

NOTE: all WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1998 format.



# MATERIAL SAFETY DATA SHEET

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Prepared to OSHA, ACC, ANSI and WHMIS Standards

MSDS Revision Date 11/01/2002

## 3. HAZARD IDENTIFICATION

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |    |             |    |            |     |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----|-------------|----|------------|-----|
| 3.1 | Hazard Identification:                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |    |             |    |            |     |
| 3.2 | Routes of Entry:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Inhalation: | NO | Absorption: | NO | Ingestion: | YES |
| 3.3 | <p>Effects of Exposure:</p> <p><b>INGESTION:</b> If product is swallowed, may cause nausea, vomiting and/or diarrhea.</p> <p><b>SKIN &amp; EYES:</b> Mildly to moderately irritating to the eyes. May be irritating to skin in some sensitive individuals, especially after prolonged contact.</p> <p><b>INHALATION:</b> Inhalation is unlikely, however, if the product is dried out and becomes a dust, the dust from this product may be moderately irritating to some sensitive individuals.</p> |             |    |             |    |            |     |
| 3.4 | <p>Symptoms of Overexposure:</p> <p><b>Symptoms of overexposure may include redness, itching, irritation and watering (if in eyes).</b></p>                                                                                                                                                                                                                                                                                                                                                          |             |    |             |    |            |     |
| 3.5 | <p>Acute Health Effects:</p> <p><b>Redness, itching, irritation (and watering if in eyes) or skin at the site of contact for some sensitive individuals. May cause excessive bowel movements following ingestion.</b></p>                                                                                                                                                                                                                                                                            |             |    |             |    |            |     |
| 3.6 | <p>Chronic Health Effects:</p> <p><b>No chronic health effects are known, although symptoms and discomfort may occur for several days following overexposure following ingestion.</b></p>                                                                                                                                                                                                                                                                                                            |             |    |             |    |            |     |
| 3.7 | <p>Target Organs:</p> <p><b>Eyes, skin and respiratory system.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                               |             |    |             |    |            |     |

## 4. FIRST AID MEASURES

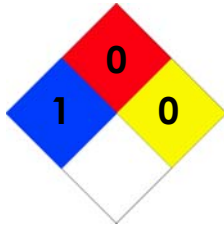
|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                |        |   |              |   |            |   |                      |  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---|--------------|---|------------|---|----------------------|--|
| 4.1                  | <p>First Aid:</p> <p><b>INGESTION:</b> If ingested, do not induce vomiting. Drink plenty of water or milk IMMEDIATELY. If the patient is vomiting, continue to offer plenty of water or milk. Never give water or milk to an unconscious person. Contact Rocky Mountain Poison Control at 1-303-623-5716 or the nearest Poison Control Center or local emergency number. Provide an estimate of the time and amount of the substance that was swallowed.</p> <p><b>EYES &amp; SKIN:</b> If product is in the eyes, flush with copious amounts of lukewarm water for at least 15 minutes. Open and close eyelid(s) to ensure thorough irrigation. If irritation persists, consult a physician. If redness, dryness or other signs of irritation to the skin develop, wash affected skin areas with plenty of warm water and soap. Do not wear contaminated clothing until after it has been properly cleaned. If irritation persists, consult a physician.</p> <p><b>INHALATION:</b> Remove victim to fresh air at once. If breathing stops, administer artificial respiration. Seek immediate medical attention.</p> |                                                                                                                                                                                |        |   |              |   |            |   |                      |  |
| 4.2                  | <p>Medical Conditions Aggravated by Exposure:</p> <p>None known.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <table><tr><td>HEALTH</td><td>1</td></tr><tr><td>FLAMMABILITY</td><td>0</td></tr><tr><td>REACTIVITY</td><td>0</td></tr><tr><td>PROTECTIVE EQUIPMENT</td><td></td></tr></table> | HEALTH | 1 | FLAMMABILITY | 0 | REACTIVITY | 0 | PROTECTIVE EQUIPMENT |  |
| HEALTH               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |        |   |              |   |            |   |                      |  |
| FLAMMABILITY         | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |        |   |              |   |            |   |                      |  |
| REACTIVITY           | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                |        |   |              |   |            |   |                      |  |
| PROTECTIVE EQUIPMENT |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                |        |   |              |   |            |   |                      |  |

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## 5. FIREFIGHTING MEASURES

|     |                                                                                                                              |                                                                                                                                                                                                                                                                                                      |           |                              |           |
|-----|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------|-----------|
| 5.1 | Flashpoint & Method:<br><b>ND</b>                                                                                            |                                                                                                                                                                                                                                                                                                      |           |                              |           |
| 5.2 | Autoignition Temperature:<br><b>ND</b>                                                                                       |                                                                                                                                                                                                                                                                                                      |           |                              |           |
| 5.3 | Flammability Limits:                                                                                                         | Lower Explosive Limit (LEL):                                                                                                                                                                                                                                                                         | <b>NA</b> | Upper Explosive Limit (UEL): | <b>NA</b> |
| 5.4 | Fire & Explosion Hazards:<br><b>This product must be substantially pre-heated before ignition can occur.</b>                 |  <p>RED = FLAMMABILITY<br/>BLUE = HEALTH<br/>YELLOW = REACTIVITY<br/>WHITE = SPECIAL MEASURES</p> <p>0 = NO HAZARD<br/>1 = MINIMAL HAZARD<br/>2 = SLIGHT HAZARD<br/>3 = MODERATE HAZARD<br/>4 = SEVERE HAZARD</p> |           |                              |           |
| 5.5 | Extinguishing Methods:<br><b>Water, Foam, CO<sub>2</sub>, Dry Chemical</b>                                                   |                                                                                                                                                                                                                                                                                                      |           |                              |           |
| 5.6 | Firefighting Procedures:<br><b>Wear protective clothing and NIOSH-approved self-contained breathing apparatus if needed.</b> |                                                                                                                                                                                                                                                                                                      |           |                              |           |

## 6. ACCIDENTAL RELEASE MEASURES

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.1 | Spills:<br><b>Before cleaning any spill or leak, individuals involved in spill cleanup must wear appropriate Personal Protective Equipment.</b><br><b>For small spills (e.g., &lt;1 gallon) wear appropriate personal protective equipment (e.g., goggles, gloves). Maximize ventilation (open doors and windows) and secure all sources of ignition. Remove spilled material with absorbent material and place into appropriate closed container(s) for disposal. Dispose of properly in accordance with local, state and federal regulations. Wash all affected areas and outside of container with plenty of warm water and soap. Remove any contaminated clothing and wash thoroughly before reuse.</b><br><b>For spills ≥ 1 gallon, deny entry to all unprotected individuals. Dike and contain spill with inert material (e.g., sand or earth). Use ONLY non-sparking tools for recovery and cleanup. Transfer liquid to containers for recovery or disposal and solid diking material to separate containers for proper disposal. Remove contaminated clothing promptly and wash affected skin areas with soap and water. Keep spills and cleaning runoffs out of municipal sewers and open bodies of water.</b> |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 7. HANDLING & STORAGE INFORMATION

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.1 | Work & Hygiene Practices:<br><b>Wash all affected areas thoroughly with soap and warm water after use.</b>                                                                                                                                                                                                                                                                                                                                        |
| 7.2 | Storage & Handling:<br><b>Use and store in a cool, dry, well-ventilated location (e.g., local exhaust ventilation, fans). Keep away from excessive heat, open flames, sparks, and other possible sources of ignition. Keep away from incompatible materials listed in Section 10. Do not store in damaged or unmarked containers or storage devices. Keep containers securely closed when not in use. Open slowly on a level, stable surface.</b> |
| 7.3 | Special Precautions:<br><b>Spilled material may present a slipping hazard if left unattended. Clean all spills promptly.</b>                                                                                                                                                                                                                                                                                                                      |

## 8. EXPOSURE CONTROLS & PERSONAL PROTECTION

|     |                                                                                                                                                                                                                                                                                                                                           |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8.1 | Ventilation & Engineering Controls:<br><b>General mechanical (e.g., local exhaust ventilation, fans) or natural ventilation is sufficient when this product is in use.</b>                                                                                                                                                                |
| 8.2 | Respiratory Protection:<br><b>Mechanical exhaust may be required in confined areas. None required if used in a well-ventilated area.</b>                                                                                                                                                                                                  |
| 8.3 | Eye Protection:<br><b>Avoid eye contact. None required under normal conditions of use. However, may cause irritation in some sensitive individuals. When handling large quantities (e.g., ≥ 1 gallon), safety glasses with side shields should be used.</b>                                                                               |
| 8.4 | Hand Protection:<br><b>None required under normal conditions of use. However, may cause skin irritation in some sensitive individuals. When handling large quantities (e.g., ≥ 1 gallon), wear rubber or plastic impervious gloves.</b>                                                                                                   |
| 8.5 | Body Protection:<br><b>No apron required when handling small quantities.</b><br><b>When handling large quantities (e.g., ≥ 1 gallon), eye wash stations and deluge showers should be available. Upon completion of work activities involving large quantities of this product, wash any exposed areas thoroughly with soap and water.</b> |



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## 9. PHYSICAL & CHEMICAL PROPERTIES

|      |                     |                            |
|------|---------------------|----------------------------|
| 9.1  | Density:            | ND                         |
| 9.2  | Boiling Point:      | ND                         |
| 9.3  | Melting Point:      | ND                         |
| 9.4  | Evaporation Rate:   | < 1 (N-BuAc = 1)           |
| 9.5  | Vapor Pressure:     | ND                         |
| 9.6  | Molecular Weight:   | ND                         |
| 9.7  | Appearance & Color: | White, opaque, creamy gel. |
| 9.8  | Odor Threshold:     | ND                         |
| 9.9  | Solubility:         | Fully soluble.             |
| 9.10 | pH                  | ND                         |
| 9.11 | Viscosity:          | ND                         |
| 9.12 | Other Information:  | NA                         |

## 10. STABILITY & REACTIVITY

|      |                                   |                                                                                          |
|------|-----------------------------------|------------------------------------------------------------------------------------------|
| 10.1 | Stability:                        | Stable under ambient conditions.                                                         |
| 10.2 | Hazardous Decomposition Products: | NA                                                                                       |
| 10.3 | Hazardous Polymerization:         | Will not occur.                                                                          |
| 10.4 | Conditions to Avoid:              | Exposure or contact with extreme temperatures, sparks, flames or incompatible materials. |
| 10.5 | Incompatible Substances:          | Strong oxidizers.                                                                        |

## 11. TOXICOLOGICAL INFORMATION

|      |                              |                                                                                                                                                                                                                                            |
|------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11.1 | Toxicity Data:               | This product has not been tested on animals to obtain toxicological data. There are toxicology data for the components of this product, which are found in the scientific literature. These data have not been presented in this document. |
| 11.2 | Acute Toxicity:              | See Section 3.5                                                                                                                                                                                                                            |
| 11.3 | Chronic Toxicity:            | See Section 3.6                                                                                                                                                                                                                            |
| 11.4 | Suspected Carcinogen:        | IARC has classified crystalline silica (quartz) as a human carcinogen.                                                                                                                                                                     |
| 11.5 | Reproductive Toxicity:       | None                                                                                                                                                                                                                                       |
|      | 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 produce teratogenic effects in humans.                                                                                                                                                                     |
|      | Reproductive Toxicity:       | This product is not reported to produce reproductive effects in humans.                                                                                                                                                                    |
| 11.6 | Irritancy of Product:        | See Section 3.3                                                                                                                                                                                                                            |
| 11.7 | Biological Exposure Indices: | NE                                                                                                                                                                                                                                         |
| 11.8 | Physician Recommendations:   | Treat symptomatically.                                                                                                                                                                                                                     |



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## 12. ECOLOGICAL INFORMATION

|      |                              |                                                                                                                                                                                        |
|------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12.1 | Environmental Stability:     | This product will slowly volatile from soil. Components of this product will slowly decompose into organic compounds.                                                                  |
| 12.2 | Effects on Plants & Animals: | There is no specific data available for this product.                                                                                                                                  |
| 12.3 | Effects on Aquatic Life:     | Releases of large volumes may be harmful or fatal to overexposed aquatic life. Aquatic toxicity data for components of this product are available, but are not presented in this MSDS. |

## 13. DISPOSAL CONSIDERATIONS

|      |                         |                                                                   |
|------|-------------------------|-------------------------------------------------------------------|
| 13.1 | Waste Disposal:         | Dispose in accordance with Federal, state, and local regulations. |
| 13.2 | Special Considerations: | None.                                                             |

## 14. TRANSPORTATION INFORMATION

The basic description (proper shipping name, hazard class & division, ID Number, packing group) is shown for each mode of transportation. Additional descriptive information may be required by 49 CFR, IATA/ICAO, IMDG and the CTDGR.

|      |                      |  |
|------|----------------------|--|
| 14.1 | 49 CFR (GND):        |  |
|      | <b>NOT REGULATED</b> |  |
| 14.2 | IATA (AIR):          |  |
|      | <b>NOT REGULATED</b> |  |
| 14.3 | IMDG (OCN):          |  |
|      | <b>NOT REGULATED</b> |  |
| 14.4 | TDGR (Canadian GND): |  |
|      | <b>NOT REGULATED</b> |  |

## 15. REGULATORY INFORMATION

|      |                                   |                                                                                                                                                |
|------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 15.1 | SARA Reporting Requirements:      | Not applicable.                                                                                                                                |
| 15.2 | SARA Threshold Planning Quantity: | Not applicable.                                                                                                                                |
| 15.3 | TSCA Inventory Status:            | All components of this product are listed in the TSCA Inventory.                                                                               |
| 15.4 | CERCLA Reportable Quantity (RQ):  | There are no Reportable Quantities for any of the components of this product.                                                                  |
| 15.5 | Other Federal Requirements:       | Not applicable.                                                                                                                                |
| 15.6 | Other Canadian Regulations:       | This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR. |
| 15.7 | State Regulatory Information:     | NA                                                                                                                                             |



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## 16. OTHER INFORMATION

|                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                  |                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 16.1                                                                                                                                                                                                                             | Other Information:<br><b>Use only as directed. Do not use on sensitive areas of the body (i.e. face). Avoid eye contact. If contact occurs, flush eye thoroughly with running water. Do not taste or swallow. If redness or other signs of adverse reaction occur, discontinue use immediately.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                  |                                                                                    |
| 16.2                                                                                                                                                                                                                             | Terms & Definitions:<br><b>See page 7 of this MSDS.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                  |                                                                                    |
| 16.3                                                                                                                                                                                                                             | Disclaimer:<br>This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of ShipMate's & Creative Nail Design's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either expressed or implied, are provided. The information contained herein relates only to the specific product(s). If this product(s) is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition. |                                                                                                                                                                                                                                  |                                                                                    |
| 16.4                                                                                                                                                                                                                             | <table><tr><td>Prepared for:<br/><b>Creative Nail Design, Inc.</b><br/>1125 Joshua Way<br/>Vista, CA 92083<br/>800-833-NAIL (6245) phone<br/>760-599-4005 fax<br/><a href="http://www.creativenaildesign.com/">http://www.creativenaildesign.com/</a></td><td></td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                              | Prepared for:<br><b>Creative Nail Design, Inc.</b><br>1125 Joshua Way<br>Vista, CA 92083<br>800-833-NAIL (6245) phone<br>760-599-4005 fax<br><a href="http://www.creativenaildesign.com/">http://www.creativenaildesign.com/</a> |   |
| Prepared for:<br><b>Creative Nail Design, Inc.</b><br>1125 Joshua Way<br>Vista, CA 92083<br>800-833-NAIL (6245) phone<br>760-599-4005 fax<br><a href="http://www.creativenaildesign.com/">http://www.creativenaildesign.com/</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                  |                                                                                    |
| 16.5                                                                                                                                                                                                                             | <table><tr><td>Prepared by:<br/><b>ShipMate, Inc.</b><br/>18436 Hawthorne Blvd, Suite 201<br/>Torrance, CA 90504<br/>310-370-3600 phone<br/>310-370-5700 fax<br/><a href="http://www.shipmate.com/">http://www.shipmate.com/</a></td><td></td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                  | Prepared by:<br><b>ShipMate, Inc.</b><br>18436 Hawthorne Blvd, Suite 201<br>Torrance, CA 90504<br>310-370-3600 phone<br>310-370-5700 fax<br><a href="http://www.shipmate.com/">http://www.shipmate.com/</a>                      |  |
| Prepared by:<br><b>ShipMate, Inc.</b><br>18436 Hawthorne Blvd, Suite 201<br>Torrance, CA 90504<br>310-370-3600 phone<br>310-370-5700 fax<br><a href="http://www.shipmate.com/">http://www.shipmate.com/</a>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                  |                                                                                    |



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## DEFINITIONS OF TERMS

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

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

### EXPOSURE LIMITS IN AIR:

**ACGIH** – The American Conference on Governmental Industrial Hygienists, a professional association that establishes exposure limits.

**TLV** – Threshold Limit Value – an airborne concentration of a substance that represents conditions under which it is generally believed that 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 effect must also be considered.

**OSHA** – U.S. Occupational Safety and Health Administration

**PEL** – Permissible Exposure Limit – This exposure value means exactly the same as 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**). When no exposure guidelines are established; an entry of **NE** is made for reference.

### FIRST AID MEASURES:

**CPR:** Cardiopulmonary resuscitation. Method in which a person whose heart has stopped receives manual chest compressions and breathing to circulate blood and provide oxygen to the body.

### HAZARD RATINGS:

**HAZARDOUS MATERIALS IDENTIFICATION SYSTEM:** 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 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 liquids or solids; liquids with a flashpoint of 38-93C [100-200F]); **3** (Class 1B and 1C flammable liquids with flash points below 38C [100F]; **4** (Class 1A flammable liquids with flash points below 23C [73F] and boiling points below 38C [100F]. Reactivity Hazard: **0** (normally stable); **1** (materials that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate when initiated 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). PPE Rating **A:** Eye protection is required for routine chemical use.

**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** (material that under very short exposure could cause death or major residual injury).

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 use dnt his 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 **TD<sub>01</sub>**, the lowest dose to cause a symptom and **TCLO** the lowest concentration to cause a symptom; **TD<sub>01</sub>**, **LD<sub>01</sub>**, and **LD<sub>01</sub>**, or **TC**, **TC<sub>01</sub>**, **LC<sub>01</sub>**, and **LC<sub>01</sub>**, 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. Sub rankings (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 health worker who has been exposed to chemical 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 life forms that consume contaminated plant or animal matter. **TL<sub>m</sub>** – median threshold limit; 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:

**U.S. and CANADA:** This section explains the impact of various laws and regulation of the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Material Information System. **DOT** and **TC** are the U.S. Department of Transportation and Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substance List (**DSL/NDSL**); 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 that appear on the material's package label.

**EUROPEAN and INTERNATIONAL:** **EC** is the European Community, formerly known as the EEC, European Economic Community). **EINECS:** This is the European Inventory of Now-Existing Chemical Substances. **AICS** is the Australian Inventory of Chemical Substances. **MITI** is the Japanese Minister of International Trade and Industry. **ECL** is the Korean Existing Chemicals List. **IMO** is the International Maritime Organization and **IATA** is the International Air Transport Association. 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.

