, Ammonium Sulfate
James Hardie Building Products
26300 La Alameda, Suite 250
Mission Viejo, CA 92691
Telephone (General Information and Emergency): 1-800-942-7343 (1-800-HARDIE)

Section 1. Chemical Products and Company Identification

**Product Name/Trade Names:**
Hardibacker 500®, Hardibacker®, Hardisoffit®, Hardipanel®, Hardiplank®, Harditex®, Hardishingle™

**Other Names:** Fiber-cement, Fiber-reinforced cement

**Use:** The above products are used as internal/external wall cladding and tile underlayment.

**Manufacturer:** James Hardie Building Products, 26300 La Alameda, Suite 250, Mission Viejo, CA 92691

**Effective Date:** December 10, 2003. Check to verify the latest version or translation availability.

**NOTE:** As of the date of the preparation of this document, the information contained herein is believed to be accurate.

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS NUMBER</th>
<th>UN Number</th>
<th>EINECS Number</th>
<th>Proportion (by weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline Silica (Quartz)</td>
<td>14808-60-7</td>
<td>Not a hazardous material for shipping purposes</td>
<td>238-878-4</td>
<td>35-45%</td>
</tr>
<tr>
<td>Calcium Silicate (Hydrate)</td>
<td>65997-15-1</td>
<td>Not a hazardous material for shipping purposes</td>
<td>266-043-4</td>
<td>50-60%</td>
</tr>
<tr>
<td>Cellulose</td>
<td>9004-34-6</td>
<td>Not a hazardous material for shipping purposes</td>
<td>232-674-9</td>
<td>&lt;10%</td>
</tr>
<tr>
<td>Other non hazardous ingredients (fillers)</td>
<td></td>
<td></td>
<td></td>
<td>&lt;10%</td>
</tr>
</tbody>
</table>

Coated products are coated with water-based acrylic paint or acrylic sealer.

Section 2. Hazardous Ingredients/Identity Information

<table>
<thead>
<tr>
<th>Substance Name</th>
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</tr>
</tbody>
</table>
Section 3. Hazards Identification

Emergency Overview: Not explosive, not a fire hazard.

Primary Routes of Entry and Potential Health Effects:

**Inhalation:**
Acute effects. Dust may cause irritation of the nose, throat, and airways, resulting in coughing and sneezing. Certain susceptible individuals may experience wheezing (spasms of the bronchial airways) on inhaling dust during sanding or sawing operations.

Chronic Effects. Repeated and prolonged overexposures to dust containing crystalline silica causes silicosis (scarring of the lung) and increases the risk of bronchitis, tuberculosis, lung cancer, renal disease, and scleroderma (a disease affecting the connective tissue of the skin, joints, blood vessels, and internal organs). Studies have shown cigarette smoking increases the risk of silicosis, bronchitis and lung cancer in persons also exposed to crystalline silica.

Acute silicosis, a sub-chronic disease associated with acute, massive silica exposure, is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include, but are not limited to, shortness of breath, cough, fever, weight loss and chest pain. Such exposure may cause pneumoconiosis and pulmonary fibrosis.

**Ingestion:**
Unlikely under normal conditions of use, but swallowing the dust from this product may result in irritation or damage to the mouth and gastrointestinal tract due to alkalinity of dust.

**Eye:**
Dust may irritate the eyes from mechanical abrasion causing watering and redness.

**Skin:**
Dust may cause irritation of the skin from friction but cannot be absorbed through intact skin.

**Medical conditions generally aggravated by exposure:** Pulmonary function may be reduced by inhalation of respirable crystalline silica and/or cellulose. If lung scarring occurs, such scarring could aggravate other lung conditions such as asthma, emphysema, pneumonia or restrictive lung diseases. Lung scarring from crystalline silica may also increase risks to pulmonary tuberculosis.

**Smoking:**
Cigarette smoking increases the risk of occupational respiratory diseases.

Carcinogenicity:

**California Proposition 65 Warning:**
Respirable crystalline silica is known to the State of California to cause cancer.

**International Agency for the Research on Cancer (IARC):**
Crystalline silica inhaled in the forms of quartz or cristobalite from occupational sources is carcinogenic to humans.

**The National Toxicology Program (NTP):**
NTP has concluded that respirable crystalline silica is a known human carcinogen.

**LD50:**
Silicon Dioxide: Rat oral >22,500 mg/kg; Mouse oral >10,500 mg/kg.

**NFPA Ratings (Scale 0-4):** health=2, flammability=0, reactivity=0, personal protection=E.
Section 4. First Aid Measures

Signs and symptoms of over exposure: Breathlessness, wheezing, cough, sputum production.

First Aid:

Swallowed:
If swallowed, dilute by drinking large amounts of water. Do not induce vomiting. Seek medical attention. If unconscious, loosen tight clothing and lay the person on his/her left side. Give nothing by mouth to an individual who is not alert and conscious.

Eye Contact:
Remove contact lens. Flush with running water or saline for at least 15 minutes. Seek medical attention if redness persists or if visual changes occur.

Skin Contact:
Wash with mild soap and water. Contact physician if irritation persists or later develops.

Inhaled:
Remove to fresh air. If shortness of breath or wheezing develop, seek medical attention.

ADVICE TO DOCTOR: Treat symptomatically.

Section 5. Fire Fighting Measures

James Hardie® fiber-cement products are neither flammable nor explosive.

Fire and Explosion Hazard:
1. Flash Point: Not applicable.
2. Auto-ignition: Not applicable.

Extinguishing Media: This material is not combustible. Appropriate extinguishing media for surrounding fire should be used.

Fire Fighting: Fire fighting personnel should wear normal protective equipment and positive self-contained breathing apparatus.

Section 6. Accidental Release Measures

No special precautions are necessary to pick up product that has been dropped. The following applies to spills or releases of dust generated during cutting or sanding of the material.

Precautions: Good housekeeping practices are necessary for cleaning up areas where spills or leaks have occurred. Take measures to either eliminate or minimize the creation of dust. Respirable dust and silica levels should be monitored regularly.

Wherever possible, practices likely to generate dust should be controlled with engineering controls such as local exhaust ventilation, dust suppression with water and containment, enclosure or covers.

Use respiratory protection as described in Section 8.
Cleanup Methods: A fine water spray should be used to suppress dust when sweeping (dry sweeping should not be attempted). Vacuuming, preferably with an industrial vacuum cleaner outfitted with a high-efficiency particulate (HEPA) filter, is preferred to sweeping. Waste may be disposed of by landfill in compliance with federal, state and local requirements.

In the event of an accidental release, observe all protection measures set out in this MSDS. Avoid using materials and products that are incompatible with the product. (refer to Section 10)

Section 7. Handling and Storage

Note: The fiber cement boards in their intact state do not present a health hazard. The controls below apply to dust generated from the boards by cutting, drilling, routing, sawing, crushing, or otherwise abrading, and cleaning or moving sawdust.

James Hardie’s recommendation: Keep exposure to dust as low as reasonably possible. Respirable crystalline silica levels should not exceed those specified by OSHA and MSHA and identified in this MSDS. Exposure to respirable (fine) silica dust depends on a variety of factors, including activity rate (e.g. cutting rate), method of handling (e.g. electric shears), environmental conditions (e.g. weather conditions, workstation orientation) and control measures used.

Wherever possible, practices likely to generate dust should be carried out in well ventilated areas (e.g. outside).

At a minimum, the following methods and/or tools are required to minimize dust levels:

- “Score and Snap” method with score and snap knife.
- Manual, electric or pneumatic shears.
- Circular saw blades specifically designed for cutting fiber cement (e.g. Hitachi Hardiblade).
- Power tools outfitted with dust collection/vacuum systems with high-efficiency particulate air (HEPA) filter, or wet-cutting systems.
- Vacuuming with HEPA filter.

DO NOT saw cut indoors.

DO NOT dry-saw with any type of masonry blade such as a segmented or continuous rim diamond blade, or with any other type of grinding or abrasive-type wheel.

DO NOT dry sweep.

DO NOT work in windy/dusty condition, when wind/dust is blowing toward other persons.

Keep away from reactive products. Do not store near food, beverages or smoking materials. Avoid spilling and creating dust. Maintain appropriate dust controls during handling. Use appropriate respiratory protection during handling as described in Section 8.

Section 8. Exposure Controls and Personal Protection

OSHA Permissible Exposure Standards (PEL): Exposures shall not exceed an 8-hour time weighted average limit as stated in 29 CFR § 1910.1000 Table Z-3 for mineral dusts, expressed in million particles per cubic feet (Mppcf) and/or milligrams per cubic meter (mg/m³). The American Conference of Governmental Industrial Hygienists Threshold Limit Values (TLV) is a recommended exposure limit based on an 8-hour time-weighted average.
### Other Limits Recommended
The National Institute of Occupational Safety and Health also has a Recommended Exposure Limit (REL) of 0.05 mg/m³ for respirable crystalline silica, based on a 10-hour time-weighted average.

Products may be coated. If coated, the coating will be water based acrylic paint or acrylic sealer.

**Personal Protection:** When handling products that may generate silica dust: (1) Work outdoors where feasible, otherwise use mechanical ventilation, (2) Wear a dust mask or, if dust may exceed PEL, use NIOSH, OSHA or MSHA approved respirator, and (3) Warn others in area.

Use and maintain respirators that conform to ANSI Standard (Z88.2) particulate respirators. Select respirators based on the level of exposure to crystalline silica as measured by dust sampling. Use respirators that offer protection to the highest concentrations of crystalline silica if the actual concentrations are unknown. Put in place a respiratory protection and monitoring program that complies with MSHA or OSHA (e.g. 29 CFR 1910.134) standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing and other requirements. Comply with all other federal and state laws.

### Section 9. Physical and Chemical Properties

**Appearance and Odor:** Solid gray boards with varying dimensions according to product

**Vapor Pressure:** Not Relevant
**Flash Point:** Not Relevant
**Specific Gravity:** Not Relevant
**Autoignition Temp:** Not Relevant
**Flammability Limits:** Not Relevant
**Volatility:** Not Relevant
**Boiling Point:** Not Relevant
**Solubility in Water:** Not Relevant
**Melting Points:** Not Relevant
**Evaporation Rate:** Not Applicable
**NFPA Ratings (SCALE 0-4):** health=2, flammability=0, reactivity=0, personal protection=E
Section 10. Stability and Reactivity

**Stability:** Crystalline silica is stable under ordinary conditions.

**Conditions to Avoid:** Excessive dust generation during storage and handling.

**Materials to Avoid:**
- **Incompatibility:** Hydrofluoric acid will dissolve silica and can generate silicon tetrafluoride, a corrosive gas.
  - Contact with strong oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride or oxygen difluoride may cause fires and/or explosions.

Section 11. Toxicological Information

This product is not toxic in its intact form. The following applies to dust that may be generated during cutting and sanding:

**Chronic Effects:**
- **Inhaled:** Repeated and prolonged overexposures to dust containing crystalline silica causes silicosis (scarring of the lung) and increases the risk of bronchitis, tuberculosis, lung cancer, renal disease and scleroderma (a disease affecting the connective tissue of the skin, joints, blood vessels and internal organs). Studies have shown cigarette smoking increases the risk of silicosis, bronchitis, and lung cancer in persons also exposed to crystalline silica. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include, but are not limited to: shortness of breath, cough, fever, weight loss and chest pain. Such exposure may cause pneumoconiosis and pulmonary fibrosis.

  The following relates to health effects of cellulose: Based on limited animal research, it is possible that repeated chronic inhalation exposure to cellulose fiber dust over time may lead to inflammation and scarring of the lung in humans. Precautions taken for crystalline silica dust will protect against cellulose.

Section 12. Ecological Information

There is a very limited amount of ecological data available on the effects of releases that may occur from this product being released into the environment. Clean up of the spilled product would not be expected to leave any hazardous material that could cause a significant adverse impact. There is a limited amount of ecological data available on crystalline silica, primarily because it is a naturally occurring mineral. An adequate representation of these data is beyond the scope of this document.

Section 13. Disposal Consideration

Dispose of material as inert, non-metallic mineral in conformance with local, state and federal regulations. Crystalline silica is not a RCRA hazardous waste.
Section 14. Transport Information

There are no special requirements for storage and transport.
- **UN No:** None Allocated.
- **Dangerous Goods Class:** None Allocated.
- **Hazchem Code:** None Allocated.
- **Poisons Schedule:** None Allocated.
- **Packing Group:** Not Applicable.
- **Label:** Not a DOT hazardous material. Local regulations may apply.

Section 15. Regulatory Information

**DOT Hazard Classification:** None.

**Placard requirement:** Not a DOT hazardous material. Local placarding regulations may apply.

**California Proposition 65:** Warning: Airborne particles of respirable size of crystalline silica are known to the State of California to cause cancer.

**CERCLA Hazardous Substance (40 CFR Part 302):**
- Listed Substance: No.
- Unlisted Substance: No.
- Reportable Quantity (RQ): None.
- Characteristic(s): Not applicable.
- RCRA Waste Number: Not applicable.

**SARA, Title III, Sections 302/303 (40 CFR Part 355 – Emergency Planning and Notification):**

- Extremely Hazardous Substance: No.

**SARA, Title III, Sections 311/312 (40 CFR Part 370 – Hazardous Chemical Reporting: Community Right-To-Know):**


**SARA, Title III, Sections 313 (40 CFR Part 372 – Toxic chemical Release Reporting: Community Right-To-Know):**

- Not a RCRA Hazardous Waste.

**TSCA Inventory List:** Yes.

**TSCA 8(d):** No.
WARNING

AVOID BREATHING SILICA DUST

Product contains silica. Inhalation of respirable silica dust can cause silicosis a potentially disabling lung disease, and is known to the State of California to cause lung cancer. When drilling, cutting, or abrading product during installation or handling, (1) Work outdoors where feasible, otherwise use mechanical ventilation, (2) Wear a dust mask or, if dust may exceed PEL, use NIOSH approved respirator, (3) Warn others in area. For further information, refer to material safety data sheet.

This form has been prepared to meet current Federal OSHA hazard communication regulations and is offered without any warranty or guarantee of any type. James Hardie® Building Products cannot control the use of its products, and therefore specifically disclaims liability and responsibility arising from the use, misuse and alteration of its products.

The information contained on this MSDS was produced without independent scientific or medical studies analyzing the effects of silica upon human health. The information contained herein is based upon scientific and other data James Hardie® Building Products believes is valid and reliable and provides the basis for this MSDS. The information contained herein relates only to specific materials listed in the document. It does not address the effects of silica when used in combination with other materials or substances, or when used in other processes. Because conditions of use are beyond James Hardie® Building Products control, the company makes no representations, guarantees or warranties, either express or implied warranties as to the fitness of the product for use, and assumes no liability related to the information contained above.

James Hardie® Building Products requires, as a condition of use of its products, that purchasers comply with all applicable Federal, State, and Local health and safety laws, regulations, orders, requirements, and strictly adhere to all instructions and warnings which accompany the product.
Anti Fog Coating

*Improves Light Transmission and Prevents Plant Disease*

Polygal Polycarbonate sheets can be Anti-Fog coated upon request. This factory-applied, silicone-based coating combines long lasting anti-fogging properties with excellent adhesion and great stability under exposure to environmental chemicals.

Anti-Fog coated Polycarbonate sheets show improved abrasion resistance, resulting in very good rub-off and wash-off resistance.

When used in greenhouse applications, Anti-Fog treated Polygal Polycarbonate sheets increase light transmission and protect against plant diseases by eliminating condensed water drip.

**Polygal PCSS Material Safety Data Sheet**

*Date of issue: November 27, 2000*

1. **Identification of the substance, preparation and manufacturer:**
   Hollow Profile Sheet made of Polycarbonate
   Cas #:
   Polygal Plastics Industries Ltd.
   Ramat Hashofet 19238 ISRAEL
   Phone: 972-4-959-6222, Fax: 972-4-959-6296,
   Email: sales@polygal.co.il
   Website: www.polygal.com

2. **Composition/Information on Ingredients:**
   Polycarbonate based on Bisphenol A

3. **Hazard Identifications:**
   **Emergency Overview:**
   Sheets have almost no odor. Can burn in fire creating dense toxic smoke. If heated to melt-point the molten plastic can cause severe thermal burns. Secondary operations, such as grinding, sanding or sawing can produce dust, which may create a respiratory or explosion hazard.

   **Potential Health Effects**
EYE: Product may cause irritation or injury due to mechanical action.
SKIN: Sheets are not likely to cause skin irritation. If heated to melt-point the molten plastic can cause severe thermal burns.
INGESTION: Not acutely toxic.
INHALATION: Unlikely due to physical form.
CHRONIC/CARCINOGENICITY: Not listed
MEDICAL RESTRICTIONS: There are no known human health effects aggravated by exposure to this product.

4. First-Aid Measures:
EMERGENCY AND FIRST AID INFORMATION:
EYES: Remove contact lenses at once. Immediately flush eyes well with copious quantities of water or normal saline for at least 20-30 minutes. If irritation persists, seek medical attention.
SKIN: Wash skin thoroughly with soap and water. Seek medical attention if rash or burn occurs.
INGESTION: Not probable. If large amount is swallowed, seek medical attention.
INHALATION: Not likely due to physical form.
BURNS: Burns by molten material must receive medical attention. Do not try to remove melted PC from skin.

5. Fire-Fighting Measures:
Extinguishing materials: water spray is recommended due to its cooling capacity. Other materials such as extinguishing powder, CO2, Foam, dry powder are also possible. Firemen must wear self-contained breathing apparatus.
FLASH POINT: Not applicable
AUTO IGNITION TEMPERATURE: 630°C (1166°F) estimated
LOWER EXPOSURE LIMIT(%): Not established
UPPER EXPOSURE LIMIT (%): Not established
HAZARDOUS COMBUSTION BY-PRODUCTS: Hazardous combustion by-products may include intense heat, dense black smoke, carbon monoxide, carbon dioxide and hydrocarbon fragments.

6. Accidental Release Measures:
Sweep or gather up material mechanically.

7. Handling and Storage:
Ensure adequate ventilation or exhaust ventilation in the working area. Dust must be removed by effective exhaust ventilation.
Avoid contact or proximity with PVC plasticizers (phtalates).
Store in a dry place away from moisture, excessive heat and sources of combustion.

8. Exposure Controls / Personal Protection:
No specific exposure related hazards are known.
Wear protective gloves while handling sheets.

9. Physical and Chemical Properties:
Form: Hollow Plastic Sheet
Color:
Colorless or pigmented:
Clear, Opal Ice, Bronze, Blue,
Green, Grey and other Odor: Odorless
Softening Point: 150-160°C (300-320°F)
Density: Material: 1200 kg/m³ at 20°C
Sheet: 125-250 kg/m³ Vapor Pressure: Not Applicable
Viscosity: Not Applicable
Solubility in Water: Insoluble
pH Value: Not Applicable
Flash Ignition Temperature: > 450°C (842°F)
Self Ignition Temperature: > 450°C (842°F)
Explosive Limit: Not Applicable

10. Stability and Reactivity:
Thermal decomposition: Decomposition begins at 380°C (716°F).
Hazardous decomposition products: in cases of smoldering and incomplete combustion, toxic fumes mainly consisting of CO and CO2 may develop as well as traces of Aliphatic and Aromatic Hydrocarbons, Aldehydes, Acids, Phenol and Phenol-derivatives.
Hazardous reactions: No hazardous reactions observed.

11. Toxicological Information:
EYE: Product not considered as a primary eye irritant.
SKIN: Product not considered as a primary skin irritant.
Dermal LD50 (rabbit) >2g/kg estimated.
ACUTE ORAL: Oral LD50 (rat) >5g/kg estimated

12. Ecological Information
WATER: Water pollution class (WGK): 0 - not generally hazardous to water.
GENERAL: Not expected to present any significant ecological problems.
13. Disposal Considerations:
RECYCLE AND DISCHARGE: The product is suitable for mechanical recycling. After appropriate treatment it can be remelted and processed into new molded articles. Mechanical recycling is possible if the material has been selectively retrieved and carefully segregated according to type. May be discharged or incinerated together with household refuse if local official regulations are observed.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Sweep or gather up material and place in proper container for disposal or recovery.

14. Transport Information
DOT HAZARD CLASS: Not regulated
PROPER SHIPPING NAME: Not regulated
IDENTIFICATION NUMBER: Not listed
OTHER INFORMATION: Not Dangerous Cargo. Keep Dry.

15. Regulatory Information
No labeling is required in accordance with the EEC directives. In connection with dusts formed in consequence of mechanical treatment, e.g. grinding, the appropriate regulation/maximal values for fine dusts must be observed:
MAX Value (fine dust): 6 mg/m3
This product does not contain reportable quantities of substances subject to supplier notification.

16. Other Information
The safety data sheet is valid for Polycarbonate (bisphenol-A-carbonate). The trade names of the base resin are Makrolon of Bayer AG Germany and Lexan of General Electric Plastics B.V. Holland. Pigments and additives used to enhance specific properties are encapsulated in the polymer resin matrix, and/or on the sheet surface.
THOMPSON AND FORMBY INC -- THOMPSON’S WATER SEAL, WATERPROOFING FORMULA

======================================================================
MSDS Safety Information
======================================================================
FSC: 8030
NIIN: 00-555-2878
MSDS Date: 02/11/1994
MSDS Num: BJQTC
Product ID: THOMPSON'S WATER SEAL, WATERPROOFING FORMULA
MFN: 01
Responsible Party
Cage: 63727
Name: THOMPSON AND FORMBY INC
Address: 825 CROSSEOVER LANE
City: MEMPHIS TN 38117
Info Phone Number: 901-685-7555
Emergency Phone Number: 201-573-5700  800-424-9300
Review Ind: Y
Published: Y
======================================================================
Contractor Summary
======================================================================
Cage: 63727
Name: THOMPSON AND FORMBY INC
Address: 825 CROSSEOVER LN SUITE 240 BLDG C
City: MEMPHIS TN 38117-4934
Phone: 901-685-7555
======================================================================
Item Description Information
======================================================================
Item Manager: GSA
Item Name: SEALING COMPOUND
Specification Number: NONE
Type/Grade/Class: NONE
Unit of Issue: GL
UI Container Qty: 1 GALLON
Type of Container: CAN
======================================================================
Ingredients
======================================================================
Cas: 64742-88-7
RTECS #: 1003692SN
Name: SOLVENT NAPHTHA (PETROLEUM) MEDIUM ALIPHATIC
% Wt: 75-80
OSHA PEL: 5 MG/M3 (OIL MIST)
ACGIH TLV: 5 MG/M3 (OIL MIST)
======================================================================
Health Hazards Data
======================================================================
LD50 LC50 Mixture: LD50 (ORAL RAT) IS UNKNOWN
Route Of Entry Inds - Inhalation: YES
Skin: YES
Ingestion: YES
Carcinogenicity Inds - NTP: NO
IARC: NO
OSHA: NO
Effects of Exposure: INHALED: AVOID PROLONGED BREATHING OF VAPORS. DO NOT
BREATHE SPRAY MIST. SKIN: AVOID PROLONGED OR REPEATED CONTACT W/SKIN.
EYE: WEAR EYE PROTECTION TO AVOID CONTACT W/EYES. INGESTED: HARMFUL OR FATAL IF
SWALLOWED. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND
INHALING THE CONTENTS MAY BE HARMFUL OR FATAL.
Explanation Of Carcinogenicity: MANUFACTURER GAVE NO COMMENTS OTHER THAN THE
ABOVE REFERENCES TO THE THREE LISTINGS.
Signs And Symptoms Of Overexposure: IF YOU EXPERIENCE EYE WATERING, HEADACHE,
DIZZINESS; INCREASE AIR, WEAR RESPIRATORY PROTECTION OR LEAVE AREA.
Medical Cond Aggravated By Exposure: PRI-EXISTING EYE, SKIN AND RESPIRATORY
DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO THIS PRODUCT.
First Aid: INHALED: IF AFFECTED BY INHALATION OF VAPOR OR SPRAY MIST, REMOVE TO
FRESH AIR. SKIN: IN KEEPING W/GOOD HYGIENIC PRACTICE, WASH THOROUGHLY W/SOAP
& WATER. EYE: IN CASE OF EYE CONTACT, FLUSH IMMEDIATELY W/PLENTY OF WATER.
INGESTED: IF SWALLOWED, DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION.
Handling and Disposal
Spill Release Procedures: ABSORB WITH SAND OR OTHER SUITABLE ABSORBENT MATERIAL.
THEN PLACE IN A CONTAINER FOR DISPOSAL.
Neutralizing Agent: MFR GAVE NO INFORMATION ON MSDS.
Waste Disposal Methods: VEST DISPOSAL IS BY CONSUMING THROUGH INGENDED USE.
DISPOSE OF EXCESS PRODUCT IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL
REGULATIONS GOVERNING COMBUSTIBLE WASTE.
Handling And Storage Precautions: CONTAINS PETROLEUM DISTILLATES. DO NOT USE
NEAR SPARKS, HEAT OR FLAME. AVOID PROLONGED BREATHING OF VAPORS. DO NOT
BREATHE SPRAY MIST.
Other Precautions: USE IN WELL VENTILATED AREA. OPEN WINDOWS AND DOORS OR USE
OTHER MEANS TO INSURE FRESH AIR ENTRY DURING APPLICATION AND DRYING.
IF YOU EXPERIENCE EYE WATERING, HEADACHE OR DIZZINESS, INCREASE FRESH AIR,
SEAR RESPIRATOR OR LEAVE AREA.
Fire and Explosion Hazard Information
Flash Point Method: SCC
Flash Point Text: <101F, <38C
Lower Limits: 1.0
Upper Limits: 6.0
Extinguishing Media: USE WATER FOG, FOAM, DRY CHEMICAL OR CARBON DIOXIDE. DO
NOT USE A DIRECT STREAM OF WATER. PRODUCT WILL FLOAT & REIGNITE.
Fire Fighting Procedures: TO ENTER CONFINED FIRE SPACE USE FULL BUNKER
GEAR
W/POSITIVE PRESSURE NIOSH APPROVED SELF-CONTAINED BREATHING APPARATUS. COOL
FIRE EXPOSED CONTAINERS W/WATER.
Unusual Fire/Explosion Hazard: COMBUSTIBLE! DO NOT USE NEAR SPARKS, HEAT, FLAME.
FIRE EXPOSED CONTAINERS SHOULD BE COOLED W/WTQ PREVENT RUPTURE.

Control Measures
===================================================================================================================
Respiratory Protection: DO NOT BREATHE SPRAY MIST. IF YOU EXPERIENCE EYE WATERING, HEADACHE OR DIZZINESS, INCREASE FRESH AIR, WEAR RESPIRATOR (NIOSH/MSHA TC23C OR EQUIVALENT APPROVED) OR LEAVE AREA.
Ventilation: AVOID PROLONGED BREATHING OF VAPORS. USE IN WELL VENTILATED AREA.
OPEN DOORS & WINDOWS TO ENSURE FRESH AIR DURING USE.
Protective Gloves: AVOID PROLONGED/REPEATED SKIN CONTACT
Eye Protection: WEAR EYE PROTECTION. PREVENT EYE CONTACT
Other Protective Equipment: NONE REQUIRED
Work Hygienic Practices: USE GOOD CHEMICAL HYGIENE PRACTICE. AVOID ALL UNNECESSARY EXPOSURE. WASH THOROUGHLY BEFORE EATING OR DRINKING.
Supplemental Safety and Health: NONE
===================================================================================================================
Physical/Chemical Properties
===================================================================================================================
HCC: F4
NRC/State LIC No: NONE
Net Prop WT For Ammo: NONE
B.P. Text: 318F, 159C
M.P/F.P Text: UNKNOWN
Decomp Text: UNKNOWN
Vapor Pres: <55
Vapor Density: 4.8
Spec Gravity: 0.80
Evaporation Rate & Reference: UNKNOWN
Solubility in Water: INSOLUBLE
Appearance and Odor: AMBER MOBILE LIQUID, PETROLEUM SOLVENT ODOR
Percent Volatiles by Volume: 85
Corrosion Rate: UNKNOWN
===================================================================================================================
Reactivity Data
===================================================================================================================
Stability Indicator: YES
Stability Condition To Avoid: DO NOT USE NEAR HEAT, SPARK, FLAMES.
Materials To Avoid: STRONG OXIDIZING AGENTS
Hazardous Decomposition Products: CARBON MONOXIDE, CARBON DIOXIDE, AND UNIDENTIFIED ORGANIC COMPOUNDS MAY BE FORMED DURING COMBUSTION.
Hazardous Polymerization Indicator: NO
Conditions To Avoid Polymerization: WILL NOT OCCUR.
===================================================================================================================
Toxicological Information
===================================================================================================================
ECological Information
===================================================================================================================
MSDS Transport Information

Regulatory Information

Other Information

Transportation Information

Transportation Information

Responsible Party Cage: 63727
Trans ID NO: 76672
Product ID: THOMPSON'S WATER SEAL, WATERPROOFING FORMULA
MSDS Prepared Date: 02/11/1994
Review Date: 12/31/1994
MFN: 1
Net Unit Weight: UNKNOWN
Multiple KIT Number: 0
Review IND: Y
Unit Of Issue: GL
Container QTY: 1 GALLON
Type Of Container: CAN
Additional Data: THE PRODUCT IS CLASSIFIED AS A PAINT, P.G. III.
HOWEVER IF
SHIPPING DOMESTICALLY, IT QUALIFIES AS A COMBUSTIBLE LIQUID WHICH IS
NOT
REGULATED IN ONE GALLON SIZES.

Detail DOT Information

DOT PSN Code: XXX

Detail IMO Information

IMO PSN Code: LCT
IMO Proper Shipping Name: PAINT OR PAINT RELATED MATERIAL
IMO PSN Modifier: (INCLUDING PAINT, LACQUER, ENAMEL, STAIN, SHELLAC
SOLUTIONS,

VARNISH, POLISH, LIQUID FILLER AND LIQUID LACQUER BASE) OR (INCLUDING
PAINT
THINNING OR REDUCING COMPOUND) o
IMDG Page Number: 3372
UN Number: 1263
UN Hazard Class: 3.3
IMO Packaging Group: III
Subsidiary Risk Label: -
EMS Number: 3-05
MED First Aid Guide NUM: 310

Detail IATA Information

IATA PSN Code: SXH
IATA UN ID Num: 1263
IATA Proper Shipping Name: PAINT
IATA PSN Modifier: (INCLUDING PAINT, LACQUER, ENAMEL, STAIN, SHELLAC,
VARNISH,
POLISH, LIQUID FILLER AND LIQUID LACQUER BASE
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
UN Packing Group: III
Packing Note Passenger: 309
Max Quant Pass: 60L
Max Quant Cargo: 220L
Packing Note Cargo: 310

Detail API Information

API PSN Code: SXH
API Proper Shipping Name: PAINT OR PAINT RELATED MATERIAL
API PSN Modifier: (INCLUDING PAINT, LACQUER, ENAMEL, STAIN, SHELLAC SOLUTIONS,
   VARNISH, POLISH, LIQUID FILLER AND LIQUID LACQUER BASE) OR (INCLUDING
   PAINT
   THINNING OR REDUCING COMPOUNDS)
API Hazard Class: 3
API UN ID NUM: UN1263
API Packing Group: III
Special Provisions: P5
Back Pack Reference: A7.3

HAZCOM Label

Product ID: THOMPSON'S WATER SEAL, WATERPROOFING FORMULA
Cage: 63727
Company Name: THOMPSON AND FORMBY INC
Street: 825 CROSSOVER LN SUITE 240 BLDG C
City: MEMPHIS TN
Zipcode: 38117-4934
Health Emergency Phone: 901-685-7555
Label Required IND: Y
Date Of Label Review: 12/31/1994
Status Code: C
MFG Label NO: NONE
Label Date: 12/31/1994
Origination Code: F
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: WARNING
Respiratory Protection IND: YES
Health Hazard: Moderate
Contact Hazard: Slight
Fire Hazard: Moderate
Reactivity Hazard: None
Hazard And Precautions: **TARGET ORGANS:SKIN, EYES, RESPIRATORY SYSTEM, CNS **
   INHALED:AVOID PROLONGED BREATHING OF VAPORS. DO NOT BREATH SPRAY MIST.
   SKIN:AVOID PROLONGED OR REPEATED CONTACT W/SKIN. EYE:WEAR EYE PROTECTION TO
   AVOID CONTACT W/EYES. INGESTED:HARMFUL OR FATAL IF SWALLOWED.
   INTENTIONAL
   MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS MAY BE HARMFUL
OR FATAL. CONTAINS PETROLEUM DISTILLATES. DO NOT USE NEAR SPARKS, HEAT OR FLAME. AVOID PROLONGED BREATHING OF VAPORS. DO NOT BREATHE SPRAY MIST. IN CASE OF SPILL: ABSORB WITH SAND OR OTHER SUITABLE ABSORBENT MATERIAL. THEN PLACE IN A CONTAINER FOR DISPOSAL.

Disclaimer (provided with this information by the compiling agencies):
This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever expressly or implied warrants, states, or intends said information to have any application, use or viability by or to any person or persons outside the Department of Defense nor any person or persons contracting with any instrumentality of the United States of America and disclaims all liability for such use. Any person utilizing this instruction who is not a military or civilian employee of the United States of America should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation regardless of similarity to a corresponding Department of Defense or other government situation.
Material Safety Data Sheet

SECTION 1  CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Phenol-Formaldehyde Bonded Wood Products plus a polyurethane film: softwood plywood (veneer core), laminated veneer lumber, and wood I-joists.

Trade Name: Laminated veneer lumber (LVL): Versa-Lam®, Versa-Rim®
Plywood: Sheathing
Wood I-Joist: BCI®

Manufacturer/Distributor: Boise Cascade, LLC P.O. Box 62
Boise, ID 83707-0062

Phone Number: 1/800/228-0815

Description: The plywood panel product contains bonded layers of softwood veneer. The laminated veneer lumber is manufactured with all grain parallel with the length of the member. The wood I-joists are manufactured with LVL flanges bonded to either plywood or OSB webs. These products are bonded together with resins that comply with ASTM D2559.

SECTION 2  COMPOSITION, INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>MATERIAL OR COMPONENT</th>
<th>C.A.S. #</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>&lt;0.1% by weight</td>
</tr>
<tr>
<td>Solid Polyurethane Film</td>
<td>Not Applicable</td>
<td>2.67% by weight</td>
</tr>
<tr>
<td>Wood Dust (soft and most hardwoods, except Western Red Cedar, Beech, and Oak)</td>
<td>Not Applicable</td>
<td></td>
</tr>
</tbody>
</table>

Component

<table>
<thead>
<tr>
<th>Formaldehyde</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&lt;0.1% by weight)</td>
<td>0.75 ppm TWA</td>
<td>0.3 ppm ceiling</td>
</tr>
<tr>
<td></td>
<td>2.0 ppm STEL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5 ppm Action Level</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solid Polyurethane Film</th>
<th>Not applicable</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

| Wood Dust                             | 15.0 mg/m³ TWA (Total) | Nonallergenic and noncarcinogenic 2 mg/m³ |
|                                       | 5.0 mg/m³ TWA (Respirable) | Western Red Cedar 0.5 mg/m³ |
|                                       | Other respiratory allergenic wood dust, Birch, Mahogany, Teak, Walnut, Oak and Beech 1 mg/m³ |
SECTION 3  HAZARDS IDENTIFICATION

INHALATION
Dust may cause nasal dryness, irritation, coughing, and sinusitis. Repeated exposures (even below 5 mg/m³) to certain wood dusts can produce allergic responses in some sensitive individuals.

SKIN CONTACT
Both formaldehyde and various species of wood dust may evoke allergic contact dermatitis in sensitized individuals.

SKIN ABSORPTION
Not applicable for product in purchased form.

EYE CONTACT
Dust may cause temporary irritation, mechanical irritation, or a burning sensation to the eyes.

INGESTION
Not applicable for product in purchased form.

WOOD DUST: Wood dust may cause nasal dryness, irritation, and obstruction. Coughing, wheezing, and sneezing; sinusitis and prolonged colds have also been reported.

Depending on species, may cause respiratory sensitization and/or irritation. Wood dust is not classified as a potential cancer hazard by OSHA. The National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) do classify wood dust as a carcinogen to humans (Group 1). This classification is based primarily on IARC’s evaluation of increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. IARC did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon, or rectum with exposure to wood dust.

FORMALDEHYDE: May cause temporary irritation to eyes, nose and throat. Some reports suggest that formaldehyde may cause respiratory sensitization, such as asthma, and the preexisting respiratory disorders may be aggravated by exposure.

Formaldehyde is listed by IARC as a probable human carcinogen. The NTP includes formaldehyde in the Annual Report on Carcinogens. Formaldehyde is regulated by OSHA as a potential cancer agent.

In studies involving rats, formaldehyde has been shown to cause nasal cancer after long-term exposure to very high concentrations (14+ ppm), far above those normally found in the workplace using this product.

The National Cancer Institute (NCI) conducted an epidemiological study of industrial workers exposed to formaldehyde (published June 1986). The NCI concluded that the data provides little evidence that mortality from cancer is associated with formaldehyde exposure at the levels experienced by workers in the study.

Polyurethane Film is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the Occupational Safety and Health Administration.

SECTION 4  FIRST-AID MEASURES

INHALATION
Remove to fresh air. If persistent irritation, severe coughing, or breathing difficulty occurs, get medical attention.

EYE CONTACT
Remove contact lenses (if applicable). Flush eyes, including under
eyelids, with large amounts of water. Remove to fresh air. If irritation persists, get medical attention.

SKIN CONTACT
Wash affected areas with soap and water. If rash or persistent irritation or dermatitis occurs, get medical attention.

INGESTION
Not applicable for product in purchased form.

SECTION 5 FIRE FIGHTING MEASURES

FIRED AND EXPLOSION

FLASH POINT
Not applicable

AUTO IGNITION TEMPERATURE
Dependent upon duration of exposure to heat source and other variables.
400° - 500°F (204° - 260°C)

FLAMMABLE LIMITS IN AIR (% BY VOLUME)
An airborne concentration of 40 grams of dust per cubic meter of air is often used as the lowest explosion limit (LEL) for wood dust.

Formaldehyde
LEL 7% UEL 73%

SPECIAL FIRE FIGHTING PROCEDURES
Burns like other wood products, although it is dangerous and may burn hotter. Partially burned dust is especially hazardous if dispersed into the air. Remove burned or wet dust to an open area after fire is extinguished.

EXTINGUISHING MEDIA
Water, carbon dioxide, sand.
SECTION 6  ACCIDENTAL RELEASE MEASURES

Not applicable for product in purchased form. Sweep or vacuum dust for recovery or disposal. Wood dust cleanup and disposal activities should be accomplished in a manner to minimize creation of airborne dust.

*Appropriate Regulatory Agencies should be notified in the event of an accident.

SECTION 7  HANDLING AND STORAGE

Provide adequate ventilation to reduce the possible buildup of formaldehyde gas, particularly when high temperatures occur. Avoid dusty conditions and provide good ventilation. PF-bonded wood products should not be stored where exposure to water could occur. Wood products are combustible and, therefore, should not be subjected to temperatures exceeding the autoignition temperature.

SECTION 8  EXPOSURE CONTROLS, PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION
  Wear NIOSH-approved respirator when the allowable OSHA exposure limits to wood dust and/or formaldehyde may be exceeded.

EYE PROTECTION
  Recommend goggles or safety glasses as conditions indicate when sawing, sanding, or machining wood products.

SKIN PROTECTION
  Other protective equipment, such as gloves and outer garments, may be needed to reduce skin contact. Wash affected area of the body after contact with dust.

OTHER CLOTHING AND EQUIPMENT
  Not Applicable

ENGINEERING CONTROLS

VENTILATION REQUIREMENTS
  Provide local exhaust, as necessary, to meet OSHA requirements for allowable exposure limits.

OTHER TYPES OF ENGINEERING CONTROLS
  Due to the explosive potential of wood dust when suspended in air, precautions should be taken during sanding, sawing, or machining of wood products to prevent sparks or other ignition sources in ventilation equipment.

SECTION 9  PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM .................................................: Solid
COLOR ......................................................: Light to dark tan. Color and odor are dependent upon wood species.
SECTION 11  TOXICOLOGICAL INFORMATION

WOOD DUST: Wood dust may cause nasal dryness, irritation, and obstruction. Coughing, wheezing, and sneezing; sinusitis and prolonged colds have also been reported.

Depending on species, may cause respiratory sensitization and/or irritation. Wood dust is not considered a potential cancer hazard by OSHA. The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) classifies wood dust as a carcinogen to humans (Group 1). This classification is based primarily on IARC’s evaluation of increased risk in the occurrence of adenocarcinomas of the nasal cavities and paranasal sinuses associated with exposure to wood dust. IARC did not find sufficient evidence to associate cancers of the oropharynx, hypopharynx, lung, lymphatic and hematopoietic systems, stomach, colon, or rectum with exposure to wood dust.

FORMALDEHYDE: May cause temporary irritation to eyes, nose, and throat. Some reports suggest that formaldehyde may cause respiratory sensitization, such as asthma, and the preexisting respiratory disorders may be aggravated by exposure.

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In studies involving rats, formaldehyde has been shown to cause nasal cancer after long-term exposure to very high concentrations (14+ ppm), far above those normally found in the workplace using this product.

The National Cancer Institute (NCI) conducted an epidemiological study of industrial workers exposed to formaldehyde (published June 1986). The NCI concluded that the data provides little evidence that mortality from cancer is associated with formaldehyde exposure at the levels experienced by workers in the study.

Polyurethane film is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the Occupational Safety and Health Administration.

SECTION 12  ECOLOGICAL INFORMATION

Not applicable for product in purchased form.
SECTION 13 DISPOSAL CONSIDERATIONS

This product is not considered hazardous waste under Federal Hazardous Waste Regulations 40 CFR 261. State and local requirements for waste disposal may be different from federal regulations. Incinerate or landfill in accordance with local, state, and federal regulations.

HAZARDOUS WASTE DESIGNATION

Not applicable

SECTION 14 TRANSPORT INFORMATION

DOT (Department of Transportation)

Proper Shipping Name: Phenol-formaldehyde bonded wood products plus a polyurethane film
Hazard Class: Combustible
Identification Number: Not applicable

SECTION 15 REGULATORY INFORMATION

TSCA (Toxic Substance Control Act):

Not applicable for product in purchased form.

CERCLA (Comprehensive Response Compensation and Liability Act):

Not applicable for product in purchased form.

SARA Title III:

Not applicable for product in purchased form.
SECTION 16 OTHER INFORMATION

This fact sheet is for products that have not been finished (coated, laminated, or overlaid) or treated (for example, with preservative or fire retardant).

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 of: TWA - 15.0 mg/m³ (total dust); 5.0 mg/m³ (respirable fraction). 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 noncompliance with the 1989 PELs.

MSDS Status: Updated to new format.

References:
Isoset Adhesive Cured Film MSDS, 05/12/98, Ashland Chemical Company
Isoset CX-47 MSDS, 08/18/98, Ashland Chemical Company
Isoset UX 100 MSDS, 08/20/98, Ashland Chemical Company
Isoset WD3-A320 MSDS, 09/28/98, Ashland Chemical Company
Isoset WD3-A322 MSDS, 01/26/98, Ashland Chemical Company
Polyisocyanate Type 1 MSDS, 08/18/98, Ashland Chemical Company
BB-703 MSDS, 01/26/98, Neste Resins, Canada
Chembond Liquids Phenol Formaldehyde Resin MSDS, 10/01/93, Neste Resins Corporation
Niaproof Anionic Surfactant 08 MSDS, 07/01/97, Van Waters & Rogers Inc.
HM-8266-L & HM-6266-L MSDS(s), 02/10/98 & 03/10/98, Linear Products Inc.
Cascowax EW-585 MSDS, 04/18/97, Borden Chemical Company
Cascofen LT-5210J (Liquid PF Resin) MSDS, 01/11/99, Borden Chemical Company
Cascofen PM-6210S (Paraformaldehyde Catalyst) MSDS, 01/28/97, Borden Chemical Company
Cascofen Resins (Liquid PF Resins) MSDS(s), 05/30/96 through 10/07/98, Borden Chemical Company
Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices for 1998
NIOSH Pocket Guide to Chemical Hazards for June 1997

THIS MATERIAL SAFETY DATA SHEET IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION, AND INVESTIGATION. WHILE THE INFORMATION AND RECOMMENDATIONS SET FORTH HEREIN ARE BELIEVED TO BE CORRECT, THE BOISE CASCADE CORPORATION PROVIDES NO WARRANTIES, EITHER EXPRESSED OR IMPLIED, AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE DATA CONTAINED HEREIN.

Current Issue: 10/02/04
Previous Issue: 01/22/03
MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet meets or exceeds the requirements of the Canadian Controlled Product Regulations (WHMIS) and the United States Occupational Safety and Health Administration (OSHA) hazard communication standard 29 CFR 1910.1200.

1. Product and Supplier Identification

Product: Tolko Industries Ltd. OSB Products

Supplier: Tolko Industries Ltd.

Slave Lake Division, Mitsue Industrial Park, Slave Lake, Alberta, Canada, T0G 2A0
High Prairie Division, Highway 2 West, High Prairie, Alberta Canada, T0G 1E0
Meadow Lake OSB Limited Partnership, 12 km South of Highway 55, On Matchee/Neeb Road, Meadow Lake, Saskatchewan Canada, S9X 1Y2

Emergency Telephone: (780) 849-4333 (780) 523-2101 (306) 236-6565

2. Composition

<table>
<thead>
<tr>
<th>Component</th>
<th>% (w/w)</th>
<th>Exposure Limits</th>
<th>LD$_{50}$</th>
<th>LC$_{50}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood (Trembling Aspen, Poplar, – but not Western Red Cedar) (Meadow Lake OSB also contains Spruce and Pine)</td>
<td>87-95</td>
<td>ACGIH TLV-TWA 1 mg/m$^3$</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ACGIH TLV- STEL 10 mg/m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>See note (a), (c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL-TWA 5 mg/m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL- STEL 10 mg/m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polymeric Diphenylmethane Diisocyanate</td>
<td>1.5 – 4%</td>
<td>ACGIH TLV 0.05 mg/m$^3$ (8 hours/40 hours per week)</td>
<td>&gt; 10000 mg/kg (oral, rat)</td>
<td>490 mg/m$^3$ (aerosol, 4-hour exposure), Respiratory sensitizer</td>
</tr>
<tr>
<td>Polymethylene Polyurethane Polyphenylisocyanate (CAS No 9016-87-9)</td>
<td></td>
<td>OTHER See note (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>See note (c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL-TWA 0.05mg/m$^3$ (10 hours, 40 hours per week)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formaldehyde (CAS No. 50-00-0)</td>
<td>&lt; 0.1</td>
<td>See note (b)</td>
<td>100 mg/kg (oral/rat)</td>
<td>203 mg/m$^3$ (inhalation /rat)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>270 mg/kg (dermal/rabbit)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Non-hazardous ingredients make up the remainder of the product
SECTION 10  STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY
Stable under normal conditions. Wood dust generated from sawing, sanding, or machining the product is extremely combustible. Keep in cool, dry place away from ignition sources.

INCOMPATIBILITY (MATERIALS TO AVOID)
Avoid contact with oxidizing agents and drying oils. Avoid open flame.

HAZARDOUS DECOMPOSITION PRODUCTS
Thermal-oxidation degradative or burning of wood can produce irritating and potentially toxic fumes and gases, including carbon monoxide, aldehydes, organic acids, nitrogen compounds, hydrogen cyanide, and various hydrocarbons.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION
Will not occur.
Canada

(a) The Occupational Health and Safety Regulation has adopted the ACGIH exposure limits. American Conference of Governmental Industrial Hygienists (ACGIH) exposure limits may vary from time to time and from one jurisdiction to another. Check with local regulatory agency for the exposure limits in your area. (The OHS list of allergenic wood dusts includes, but is not limited to Western Red Cedar, California Redwood, Mahogany, and Oak.)

(b) The OSHA ‘Action Level’ is 0.5 ppm based on an 8-hour TWA under 29 CFR 1910.1048. This level is not achieved under normal occupational exposures to this product. The Occupational Health and Safety Regulation’s 8-hour EL is 0.3 mg/m3 with the ALARA (As Low As Reasonably Achievable) designation.

United States

(c) Wood dust is regulated as an organic dust in a category known as “Particles Not Otherwise Regulated” (PNOR), or Nuisance dust. Certain jurisdictions recommend the use of OSHA PEL’s as the standard for exposure in the workplace.

3. Hazards Identification

Hazard Summary: In the short term (acute) both wood dusts and residual formaldehyde, when inhaled, may produce respiratory symptoms and eye nose and throat irritation. Long term (chronic) effects may take on several forms. Repeat contact with wood dust containing residue formaldehyde, may result in lesions in the upper respiratory system. SENSITIZER – MDI may sensitize persons causing chest tightness, wheezing, cough, shortness in breath or asthmatic responses. Once sensitized, the individual can experience these symptoms from exposure to cold, dust, or other irritants.

Routes of Entry: Inhalation and skin contact are the major routes of entry while ingestion and eye contact are likely to be only minor. MDI vapours or mists above the TLV can irritate the mucous membranes in the respiratory tract causing a runny nose, sore throat coughing, chest discomfort, shortness of breath and reduced lung function. Persons with a non-specific bronchial hyperactivity can respond to concentrations below the TLV which may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in the lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis with flu like symptoms has also been reported. sneezing, coughing, rhinorrhea, fever, muscular aches and pains, laboured breathing, naso-pharyngitis, laryngitis, and bronchitis. Wood dust can mechanically irritate the eyes and skin. Damage to the cornea may occur. Areas most commonly affected are the face, eyelids, hands, and forearms. Wood dust can deposit in and even obstruct nasal passages resulting in dryness of the nose, cough, and headache. Splinters from some softwoods may produce septic wounds that may take an extremely long time to heal.

Chronic Health Effects: Dermatitis may result from prolonged or repetitive skin contact. Some individuals can become sensitized upon prolonged or repeated exposure to wood dusts and formaldehyde. Inhalation may aggravate pre-existing respiratory conditions or allergies. Repeated or prolonged inhalation may result in asthma and/or rhinitis. These conditions may be attributed to the irritation of wood dust itself or may be due to the presence of biologically active chemical agents. Cases of pulmonary fibrosis have been reported in individuals with long-term exposure to wood dust. Woods can be contaminated with saprophytic fungus that can cause an allergic condition called hypersensitivity pneumonitis that can lead to pulmonary damage over prolonged periods of time. Repeated or prolonged exposure to the eyes can cause conjunctivitis.

In June, 2004 IARC (The International Agency for Research on Cancer) concluded that there is sufficient information to classify formaldehyde as a human carcinogen. Evidence has shown that formaldehyde can cause a relatively rare form of cancer (nasopharyngeal cancer). IARC has also found that there is limited evidence that formaldehyde may cause certain types of leukaemia.

The Occupational Health and Safety Regulation rates non-allergenic softwood dust as a 'confirmed human carcinogen'. Wood dust is listed by IARC as a Group 1 carcinogen.
4. First Aid Measures

EYE CONTACT: Treat dust as ‘foreign object’. Flush contaminated eye(s) with lukewarm, gently running water for 15 minutes, or until dust particles are removed. Seek medical attention if irritation persists.

SKIN CONTACT: Flush contaminated area(s) with lukewarm, gently flowing water for 5 minutes, or until dust is removed. Remove contaminated clothing. Seek medical attention if irritation develops.

INHALATION: Remove victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, a trained person should perform artificial respiration. Get medical attention immediately.

INGESTION: Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to avoid aspiration. Seek medical attention.

5. Fire Fighting Measures

Flash point: Not available.
Autoignition temperature: 204°C (400°F)
Lower Flammability Limit: 40 g/m³ dust
Upper Flammability Limit: Not applicable.
Sensitivity to Impact: Not sensitive.
Sensitivity to Static Discharge: Yes, if dust concentration exceeds the LEL (Lower Flammability Limit)

Hazardous Combustion Products: Thermal oxidative degradation of wood produces irritating and toxic smoke and gases. These include carbon monoxide, aldehydes, terpenes, carbon particulate, organic acids, and polycyclic and aromatic hydrocarbons.

Extinguishing Media: Water spray is an effective agent. Carbon dioxide and sand are also effective.

Fire Fighting Instructions: Wood dust poses a strong to severe explosion hazard in the presence of an ignition source. Particle size and water content are key parameters. Wood dusts may ignite at temperatures in excess of 204°C. Use water spray to wet wood dusts. Normal fire fighting procedures must be followed to avoid inhalation of smoke and gases and to reduce exposure to heat and flame.

6. Accidental Release Measures

Personal Protection: Wear appropriate personal protective equipment.

Environmental Precautions: Not applicable.

Cleanup Procedures: Vacuum dusts. Do not dry sweep. If sweeping is necessary, control dust with water. Do not use compressed air for clean-up.

7. Handling and Storage

Handling Procedures: Avoid generation of dusts. Use good housekeeping practices.

Storage: Avoid excessive heat, open flames, and other sources of ignition. Avoid contact with oxidizing agents.
8. Exposure Controls, Personal Protection

**Engineering Controls:** Use general and local exhaust ventilation to limit exposures below the exposure limits. These controls may be augmented by the use of process or personnel enclosures, control of process conditions, or by process modification. The presence of formaldehyde requires that exposures be kept as low as reasonably achievable.

**Respiratory Protection:** If respiratory protection is warranted, a NIOSH (National Institute for Occupational Safety and Health) approved respirator with an efficiency rating of N95 or higher must be used. (See 42 CFR 84). Use of these high efficiency respirators should minimize respiration of MDI, since these contaminants are bonded to the wood particles.

**Skin Protection:** It is good practice to limit skin contact. Wear coveralls or other suitable work clothes, protective leather or cotton gloves, and safety boots. Contaminated clothing should be laundered before reuse.

**Eye and Face Protection:** Eye protection is required. Chemical safety goggles are recommended. The wearing of contact lenses is not recommended.

**Other:** Have a safety shower and eye wash station readily available.

9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Wood paneling</td>
</tr>
<tr>
<td>Odour</td>
<td>Slightly aromatic.</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>Extremely low.</td>
</tr>
<tr>
<td>Solubility</td>
<td>&lt; 0.1% in water.</td>
</tr>
<tr>
<td>Vapour Density</td>
<td>Various</td>
</tr>
<tr>
<td>Melting Point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Critical Temperature</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Relative Density</td>
<td>0.40 – 0.80</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

**Chemical Stability:** Product is stable.

**Incompatibility:** Avoid contact with strong acids, strong bases, flammables, oxidizers, and temperatures in excess of 200°C.

**Hazardous Decomposition Products:** Thermal oxidative degradation of wood produces irritating and toxic smoke and gases. These include carbon monoxide, aldehydes, terpenes, carbon particulate, organic acids, and polycyclic and aromatic hydrocarbons.

**Hazardous Polymerization:** Hazardous polymerization will not occur.

11. Toxicological Information

<table>
<thead>
<tr>
<th>Exposure Type</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Exposure</td>
<td>No specific toxicological data is available. See Section 3</td>
</tr>
<tr>
<td>Chronic Exposure</td>
<td>See Section 3.</td>
</tr>
<tr>
<td>Exposure Limits</td>
<td>See Section 2.</td>
</tr>
<tr>
<td>Irritancy</td>
<td>See Section 3.</td>
</tr>
<tr>
<td>Sensitization</td>
<td>See Section 3.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>See Section 3.</td>
</tr>
<tr>
<td>Teratogenicity</td>
<td>Not reported.</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not reported.</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Not reported.</td>
</tr>
<tr>
<td>Synergistic products</td>
<td>None reported.</td>
</tr>
</tbody>
</table>
12. Ecological Information

Environmental toxicity: No data available.

Biodegradability: No data available.

13. Disposal Considerations

Canadian Environmental Protection Act: Not a hazardous waste as sold. Comply with all provincial and local regulations. Incineration or dry-land disposal is acceptable in most jurisdictions.

Resource Conservation and Recovery Act (RCRA): Not a United States Environmental Protection Agency (EPA) hazardous waste as sold. Comply with all state and local regulations. Incineration or dry-land disposal is acceptable in most jurisdictions.

14. Transport Information


15. Regulatory Information

Canadian Federal Regulations:

Canadian Environmental Protection Act: Formaldehyde is listed on the Domestic Substances List.

WHMIS Classification: Wood Products are not Controlled Products.

United States Federal Regulations:

Toxic Substances Control Act: All ingredients are listed in the inventory.

OSHA: Not a Hazardous Substance under 29 CFR Section 1910, Subpart Z

CERCLA: Not a Hazardous Substance under 40 CFR Part 302

SARA 313: Not subject to the reporting requirements of 40 CFR Part 372

SARA 311/312 EPA Hazard Categories: Delayed (chronic) health, Immediate (acute) health.

SARA 302: No ingredients subject to 40 CFR Part 355.

16. Other Information

Initial Preparation Date: March 16, 2006

Prepared by: Kel-Ex Agencies Ltd. from information provided by Tolko Industries Ltd. and the CCINFO Data Base

Revisions: None
HEALTH HAZARD DATA

Permissible Exposure Limit: None established.

Effects of Overexposure: May cause skin or eye irritation upon contact. Avoid breathing vapors. The dense vapors can displace and reduce breathing air in confined or unventilated spaces causing asphyxiation. Overexposure may cause tremors, confusion, irritation, and may result in cardiac sensitization.

First Aid Procedures

Eyes: Flush with water for at least 15 minutes. See a physician if irritation develops.
Skin: Wash with soap and water at first opportunity.
Inhalation: Move to fresh air if symptoms develop. If breathing is difficult, give oxygen and call physician.
Ingestion: Induce vomiting; get medical attention.

SPECIAL PROTECTION INFORMATION

Ventilation: Local exhaust ventilation is recommended when working with this product. Uses requiring heating and/or spraying may require more ventilation or personal protective equipment.

Respiratory Protection: The specific respirator selected must be based on contamination levels of this material found in the workplace and the working limits of the respirator. A supplied air, full-face mask, positive pressure or continuous flow respirator or a supplied air hood is required when airborne concentrations are unknown or exceed threshold limit values. A positive pressure, self contained breathing apparatus can be used in emergencies or other unusual situations. Full-face air purifying respirators equipped with organic vapor cartridges can be used in certain situations, see OSHA standard 29CFR 1910.134. All equipment must be NIOSH approved and maintained.

Eye Protection: Goggles or chemical safety glasses.
Gloves: Chemically resistant rubber or plastic.
Other: Avoid eye and skin contact. Eye wash system and showers should be available.

SPILL OR LEAK PROCEDURES

Remove or extinguish ignition or combustion sources.
Contain spill. Absorb with sawdust, etc., and shovel into container. Waste material should be disposed of under conditions which meet federal, state, and local environmental regulations.
Wash area with detergent and water.

SPECIAL PRECAUTIONS

Store between 65°F and 85°F out of sunlight. Keep tightly sealed. Relieve pressure slowly when opening container.
R Component drums can be sent to drum reconditioners or disposed of as ordinary industrial waste in compliance with pertinent regulations.

CAUTION: Under no circumstances should empty drums be burned or cut open with an electric or gas torch.