MATERIAL SAFETY DATA SHEET: SAF-SOL

Section I - General Information

Date of Issue: 10/23/2007 12:00:00 AM
Supercedes: 8/9/2004 12:00:00 AM
Chemical Name & Synonyms:
N/A
Trade Name & Synonyms: SAF-SOL
Chemical Family:
Chlorinated/Aliphatic solvent blend
Formula is a mixture: [√]
Manufacturer Name:
CERTIFIED LABS, DIV. OF NCH CORP.
Manufacturer Address:
BOX 152170
IRVING, TEXAS 75015
Prepared By:
D HOLLAS/CHEMIST
Product Code Number:
0019
Emergency Phone Number:
800-424-9300

Section II - Hazardous Ingredients

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS

<table>
<thead>
<tr>
<th>Chemical Name (Ingredients)</th>
<th>Hazard</th>
<th>TLV</th>
<th>PEL</th>
<th>STEL</th>
<th>CAS #</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHYLENE CHLORIDE</td>
<td>IRR/CARC</td>
<td>50 ppm 1</td>
<td>25 ppm 2</td>
<td>125 ppm 2</td>
<td>75-09-2</td>
</tr>
<tr>
<td>TETRACHLOROETHYLENE</td>
<td>IRR/CARC</td>
<td>25 ppm 1</td>
<td>100 ppm 2</td>
<td>100 ppm 1</td>
<td>127-18-4</td>
</tr>
<tr>
<td>ALIPHATIC PETROLEUM DISTILLATES</td>
<td>IRR/COMB</td>
<td>100 ppm* 1</td>
<td>500 ppm* 2</td>
<td>N/E</td>
<td>$</td>
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<tr>
<td>PROPYLENE OXIDE</td>
<td>IRR/CARC</td>
<td>2 ppm 1</td>
<td>100 ppm 2</td>
<td>N/E</td>
<td>75-56-9</td>
</tr>
<tr>
<td>CARBON TETRACHLORIDE</td>
<td>IRR/CARC</td>
<td>5 ppm 1</td>
<td>10 ppm 2</td>
<td>10 ppm 1</td>
<td>56-23-5</td>
</tr>
</tbody>
</table>
* Stoddard Solvent values
$ 64742-47-8, 64742-88-7, and 8042-41-3

Section III - Physical Data

Boiling Point (°F): 104
Vapor Pressure (mm Hg): 97.7
Vapor Density (Air=1): 3.1
pH @ 100% : N/A
% Volatile by Volume: 100
H₂O Solubility: Negligible
Specific Gravity (H₂O=1): 1.03
Color: Colorless
Odor: Chlorinated solvent
Clarity: Transparent
Evaporation Rate (BuAc=1): 4.65
Viscosity: Non-Viscous

Section IV - Fire and Explosion Hazard

Flash Point: 172°F
Flammable Limits: Product Mixture
LEL: 0.8%
Method Used: Setaflash
UEL: 23%
Aerosol Level (NFPA 30B): N/A
NFPA 704 Hazard Rating:
4-Extreme  Health: 2
3-High       Flammability: 2
2-Moderate   Instability: 0
1-Slight     Special:    
0-Insignificant

Extinguishing Media:
[√] Foam  [√] Alcohol Foam  [√] CO2
[√] Dry Chemical  [√] Water Spray  [ ] Other

Special Fire Fighting Procedures:
Firefighters should wear a self-contained breathing apparatus and full protective gear. Extinguishing media should be chosen based on the nature of the surrounding fire. Cool fire-exposed containers with water spray to prevent bursting.
Unusual Fire and Explosion Hazards:
Vapors are heavier than air and may travel to distant and/or low-lying sources of ignition and flashback. Phosgene can be formed at temperatures above 1000°F. The use of water spray (fog), while effective, may cause frothing and foaming. Never use a water jet as this will just spread the fire. Use care as spills may be slippery.

Section V - Health and Hazard Data

Threshold Limit Value:
Not Established for Mixture. See Section II.

Effects of Overexposure:

Acute: (Short Term Exposure)
EYE CONTACT: Causes severe irritation seen as stinging, tearing, redness, swelling, and a burning sensation. Vapors may cause irritation with stinging, tearing, redness, and a burning sensation. Prolonged or repeated contact may cause corneal damage.
SKIN CONTACT: Causes severe irritation seen as itching, redness, and a burning sensation. May cause allergic skin reactions seen as delayed skin rash which may be followed by blistering, scaling, and other skin effects. Product may be absorbed through the skin in harmful amounts. Prolonged contact may cause an intense burning sensation followed by a feeling of cold and numbness. Prolonged or repeated contact, as from clothing wet with material, may cause drying, defatting, and cracking of the skin.
INHALATION: Causes respiratory irritation seen as coughing and sneezing. May cause pulmonary edema which may not present symptoms, such as shortness of breath, until several hours after exposure and are aggravated by physical exertion. At high vapor concentrations, inhalation may cause central nervous system effects such as headache, dizziness, drowsiness, weakness, unconsciousness, possible anesthetic effects from central nervous system depression, and may be fatal. Excessive exposure may cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen. Initial symptoms are characterized by navy blue, almost black lips, tongue, and mucous membranes, with skin color being slate gray. Further symptoms are characterized by vomiting, headache, blurring of vision, ataxia, weakness, dizziness, stupor, rapid heartbeat, syncope, dyspnea, respiratory distress, and death due to anoxia. This can be additive to the increase caused by smoking and other carbon monoxide sources. A single brief exposure to levels above 6000 ppm of Tetrachloroethylene may be immediately fatal. Excessive exposure may potentially increase sensitivity to epinephrine and increase myocardial irritability. Alcohol consumed before or after exposure may increase adverse effects.
INGESTION: Causes irritation with possible nausea, vomiting, and diarrhea. May cause central nervous system effects such as headache, dizziness, weakness, staggering gait, nausea, blurred vision, excitation, and in extreme cases, coma or death. Ingestion and subsequent vomiting of this product can lead to aspiration of the product into the lungs which can cause damage and may be fatal. Alcohol may exacerbate the effects of overexposure. Avoid alcohol consumption.

Chronic: (Long Term Exposure)
May cause skin sensitization in some individuals. Exposure may result in cardiac sensitization and increase the risk of cardiac arrest. May cause kidney or liver damage. On rare occasions, prolonged and repeated exposure to hydrocarbon mist poses a risk of chronic lung inflammation. This condition is usually asymptomatic as a result of repeated small aspirations. Shortness of breath and coughing are the most common symptoms. Aspiration may lead to pulmonary edema and hemorrhage and may be fatal. Signs of lung involvement include increased respiration and heart rates as well as a bluish discoloration of the skin. Chronic skin contact may promote dermatitis and oil acne. In rarer cases, an increased sensitivity to sunlight (photosensitivity) may occur.
Medical conditions aggravated by exposure: pre-existing respiratory and skin conditions such as asthma, emphysema, and dermatitis; pre-existing liver and kidney diseases; and rhythm disorders of the heart.
TARGET ORGANS: Liver, kidneys, lungs, heart, central nervous system, blood-forming organs, and cardiovascular system. The primary routes of exposure are skin and eye contact.

Primary Routes of Entry
- Inhalation
- Ingestion
- Absorption

Emergency First Aid Procedures:

Inhalation:
Remove from the area to fresh air. If not breathing, clear the airway and start mouth to mouth artificial respiration. Get immediate medical attention.

Eye Contact:
Immediately rinse the eyes with water. Remove any contact lenses and continue flushing for at least 15 minutes. Hold the eyelids apart to ensure rinsing of the entire surface of the eyes and lids with water. Get immediate medical attention.

Skin Contact:
Wash affected areas with large amounts of soap and water for 15 minutes. Remove contaminated clothing and shoes. Seek medical attention if irritation persists. Wash clothing and clean shoes before re-use.

Ingestion:
Give 3 to 4 glasses of water, but DO NOT induce vomiting. If vomiting occurs, give fluids again. Get immediate medical attention. Do not give anything by mouth to an unconscious or convulsing person.

Notes to Physician:
Chlorinated Hydrocarbons may sensitize the heart to Epinephrine and other circulating catecholamines so that arrhythmias may occur. Careful consideration of this potential adverse effect should precede administration of epinephrine or other cardiac stimulants and the selection of bronchodilators. Do not administer sympathomimetic drugs unless absolutely necessary. Ingestion and subsequent vomiting of this product can lead to aspiration of the product into the lungs which can cause damage and may be fatal. Depending on the amount ingested and retained

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as well as the toxicity of the product, gastric lavage should be considered. Keep patient’s head below hips to prevent pulmonary aspiration. If comatose, a cuffed endotracheal tube will prevent aspiration.

Section VI - Toxicity Information

<table>
<thead>
<tr>
<th>Product Contains Chemicals Listed as Carcinogen or Potential Carcinogen By:</th>
<th>[✓] IARC</th>
<th>[✓] NTP</th>
<th>[✓] OSHA</th>
<th>[✓] ACGIH</th>
<th>[✓] Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC Content:</td>
<td>50% by weight; 66.6% by volume; 515 g/L</td>
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<tr>
<td>METHYLENE CHLORIDE</td>
<td>ORL-HMN LD₅₀: 357 mg/kg 3.</td>
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<td></td>
<td>ORL-RAT LD₅₀: 1,600 mg/kg 3.</td>
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<td></td>
<td>SKN-RBT SDT: 800 mg/24 hr; severe 3.</td>
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<td></td>
<td>EYE-RBT SDT: 162 mg; moderate 3.</td>
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<tr>
<td></td>
<td>IHL-RAT LC₅₀: 52 g/m³ 3.</td>
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<tr>
<td></td>
<td>IHL-HMN TCₐ₀: 500 ppm/8 hr 3.</td>
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<tr>
<td>Tumorogenic data</td>
<td>IHL-RAT TCₐ₀: 3,500 ppm/6 hr/2 years-intermittent 3.</td>
<td></td>
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</tr>
<tr>
<td>Reproductive data</td>
<td>IHL-RAT TCₐ₀: 4,500 ppm/24 hr/female 1-17 days after conception 3.</td>
<td></td>
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</tr>
</tbody>
</table>

Methylene Chloride has been evaluated for possible cancer causing effects in laboratory animals. Inhalation studies at concentrations of 2,000 and 4,000 ppm increased the incidence of malignant liver and lung tumors in mice. Three inhalation studies of rats have shown increased incidence of benign mammary gland tumors in female rats at concentrations of 500 ppm and above and increases in benign mammary gland tumors in males at concentrations of 1500 ppm and above. Rats exposed to 50 and 200 ppm via inhalation showed no increased incidence of tumors. Mice and rats exposed by ingestion at levels up to 250 mg/kg/day lifetime and hamsters exposed via inhalation to concentrations up to 3,500 ppm lifetime did not show an increased incidence of tumors. 4.

Epidemiology studies of 751 humans chronically exposed to Methylene Chloride in the workplace of which 252 were exposed for a minimum of 20 years did not demonstrate any increase in deaths caused by cancer or cardiac problems. A second study of 2,227 workers confirmed these results. 4.

Laboratory animal studies on mice, rats, and rabbits have been conducted to evaluate the potential reproductive and developmental effects of Methylene Chloride exposures. Methylen Chloride exposure has not been shown to cause teratogenic effects (birth defects) in experimental animals. 4.

ACGIH group A3: Confirmed animal carcinogen with unknown relevance to humans
IARC group 2B: Animal sufficient evidence; human inadequate evidence
NTP: Part B; Reasonably anticipated to be a human carcinogen

TETRACHLOROETHYLENE
IHL-RAT LC₅₀: 34,200 mg/m³/8h 3. |
| ORL-RAT LD₅₀: 2,629 mg/kg 3. |
| SKN-RBT LD₅₀: >3,228 mg/kg 3. |
| SKN-RBT SDT: 500 mg/24 hr mild 3. |
| EYE-RBT SDT: 500 mg/24 hr mild 3. |
| EYE-RBT: Severe 4. |

ACGIH: A3; Confirmed animal carcinogen with unknown relevance to humans
IARC group 2A: Animal sufficient evidence; human inadequate evidence
NTP: Part B; Reasonably anticipated to be a human carcinogen

ALIPHATIC PETROLEUM DISTILLATES
ORL-RAT LD₅₀: >5,000 mg/kg 3. |
| SKN-RBT LD₅₀: >3,160 mg/kg 3. |
| IHL-RAT LC₅₀: >5.2 mg/L/4 hr 5. |
| SKN-RBT: Moderate irritation 3. |
| EYE-RBT: Mild irritation 3. |

Similar materials were administered orally 5 days/week to male and female rats at 100, 500 or 1,000 mg/kg for 13 weeks. An additional group was dosed with 100 mg/kg for 13 weeks followed by a 4-week recovery period. No mortalities or clinical effects were observed. Liver and kidney weights for the 500 and 1,000 mg/kg exposure groups were significantly increased. After the 4-week recovery period, there were no differences in organ weights. 3.
Animal data suggest that slight anemia, adaptive liver changes, and kidney toxicity may be caused by repeated overexposure to some similar solvents. The significance of this to humans is unknown.

Hydrocarbon mists derived from highly refined petroleum distillates are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation, and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations at or near current workplace exposure levels produced no significant toxicological effects. In long term studies (up to two years) no carcinogenic effects have been reported in any animal species tested. These petroleum distillates are severely hydrotreated, severely solvent extracted, and/or processed by mild hydrotreatment and extraction. For this reason, they are not classified as cancer hazards.

**PROPYLENE OXIDE**
- ORL-RAT LD$_{50}$: 380 mg/kg
- IHL-RAT LC$_{50}$: 4,000 ppm/4h
- SKN-RBT LD$_{50}$: 1,500 uL/kg
- SKN-RBT SDT: 50 mg/6 minutes; severe
- EYE-RBT SDT: 20 mg/24 hours; moderate

ACGIH group A3: Confirmed animal carcinogen with unknown relevance to humans

**CARBON TETRACHLORIDE**
- ORL-RAT LD$_{50}$: 2,350 mg/kg
- IHL-RAT LC$_{50}$: 8,000 ppm
- SKN-RAT LD$_{50}$: 5,070 mg/kg

ACGIH: A2 - Suspected human carcinogen.

Section VII - Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>Hazardous Polymerization</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Stable</td>
<td>[ ] Will not occur</td>
</tr>
<tr>
<td>[ ] Unstable</td>
<td>[ ] May occur</td>
</tr>
</tbody>
</table>

Conditions to Avoid:
Avoid heat, hot surfaces, sparks, and open flames. Avoid direct sunlight and other ultraviolet sources.

**Incompatibility (Materials to Avoid):**
Strong oxidizing agents such as Chlorine Bleach, concentrated Hydrogen Peroxide, and Nitrogen Peroxide. Alkalis, Amines, Oxygen, water, Methanol, aromatic hydrocarbons, Permanganates, and Chromates, and 1,1,1-Trichloroethane. Metals such as Zinc, Potassium, Sodium, and Barium. Reactive powdered metals such as Aluminum, Magnesium, Potassium, Sodium, and Zinc. Forms an explosive mixture with Nitric Acid.

**Hazardous Decomposition Products:**

Section VIII - Spill Or Leak Procedures

Steps to be Taken if Material is Released or Spilled:
Wear appropriate protective clothing. Eliminate all sources of ignition and ventilate the area. Use only non-sparking equipment. Use care as spills may be slippery. Shut off source of leak. Dike and contain spill. Absorb with an inert material and transfer all material into a properly labeled container for disposal. Prevent product from contaminating soil or from entering sewage and drainage systems and bodies of water. Flush area with water.

Waste Disposal Method(s):
Dispose of in accordance with all Federal, State, and local regulations.

Neutralizing Agent:
N/A

Section IX - Special Protection Information

**Required Ventilation:**
Local ventilation is recommended to control exposure from operations that can generate excessive levels of mists or vapors. Local ventilation is preferred, because it prevents dispersion into work areas by controlling it at its source.

**Respiratory Protection:**
Respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in
OSHA’s respirator standard (29 CFR 1910.134) and ANSI’s standard for respiratory protection (Z88.2-1992). For concentrations above the TLV and/or PEL but less than 10 times these limits, a NIOSH approved half-facepiece respirator equipped with appropriate chemical cartridges may be used. For concentrations greater than 10 times the TLV and/or PEL, consult the NIOSH respirator decision logic found in publication No. 87-116 or ANSI Z88.2-1992.

Glove Protection:
Viton or Polyvinyl Alcohol gloves should be worn. Ensure compliance with OSHA’s personal protective equipment (PPE) standard for hand protection, 29 CFR 1910.138.

Eye Protection:
Chemical goggles should be worn when handling. Ensure compliance with OSHA’s Personal Protective Equipment (PPE) standard for eye and face protection, 29 CFR 1910.133.

Other Protection:
Wear protective clothing when handling. A safety shower and an eyewash station should be available. Remove soaked clothing and shoes. Wash clothing and clean shoes before re-use.

Section X - Storage and Handling Information

<table>
<thead>
<tr>
<th>Storage Temperature</th>
<th>Storage Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max: 120°F</td>
<td>[✓] Indoors</td>
</tr>
<tr>
<td>Min: 35°F</td>
<td>[✓] Outdoors</td>
</tr>
<tr>
<td></td>
<td>[ ] Heated</td>
</tr>
<tr>
<td></td>
<td>[ ] Refrigerated</td>
</tr>
</tbody>
</table>

Precautions to be Taken in Handling and Storing:
Always store material in its original container. Do not store in Zinc, Aluminum, Aluminum alloys, galvanized steel, or in plastics. Keep the container tightly closed when not in use. Use with caution around heat, sparks, pilot lights, static electricity, and open flame. Empty containers may contain product residues which may exhibit the hazards of the product. To avoid possible explosion, do not pressurize, cut, weld, solder, drill, grind, or expose empty containers to heat, hot surfaces, sparks, or open flames. Ground and bond container when handling near flammable vapors and all sources of ignition. Bulk Storage: For maximum product life, store indoors. Outdoor Storage Tip: Store containers on their side to help prevent water accumulation on a flat end and consequent product contamination.

Other Precautions:
Keep out of reach of children. Read the entire label before using the product. Follow the label directions.

Section XI - Regulatory Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Upper % Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHYLENE CHLORIDE</td>
<td>75-09-2</td>
<td>20</td>
</tr>
<tr>
<td>TETRACHLOROETHYLENE</td>
<td>127-18-4</td>
<td>40</td>
</tr>
<tr>
<td>CARBON TETRACHLORIDE</td>
<td>56-23-5</td>
<td>1</td>
</tr>
<tr>
<td>PROPYLENE OXIDE</td>
<td>75-96-9</td>
<td>1</td>
</tr>
</tbody>
</table>

Those Ingredients listed above are subject to the reporting requirements of 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Please call 1-800-527-9919 for additional information if you are a California customer. This MSDS is not intended for users in the state of California.

Section XII - References

2. OSHA PEL.
3. Vendor’s MSDS.
5. European Chemical Substances Information System (ESIS), International Uniform Chemical Information Database (IUCLID) Chemical Data Sheets.

All the components of this product are in compliance with the Toxic Substances Control Act (TSCA) and are either listed on the TSCA inventory or otherwise exempted from listing.
Kilogram, VOC: Volatile Organic Compound, SDT: Standard Draize Test, MSE: Mouse, GPG: Guinea Pig.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

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