

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):

CHEMICAL NAMES:

PRODUCT USE:

SYNONYMS:

U.N. NUMBERS:

U.N. DANGEROUS GOODS CLASS/SUBSIDIARY RISK:

HAZCHEM CODE (AUSTRALIA):

POISONS SCHEDULE NUMBER (AUSTRALIA):

SUPPLIER/MANUFACTURER'S NAME (USA/Canada):

ADDRESS:

EMERGENCY PHONE:

SAFETY COORDINATOR:

BUSINESS PHONE:

SUPPLIER/IMPORTER'S NAME (Europe):

ADDRESS:

EMERGENCY PHONE:

BUSINESS PHONE:

SUPPLIER/IMPORTER'S NAME (Australia):

ADDRESS:

EMERGENCY PHONE:

BUSINESS PHONE:

SUPPLIER/IMPORTER'S NAME (New Zealand):

ADDRESS:

EMERGENCY PHONE:

BUSINESS PHONE:

UREA/FORMALDEHYDE-FREE ENVIRONMENTAL CLASS DOORS

Doors Constructed of Wood with Plastic, Paper, Metal or Composite Veneer
Overlays to a Urea/Formaldehyde-Free Composite Wood Core

Various Construction Uses

ECLUF, ECLUF-20PP, ECLUF-20PPFM; EFMUF-45PP, EFMUF-60PP,
EFMUF-90PP; EPCUF SW-COC-675, EPCUF-20PP SW-COC-675, EPCUF-
20PPAF SW-COC-675, EPCUF-20PPFM SW-COC-675; ESCUF SW-COC-
675, ESCUF-20PP SW-COC-675; ESCUF-20PPAF SW-COC-675, ESCUF-
20PPFM SW-COC-675

None

None

None

Not Applicable

MARSHFIELD DOORSYSTEMS, INC.

1401 East Fourth Street, PO Box 7780

Marshfield, WI 54449-7780

01-(715) 486-2278 (U.S. and International)

1-(715) 486-2330

1-(715) 384-2141 (U.S. and International)

1-(800) 869-3667 (U.S./Canada Only)

ALL Canadian WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2004 format. These products have been classified in accordance with the hazard criteria of the CPR. The MSDS also includes all required information under European Union Directives for MSDS preparation.

NOTE: These products are "Articles" under the U.S. Federal OSHA Hazard Communication Standard (29 CFR 1910.1200), EU Directives, and the Canadian Workplace Hazardous Materials Standard. Refer to Section 15 (Regulatory Information) for specific regulatory citations. As articles, these products present negligible health and physical hazards under reasonably anticipated circumstances of use. Subsequently, a Material Safety Data Sheet is not required for these products under Standards cited above. This document is prepared to provide persons using these products with additional safety information.

2. HAZARD IDENTIFICATION

EU LABELING/CLASSIFICATION: As Articles, these products do not meet the definition of any hazard class as defined by the European Union Council Directives.

EMERGENCY OVERVIEW: Product Description: These products are mostly wood doors made from gluing various wood, plastic, paper, metal or composite veneer overlays to a urea/formaldehyde-free composite wood core and that come in a variety of grains and hues. These doors are comprised mostly of wood. The wood component of these products may consist of alder, aspen, beech, birch, cottonwood, fir, gum, hemlock, hickory, maple, oak, pecan, pine, poplar, spruce, walnut, and/or western red cedar. A formaldehyde-free, thermal-curing, catalyzed resin is blended with the wood fiber, wax is also blended with the wood particles and acts as a sizing agent to control thickness swell. **Health Hazards:** These products are considered manufactured articles and present negligible health hazards under typical use conditions. If these products are cut, sanded or otherwise manipulated so that dusts or particles may be produced, inhalation can cause irritation of the respiratory system. Eye irritation may also occur. Handling the doors without gloves may lead to cuts and wood splinters. Some types of woods used in these products can cause allergic skin respiratory reactions. **Flammability Hazards:** As these products are formed of wood, paper, resin and wax, they can ignite if exposed to flame. During a fire involving these products care should be taken to avoid inhalation of fumes. **Reactivity Hazards:** Negligible. **Environmental Hazards:** Negligible. **Emergency Considerations:** Emergency responders must wear the proper personal protective equipment (and have appropriate fire-suppression equipment) suitable for the situation to which they are responding.

3. COMPOSITION and INFORMATION ON INGREDIENTS

These doors are manufactured mostly of wood – the doors are manufactured by gluing various wood, plastic, paper, metal or composite veneer overlays to a urea formaldehyde-free composite wood core. Adhesives used in the manufacturing process are formaldehyde-free adhesives. Most doors are then sanded, stained and sealed (factory-finished) to customer specifications. If these products are cut, sanded or otherwise manipulated in such a way that will generate dusts or particles, exposure to components and to wood dust and particles is possible.

CHEMICAL NAME	CAS #	EINECS #	AICS Inventory Listing	Japanese ENC #	Korean ECL #	% w/w	EU CLASSIFICATION FOR COMPONENTS
Paraffin Wax Emulsion	Proprietary Mixture	Not Applicable	Not Applicable	Not Applicable	Not Applicable	1.0	Hazard Classification: Not classified. Risk Phrases: Not classified.
Urea/Formaldehyde-Free Adhesive Mixture	Proprietary Mixture	Not Applicable	Not Applicable	Not Applicable	Not Applicable	5.0-12.0	Hazard Classification: Not classified. Risk Phrases: Not classified.
Paper/Wood/Plastic/Melamine Mixture	Proprietary Mixture	Not Applicable	Not Applicable	Not Applicable	Not Applicable	17.0	Hazard Classification: Not classified. Risk Phrases: Not classified.
Wood (Mixture of Hardwoods and Softwoods)	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	70.0-77.0	Hazard Classification: Not classified. Risk Phrases: Not classified.

See Section 16 for full text of any applicable Ingredient Risk Phrases

4. FIRST-AID MEASURES

If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Take a copy of label and MSDS to physician or health professional with the contaminated individual.

SKIN EXPOSURE: If adverse skin effects occur, discontinue use and flush contaminated area. Seek medical attention if adverse effect occurs after flushing.

EYE EXPOSURE: If dusts or particles from these products contaminate the eyes, rinse eyes under gently running water. Do not allow contaminated individual to rub eyes. Use sufficient force to open eyelids and then "roll" eyes while flushing. Minimum flushing is for 15 minutes. Seek medical attention.

INHALATION: If dusts or particulates from these products are inhaled remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention.

INGESTION: If dusts or particulates from these products are swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, DO NOT INDUCE VOMITING. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If victim is convulsing, maintain an open airway and obtain immediate medical attention.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory or skin conditions may be aggravated by exposure to dusts or particulates from these products.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate exposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not determined.

AUTOIGNITION TEMPERATURE: 400-500°F (204-260°C) for wood

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable. **Upper (UEL):** Not applicable.

FIRE EXTINGUISHING MATERIALS: The following extinguishing materials are recommended for fires involving these products.

Water Spray: OK

Foam: OK

Halon: OK

Carbon Dioxide: OK

Dry Chemical: OK

Other: Any "ABC" Class

FIRE EXTINGUISHING MATERIALS NOT TO BE USED: None known.

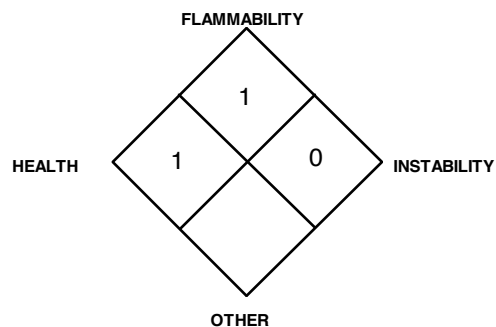
UNUSUAL FIRE AND EXPLOSION HAZARDS: If involved in a fire, these products will ignite and burn, producing smoke and toxic compounds.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: These products are not sensitive to static discharge, however if highly dusty conditions are created while the product is sanded or otherwise manipulated, a severe hazard of an air/dust explosion may occur. Depending on moisture content and, more importantly, particle diameter, wood dust may explode in the presence of an ignition source. An airborne concentration of 40 grams (40,000 mg) of dust per cubic meter of air is often used as the LEL for wood dust.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus (SCBA) and full protective equipment. Move containers from fire area if it can be done without risk to personnel. Water spray can be used to cool fire-exposed containers. Water fog or spray can also be used by trained firefighters to disperse these products' vapors and to protect personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING



Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Due to the form of these products, there is no hazard of a release. Waste doors can be disposed of as non-hazardous waste materials. Dispose of in accordance with appropriate U.S. Federal, State, and local regulations or with regulations of the EU and its member states, Australia, New Zealand, Japan, or Canada and its Provinces.

7. HANDLING and USE

WORK PRACTICES AND HYGIENE PRACTICES: Do not eat, drink, smoke, or apply cosmetics while handling these products. Wash hands thoroughly after handling these products or containers of these products. Avoid breathing dusts generated by these products if cut, sanded or otherwise manipulated. Use in a well-ventilated location. Follow SPECIFIC USE INSTRUCTIONS supplied with these products.

STORAGE AND HANDLING PRACTICES: Employees must be trained to properly use these products. Keep away from heat, sparks, and other sources of ignition. Do not cut or sand doors in unventilated areas. Store in a cool, dry, ventilated area away from sources of heat or flame and away from material with which it is incompatible (see Section 10, Stability and Reactivity). Storage areas should be made of fire resistant materials. Post warning and "NO SMOKING" signs in storage and use areas as appropriate. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers).

SPECIFIC USES: These products are used in construction.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Normal room ventilation should be sufficient during normal use and handling. If necessary, refer to Australian National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC: 2007 (1994)] for further information.

EXPOSURE LIMITS/GUIDELINES: These products are solid articles consisting of solid, pressed-wood doors with a resin-based adhesive. As manufactured, exposure to individual components is not expected. If these products are cut, sanded or otherwise manipulated in such a way that dusts will be produced, the following exposure limits may be applicable.

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELS		NIOSH	OTHER
		TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	mg/m ³
Paper-Cellulose	9004-34-6	10	NE	15 (total dust); 5 (respirable fraction)	NE	10 (total dust); 5 (respirable fraction)	NE	NE	NE
Melamine	108-78-1	NE	NE	NE	NE	NE	NE	NE	AIHA WEEL: TWA = 10 (inhalable fraction); 5 (respirable fraction) Carcinogen: IARC-3
Paraffin Wax (fume)	8002-74-2	2	NE	2 (vacated 1989 PEL)	NE	2	NE	NE	NE
Wood Dusts, Softwood	Not Applicable	NE	NE	5 (vacated 1989 PEL)	10 (vacated 1989 PEL)	1	NE	NE	Carcinogen: MAK-3B, NIOSH-Ca, NTP-K
Wood Dusts, Beech and Oak	Not Applicable	1 (inhalable fraction)	NE	5 (vacated 1989 PEL)	10 (vacated 1989 PEL)	1	NE	NE	Carcinogen: MAK-3B, NTP-K, TLV-A2
Wood Dusts, Birch, Mahogany, Teak, Walnut	Not Applicable	1 (inhalable fraction)	NE	5 (vacated 1989 PEL)	10 (vacated 1989 PEL)	1	NE	NE	Carcinogen: MAK-! NTP-K, TLV-A1
Wood Dusts, Western Red Cedar	Not Applicable	0.5 (inhalable fraction) SEN	SEN	NE	NE	NE	NE	NE	DFG MAK: Danger of Sensitization of the Airways and the Skin Carcinogen: MAK-3B, NIOSH-Ca, NTP-K, TLV-A4
Wood Dusts, All Other Species	Not Applicable	1 (inhalable fraction)	NE	5 (vacated 1989 PEL)	10 (vacated 1989 PEL)	NE	NE	NE	Carcinogen: TLV-A4, NTP-K

NE = Not Established. SEN – Sensitization See Section 16 for Definitions of Terms Used.

INTERNATIONAL OCCUPATIONAL EXPOSURE LIMITS: Currently, the following international exposure limits are established for wood dusts and other components. The limits presented may not be the most current; please check with competent authority in each country for most recent limits in place for components.

CELLULOSE:

Australia: TWA = 10 mg/m³, JAN 1993
 Belgium: TWA = 10 mg/m³, JAN 1993
 France: VME = 10 mg/m³, JAN 1999
 Mexico: TWA = 10 mg/m³, STEL = 20 mg/m³, 2004
 The Netherlands: MAC-TGG = 2 mg/m³, 2003
 Russia: STEL = 10 mg/m³, JUN 2003
 Switzerland: MAK-W = 6 mg/m³, JAN 1999
 United Kingdom: TWA = 10 mg/m³ (inhalable), 2005
 United Kingdom: TWA = 4 mg/m³; STEL = 20 mg/m³ (respirable), 200
 In Argentina, Bulgaria, Colombia, Jordan, Korea, New Zealand, Singapore, Vietnam, New Zealand, Singapore, Vietnam check ACGIH TLV

MELAMINE:

Russia: STEL = 0.5 mg/m³, JUN 2003

WOOD DUSTS:

Austria: TRK = 2 mg/m³ (inhalable), JAN 2006
 Denmark: TWA = 2 mg/m³ (total), OCT 2002
 EC: TWA = 5 mg/m³ (inhalable), APR 2004
 Sweden: TWA = 2 mg/m³, Carcinogen, JAN1999
 Switzerland: MAK-W = 2 mg/m³ (hard wood), JAN1993
 Switzerland: MAK-W = 5 mg/m³ (soft wood), JAN1993
 Turkey: TWA 10 mg/m³ (soft wood), JAN1993
 United Kingdom: TWA = 5 mg/m³ (sen), 2005
 In Argentina, Bulgaria, Colombia, Jordan, Korea, New Zealand, Singapore, Vietnam check ACGIH TLV
WOOD DUSTS, SOFTWOOD:
 Mexico: TWA = 5 mg/m³; STEL = 10 mg/m³, 2004
 United Kingdom: TWA = 5 mg/m³ (sen), 2005

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132), equivalent standards of Canada (including CSA Standard Z94.4-02 and CSA Standard Z94.3-02), standards of EU member states (including EN 529:2005 for respiratory PPE, CEN/TR 15419:2006 for hand protection, and CR 13464:1999 for face/eye protection), or standards of Australia (including AS/NZS 1715:1994 for respiratory PPE, AS/NZS 4501.2:2006 for protective clothing, AS/NZS 2161.1:2000 for glove selection, and AS/NZS 1336:1997 for eye protection). Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: A respirator is not required for routine conditions of use of these products. In conditions of use where dusts are produced, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-02, the European Standard EN 529:2005, and EU member state standards, the Australian Standard 1716-Respiratory Protective Devices and Australian Standard 1715-Selection, Use, and Maintenance of Respiratory Protective Devices, New Zealand standards, or Japanese standards. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). The following are NIOSH respiratory protection equipment guidelines for Wood Dusts.

WOOD DUSTS

CONCENTRATION

At Concentrations Above the NIOSH REL, or Where There Is No REL, At Any Detectable Concentration: Any Self-Contained Breathing Apparatus (SCBA) that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode, or any Supplied-Air Respirator (SAR) that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in pressure-demand or other positive-pressure mode.

Escape: Any Air-Purifying, Full-Facepiece Respirator with a high-efficiency particulate filter, or any appropriate escape-type, SCBA.

RESPIRATORY PROTECTION

EYE PROTECTION: Not normally needed during normal use. In conditions where dusts or other particulates may be produced, wear protective eyewear. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian CSA Standard Z94.3-02, or the European Standard CR 13464:1999, the Australian Standard 1337-Eye Protection for Industrial Applications and Australian Standard 1336-Recommended Practices for Eye Protection in the Industrial Environment, New Zealand standards, or Japanese standards.

HAND PROTECTION: Wear leather or other type glove that can protect against abrasion and splinters when handling these products. If necessary, refer to U.S. OSHA 29 CFR 1910.138, appropriate Standards of Canada, the Australian Standard 2161-Industrial Safety Gloves and Mittens and the European Standard CEN/TR 15419:2006, New Zealand standards, or Japanese standards.

BODY/SKIN PROTECTION: Not normally needed during normal use. If a hazard of flying particles or wood chips is possible, a construction-type apron or other type of clothing may be prudent. If necessary, refer to appropriate Standards of Canada, the European Standard CEN/TR 15419:2006, Australian Standard 3765-Clothing for Protection Against Hazardous Chemicals, New Zealand standards, or Japanese standards. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136 and the Canadian CSA Standard Z195-02, *Protective Footwear*.

9. PHYSICAL and CHEMICAL PROPERTIES

BOILING POINT: Not applicable.

FREEZING/MELTING POINT: Not applicable.

EVAPORATION RATE (water = 1): Not applicable.

SOLUBILITY IN WATER: Not applicable.

VAPOR PRESSURE (air = 1): Not applicable.

DENSITY: Not applicable.

ODOR THRESHOLD: Not applicable.

pH: Not applicable.

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

APPEARANCE, ODOR, AND COLOR: These products are solid, pressed-wood, particleboard core doors with a door face of wood, paper, plastic, melamine, a resin adhesive and wax that come in a variety of grains and hues and have a slight aromatic odor.

HOW TO DETECT THIS SUBSTANCE (warning properties in event of accidental release): These products do not present a hazard of release.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Depending on moisture content, availability of oxygen, and temperature, thermal decomposition products include carbon monoxide, water, various aldehydes (both aliphatic and aromatic), tars, and carbon.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Because these doors are combustible, they are not compatible with strong oxidizing agents.

HAZARDOUS POLYMERIZATION: Will not occur.

10. STABILITY and REACTIVITY (Continued)

CONDITIONS TO AVOID: Avoid exposure to or contact with sparks, flames, other sources of ignition, extreme temperatures, and incompatible chemicals.

11. TOXICOLOGICAL INFORMATION

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: As manufactured, these products pose minimal health hazard. If cut, sanded or otherwise manipulated to form dusts, inhalation and eye contact may cause irritation.

INHALATION: Wood dusts may be irritating to the nose, throat and respiratory system. Symptoms can include nasal dryness, coughing, sneezing, sinusitis, headaches, and prolonged colds. Inhalation of large amounts of dusts can cause chest pains and chemical pneumonitis. Dusts from some species of wood can cause respiratory sensitization and allergic reaction in susceptible individuals. Symptoms can include sneezing, coughing, wheezing and respiratory distress. Once sensitized, exposure to very small amounts of dust lead to allergic reaction.

CONTACT WITH SKIN or EYES: Dusts particles and wood splinters can be irritating or damaging to eye tissue. Dusts of this product can be mildly irritating to contaminated skin. Splinters from the wood can puncture skin tissue. Splinters that remain in the skin or eyes can cause infection. These products may contain types of wood which are known to cause sensitization and allergic skin reaction in sensitive individuals. Symptoms can include redness, itching and welts.

SKIN ABSORPTION: These products do not present any hazard of skin absorption.

INGESTION: Ingestion is not a likely route of exposure to these products. Though this is not an anticipated route of occupational exposure, ingestion of large volumes of dusts or wood fibers can be highly toxic by ingestion. Such exposure may result in nausea, vomiting, severe abdominal distress/pain and diarrhea. Blood may appear in vomit or stools.

INJECTION: Injection is not a likely route of exposure to these products.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**. Overexposure to these products may cause the following health effects:

Acute: Inhalation of wood dusts can cause irritation. Eye contact with wood dusts or particles can cause irritation or damage to the eyes. Ingestion of dusts or wood fiber can be harmful or fatal.

Chronic: Exposure to wood dusts may cause respiratory and skin sensitization. Chronic inhalation exposure may cause permanent damage to the lungs.

TARGET ORGANS: ACUTE: Skin (mechanical injury). Respiratory system, eyes (dust exposure). CHRONIC: Respiratory system, skin.

TOXICITY DATA: As an article, these products do not present a health hazard by inhalation, ingestion, or skin contact. The following animal toxicological data are available for wood dusts, cellulose and melamine.

CELULOSE:

LC₅₀ (Inhalation-Rat) > 5800 mg/m³/4 hours
LD₅₀ (Oral-Rat) > 5 gm/kg
LD₅₀ (Intraperitoneal-Rat) > 31,600 mg/kg
LD₅₀ (Skin-Rabbit) > 2 gm/kg

MELAMINE:

Standard Draize Test (Eye-Rabbit) 500 mg/24 hours:
Mild
LC₅₀ (Inhalation-Rat) 3248 mg/m³
LD₅₀ (Oral-Rat) 3161 mg/kg
LD₅₀ (Oral-Mouse) 3296 mg/kg
LD₅₀ (Skin-Rabbit) > 1 gm/kg

WOOD DUSTS:

TDLo (Intratracheal-Rat) 7000 mg/kg/4 weeks-intermittent: Lungs, Thorax, or Respiration: other changes
TCLo (Inhalation-Rat) 1683.5 mg/kg/13 weeks-intermittent: Lungs, Thorax, or Respiration: consolidation, (interstitial)

IRRITANCY OF PRODUCT: Dusts potentially generated by cutting or sanding of these products may cause irritation of the respiratory system and eyes.

SENSITIZATION OF PRODUCT: Some types of woods used in these products can cause allergic skin respiratory reactions.

SUSPECTED CANCER AGENT: The components of these products are listed by agencies tracking the carcinogenic potential of chemical compounds as follows:

MELAMINE: IARC-3 (Unclassifiable as to Carcinogenicity in Humans)

WOOD DUSTS, BEECH and OAK: ACGIH TLV-A1 (Confirmed Human Carcinogen); MAK-1 (Substances that Cause Cancer in Man and Can Be Assumed to Make a Significant Contribution to Cancer Risk); NIOSH-Ca (Potential Occupational Carcinogen, with No Further Categorization); NTP-K (Known to Be a Human Carcinogen)

WOOD DUSTS, BIRCH, MAHOGANY, TEAK, WALNUT: ACGIH TLV-A2 (Suspected Human Carcinogen-human data are accepted as adequate in quality, but are conflicting or insufficient to classify the agent as a confirmed human carcinogen, OR the agent is carcinogenic in experimental animals at does(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure); MAK-3B (Unclassifiable as to Carcinogenicity in Humans); NIOSH-Ca (Potential Occupational Carcinogen, with No Further Categorization); NTP-K (Known to Be a Human Carcinogen)



HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD	(BLUE)	1
---------------	--------	---

FLAMMABILITY HAZARD	(RED)	1
---------------------	-------	---

PHYSICAL HAZARD	(YELLOW)	0
-----------------	----------	---

PROTECTIVE EQUIPMENT

EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		SEE SECTION 8

For Routine Industrial Use and Handling Applications

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe * = Chronic hazard

11. TOXICOLOGICAL INFORMATION (Continued)

SUSPECTED CANCER AGENT (continued):

WOOD DUSTS, SOFTWOOD: MAK-3B (Unclassifiable as to Carcinogenicity in Humans); NIOSH-Ca (Potential Occupational Carcinogen, with No Further Categorization); NTP-K (Known to Be a Human Carcinogen)

WOOD DUSTS, WESTERN RED CEDAR: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen); MAK-3B (Unclassifiable as to Carcinogenicity in Humans); NIOSH-Ca (Potential Occupational Carcinogen, with No Further Categorization); NTP-K (Known to Be a Human Carcinogen)

WOOD DUSTS, ALL OTHER SPECIES: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen); NTP-K (Known to Be a Human Carcinogen)

The remaining components of these products are not found on the following lists: U.S. EPA, U.S. NTP, U.S. OSHA, U.S. NIOSH, GERMAN MAK, IARC, and ACGIH and therefore are neither considered to be nor suspected to be cancer-causing agents by these agencies.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects these products and their components on human and animal reproductive systems.

Mutagenicity: Due to the form of these products, they are not anticipated to produce mutagenic effects in humans.

Embryotoxicity: Due to the form of these products, they are not anticipated to produce embryotoxic effects in humans.

Teratogenicity: Due to the form of these products, they are not anticipated to cause teratogenic effects in humans.

Reproductive Toxicity: Due to the form of these products, they are not anticipated to cause reproductive effects in humans.

*A **mutagen** is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An **embryo toxin** is a chemical that causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A **teratogen** is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A **reproductive toxin** is any substance that interferes in any way with the reproductive process.*

ACGIH BIOLOGICAL EXPOSURE INDICES (BEIs): ACGIH Biological Exposure Indices (BEIs) are not applicable to these products.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: As wood products, these doors will decompose in the environment, although at a slower rate than natural wood due to resin and wax present.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: These products are not anticipated to cause harm to plants and animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: These products are not anticipated to cause harm to an aquatic environment.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: These doors may be disposed of as non-hazardous waste. Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Check with the competent authority in your area for specific guidance on disposal.

U.S. EPA WASTE NUMBER: Not applicable.

EUROPEAN EWC WASTE CODES: 03 01 05: Wastes from Wood Processing and the Production of Panels and Furniture, Pulp, Paper and Cardboard: sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION 49 CFR 172.101: These products are NOT classified as Dangerous Goods, per regulations of the DOT.

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: These products are NOT classified as Dangerous Goods, per regulations of Transport Canada.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA): These products are NOT as dangerous goods under rules of IATA.

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION: These products are NOT classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): These products are NOT classified by the United Nations Economic Commission for Europe to be dangerous goods.

AUSTRALIAN FEDERAL OFFICE OF ROAD SAFETY CODE FOR THE TRANSPORTATION OF DANGEROUS GOODS BY ROAD OR RAIL: These products are NOT classified as dangerous goods, per regulations of the Federal Office of Road Safety.

15. REGULATORY INFORMATION

UNITED STATES REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: As formed articles, these products are not subject to SARA reporting requirements.

U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21): ACUTE: No; CHRONIC: No; FIRE: Yes; REACTIVE: No; SUDDEN RELEASE: No

15. REGULATORY INFORMATION (Continued)

UNITED STATES REGULATIONS (continued):

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. TSCA INVENTORY STATUS: These products are articles and are not subject to the requirements of TSCA.

OTHER U.S. FEDERAL REGULATIONS: This product meets the definition of an "Article" under the U.S. Federal OSHA Hazard Communication Standard (29 CFR 1910.1200). For further information, the definition of "Article" is provided below.

Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No component of this product is on the CA Proposition 65 Lists.

ANSI LABELING (Z129.1): These are manufactured articles; no label information is required under OSHA 29 CFR 1910.1200 or ANSI Z400.1 to address the chemical hazards.

CANADIAN REGULATIONS:

CANADIAN DSL INVENTORY: These are manufactured items and are not subject to the DSL requirements under CEPA.

OTHER CANADIAN REGULATIONS: These products meet the definition of an article under WHMIS Regulations (Hazardous Products Act, 6 & 7, Part II (Sections 11 and 12)).

CANADIAN ENVIRONMENTAL PROTECTION AGENCY (CEPA) PRIORITIES SUBSTANCES LISTS: Not available.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: Not applicable.

EUROPEAN UNION REGULATIONS:

EU LABELING/CLASSIFICATION: As Articles, these products do not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC.

EU CLASSIFICATION: Not applicable. EU RISK PHRASES: Not applicable.

EU SAFETY PHRASES: Not applicable. EUROPEAN UNION ANNEX II HAZARD SYMBOL: Not applicable.

AUSTRALIAN REGULATIONS:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: Not applicable.

HAZARDOUS SUBSTANCES INFORMATION SYSTEM (HSIS) CLASSIFICATION: As Articles, these products do not meet the definition of any hazard class.

RISK PHRASES: Not applicable. SAFETY PHRASES: Not applicable.

POISONS SCHEDULE NUMBER: Not applicable.

NEW ZEALAND REGULATIONS:

HAZARDOUS SUBSTANCES AND NEW ORGANISMS ACT (1996): Not applicable to manufactured articles.

JAPANESE REGULATIONS:

JAPANESE ENCS: Not applicable to manufactured articles.

JAPANESE MINISTRY OF ECONOMY, TRADE, AND INDUSTRY (METI) STATUS: Not applicable.

POISONOUS AND DELETERIOUS SUBSTANCES CONTROL LAW: Not applicable.

16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
PO Box 3519, La Mesa, CA 91944-3519
(800) 441-3365 / (619) 670-0609

DATE OF PRINTING: November 14, 2007

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

DFG MAK Germ Cell Mutagen Categories: 1: Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed humans. 2: Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed mammals.

3A: Substances which have been shown to induce genetic damage in germ cells of human of animals, or which produce mutagenic effects in somatic cells of mammals *in vivo* and have been shown to reach the germ cells in an active form. **3B:** Substances which are suspected of being germ cell mutagens because of their genotoxic effects in mammalian somatic cell *in vivo*; in exceptional cases, substances for which there are no *in vivo* data, but which are clearly mutagenic *in vitro* and structurally related to known *in vivo* mutagens.

EXPOSURE LIMITS IN AIR (continued):

DFG MAK Germ Cell Mutagen Categories (continued): 4: Not applicable (Category 4 carcinogenic substances are those with non-genotoxic mechanisms of action. By definition, germ cell mutagens are genotoxic. Therefore, a Category 4 for germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be established for genotoxic substances with primary targets other than DNA [e.g. purely aneugenic substances] if research results make this seem sensible.) 5: Germ cell mutagens, the potency of which is considered to be so low that, provided the MAK value is observed, their contribution to genetic risk for humans is expected not to be significant.

DFG MAK Pregnancy Risk Group Classification: Group A: A risk of damage to the developing embryo or fetus has been unequivocally demonstrated. Exposure of pregnant women can lead to damage of the developing organism, even when MAK and BAT (Biological Tolerance Value for Working Materials) values are observed.

DEFINITIONS OF TERMS (Continued)

EXPOSURE LIMITS IN AIR (continued):

DFG MAK Pregnancy Risk Group Classification (continued): Group B: Currently available information indicates a risk of damage to the developing embryo or fetus must be considered to be probable. Damage to the developing organism cannot be excluded when pregnant women are exposed, even when MAK and BAT values are observed. **Group C:** There is no reason to fear a risk of damage to the developing embryo or fetus when MAK and BAT values are observed. Classification in one of the groups A-C is not yet possible because, although the data available may indicate a trend, they are not sufficient for final evaluation.

IDLH-Immediately Dangerous to Life and Health: This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

LOQ: Limit of Quantitation.

MAK: Federal Republic of Germany Maximum Concentration Values in the workplace.

NE: Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

NIC: Notice of Intended Change.

NIOSH CEILING: The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

NIOSH RELS: NIOSH's Recommended Exposure Limits.

PEL-Permissible Exposure Limit: OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register; 58: 35338-35351 and 58: 40191).

PEL-Permissible Exposure Limit (continued): Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.

SKIN: Used when there is a danger of cutaneous absorption.

STEL-Short Term Exposure Limit: Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

TLV-Threshold Limit Value: An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.

TWA-Time Weighted Average: Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

HAZARD RATINGS: This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

HEALTH HAZARD:

0 (Minimal Hazard): No significant health risk, irritation of skin or eyes not anticipated. *Skin Irritation:* Essentially non-irritating. *PII or Draize = "0".* *Eye Irritation:* Essentially non-irritating, or minimal effects which clear in < 24 hours [e.g. mechanical irritation]. *Draize = "0".*

Oral Toxicity LD₅₀ Rat: < 5000 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* < 2000 mg/kg. *Inhalation Toxicity 4-hrs LC₅₀ Rat:* < 20 mg/L; 1 (Slight Hazard): Minor reversible injury may occur; slightly or mildly irritating. *Skin Irritation:* Slightly or mildly irritating. *Eye Irritation:* Slightly or mildly irritating. *Oral Toxicity LD₅₀ Rat:* > 500-5000 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* > 1000-2000 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat:* > 2-20 mg/L; 2 (Moderate Hazard): Temporary or transitory injury may occur. *Skin Irritation:* Moderately irritating; primary irritant, sensitizer. *PII or Draize > 0, < 5.* *Eye Irritation:* Moderately to severely irritating and/or corrosive; reversible corneal opacity; corneal involvement or irritation clearing in 8-21 days. *Draize > 0, ≤ 25.* *Oral Toxicity LD₅₀ Rat:* > 50-500 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* > 200-1000 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat:* > 0.5-2 mg/L; 3 (Serious Hazard): Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. *Skin Irritation:* Severely irritating and/or corrosive; may destroy dermal tissue, cause skin burns, dermal necrosis. *PII or Draize > 5-8* with destruction of tissue. *Eye Irritation:* Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. *Draize > 80* with effects irreversible in 21 days. *Oral Toxicity LD₅₀ Rat:* > 1-50 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* > 20-200 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat:* > 0.05-0.5 mg/L; 4 (Severe Hazard): Life-threatening; major or permanent damage may result from single or repeated exposure. *Skin Irritation:* Not appropriate. Do not rate as a "4", based on skin irritation alone. *Eye Irritation:* Not appropriate. Do not rate as a "4", based on eye irritation alone. *Oral Toxicity LD₅₀ Rat:* ≤ 1 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit:* ≤ 20 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat:* ≤ 0.05 mg/L).

FLAMMABILITY HAZARD:

0 (Minimal Hazard-Materials) that will not burn in air when exposure to a temperature of 815.5°C [1500°F] for a period of 5 minutes.; **1 (Slight Hazard-Materials)** that must be pre-heated before ignition can occur. Material require considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur. Including: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C [200°F] (e.g. OSHA Class IIIB, or; Most ordinary combustible materials [e.g. wood, paper, etc.]; **2 (Moderate Hazard-Materials)** that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres in air, including: Liquids having a flash-point at or above 37.8°C [100°F]; Solid materials in the form of course dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp; Solids and semisolids that readily give off flammable vapors.); **3 (Serious Hazard- Liquids and solids)** that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions, including: Liquids having a flash point below 22.8°C [73°F] and having a boiling point at or above 38°C [100°F] and below 37.8°C [100°F] [e.g. OSHA Class IB and IC]; Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air [e.g., dusts of combustible solids, mists or droplets of flammable liquids]; Materials that burn extremely rapidly, usually by reason of self-contained oxygen [e.g. dry nitrocellulose and many organic peroxides]; **4 (Severe Hazard-Materials)** that will readily or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and which will burn readily, including: Flammable gases; Flammable cryogenic materials;

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued):

4 (continued): Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C [73°F] and a boiling point below 37.8°C [100°F] [e.g. OSHA Class IA; Material that ignite spontaneously when exposed to air at a temperature of 54.4°C [130°F] or below [e.g. pyrophoric].

PHYSICAL HAZARD:

0 (Water Reactivity): Materials that do not react with water. *Organic Peroxides:* Materials that are normally stable, even under fire conditions and will not react with water. *Explosives:* Substances that are Non-Explosive. *Unstable Compressed Gases:* No Rating. *Pyrophorics:* No Rating. *Oxidizers:* No "0" rating allowed. *Unstable Reactives:* Substances that will not polymerize, decompose, condense or self-react.; **1 (Water Reactivity):** Materials that change or decompose upon exposure to moisture. *Organic Peroxides:* Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy. *Explosives:* Division 1.5 & 1.6 substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases:* Pressure below OSHA definition. *Pyrophorics:* No Rating. (*Oxidizers:* Packaging Group III; *Solids:* any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. *Liquids:* any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives:* Substances that may decompose, condense or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosive hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors.); **2 (Water Reactivity):** Materials that may react violently with water. *Organic Peroxides:* Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. *Explosives:* Division 1.4 – Explosive substances where the explosive effect are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases:* Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics:* No Rating. *Oxidizers:* Packaging Group II *Solids:* any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. *Liquids:* any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)cellulose mixture and the criteria for Packing Group I are not met. *Unstable Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature); **3 (Water Reactivity):** Materials that may form explosive reactions with water. *Organic Peroxides:* Materials that are capable of detonation or explosive reaction, but require a strong initiating source, or must be heated under confinement before initiation; or materials that react explosively with water. *Explosives:* Division 1.2 – Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. *Compressed Gases:* Pressure ≥ 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics:* No Rating. *Oxidizers:* Packaging Group I *Solids:* any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3:2 potassium bromate/cellulose mixture. *Oxidizers:*

Liquids: Any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)cellulose mixture. *Unstable Reactives:* Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a moderate potential to cause significant heat generation or explosion.; **4 (Water Reactivity):** Materials that react explosively with water without requiring heat or confinement. *Organic Peroxides:* Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. *Explosives:* Division 1.1 & 1.2-explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. *Compressed Gases:* No Rating. *Pyrophorics:* Add to the definition of Flammability "4". *Oxidizers:* No "4" rating. *Unstable Reactives:* Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a high potential to cause significant heat generation or explosion.).

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS:

HEALTH HAZARD: 0 (materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials); Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 10,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 200 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 2000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 2000 mg/kg. Materials that are essentially non-irritating to the respiratory tract, eyes and skin. **1** (materials that, under emergency conditions, can cause significant irritation): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 10 mg/L but less than or equal to 200 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 500 mg/kg but less than or equal to 2000 mg/kg. Materials that cause slight to moderate irritation to the respiratory tract, eyes and skin. **2** (materials that, under emergency conditions, can cause temporary incapacitation or residual injury): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 3,000 ppm but less than or equal to 5,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 2 mg/L but less than or equal to 10 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 200 mg/kg but less than or equal to 1000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause severe tissue damage, depending on duration of exposure. Materials that are respiratory irritants. Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. **3** (materials that, under emergency conditions, can cause serious or permanent injury): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 1,000 ppm but less than or equal to 3,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 0.5 mg/L but less than or equal to 2 mg/L.

DEFINITIONS OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): (3 continued): Materials whose LD₅₀ for acute dermal toxicity is greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 5 mg/kg but less than or equal to 50 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 3000 ppm and that does not meet the criteria for degree of hazard 4. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials that are respiratory irritants. Cryogenic gases that cause frostbite and irreversible tissue damage. Materials that are corrosive to the respiratory tract. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials that are corrosive to the skin. **4** (materials that, under emergency conditions, can be lethal): Gases and vapors whose LC₅₀ for acute inhalation toxicity less than or equal to 1,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD₅₀ for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD₅₀ for acute oral toxicity is less than or equal to 5 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 1000 ppm.

FLAMMABILITY HAZARD: 0 Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand; Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in accordance with Annex D. **1** Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur: Materials that will burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in accordance with Annex D. Liquids, solids and semisolids having a flash point at or above 93.4°C (200°F) (i.e. Class IIIB liquids). Liquids with a flash point greater than 35°C (95°F) that do not sustain combustion when tested using the *Method of Testing for Sustained Combustibility*, per 49 CFR 173, Appendix H or the UN *Recommendation on the Transport of Dangerous Goods, Model Regulations* (current edition) and the related *Manual of Tests and Criteria* (current edition). Liquids with a flash point greater than 35°C (95°F) in a water-miscible solution or dispersion with a water non-combustible liquid/solid content of more than 85 percent by weight. Liquids that have no fire point when tested by ASTM D 92 Standard Test Method for Flash and Fire Points by Cleveland Open Cup, up to a boiling point of the liquid or up to a temperature at which the sample being tested shows an obvious physical change. Combustible pellets with a representative diameter of greater than 2 mm (10 mesh). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed up flash point of the solvent. Most ordinary combustible materials. **2** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air: Liquids having a flash point at or above 37.8°C (100°F) and below 93.4°C (200°F) (i.e. Class II and Class IIIA liquids.) Solid materials in the form of powders or coarse dusts of representative diameter between 420 microns (40 mesh) and 2 mm (10 mesh) that burn rapidly but that generally do not form explosive mixtures in air. Solid materials in fibrous or shredded form that burn rapidly and create flash fire hazards, such as cotton, sisal and hemp. Solids and semisolids that readily give off flammable vapors. Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **3** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions: Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 37.8°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). Materials that, on account of their physical form or environmental conditions, can form explosive mixtures with air and are readily dispersed in air. Flammable or combustible dusts with a representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **4** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily: Flammable gases. Flammable cryogenic materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air. Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

INSTABILITY HAZARD: 0 Materials that in themselves are normally stable, even under fire conditions: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 0.01 W/mL and below 10 W/mL.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

INSTABILITY HAZARD (continued):

2 Materials that readily undergo violent chemical change at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100W/mL. **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures.

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). **Flash Point** - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. **Autoignition Temperature:** The minimum temperature required to initiate combustion in air with no other source of ignition. **LEL** - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. **UEL** - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program; **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. **IARC** and **NTP** rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information:** **BEI** - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

ECOLOGICAL INFORMATION:

EC is the effect concentration in water. **BCF** = Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. **TL_m** = median threshold limit; Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION:

U.S. and CANADA:

This section explains the impact of various laws and regulations on the material. **ACGIH:** American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **EPA** is the U.S. Environmental Protection Agency. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA** or **Superfund**); and various state regulations. This section also includes information on the precautionary warnings which appear on the material's package label. **OSHA** - U.S. Occupational Safety and Health Administration.

EUROPEAN: **EU** is the European Union (formerly known as the **EEC**, European Economic Community). **EINECS:** This is the European Inventory of Existing Chemical Substances. The **ARD** is the European Agreement Concerning the International Carriage of Dangerous Goods by Road and the **RID** are the International Regulations Concerning the Carriage of Dangerous Goods by Rail. **AUSTRALIAN:** **AICS** is the Australian Inventory of Chemical Substances. **NOHSC:** National Occupational Health & Safety Code.