Ceramic Magnetics, Inc.

MATERIAL SAFETY DATA SHEET

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

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

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**NICKEL-ZINC FERRITE**
CHEMICAL CLASS:	Inert Ceramic Material
MANUFACTURER'S NAME:	**CERAMIC MAGNETICS, Inc.**
ADDRESS:	16 Law Drive Fairfield, New Jersey 07004
EMERGENCY PHONE:	973-227-4222
BUSINESS PHONE:	973-227-4222
DATE OF PREPARATION:	April 23, 2012

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			
			TLV	STEL	PEL	STEL	IDLH	OTHER
Nickel-Zinc Ferrite	12645-50-0	100	For Ceramic Dusts: 10 mg/m^3 Paticulates, Not Otherwise Classified	NE	For Ceramic Dusts: 15 mg/m^3 (Total Dust); 5 mg/m^3 (Respirable Fraction) Particulates, Not Otherwise Classified	NE	NE	NE
Note: This ceramic compound is a crystallographically distinct compound comprised of the following elements: Nickel (Ni) = 15-25 %, by weight Zinc (Zn) = 0-20% Iron (Fe) = 40-50% Copper = 0-3% Cobalt = 0-1% Oxygen: Balance			1 mg/m^3 (for Nickel, Insoluble Compounds); A1 (Confirmed Human Carcinogen) 1 mg/m^3 (for Copper Dusts) 0.02 mg/m^3 (for Inorganic Cobalt Compounds); A3 (Animal Carcinogen)	NE	1 mg/m^3 (for Nickel, Insoluble Compounds) 1 mg/m^3 (for Copper Dusts) 0.05 (for Cobalt Compounds); 0.1 mg/m^3 (for Cobalt, metal, dust, and fumes)	NE	NE	**For Nickel Compounds:** NIOSH REL: 0.015 **mg/m^3**; Carcinogen IARC 1; NTP: 2A **For Copper Compounds:** NIOSH REL: 1 mg/m^3; DFG MAK: 1 mg/m^3; EPA: D **For Cobalt Compounds**: NIOSH REL: 0.5 mg/m^3; IARC-2B; MAK-A2

NE= Not Established. C = Ceiling Level. See Section 16 for Definitions of Terms Used.

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1993 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a black, ceramic material which is odorless. The product presents no unusual hazards in typical emergency response situations. Large quantities of dusts of this ceramic can be irritating to the nose and throat. Nickel compounds are confirmed human carcinogens. Cobalt compounds are suspect human carcinogens; exposures to the dusts of this material should be avoided. If this material is shattered, sharp edges and shards can pose a serious physical hazard to responders. Exposure to intense heat can cause ceramic to shatter. This product is not reactive. Emergency responders must wear adequate protective equipment.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: No adverse effects are anticipated when employees handle solid ceramic. The main health effect associated with exposure to this product would be irritation of tissue contaminated with dusts, or cuts and abrasions caused by shattered ceramic.

INHALATION: Inhalation of dusts of this ceramic material can be irritating to the nose, throat, and other tissues of the upper respiratory system. The symptoms of such over-exposure may include coughing, sneezing, and a dry nose.

Inhalation of nickel and cobalt compounds can cause sensitization, with the development of allergy-like symptoms (wheezing and coughing). Nickel compounds are confirmed human carcinogens. Cobalt compounds are potentially carcinogenic to humans. Exposures to dusts of this product must be minimized.

CONTACT WITH SKIN or EYES: Contact with dusts generated from the ceramic can irritate contaminated skin or eyes, and may cause pain and reddening.

Nickel and cobalt compounds are potentially skin sensitizers; prolonged or repeated exposures to the dusts of this product can result in the development of allergy-like symptoms (i.e. rashes, redness). Shards or sharp edges of this ceramic material can cut or puncture skin or eye tissue, which may result in serious injury.

SKIN ABSORPTION: Skin absorption is not anticipated to be a significant route of exposure for this product.

HAZARDOUS MATERIAL INFORMATION SYSTEM

HEALTH	(BLUE)	2
FLAMMABILITY	(RED)	0
REACTIVITY	(YELLOW)	0
PROTECTIVE EQUIPMENT		B

EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8

For routine industrial applications

INGESTION: Ingestion of this product is not anticipated to be a significant route of occupational exposure. If shards of this material are swallowed, the sharp edges may cut the tissues of the mouth, esophagus, and other tissues of the digestive system. Ingestion of nickel, zinc, copper and cobalt compounds can cause adverse effects on the health, including the following: nausea, vomiting, diarrhea, and disorders of the liver and kidneys.

INJECTION: If the skin is punctured by sharp edges of the ceramic material, the surrounding area may become irritated.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**.

ACUTE: No adverse effects are anticipated when employees handle the solid ceramic product. The main health effect associated with exposure to this product would be irritation of tissue contaminated with dusts, or cuts and abrasions caused by shattered ceramic.

CHRONIC: Sensitive individuals may develop skin irritation after repeated or prolonged over-exposures to large amounts of the dusts of this product. Chronic inhalation of nickel and cobalt compounds can cause sensitization, with the development of allergy-like symptoms (wheezing and coughing). Nickel compounds are confirmed human carcinogens. Cobalt compounds are potentially carcinogenic to humans. Exposures to dusts of this product must be minimized. Refer to Section 11 (Toxicological Information) on this MSDS for additional information.

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

4. FIRST-AID MEASURES

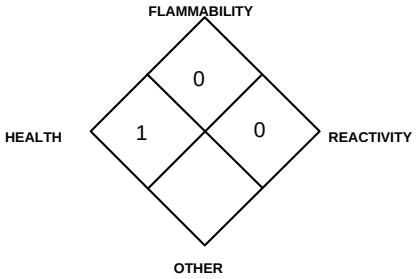
SKIN EXPOSURE: If dusts of this product irritate the skin, immediately begin decontamination with soap and water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek medical attention if irritation persists.
EYE EXPOSURE: If shards of the product enter the eyes, bandage the eye and immediately seek medical attention. If dusts of this product enter the eyes and irritation develops, flush the eyes with water for 15 minutes and immediately seek medical attention.
INHALATION: If chemical is inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.
INGESTION: If chemical is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should drink milk, egg whites, or large quantities of water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow.

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to physician or health professional with victim.

5. FIRE-FIGHTING MEASURES

FLASH POINT, °C (method): Not applicable.
AUTOIGNITION TEMPERATURE, °C: Not applicable.
FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable.
Upper (UEL): Not applicable.

NFPA RATING



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

Water Spray: YES Carbon Dioxide: YES Foam: YES
Dry Chemical: YES Halon: YES Other: Any "ABC" Class.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This ceramic may shatter if instantly exposed to extremely high temperatures. Sharp edges and shards can pose a physical hazard to fire-fighters.

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES

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

Minimum Personal Protective Equipment should be **Level D: gloves (leather, ceramic mesh, or steel mesh if cleaning-up broken ceramic; mil nitrile or latex gloves if cleaning-up dusts), safety glasses, and normal work clothing. Level C (which includes an air-purifying respirator with high-efficiency particulate filter) should be worn if excessive amounts of dusts are anticipated during clean-up. Level B (which includes Self-Contained Breathing Apparatus) must be worn in situations where the oxygen level is below 19.5% or is unknown.**

Sweep-up area carefully. Avoid generation of dusts by wetting spilled material with water before-clean-up, as necessary. Decontaminate the area thoroughly. Place all spill residue in an appropriate container and seal. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13).

PART III *How can I prevent hazardous situations from occuring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Avoid generating dusts. Wash hands after handling this product, especially if dusts were generated during use. Do not eat, drink, or smoke while handling this product. This material must not be machined dry. Machine under water-based, flood coolant to eliminate dust.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Avoid breathing dusts generated from this product. Use a liquid coolant during any machining operations to prevent damage and dust.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment using soapy water before maintenance begins. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Use a mechanical fan or vent area to outside, if operations create excessive dust. Ensure that an eye wash station is located near areas in which grinding or other dust-producing operations occur.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below guidelines listed in Section 2. If respiratory protection is needed, use only protection (i.e. a dust mask, an air purifying respirator with a high efficiency particulate filter, or a respirator with a fume filter) authorized in 29 CFR 1910.134, or applicable State regulations. Use supplied air respiration protection during emergency response or if oxygen levels are below 19.5% or if levels are unknown.

EYE PROTECTION: Safety glasses.

HAND PROTECTION: Wear thin mil nitrile gloves or other appropriate gloves for routine industrial use. Use ceramic-mesh, steel-mesh, or leather gloves if handling shards or shattered ceramic.

BODY PROTECTION: Use body protection appropriate for task.

PERSONAL PROTECTIVE EQUIPMENT LEVEL: B.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY(air = 1): Not applicable.
SPECIFIC GRAVITY (water = 1): 5.3
SOLUBILITY IN WATER: No.
VAPOR PRESSURE, mm Hg @ 20 °C: Not applicable.

EVAPORATION RATE (n-BuAc = 1): Not applicable.
MELTING POINT or RANGE: Approximately 1500 °C.
BOILING POINT: Not applicable.
pH: Not applicable.

APPEARANCE AND COLOR: Black, ceramic material with no odor.

HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance of this product is a distinct characteristic of this material. This product can also be attracted by a magnet.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: If this product is exposed to extremely high temperature, fumes containing zinc, iron, copper, nickel, and cobalt compounds can be generated.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product may produce hydrogen gas if exposed to strong acids.

HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Exposure to strong acids and extreme temperatures.

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

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

NICKEL-ZINC FERRITE: There is no specific toxicology information available for this product. Information is available for the main elements comprising this ceramic, as provided below.

NICKEL:
Oncogenic Transformation System (hamster, kidney) = 400 mg/L
Oncogenic Transformation System (hamster, embryo) = 0.05 mmol/L
TDLo (oral, rat) = 158 mg/L; teratogenic effects
TDLo (subcutaneous, rat) = 3000 mg/kg/6 weeks; equivocal tumorigenic agent
TDLo (intramuscular, rat) = 56 mg/kg; carcinogenic effects
TDLo (parenteral, rat) = 40 mg/kg; carcinogenic effects
TDLo (implant, rat) = 250 mg/kg; carcinogenic effects
TDLo (intramuscular, mouse) = 200 mg/kg; neoplastigenic effects
TDLo (implant, rabbit) = 165/kg/2 years-I; neoplastigenic, teratogenic effects
LDLo (oral, rat) = 5000 mg/kg
LDLo (intratracheal, rat) = 12 mg/kg
LDLo (intravenous, mouse) = 50 mg/kg

NICKEL (Continued)
LDLo (intravenous, dog) = 10 mg/kg
LDLo (subcutaneous, rat) = 12.5 mg/kg
LDLo (intraperitoneal, rabbit) = 7 mg/kg
LDLo (subcutaneous, rabbit) = 7.5 mg/kg
LCLo (oral, guinea pig) = 5 mg/kg

ZINC:
TCLo (inhalation human): 124 mg/m^3/50 min; pulmonary, skin
Human skin 0.3 mg/3 days; intermittent: mild irritation

COPPER:
TDLo (oral, rat) = 152 mg/kg (22W pre); teratogenic effects
TDLo (intrauterine, rat) = 0.25 mg/kg
TDLo (implant, rat) = 100 mg/kg; equivocal tumorigenic data
TDLo (oral, human) = 0.12 mg/kg; gastrointestinal effects

COBALT:
TDLo (intramuscular, rat) = 126 mg/kg; neoplastigenic effects
TDLo (implant, rabbit) = 75 mg/kg; equivocal tumorigenic agent
LDLo (oral, rat) = 1500 mg/kg
LDLo (intraperitoneal, rat) = 250 mg/kg
LDLo (intravenous, rat) = 100 mg/kg
LDLo (intratracheal, rat) = 25 mg/kg
LDLo (intraperitoneal, mouse) = 100 mg/kg
LDLo (oral, rabbit) = 750 mg/kg
TDLo (intravenous, rabbit) = 100 mg/kg

IRON:
TDLo (rat) = 450 mg/kg
LD_{50} (oral-rat) = 30 000 mg/kg
LDLo (intraperitoneal-rabbit) = 20 mg/kg

SUSPECTED CANCER AGENT: This product is not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA. However, nickel, copper and cobalt compounds are listed as follows:

NICKEL COMPOUNDS: IARC-1 (Carcinogenic to Humans); NTP: 2A (Reasonably Anticipated to be a Carcinogen/Human Epidemiological Evidence); ACGIH: A1 (Confirmed Human Carcinogen).
COBALT COMPOUNDS: IARC-2B (Possibly Carcinogenic to Human); MAK-A2 (Carcinogenic in Animal Experiments Only); ACGIH: A3 (Animal Carcinogen)
COPPER: EPA-D (Not Classifiable as to Human Carcinogenicity).

IRRITANCY OF PRODUCT: The dusts of this product can be irritating to the nose, eyes, skin, and other contaminated tissue.

SENSITIZATION TO THE PRODUCT: Sensitive individuals may be prone to skin irritation after prolonged or repeated skin exposure to dusts of this product. Additionally, cobalt and nickel compounds are potential skin and respiratory system sensitizers. Prolonged or repeated over-exposure to the dusts of this product can lead to the development of allergy-like symptoms (i.e. coughing, wheezing, rashes).

11. TOXICOLOGICAL INFORMATION (Continued)

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: This product is not expected to cause mutagenic effects in humans.

Teratogenicity: This product is not expected to cause teratogenic effects in humans. Teratogenic effects are observed in clinical studies involving test animals exposed to the following compounds: copper, nickel (elements found in this product).

Reproductive Toxicity: This product is not expected to cause adverse reproductive effects in humans. Adverse reproductive effects are observed in clinical studies involving test animals exposed to the following compound: copper (an element found in this product).

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: Not applicable to the product. The BEIs which are applicable to the elements comprising this product are provided in the table below.

BIOLOGICAL EXPOSURE INDICES (BEIs) for components of this product are as follows:

CHEMICAL DETERMINANT	SAMPLING TIME	BEI
COBALT • Cobalt in urine • Cobalt in blood	 • End of shift at end of workweek • End of shift at end of workweek	 • 15 mg/L • 1 mg/L

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin conditions and respiratory ailments may be aggravated by over-exposure to the dusts of this ceramic material.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

12. ECOLOGICAL INFORMATION

STABILITY: This product will be stable in the environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: There is currently no information on this product's impact on plants and animals if this material is released into the environment. However, as with all chemical products, all work practices should be aimed at minimizing environmental contamination.

EFFECT OF CHEMICAL ON AQUATIC LIFE: There is currently no information on this product's impact on aquatic plants and animals if this material is released into the environment. However, as with all chemical products, all work practices should be aimed at minimizing environmental contamination.

13. DISPOSAL CONSIDERATIONS

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

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

14. TRANSPORTATION INFORMATION

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

PROPER SHIPPING NAME:	Not applicable.
HAZARD CLASS NUMBER and DESCRIPTION:	Not applicable.
UN IDENTIFICATION NUMBER:	Not applicable.
PACKING GROUP:	Not applicable.
DOT LABEL(S) REQUIRED:	Not applicable.

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER: Not applicable.

MARINE POLLUTANT: This product is not designated as a Marine Pollutant (as per 49 CFR 172.101, Appendix B).

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

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: This product is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows.

COMPOUND	SECTION 302	SECTION 304	SECTION 313
Nickel	No	Yes	Yes (Nickel Compound)
Iron	No	No	No
Zinc	No	Yes	Yes (Zinc Compound)
Cobalt	No	No	Yes (Cobalt Compound)
Copper	No	Yes	Yes (Copper Compound)
Nickel-Zinc Ferrite	No	No	Yes (as both a Nickel/Zinc/Cobalt/Copper Compound)

SARA Threshold Planning Quantity: Not applicable.

TSCA INVENTORY STATUS: This product is listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Nickel = 100 lbs; Zinc = 1000 lbs; Copper = 5000 lbs. (No reporting is required if the diameter of the solid metal released is equal to or exceeds 100 micrometers.)

OTHER FEDERAL REGULATIONS: Not applicable.

STATE REGULATORY INFORMATION: This product is not listed under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: No .
California - Permissible Exposure Limits for Chemical Contaminants: No .
Florida - Substance List: No.
Illinois - Toxic Substance List: No.
K**ansas** - Section 302/313 List: No .
Massachusetts - Substance List: No.
Minnesota - List of Hazardous Substances: No.
Missouri - Employer Information/Toxic Substance List: No.
New Jersey - Right to Know Hazardous Substance List: No.
North Dakota - List of Hazardous Chemicals, Reportable Quantities: No .
Pennsylvania - Hazardous Substance List: No.
Rhode Island - Hazardous Substance List: No.
Texas - Hazardous Substance List: No.
West Virginia - Hazardous Substance List: No.
Wisconsin - Toxic and Hazardous stances: No.

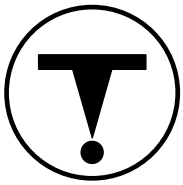
CALIFORNIA PROPOSITION 65: This product is not on the California Proposition 65 lists; however, nickel and certain nickel compounds are listed as chemicals known to the State of California to cause cancer.

15. REGULATORY INFORMATION (Continued)

LABELING (Precautionary Statements): **WARNING!** Nickel compounds are confirmed human carcinogens. Dusts of this product can be irritating to skin, eyes, and other contaminated tissue. Exposure to the dusts of this product must be minimized. Sharp edges or shards can cut skin and eye tissue. Avoid generating dusts of this product. Avoid contact with acids. Consult the Material Safety Data Sheet for further information concerning this product.

TARGET ORGANS: (For Dusts): Skin, Eyes.

WHMIS SYMBOLS:



16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.
9163 Chesapeake Drive, San Diego, CA 92123-1002
619/565-0302

DEFINITIONS OF TERMS

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

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

TLV - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour **Time Weighted Average (TWA)**, the 15-minute **Short Term Exposure Limit**, and the instantaneous **Ceiling Level**. Skin adsorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - this exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The **IDLH - Immediately Dangerous to Life and Health** 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. **O**ccupational **S**afety and **H**ealth **A**dministration (**OSHA**). NIOSH issues exposure guidelines called **R**ecommended **E**xposure **L**evels (**REL**s). When no exposure guidelines are established, an entry of **NE** is made for reference.

FLAMMABILITY LIMITS IN AIR: Much of the information related to fire and explosion is derived from the **N**ational **F**ire **P**rotection **A**ssociation (**NFPA**). 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

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - 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^3** 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. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause death. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REGULATORY INFORMATION

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazard information System. **DOT** and **CTC** are the U.S. Department of Transportation and the Canadian Transportation Commission, respectively. These are: **Superfund Amendments and Reauthorization Act (SARA)**; the **Toxic Substance Control Act (TSCA)**; Marine Pollutant status according to the **DOT**; California's Safe Drinking Water Act (**Proposition 65**); the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings which appear on the materials package label.