

# MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

## **PART I** *What is the material and what do I need to know in an emergency?*

### 1. PRODUCT IDENTIFICATION

**TRADE NAME (AS LABELED):** **AW-02**

**CHEMICAL NAME/CLASS:** Aqueous Hydrocarbon Emulsion  
**SYNONYMS:** Wax Emulsion  
**PRODUCT USE:** Water Repellent

**SUPPLIER/MANUFACTURER'S NAME:** **A & W Products, Inc.**  
**ADDRESS:** 1040 Astondale Road  
Bishop, GA 30621  
**EMERGENCY PHONE:** 706-207-4336  
CHEMTREC: 800-424-9300  
**BUSINESS PHONE:** 706-769-9012  
**MSDS PREPARATION DATE:** December 1, 2011

### 2. COMPOSITION and INFORMATION ON INGREDIENTS

| CHEMICAL NAME   | CAS # | % w/w   | EXPOSURE LIMITS IN AIR  |                           |                          |                           |                           |                            |
|---|-------|---------|---|---------------------------|--------------------------|---------------------------|---------------------------|----------------------------|
|   |       |         | ACGIH   |                           | OSHA                     |                           | IDLH<br>mg/m <sup>3</sup> | OTHER<br>mg/m <sup>3</sup> |
|   |       |         | TLV<br>mg/m <sup>3</sup>  | STEL<br>mg/m <sup>3</sup> | PEL<br>mg/m <sup>3</sup> | STEL<br>mg/m <sup>3</sup> |                           |                            |
| Proprietary Component 1:<br>The exposure limits presented are for fumes of this component.*   |       | 35-40   | 2   | NE                        | 2 (Vacated 1989 PEL)     | NE                        | NE                        | NIOSH REL: 2               |
| Proprietary Component 2   |       | 5-14    | NE  | NE                        | NE                       | NE                        | NE                        | NE                         |
| Water and other components. Each of the other components are present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens). |       | Balance | None of the other components contribute significant additional hazards at the concentrations present in this product. All pertinent hazard information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4). |                           |                          |                           |                           |                            |

NE = Not Established

C = Ceiling Limit

See Section 16 for Definitions of Terms Used

\* Under normal use conditions, the emulsion is not expected to create mist of this component.

### 3. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:** This is a light brown milky emulsion with an unique odor. The primary health hazard associated with overexposure to this product is mild irritation of skin, eyes, or other contaminated tissues. This solution would require near complete evaporation of water or substantial preheating/decomposition before ignition would occur. The products of thermal decomposition include irritating vapors and toxic gases (including carbon monoxide and carbon dioxide, sulfur oxides). This product is not reactive under normal circumstances. Emergency responders must wear personal protective equipment appropriate for the situation to which they are responding.

**SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:** The main routes of overexposure for this product would be via inhalation of mists or sprays of this product, as well as contact with skin or eyes. The symptoms of such overexposure are described in the following paragraphs.

**INHALATION:** Inhalation of aerosols, mists, or sprays of this product would cause irritation. Symptoms of such overexposure would include coughing, sneezing, and nasal congestion.

**CONTACT WITH SKIN or EYES:** This product may be irritating to contaminated skin or eyes. Symptoms of eye overexposure would include redness and watering. Symptoms of skin overexposure may include redness and an itching sensation. Prolonged or repeated overexposure may lead to dermatitis (inflamed, dry skin) and chapping.

**SKIN ABSORPTION:** Skin absorption is not anticipated to be a significant route of overexposure to any component of this product.

**INGESTION:** Ingestion is not anticipated to be a significant route of overexposure for this emulsion. If this product is swallowed, symptoms of such overexposure may include gastric distress, nausea, vomiting, and diarrhea. If components of this product (i.e. Proprietary Component 1) are aspirated, potentially life-threatening damage to the lung tissue may occur.




**INJECTION:** Injection of this product (via punctures with contaminated, sharp objects or pre-existing breaks in the skin) can produce redness and local swelling at the injection site.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE:** An Explanation in **Lay Terms**. Symptoms of overexposure to this emulsion may include the following:

**ACUTE:** The chief health hazard associated with overexposure to this product would be mild irritation of skin, eyes, or other contaminated tissue. Inhalation of sprays, mists, or vapors of this product may cause coughing, sneezing, and a congested nose. Ingestion of this product may be harmful; aspiration of components of this product (i.e. Proprietary Component 1) can produce potentially life-threatening lung damage.

**CHRONIC:** Prolonged or repeated skin overexposure may lead to dermatitis (inflamed, dry skin) and chapping. Refer to Section 11 (Toxicology Information) for additional data on this product's components.

**TARGET ORGANS:** Skin and eyes.

| HAZARDOUS MATERIAL INFORMATION SYSTEM   |               |   |   |
|---|---------------|---|---|
| HEALTH  |               | (BLUE)  | 1   |
| FLAMMABILITY  |               | (RED)   | 1   |
| REACTIVITY  |               | (YELLOW)  | 0   |
| PROTECTIVE EQUIPMENT  |               |   | C   |
| EYES  | RESPIRATORY   | HANDS   | BODY  |
|  | SEE SECTION 8 |  |  |
| See Section 16 for definition of ratings  |               |   |   |

## **PART II** *What should I do if a hazardous situation occurs?*

### **4. FIRST-AID MEASURES**

**SKIN EXPOSURE:** If the product contaminates the skin, begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Contaminated personnel should seek medical attention in the event of adverse effects which continue after the area has been flushed.

**EYE EXPOSURE:** If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is 15 minutes. Contaminated personnel should seek medical attention.

**INHALATION:** If aerosols, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

**INGESTION:** If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should drink milk or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow.

Chemically contaminated personnel must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take copy of label and MSDS to physician or health-care professional with victim.

## 5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: This product is not flammable. Use fire extinguishing material appropriate for the surrounding area.

Water Spray: YES

Carbon Dioxide: YES

Foam: YES

Dry Chemical: YES

Halon: YES

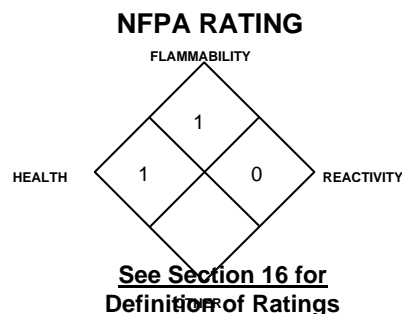
Other: Any "ABC" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this material may decompose and produce irritating vapors and toxic gases (carbon monoxide, carbon dioxide, sulfur oxide). This product must be substantially pre-heated before ignition can occur. In case of complete water evaporation, the residual of this product will behave like a liquid hydrocarbon whose density is < 1.0. Under such circumstances, follow fire fighting procedures for liquid fuels.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed containers if it can be done without risk to firefighters. If possible, firefighters should control run-off water to prevent environmental contamination.



## 6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: In case of a spill, clear the affected area, protect people. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area, protect people.

Minimum Personal Protective Equipment (for non-incident releases) should be **Level C: triple-gloves (rubber gloves and nitrile gloves, over latex gloves), chemically resistant suit and boots, hard-hat, and an Air-Purifying Respirator with a High-Efficiency Particulate Filter. Level B, which includes Self-Contained Breathing Apparatus, must be worn when oxygen levels are below 19.5% or are unknown.** Absorb spilled liquid with polypads or other suitable absorbent materials. Decontaminate the area thoroughly, via a triple-rinse. Place all spill residue in an appropriate container. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations, or those of Canada and its provinces (see Section 13, Disposal Considerations).

## PART III

*How can I prevent hazardous situations from occurring?*

## 7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this emulsion ON YOU or IN YOU. Wash hands after handling this product. Do not eat, drink, or smoke while handling this product. Remove contaminated clothing immediately. Use ventilation and other engineering controls to minimize exposure to mists or sprays of this product.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Avoid breathing aerosols, sprays or mists generated by this product. Always use this product in well-ventilated areas. Ensure totes of this product are properly labeled. Open valves on pipelines and other production equipment which contains this product slowly. Close valves tightly after use. Store totes away from sources of intense heat or incompatible materials (see Section 10, Stability and Reactivity). Recommended storage temperature is 10-30°C (50-86°F). Do not freeze. Transfer material into properly labeled containers. Periodically inspect totes or tanks of this product for leaks or damage. Empty totes, pipelines, or process equipment may contain residual liquid; therefore, they must be handled with care.

TANK CAR SHIPMENTS: Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective equipment must be used (see Section 8, Exposure Controls - Personal Protection). This product may be unloaded or transferred using air pressure, diaphragm pumps, or other pumps that do not cause excessive shear. Excessive air flow through this product may cause shear damage.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment before maintenance begins. Collect all waste materials, including rinsates and dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations, or those of Canada and its provinces.

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## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposures are below the limits provided in Section 2 (Composition and Information on Ingredients) if applicable. Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: None needed under normal circumstances of use. Maintain airborne contaminant concentrations below guidelines listed in Section 2 (Composition and Information on Ingredients) if applicable. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the appropriate standards of Canada and its Provinces. Use supplied air respiration protection if oxygen levels are below 19.5% or are unknown.

EYE PROTECTION: Splash goggles or safety glasses.

HAND PROTECTION: Wear rubber or nitrile gloves for routine industrial use. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS.

BODY PROTECTION: Use body protection appropriate for task (i.e. apron, Tyvek suit).

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## 9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): Not available.

SPECIFIC GRAVITY (water = 1): 0.92-.97

SOLUBILITY IN WATER: Emulsion.

VAPOR PRESSURE, mm Hg @ 20°C (68°F): Not available.

ODOR THRESHOLD: Not applicable.

LOG of OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not applicable.

APPEARANCE AND COLOR: Milky, odorless emulsion.

HOW TO DETECT THIS SUBSTANCE (warning properties): The light brown milky appearance may act as a distinguishing characteristic of this product.

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EVAPORATION RATE (n-BuAc=1): Not available.

MELTING\FREEZING POINT: 0 °C (32 °F)

BOILING POINT: 100 °C (212 °F)

pH: 7.0-9.5

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## 10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong oxidizing agents and materials that are not compatible with water.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposure to extreme temperatures and contact with incompatible chemicals.

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## PART IV

*Is there any other useful information about this material?*

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## 11. TOXICOLOGICAL INFORMATION

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TOXICITY DATA: Additional toxicology data for components greater than 1 percent in concentration are provided below.

**PROPRIETARY COMPONENT 1:** This component is not hazardous as defined by OSHA's Hazard Communication Standard, 29CFR 1910.1200.

**PROPRIETARY COMPONENT 2:**  
LD<sub>50</sub> (oral, rat) >7000 mg/kg

SUSPECTED CANCER AGENT: This product's ingredients are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA, and therefore are not considered to be, or suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product may be mildly irritating to contaminated tissues.

SENSITIZATION TO THE PRODUCT: The components of this product are not known to be sensitizers with repeated or prolonged use.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its

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components on the human reproductive system.

Mutagenicity: This product is not reported to produce mutagenic effects in humans.

Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.

Teratogenicity: This product is not reported to cause teratogenic effects in humans.

Reproductive Toxicity: This product is not reported to cause reproductive effects in humans.

ACGIH BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, there are no ACGIH Biological Exposure Indices (BEIs) associated with the components of this product.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin disorders may be aggravated by exposure to this product. Overexposures to aerosols, mists, or sprays of this product may aggravate respiratory conditions.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

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## 12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product are relatively stable under ambient, environmental conditions.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product may be harmful to contaminated plants or animals, especially if large volumes are released into the environment. Refer to Section 11 (Toxicology Information) for specific data on the product's components and their effects on test animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: The decomposition products may float on water and prevent oxygen from entering the water; therefore, large releases of this product may be harmful or fatal to exposed aquatic life.

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## 13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations, or those of Canada and its Provinces. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

U.S. EPA WASTE NUMBER: Not applicable to wastes consisting only of this product.

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## 14. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Not applicable.

HAZARD CLASS NUMBER and DESCRIPTION: Not applicable.

UN IDENTIFICATION NUMBER: Not applicable.

PACKING GROUP: Not applicable.

DOT LABEL(S) REQUIRED: Not applicable.

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (1996): Not applicable.

MARINE POLLUTANT: No component of this product is listed as a marine pollutant by the D.O.T. (49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS NOT CONSIDERED AS DANGEROUS GOODS.

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## 15. REGULATORY INFORMATION

U.S. SARA REPORTING REQUIREMENTS: The components of this product are not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

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

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

U.S. TSCA INVENTORY STATUS: The chemicals in this product are listed on the TSCA Inventory and are otherwise in compliance with TSCA.

OTHER U.S. FEDERAL REGULATIONS: During releases of this product, the rules of the Federal Water Pollution Control Act may be applicable. Releases of petroleum hydrocarbons (i.e. Proprietary Component 1) must be reported when there is a film or sheen upon, or discoloration of, the water surface or adjoining shoreline.

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U.S. STATE REGULATORY INFORMATION: Components in this product, specifically listed in Section 2 (Composition and Information on Ingredients), 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:** None.  
**Illinois - Toxic Substance List:** None.  
**Kansas - Section 302/313 List:** None.  
**Massachusetts - Substance List:** None.

**Michigan - Critical Materials Register:** None.  
**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:** None.  
**Texas - Hazardous Substance List:** None.  
**West Virginia - Hazardous Substance List:** None.  
**Wisconsin - Toxic and Hazardous Substances:** None.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): None

LABELING (Precautionary Statements):

**ANSI STANDARD LABEL INFORMATION (Z129.1):**

**CAUTION!** MAY CAUSE SKIN AND EYE IRRITATION. MAY BE HARMFUL IF INGESTED OR INHALED. ASPIRATION HAZARD IF SWALLOWED -- CAN ENTER LUNGS AND CAUSE DAMAGE. Avoid contact with skin, eyes, or clothing. Wash thoroughly after handling. Avoid breathing aerosols, mists, and sprays. Work in well-ventilated area. Do not taste or swallow. Wear gloves, goggles, and appropriate body protection. **FIRST-AID:** In case of contact with skin or eyes, flush skin with plenty of water for 15 minutes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, do not induce vomiting. Get medical attention if adverse effects develop. **IN CASE OF FIRE:** Use water fog, dry chemical, CO<sub>2</sub>, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with inert material (sand, polypads, or other absorbent). For large spills, dike area. Consult Material Safety Data Sheet for additional information.

**ADDITIONAL CANADIAN REGULATIONS:**

CANADIAN DSL/NDL INVENTORY STATUS: The components of this product are on the DSL/NDL Inventories.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: The components of this product are not on the CEPA Priorities Substances Lists.

CANADIAN WHMIS SYMBOLS: Not applicable.

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## 16. OTHER INFORMATION

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Chemical Specialties Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Chemical Specialties Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

## 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 which uniquely identifies each constituent. It is used for computer-related searching.

### EXPOSURE LIMITS IN AIR:

**ACGIH** - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. **TLV** - Threshold Limit Value - an airborne concentration of a substance which 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 Time Weighted Average (**TWA**), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (**C**). Skin absorption effects must also be considered. **OSHA** - U.S. Occupational Safety and Health Administration. **PEL** - Permissible Exposure Limit - 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). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

**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. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **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**). NIOSH issues exposure guidelines called Recommended Exposure Levels (**RELs**). **AIHA-WEEL** is the American Industrial Hygiene Association Workplace Environmental Exposure Level Guides. When no exposure guidelines are established, an entry of **NE** is made for reference.

### HAZARD RATINGS:

**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM:** Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Reactivity Hazard: **0** (normally stable); **1** (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

**NATIONAL FIRE PROTECTION ASSOCIATION:** Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure causes death or major residual injury).

**NATIONAL FIRE PROTECTION ASSOCIATION (Continued):** Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

### 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: **LD<sub>50</sub>** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC<sub>50</sub>** - 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/m<sup>3</sup>** 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. Coefficient of Oil/Water Distribution is represented by **log K<sub>ow</sub>** or **log K<sub>oc</sub>** and is used to assess a substance's behavior in the environment.

### REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **U.S.:** **EPA** is the U.S. Environmental Protection Agency. **DOT** is the U.S. Department of Transportation. **SARA** is the Superfund Amendments and Reauthorization Act. **TSCA** is the U.S. Toxic Substance Control Act. **CERCLA (or Superfund)** refers to the Comprehensive Environmental Response, Compensation, and Liability Act. Labeling is per the American National Standards Institute (**ANSI Z129.1**). **CANADA:** **CEPA** is the Canadian Environmental Protection Act. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **TC** is Transport Canada. **DSL/NDSL** are the Canadian Domestic/Non-Domestic Substances Lists.