EFELAB request to users of this product to study slowly the material safety data sheet and to pay special attention to the risk that means the use and manage of ethylene oxide as well as the security information. To promote safe and responsible use of this product the user must: (1) Notify to their agents, employees, etc about the content of this sheet as well as whichever important information, relating with the danger and security of the product, (2) give the same information to each one of their clients and (3) request this clients to notify to their employees to remit the information.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: EFELAB ETHYLENE OXIDE CARTRIDGES; EFELAB ETHYLENE OXIDE AMPOULES.
Manufacturer: EFELAB SRL
Address: Costa Rica 449 / 1043
         Ituzaingo 1714
         Buenos Aires, Argentina.
         Telephone: + 54 11 4623 3030
         e-mail: info@efelab.com

Emergency Telephone Number:
Call us from 8:00 am to 17:30 pm: +54 114623 3030 or send a fax at any hour of the day: + 54 11 4624 2400

SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS

Product: Ethylene Oxide
Chemical Group: Epoxide
Formula: CH2     CH2  O
Weight by %: 84 to 97 %
Synonyms: Ethylene Oxide, Alkene Oxide, Dimethylene Oxide, EO, ETO, Oxane, Dihydroxirene, Oxacyclopropane, Oxirane.

SECTION 3: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW
Specific Physic Form: Compressed gas
Appearance and odor: Colorless liquid and gas in normal temperature and pressure. Odor not detectable except at concentrations greater than 500 ppm. Non residual ether-like odor above 500 – 700 ppm concentrations.
Immediate Health, Physic and environmental hazard: Cartridges and ampoules contain flammable liquefied gas under pressure which could burn in absence of oxygen and can explode when exposed at high temperatures. Causes severe skin and eye irritation or burn and respiratory tract irritation. Effects may be delayed. Harmful if swallowed, ingested or absorbed through the skin.

POTENTIAL HEALTH EFFECTS / OVEREXPOSURE EFFECTS (ACUTE / CRHONIC):
Ingestion: It is a non common way of exposure. May cause serious irritation and ulceration of the mouth and throat, gastrointestinal irritation, Stomach upset, vomiting, nausea, diarrhea, , abdominal pain, collapse and coma.
Skin Contact: Sustained contact with the skin is unlikely, but can cause redness, itching, swelling, dryness, blistering, pain. Ethylene oxide may be absorbed by the skin and sustained
contact may produce adverse effects such as headache, vomiting, dizziness. Dissolved solutions may penetrate skin, producing a chemical burn. With liquid or solutions in water may cause: local erythema, edema, and vesicles. There might be a latent period of several hours to the onset of these signs. Large volumes of ETO spilled onto the skin may produce a frostbite-like effect.

**Inhalation:** May cause irritation of the respiratory tract. Depending on the degree of exposure, there might be stinging of the nose and throat, cough, sneezing, nasal discharge, headache, nausea, vomiting, diarrhea and hoarseness. It may produce lung injury, weakness, difficulty breathing, chest tightness, permanent lung injury, weakness, drowsiness, blueish colored skin (cyanosis), increased heart rate, loss of coordination, convulsions and coma.

**Eye contact:** May cause severe stinging on the eye, profuse tear discharge, redness and swelling of the conjunctive. Moderate irritation of the eye in high concentrations of ethylene oxide vapors. Liquid ethylene oxide is severely irritating and corrosive to the eyes and may cause corneal injury.

**Overexposure effects (chronic):** Allergic contact with dermatitis may occur in a small proportion of exposed workers. In various reports involving recurrent exposures to high concentrations of ETO vapor, peripheral neurotoxic effects, and, in some cases, indications of central nervous system toxicity were described. In most cases, there was marked improvement on removal from further exposure. A few cases of cataract formation have also been linked to such exposures. Although one epidemiological study has suggested that ETO exposed woman may have an increased of abortions. Several studies on ETO exposed workers have demonstrated an increase incidence of chromosomal aberrations and sister chromatid exchanges; the relevance of such effects to human health hazard evaluation is currently uncertain. OSHA considers that, at excessive levels, ETO may present reproductive, mutagenic, genotoxic, neurotoxic ad sensations hazards.

**Significant laboratory data with possible relevance to human health hazard evaluation:** Ethylene oxide has been shown to produce mutagenic and cytogenetic effects in a variety of test systems. Animals exposed to ethylene oxide vapor for up to two years have shown an increase in the incidence of certain malignant tumors in comparison to non-exposed controls. In human, an increased occurrence of leukemia and stomach cancer has been reported by one group of investigators who pooled results from three Swedish facilities producing or using ETO, among other materials. Based on experimental and observational data ETO is a suspect cancer hazard, and should be treated as possibly causing cancer in humans. Laboratory studies with mice have shown that acute exposure to ETO vapor at concentrations of 300 ppm and above cause testicular injury as evidence by concentration-related increased embryonic deaths following the mating of exposed males to nonexposed females (dominant lethal test). Also, a one-generation reproduction study in rats showed decreased numbers of pups at 100 but not at 33 ppm. Inhalation teratology studies have shown fetotoxicity at 100ppm and above, but no evidence for birth defects.

**Medical conditions aggravated by overexposure:** A knowledge of the available toxicology information and the physical and chemical properties of the material suggest that overexposure is unlikely to aggravate existing medical conditions.

**Carcinogenic and mutagenic assessment:** EO is considered by OSHA, IARC, and NTP as a potential human carcinogen and mutagen. Refer to OSHA 29 CFR 1910.1047 for additional information.

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**SECTION 4: FIRST AID MEASURES**

**Swallowing / Ingestion:** Give at least 2 glasses of water. Do not induce vomiting. Call a physician.
Skin: Immediately remove contaminated clothing and wash skin copiously with soap and water. Aerate, wash or clean contaminated clothing. Discard leather goods and shoes. Call a physician.

Inhalation: Remove to fresh air, and administer Oxygen if breathing is difficult. If breathing stops, start artificial respiration. Call a physician.

Eyes: Flush immediately with water and continue for at least 15 minutes. The help of an ophthalmologist should be sought urgently.

Notes to Physician: (1) Persons exposed to ETO may develop severe and intractable vomiting, requiring the use of antiemetics given intravenously. (2) Prolonged or high vapor concentration exposure may result in the development of pulmonary edema after a latent phase of several hours. Also, respiratory tract injury caused by ETO may predispose to the development of a secondary respiratory infection. Consider oxygen administration. (3) If a chemical burn is present decontaminate skin and treat as any thermal burn. Following skin contact, primary irritation and blister formation may be delayed in onset. (4) When introduced directly into blood stream, ETO may act as a hapten and lead to the development of a anaphylactoid reactions of varying severity. This has been noted in a few hemodialysis and plasmapheresis patients due to desorption of ETO from the sterilized equipment. There appears to be a close association to the presence of IgE antibodies to Albumin/ETO conjugates.

SECTION 5: FIRE FIGHTING MEASURES

Flash Point: -4 °F; -20 °C (Test method: TAG Closed Cup)

Autoignition: 804ºF (in air); 1058ºF (pure ETO)

Upper Flammable Limit in Air (% by volume): 100% (via decomposition)

Lower Flammable Limit in Air (% by volume): 3% (30,000 ppm)

Extinguishing media: Use water spray, Carbon Dioxide, dry chemical, alcohol-type or universal foams applied by manufacturer's recommended technique. Use fire extinguishers with class B extinguishing agent. Evacuate all personnel from danger area.

Protection of firefighters: Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus operated in the pressure demand mode (SCBA).

Special fire fighting procedures: Evacuate all personnel from danger area. Immediately cool containers with water spray from maximum distance taking care of not to extinguish flames. Vapors formed from the product may travel or be moved by air currents and be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources. Remove ignition sources if without risk. If flames are accidently, explosive, re-ignition may occur. Stop flow of gas if without risk, while continuing cooling water spray. Remove all containers from area of fire if without risk. Allow fire to burn out. Dilution of ETO with 23 volumes of water renders it nonflammable, per OSHA 29 CFR 1910.1047 appendix B. Union Carbide recommends dilution with 100 volumes of water as an additional safe practice. On site fire brigades should comply with OSHA 29 CFR 1910.156.

Unusual fire and explosion hazards: Extremely flammable. It may form explosive mixtures with air and oxidizing agents. Do not extinguish flames due to possibility of explosive re-ignition. Flammable vapors may spread from spill. Explosive atmosphere may linger. Before entering area, specially confined areas, check atmosphere with appropriate device. No part of a container should be subjected to a temperature higher than 52ºC (Approximately 125ºF). Containers are provided with pressure relief devices that are designed to vent the contents when they are exposed to elevated temperatures. Vapors can burn without the presence of air or oxidizing agents. ETO can decompose violently under certain conditions. Refer to DOT “EMERGENCY RESPONSE GUIDEBOOK” for isolation and evacuation distances. Vapor in air has very low ignition energy (0.6mJ) and is prone to static or other low energy ignition sources.
SECTION 6: ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

**Spill response:** Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Remove all ignition sources such as flames, smoking materials, and electrical spark sources. Reduce vapors with fog or fire water spray. Shout off leak if without risk. Ventilate area of leak or move leaking assembly to well ventilated area. Prevent runoff, collect for disposal Use only non-sparking tools. Ventilate the area with fresh air. Contain spill. If possible, seal leaking container. Flood spills with water spray. Place leaking containers in a well-ventilated area, preferably an operating exhaust hood, or if necessary outdoors on an impermeable surface until appropriate packaging for the leaking container or its contents is available. Close cylinder. If the cylinder can't be closed, place in a well-ventilated area, preferably an operating exhaust hood, or if necessary outdoors. Avoid contact with incompatible materials listed in the Reactivity Data Section. Cover spill area with fire-extinguishing foam designed for use on solvents, such as alcohols and acetone, which can dissolved in water. An AR - AFFF type foam is recommended. Clean up residue with an appropriate organic solvent. Read and follow safety precautions on the solvent label and MSDS. Place in a metal container approved for transportation by appropriate authorities. Seal the container. Dispose of collected material as soon as possible. **Danger:** May form explosive mixtures with air. Immediately evacuate all personnel from danger area. Wear self-Contained breathing apparatus operated in the pressure demand mode and protective clothing.

SECTION 7: HANDLING AND STORAGE

**Danger:** Be sure to read and understand all labels and other instructions supplied with all containers of this product. For industrial and professional use only. Extremely flammable liquefied gas under pressure. May form explosive mixtures with air. Do not breathe vapor. Can cause rapid suffocation due to oxygen deficiency. Avoid contact with eyes, skin or clothing. Safety showers and eyewash fountains should be immediately available. Use piping and equipment adequately designed to withstand pressures to be encountered. Ground all equipment. Only use spark-proof tools and explosion-proof equipment. Keep away from heat, sparks and open flame. Store and use with adequate ventilation at all times. Use only in a closed system. Close valve when not in use and when empty. Wash thoroughly after handling. It may be feasible to convert aqueous solutions of ethylene oxide to ethylene glycol (under the correct conditions pH, temperature and pressure) and dispose of glycol solution. Under certain conditions EO will evolve from water solutions.

**Mixtures:** When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consultant an industrial hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

**Other handling and storage conditions:**
Never work on a pressurized system. If there is a leak, close the cylinder valve, blow down the system by venting to a safe place, then repair the leak. Do not incinerate EO cartridges, tanks or other containers. Compatibility with plastics should be confirmed prior to use.

**Storage recommendations:** Store cartridges and ampoules in an upright position. Have established handling and emergency response procedures in place prior to use. Protect containers from physical damage and regularly inspect them for cracks or leaks. Store Ethylene oxide in a dry, cool and well ventilated area away from incompatible sources of ignition like Aqueous Alkalines; Amines; Mineral Acids; Metal Chlorides; and Metal Oxides. Store away from acids; Keep away from heat, sparks, lighted cigarettes, matches, open flame, pilot lights and all sources of ignition. DO NOT STORE IN DIRECT SUNLIGHT.
SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits: ETHYLENE OXIDE (75-21-8)

<table>
<thead>
<tr>
<th>Limit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA ACTION LEVEL (8 HR TWA)</td>
<td>0.5 PPM</td>
</tr>
<tr>
<td>OSHA PEL (8 HR TWA)</td>
<td>1 PPM</td>
</tr>
<tr>
<td>OSHA 15 MIN EXCURSION LIMIT STEL</td>
<td>5 PPM</td>
</tr>
<tr>
<td>ACGIHTVL / TWA</td>
<td>1 PPM</td>
</tr>
<tr>
<td>IDHL</td>
<td>800 PPM</td>
</tr>
</tbody>
</table>

**Eye protection:** Avoid eye contact. Avoid eye contact with vapors, mists, or spray. The following should be worn alone or in combination, as appropriate, to prevent eye contact: Never wear contact lenses when working with ethylene oxide. Indirect vented goggles usage recommended.

**Hand protection:** Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials.

**Skin protection:** Avoid skin contact.

**Ingestion (Prevention):** Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Not an expected route of exposure.

**Respiratory protection:** When necessary, select one approved respirator based on airborne concentration of contaminants and in accordance with regulations. Select and use in accordance with OSHA 29CFR 1910.1047 (g) for specific respirator selection criteria.

**Ventilation:** Use with appropriate local exhaust ventilation. Provide appropriate local exhaust ventilation on open containers. Use in an enclosed process area is recommended. Do not use in a confined area or areas with little or no air movement. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits. If ventilation is not adequate, use respiratory protection equipment. AAMI / ANSI ST41 Good Hospital Practice: Ethylene Oxide Sterilization and Sterility Assurance guideline, Section 3.4 recommends a minimum of 10 room makeup air changes per hour. Emission controls must be in accordance with local or Federal Regulations. Ventilations should be designed in such a manner that no person is exposed to concentrations of ETO exceeding the OSHA PEL of 1 ppm or the OSHA excursion limit of 15 ppm.

**Special instructions:** The OSHA EO standard (29 CFR 1910.1047) requires a written emergency plan for spills or leaks. The plan must include procedures for alerting, evacuating, rescuing, training, and medically treating personnel overcome by EO. Procedures for reporting an emergency to appropriate authorities and determining when it is safe to re-enter a spill area must be included. Do not confuse EO leakage with swelling of the gasket material under the cartridge cap or an oily residue that sometimes appears on the cartridge.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boling Point @ 760 mmhg</td>
<td>10,4º C (50,7º F)</td>
</tr>
<tr>
<td>Density (Water=1)</td>
<td>0,8719 to 20 (at 20º C)</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>1,52</td>
</tr>
<tr>
<td>Percent Volatiles by Volume</td>
<td>100 %</td>
</tr>
<tr>
<td>Vapor pressure:</td>
<td>1094 mm Hg @ 20ºC</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>-112,06º C (-170,7º F)</td>
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<tr>
<td>Vapor Pressure @ 21º C</td>
<td>1,095 mmHG (21,1 psig)</td>
</tr>
<tr>
<td>Solubility in water:</td>
<td>100 % (very soluble)</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>72</td>
</tr>
<tr>
<td>(Butyl acetate =1)</td>
<td></td>
</tr>
<tr>
<td>FLASH POINT:</td>
<td>-20º C</td>
</tr>
</tbody>
</table>
**Conditions to avoid:** Material will decompose violently at temperatures above 800º F in air. This temperature can vary depending upon time pressure and conditions of the systems. The temperature required for decomposition is reduced as pressure in increased. Trace polymers may be present under ordinary conditions of temperature, pressure, etc. However, ETO will polymerize violently if contaminated with aqueous alkalies, mineral acids, metal chlorides or metal oxides.

**Incompatibility (materials to avoid):** Dangerous runaway reactions can result from contact with copper, silver, magnesium mercury, and their salts, oxidizers of all types, alkalies and acids, alcohols, mercaptans and alkali metals.

**Hazardous decomposition products:** Thermal decomposition may produce Carbon Monoxide and/or Carbon Dioxide.

**SECTION 10: TOXICOLOGICAL INFORMATION**

**Toxicological-acute dermal:** No dermal information LC\(50\) is available on this product. It is expected to be corrosive to rabbit skin.

**Toxicological-chronic dermal:** No chronic dermal toxicity data are available on this product.

**Toxicological-eye:** No eye irritating animal data are available on this product. It is expected to be very irritating to rabbit eyes though.

**Toxicological-acute ingestion:** The acute oral LC\(50\) for this product is 72 mg/kg rat.

**Toxicological-chronic ingestion:** The effects of chronic ingestion of this product are unknown.

**Toxicological-acute inhalation:** LC\(50\) (1 HR Exposure)
- 5748 PPM (male rat)
- 4439 (female rat)
- 5029 (rat-combined sex)

Various mammalian species exposed to lethal concentrations had symptoms of mucous membrane irritation, central nervous system depression, lacrimation, nasal discharge, salivation, nausea, vomiting, diarrhea, respiratory irritation, incoordination, and convulsions.

**Toxicological-chronic inhalation:** Symptoms of chronic exposure are similar to those observed in acute studies, including lung, kidney and liner damage and testicular tube degeneration in some species. Studies demonstrated neuromuscular effects as the most sensitive indicator of ethylene oxide over exposure.

**Carcinogenicity:** Warning: Contains a chemical which can cause cancer. (75-21-8) (NTP anticipated human carcinogen, IARC human carcinogen 1, ACGIH suspected human carcinogen A2)

**Mutagenicity:** No data available.

**Reproductive Effects:** Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

**Other effects & information:** Endocrine Tissue Effects: Signs/symptoms may include disruption of gonadal, thyroid, adrenal or pancreatic function.

**Gastrointestinal effects:** Signs/symptoms may include stomach upset; nausea, vomiting and diarrhea.

**Liver effects:** Signs/symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness and jaundice.
Central nervous system (CNS) depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Peripheral neuropathy: Signs/symptoms may include tingling or numbness of the extremities, incoordination, weakness of the hands and feet, tremors and muscle atrophy.

Olfactory effects: Signs/symptoms may include decreased ability to detect odors and/or complete loss of smell. Kidney Effects: Signs/symptoms may include reduced or absent urine production, increased serum creatinine, lower back pain, increased protein in urine, and increased blood urea nitrogen (BUN).

Pulmonary edema: Signs/symptoms may include chest discomfort, shortness of breath, significant cough with frothy sputum production, bluish colored skin (cyanosis), increased heart rate, respiratory failure and may be fatal.

**SECTION 11: ECOLOGICAL INFORMATION**

Biological treatment: ETO is amenable to disposal in standard bacteriological waste treatment facilities under controlled conditions after proper acclimation of system.

Aquatic toxicity: Ethylene oxide is moderately toxic to aquatic life as indicated by a 96-hour median lethal concentration (LC₅₀)* of 84 mg/L with fathead minnows and a 48-hours LC₅₀ of about 200 mg/L with Daphnia. Laboratory biological treatment plants have effectively treated industrial wastewater containing concentrations of ethylene oxide up to 250mg/L. Rather sensitive bacterial growth inhibition tests with mixed bacterial cultures (sewage) have indicated some growth inhibition from ethylene oxide concentrations ranging from 10 to 100 mg/L

Biodegradation: Biochemical oxygen demand (BOD) studies show that ethylene oxide and its derivatives biodegrade at a fairly rapid rate (20-day BOD 50% complete), which would prevent persistence and reduce any potential for long-term toxic concentrations.

Hydrolysis: In fresh water, ethylene oxide hydrolyzes to ethylene glycol with a measured half-life of 14 days. A hydrolysis half-life on nine days was measured in salt water, yielding ethylene glycol and ethylene chlorohydrin in a 4:1 ratio. A High adsorptivity in soil is expected.

Volatilization: Ethylene oxide volatilizes from water to the atmosphere at a rate 40% that oxygen. Literature indicates that ethylene oxide is nonpersistent in air due to washout by rain and degradation via free-radical processes. This substance is expected to be rapidly removed from the aquatic and terrestrial compartments by vaporization.

Summary of environmental impact
Ethylene oxide is a nonpersistent chemical structure which would not be expected to accumulate in the environment. Its moderate level of aquatic toxicity coupled with this nonpersistence should prevent any long-term toxic effects on aquatic systems.

Environmental precautions
Try to stop release, prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. No known ecological damage caused by this product.

*Test concentration that kills 50% of the exposed test organism.

**SECTION 12: DISPOSAL CONSIDERATIONS**

Waste management / disposal: Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations. Ethylene Oxide is highly toxic to most forms of life and is considered a potential environmental pollutant. Indiscriminate dumping into sewers or waterways must be avoided. Incineration is the preferred method of disposal. Avoid to discharge at atmosphere Do not
discharge into any place where its accumulation could be dangerous. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Additionally it can be disposed in facilities specially conditioned to this purpose.

SECTION 13: TRANSPORT INFORMATION

TDG Classification: Regulated Material.  
Proper Shipping Name: Ethylene Oxide  
Class/Division: 2.3 (2.1)  
Subsidiary Risk: 2.1  
Identification Number IMDG: UN 1040  
Packing Group: I  
Packing Instructions: 200.  
ADR Class: 2  
ADR Label Item Nr: 2.3 (Toxic Gas) + 2.1 (Flammable gas)  
ADR/RID Hazard Nr: 236  
CEFIC Treamcard Nr: 16  
CEFIC Groupcard Nr: 20g43  
EMS: F-D; S-U  
Marine Pollutant: Not Listed  
Other transport Information: Only transport on vehicles where the load space is separated from the driver’s compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in case of an accident or an emergency.

SECTION 14: REGULATORY INFORMATION

U.S. Regulations:  
TESCA status: Listed  
CERCLA Section 103 (40 CFR 302.4): listed  
10lb. Reportable Quantily  
SARA Section 304 (40 CFR 356. 40): listed  
1lb. Reportable Quantily  
SARA Section 311/312 (40 CFR 370, 21) Hazard categories met:  
Acute, Chronic, Fire, reactive, Sudden Release  
SARA Section 313 (40 CFR 372, 65); listed  
OSHA (29 CFR 1910. 1200): Meets criteria as a hazardous material  
OSHA (29 CFR 1910. 1047): Ethylene Oxide Standard  
EPA list of Pesticide Chemicals (40 cfr 180. 151): Listed  
VOC Rule: 100% VOC

SECTION 15: OTHER INFORMATION / GLOSSARY

Glossary:  
ACGIH- American Conference of Governmental Industrial Hygienists  
CAS- Chemical Abstract Service  
CFR- Code of Federal Regulations  
CNS- Central Nervous System  
DOT- U.S. Environmental Protection Agency  
HMIS- Hazardous Materials information Sheet  
IARC- International Agency for Research on Cancer  
IDL- Ingredient Disclosure List  
IDLH- Immediately dangerous to life and health  
HAP- Hazardous Air Pollutant  
LC50- Median lethal dose that kills 50 % of an exposed population by the inhalation route  
LC50- Median lethal dose that kills 50 % of an exposed population by oral (or dermal) route  
NESHAPs- National Emission standards for Hazardous Air Pollutants
NFPA- National fire Protection Association
NIOSH- National Institute of Occupational Safety and health
NTP- National Toxicology Program
OSHA- Occupational Safety and health Administration
P/P- parts per part
PEL- Permissible Exposure Limit
PVC- Polyvinyl chloride
PPM- Parts per million
P.S.I.G- Pounds per square inch (gauge pressure)
RCRA- resource, Conservation and recovery Act
SARA- Superfund Amendment and Reauthorization Avt of 1990
STEL- Short- term exposure limit
TDG- Transportation of Dangerous Goods
TWA- Time Weighted Average
VOC- Volatile Organic compound
WHMIS- Workplace Hazardous Material Information System

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SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS
SECTION 3: HAZARD IDENTIFICATION
SECTION 4: FIRST AID MEASURES
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DISCLAIMER

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