I. IDENTIFICATION

COMPANY NAME	ISSUE DATE	IDENTIFICATION NUMBER
ADDRESS	PHONE NUMBER	
PRODUCT NAME: STAINLESS STEEL PRODUCTS		

II. INGREDIENTS

BASE METAL, ALLOYING ELEMENTS	% WEIGHT		PERMISSIBLE EXPOSURE LIMITS (OSHA PEL)
BASE METAL:			
IRON (Fe)	BALANCE		10 mg/M³ as Iron Oxide Fume
ALLOYING ELEMENTS:			
CARBON (C)	1.0	% MAX	None Listed
MANGANESE (Mn)	15.5	% MAX	5 mg/M³
PHOSPHORUS (P)	0.45	% MAX	0.1mg/M³
SULFUR (S)	0.5	% MAX	13 mg/M³ as Sulfur Dioxide
SILICON (Si)	5.0	% MAX	None Listed
CHROMIUM (Cr)	50.0	% MAX	1mg/M³
MOLYBDENUM (Mo)	17.0	% MAX	15mg/M³ as Insoluble Compounds
COPPER (Cu)	5.0	% MAX	0.1mg/M³- Fume, 1mg/M³- Dust
NICKEL (Ni)	45.0	% MAX	1mg/M³
VANADIUM (V)	1.0	% MAX	0.5mg/M³- Dust, 0.1mg/M³- Fume
ALUMINUM (Al)	8.0	% MAX	None Listed
NIOBIUM (Nb)	4.5	% MAX	None Listed
BORON (B)	1.2	% MAX	15mg/M³ as Oxide
TITANIUM (Ti)	2.4	% MAX	15mg/M³ as Dioxide
SELENIUM (Se)	1.0	% MAX	0.2mg/M³ as Compounds
NITROGEN (N)	1.5	% MAX	9mg/M³- Dioxide, 25mg/M³- Trifluoride
TANTALUM (Ta)	1.0	% MAX	5mg/M³
COBALT (Co)	0.5	% MAX	0.1mg/M³ as Metal Fume & Dust
LEAD (Pb)	0.1	% MAX	0.05mg/M³
TUNGSTEN (W)	3.0	% MAX	5mg/M³- Insoluble, 1mg/M³- Soluble in Water
RARE EARTHS (Ce)	1.0	% MAX	None Listed
NATRIUM (Na) + TERBIUM (Tb)	0.8	% MAX	None Listed

III. PHYSICAL DATA

1. PHYSICAL STATE: SOLID
2. APPEARANCE AND ODOR: METALIC GREY, ODORLESS
3. MELTING POINT/BOILING POINT: N/A

IV. PERSONAL PROTECTION INFORMATION

1. RESPIRATORY PROTECTION: NIOSH/MSHA APPROVED DUST AND FUME RESPIRATOR SHOULD BE USED IF OSHA PEL IS EXCEEDED.
2. HANDS, ARMS, BODY/EYES, FACE PROTECTION: USE APPROPRIATE PROTECTIVE CLOTHING/FACE SHIELD WHEN WELDING, BURNING OR GRINDING.

V. EMERGENCY MEDICAL PROCEDURES

FIRST AID: IN CASE OF EXCESSIVE EXPOSURE TO FUMES OR PARTICULATES, REMOVE EXPOSED PERSON TO FRESH AIR, AND IF NECESSARY ADMINISTER OXYGEN AND SEEK PHYSICIAN'S ASSISTANCE.

VI. HEALTH HAZARD DATA

NOTE: STEEL PRODUCTS UNDER NORMAL CONDITIONS DO NOT PRESENT AN INHALATION, INGESTION OR CONTACT HEALTH HAZARD. HOWEVER, OPERATIONS SUCH AS BURNING, WELDING, SAWING, BRAZING, GRINDING, ETC. MAY RESULT IN THE FOLLOWING EFFECTS IF EXPOSURE EXCEED PERMISSIBLE LIMITS AS LISTED IN SECTION II.

MAJOR EXPOSURE HAZARD

[x] INHALATION	[ ] SKIN CONTACT	[ ] EYE CONTACT	[ ] INGESTION

CHRONIC INHALATION OF HIGH CONCENTRATIONS OF IRON OXIDE FUMES/DUSTS MAY LEAD TO A SIDEROSIS. THE INHALATION OF HIGH CONCENTRATIONS OF FRESHLY FORMED OXIDE FUMES AND DUSTS OF MANGANESE, COPPER, LEAD AND ZINC CAN CAUSE A METAL FUME FEVER.
EXPOSURE TO HIGH CONCENTRATIONS OF NICKEL FUMES AND DUSTS MAY CAUSE RESPIRATORY IRRITATION AND PNEUMONITIS. SEVERAL NICKEL COMPOUNDS MAY BE LUNG AND NASAL CARCINOGENS. SOME INSOLUBLE CHROMIUM COMPOUNDS ARE SUSPECT CARCINOGENS.
INHALATION OF LEAD PARTICLES MAY RESULT IN LEAD-INDUCED SYSTEMIC TOXICITY.

VII. SAFETY INFORMATION

1. FIRE AND EXPLOSION: STEEL PRODUCTS IN THE SOLID STATE PRESENT NO FIRE OR EXPLOSION HAZARD.
2. REACTIVITY: STABLE UNDER NORMAL CONDITIONS.

VIII. SPILL LEAK AND DISPOSAL PROCEDURE

1. SPILL AND LEAK: N/A TO STEEL PRODUCTS IN THE SOLID STATE.
2. DISPOSAL: N/A

WHILE THE INFORMATIONS AND RECOMMENDATIONS OF THIS SHEET ARE BELIEVED TO BE ACCURATE AS OF THE PRESENT DATE, THE ISSUER OF THIS SHEET MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

STEEL PRODUCTS

WARNING! PARTICULATES MAY BE HARMFUL IF INHALED OR INGESTED.

AVOID BREATHING FUMES OR DUST. USE APPROPRIATE PROTECTIVE CLOTHING / FACE SHIELD WHEN WELDING, BURNING OR GRINDING.

FIRST AID : IN CASE OF EXCESSIVE EXPOSURE TO FUMES OR PARTICULATES, REMOVE EXPOSED PERSON TO FRESH AIR, AND IF NECESSARY ADMINISTER OXYGEN AND SEEK PHYSICIAN'S ASSISTANCE.

BCS

MATERIAL SAFETY DATA SHEET

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

BASIC CHEMICAL SOLUTIONS

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

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): **NITRIC ACID (30 – 70%)**

CHEMICAL NAME/CLASS: Nitric Acid Solution

SUPPLIER/MANUFACTURER'S NAME: **BASIC CHEMICAL SOLUTIONS**

ADDRESS: **Corporate Office**
525 Seaport Blvd.
Redwood City, CA 94063

BUSINESS PHONE: 800-411-4227

EMERGENCY PHONE: **CHEMTREC**: 800-424-9300

DATE OF PREPARATION: May 14, 2004

DATE OF REVISION: April 17, 2006

Si usted no entiende las Hojas de Informacion de Seguridad sobre Materials, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the Material Safety Data Sheet, find someone to explain it to you in detail.)

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	%w/w	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			
			TLV mg/m^3	STEL mg/m^3	PEL mg/m^3	STEL mg/m^3	IDLH	OTHER mg/m^3
Nitric Acid	7697-37-2	30-70	5.2	10	5 2, (Vacated 1989 PELs)	4, (Vacated 1989 PELs)	25 ppm	NIOSH REL: 5 STEL: 10 DFG MAKs: 5
Water and other ingredients. The other ingredients are each present in less than 1 percent concentration in this product.		Balance	The components present in the balance of this product do not contribute any significant, additional hazards. All hazard information pertinent to this product has been presented in the remaining sections of this Material Safety Data Sheet, per the requirements of Federal Occupational Safety and Health Hazard Communication Standard (29 CFR 1910.1200).					

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.
NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a clear solution. This solution is corrosive, and can be damaging to contaminated tissue. Ingestion or inhalation of large quantities can be fatal. In the event of fire or spill, adequate precautions must be taken. This solution is an oxidizer, which can act to initiate and sustain the combustion of flammable materials. If involved in a fire, this product may decompose to produce a variety of compounds (i.e. carbon monoxide, carbon dioxide and nitrogen oxides). Emergency responders must wear the proper personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of occupational overexposure are inhalation and contact with skin and eyes. The symptoms of overexposure to this product are as follows:

INHALATION: If mists or sprays of this solution are inhaled, this product may cause pulmonary irritation, irritation of the mucus membranes, coughing, and a sore throat. Inhalation of this product may cause damage to the tissues of the respiratory system, producing potentially fatal lung disorders (chemical pneumonitis and pulmonary edema). Prolonged exposure to the fumes may cause erosion of the teeth enamel.

CONTACT WITH SKIN or EYES: Contact with the eyes may cause severe irritation, eye burns and permanent eye damage. Contact with the skin may cause severe irritation, skin burns and permanent skin damage. Prolonged exposure may result in ulcerating burns which could leave scars.

SKIN ABSORPTION: Skin absorption is not anticipated to be a significant route of over-exposure to any component of this product.

INGESTION: Though ingestion is not anticipated to be a significant route of over-exposure to this product, if ingestion does occur burning and irritation of the mouth, throat, esophagus, and other tissues of the digestive system will occur immediately upon contact. Ingestion of large quantities may be fatal.

INJECTION: Though injection is not anticipated to be a significant route of over-exposure to this product, if it occurs, may cause local reddening, tissue swelling, and discomfort.

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

NITRIC ACID OTHER THAN RED FUMING <70%
HAZARDOUS MATERIALS INFORMATION SYSTEM

HEALTH	(BLUE	3
FLAMMABILITY	(RED	0
REACTIVITY	(YELLOW	0
PROTECTIVE EQUIPMENT		D

EYE	RESPIRATOR	HAND	BOD
	SEE SECTION		

For routine industrial applications

ACUTE: This solution is corrosive, and can burn and damage eyes, skin, mucous membranes, and any other exposed tissue. If inhaled, irritation of the respiratory system may occur, with coughing, and breathing difficulty. Though unlikely to occur during occupational use, ingestion or injection of large quantities may be fatal.

CHRONIC: Repeated skin contact with this product may result in dermatitis (inflammation and reddening of the skin).

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

4. FIRST-AID MEASURES

SKIN EXPOSURE: If the product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove contaminated clothing, taking care not to contaminate eyes. Victim must seek medical attention.

EYE EXPOSURE: If this product enters the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

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

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should rinse mouth with large amounts of water. Victim should drink one glass of milk or water to dilute the ingested material. 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 health professional with victim.

5. FIRE-FIGHTING MEASURES

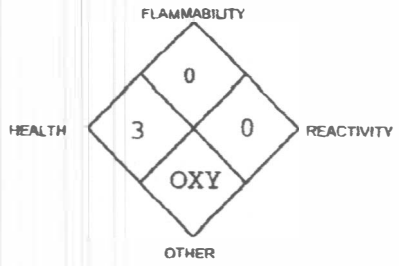
FLASH POINT, °C (method): Not flammable.
AUTOIGNITION TEMPERATURE, °C: Not flammable.
FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable.
Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES	Carbon Dioxide: NO
Foam: NO	Dry Chemical: NO
Halon: NO	Other: NO.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product is corrosive, and presents a significant contact hazard to fire-fighters. Nitric Acid, a component of this product is a strong oxidizer which can ignite many organic materials. When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (including carbon monoxide, carbon dioxide and nitrogen oxides).

NFPA RATING
Less than 71%



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. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas.

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.

The proper personal protective equipment for incidental releases (e.g.-1 L of the product released in a well-ventilated area) use impermeable gloves, specific for the material handled, goggles, face shield, and appropriate body protection. In the event of a large release, use impermeable gloves, specific for the material handled, chemically resistant suit and boots, and hard-hat. Self Contained Breathing Apparatus or respirator may be required where engineering controls are not adequate or conditions for potential exposure exist. When respirators are required, Select NIOSH/MSHA approved based on actual or potential airborne concentrations in accordance with latest OSHA and/or ANSI recommendations.
Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue with lime or soda ash or other acid neutralizing agent. Decontaminate the area thoroughly. Test area with litmus paper to confirm neutralization. Place all spill residue in a suitable container. Dispose of in accordance with Federal, State and local hazardous waste disposal regulations (see Section 13 – Disposal Considerations.)

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

7. HANDLING and STORAGE

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

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Avoid breathing mists or sprays generated by this product. Use in a well-ventilated location.

For Non-Bulk Containers: Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a diked area, as appropriate. Store containers away from incompatible chemicals. Keep container tightly closed when not in use. Wash thoroughly after using this material. Storage areas should be made of fire-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Empty containers may contain residual liquid. Therefore, empty containers should be handled with care.

Bulk Containers: All tanks and pipelines which contain this material must be labeled. Perform routine maintenance on tanks or pipelines which contain this product. Report all leaks immediately to the proper personnel.

Tank Car Shipments: Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective equipment must be used (see Section 8, Engineering Controls and Personal Protective Equipment.). All loading and unloading equipment must be inspected, prior to each use. Loading and unloading operations must be attended, at all times. Tank cars must be level, brakes must be set or wheels must be locked or blocked prior to loading or unloading. Tank car (for loading) or storage tank (for unloading) must be verified to be correct for receiving this product and be properly prepared, prior to starting the transfer operations. Hoses must be verified to be clean and free of incompatible chemicals, prior to connection to the tank car or vessel. Valves and hoses must be verified to be in the correct positions, before starting transfer operations. A sample (if required) must be taken and verified (if required) prior to starting transfer operations. All lines must be blown-down and purged before disconnecting them from the tank car or vessel.

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 before maintenance begins by a triple-rinse with water followed, if necessary, by using acid neutralizing agent and an additional rinse. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: If required use a corrosion-resistant ventilation system separate from other exhaust ventilation systems to ensure that there is no potential for overexposure to sprays, or mists of this product and that exposures are below those in section 2. Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134, or applicable State regulations. If adequate ventilation is not available or if there is potential for airborne exposure above the exposure limits (listed in Section 2) a respirator may be worn up to respirator exposure limitations, check with respirator equipment manufactures recommendations/limitations. For a higher level of protection use positive pressure supplied air respiration protection or Self Contained Breathing Apparatus or if oxygen levels are below 19.5% or are unknown. Nitric acid component has poor warning properties.

EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS:
Positive pressure, full-facepiece Self Contained Breathing Apparatus; or positive pressure, full-facepiece Self Contained Breathing Apparatus with an auxiliary positive pressure Self Contained Breathing Apparatus.

EYE PROTECTION: Splash goggles or safety glasses. Face-shields are recommended when the operation can generate splashes, sprays or mists.

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

BODY PROTECTION: Use body protection appropriate for task. Cover-all, rubber aprons, or chemical protective clothing made from natural rubber or other appropriate materials are generally acceptable, depending upon the task.

9. PHYSICAL and CHEMICAL PROPERTIES

Physical and chemical properties for Nitric Acid, a main component of this product, are as follows:

	Nitric Acid			
	30	50	60	70
PHYSICAL STATE:				
BOILING POINT @ 760 mm Hg:	107°C – 224.6°F	116.4°C – 241.5°F	120.4°C – 248.7°F	122°C – 252°F
FREEZING POINT:	-36°C - -96.8°F	-20°C - -68°F	-22°C - -71.6°F	-22°C - -71.6°F
VAPOR PRESSURE mm Hg @ 20°C:	<0.1	27.15	33.88	48
SPECIFIC GRAVITY @ 15.6°C	1.18	1.31	1.37	1.41
DENSITY – lb-gal @ 15.6°C:	9.84	10.93	11.43	11.43
VAPOR DENSITY:	Not Determined			
EVAPORATION RATE (n-BuAc = 1):	>1			
pH:	< 1 pH			
SOLUBILITY in H_2O - % by wt:	Completely Soluble			

ODOR THRESHOLD: Not available.

APPEARANCE AND COLOR: This is a clear liquid with acrid odor. The solution may turn yellow to brown upon exposure to light.

HOW TO DETECT THIS SUBSTANCE (warning properties): Litmus paper will turn red upon contact with even low concentrations of this solution.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Thermal decomposition products of this solution can include carbon monoxide, carbon dioxide, and nitrogen oxides.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product reacts with bases, reducing agents, alcohols, alkali metals, carbides, cyanides, sulfides and metal powders. Do not mix this product with sodium hypochlorite, sodium bisulfite, Chlorine Sanitizers or Chlorinated Cleaners – a deadly gas can be formed.

HAZARDOUS POLYMERIZATION: Will not occur.

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

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

11. TOXICOLOGICAL INFORMATION

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

NITRIC ACID:

TDLo (oral, rat) = 2345 mg/kg; reproductive effects
TDLo (oral, rat) = 21150 mg/kg; teratogenic effects
LDLo (oral, human) = 430 mg/kg
LDLo (unreported, man) = 110 mg/kg

SUSPECTED CANCER AGENT: The components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA; and are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product is severely irritating to contaminated tissue.

SENSITIZATION TO THE PRODUCT: No component of this product is known to be a sensitizer.

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 reported to produce mutagenic effects in humans.
Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.
Teratogenicity: This product is not reported to cause teratogenic effects in humans.
Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. Studies on test animals exposed to relatively high doses of Nitric Acid (a component of this product) indicate adverse reproductive effects.

11. TOXICOLOGICAL INFORMATION--CONTINUED

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across 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: Currently there are no Biological Exposure Indices (BEIs) associated with the components of this product.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE Skin disorders can be aggravated by over-exposure to this product. Inhalation of the products mists may aggravate respiratory conditions.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate over-exposure to this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product are relatively stable in the environment; they may degrade, after time, into other organic and inorganic constituents.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product is harmful or fatal to plant and animal life if released into the environment. As with all chemicals, work practices should be aimed at eliminating environmental releases. Refer to Section 11 (Toxicological Information) for further toxicological data.

EFFECT OF CHEMICAL ON AQUATIC LIFE This product can substantially lower the pH of an aquatic environment and can be extremely toxic to fish and aquatic plants. As with all chemicals, work practices should be aimed at eliminating environmental releases. Additional aquatic data for the components of this product is available as follows:

NITRIC ACID:
LC_{50} (shore crab) = 180 mg/L/ 48 hours (aerated water conditions)
LC_{50} (cockle) = 330-1000 mg/L/ 48 hours (aerated water conditions)
LC_{50} (starfish) = 100-300 mg/L/ 48 hours (aerated water conditions)
Acute Hazard Level: Toxic to fish NO_3 is toxic to animal life even after neutralization.
Chronic Hazard Level: Nitrate can feed algal blooms causing eutrophication.

13. DISPOSAL CONSIDERATIONS

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

EPA WASTE NUMBER: D002 (Characteristic, Corrosivity), applicable to wastes consisting only of this solution.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:	Nitric Acid *other than red fuming, with not more than 70% nitric acid*
HAZARD CLASS NUMBER and DESCRIPTION:	8 (Corrosive Material)
UN IDENTIFICATION NUMBER:	UN 2031
PACKING GROUP:	II
DOT LABEL(S) REQUIRED:	Corrosive

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 157

MARINE POLLUTANT: This product does not contain any components which are designated by the Department of Transportation to be Marine Pollutants. (49 CFR 172.101, Appendix B).

14. TRANSPORTATION INFORMATION--CONTINUED

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

Note: The latest DOT information is provided, please verify all DOT information as it is subject to change without notice.

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: The components of this product subject to the reporting requirements of Section 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act are as follows.

COMPONENT	SARA 302	SARA 304	SARA 313
Nitric Acid	Yes	Yes	Yes

SARA Threshold Planning Quantity: Nitric Acid = 1000 lbs.

TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Nitric Acid = 1000 lbs

OTHER FEDERAL REGULATIONS: Not applicable.

STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Nitric Acid
California - Permissible Exposure Limits for Chemical Contaminants: Nitric Acid
Florida - Substance List: Nitric Acid
Illinois - Toxic Substance List: Nitric Acid
Kansas - Section 302/313 List: Nitric Acid
Massachusetts - Substance List Nitric Acid
Minnesota - List of Hazardous Substances: Nitric Acid
Missouri - Employer Information/Toxic Substance List: Nitric Acid
New Jersey - Right to Know Hazardous Substance List: Nitric Acid
North Dakota - List of Hazardous Chemicals, Reportable Quantities: Nitric Acid
Pennsylvania - Hazardous Substance List: Nitric Acid
Rhode Island - Hazardous Substance List: Nitric Acid
Texas - Hazardous Substance List Nitric Acid
West Virginia Substance List: Nitric Acid
Wisconsin - Toxic and Hazardous Substances: Nitric Acid

CALIFORNIA PROPOSITION 65: No component of this product is on the California Proposition 65 lists.

LABELING (Precautionary Statements): **DANGER!** CORROSIVE MATERIAL! LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. MAY CAUSE LUNG DAMAGE. CONTAINS OXIDIZING MATERIAL-CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. Do not get into eyes, on skin or clothing. Avoid breathing spray or mist. Do not take internally. Use with adequate ventilation and employ respiratory protection when exposed to the mist or spray. When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing. Do not transfer to unlabeled containers. Wash thoroughly after handling. Keep container closed when not in use. FIRST AID: In case of contact, immediately flush skin or eyes for at least 15 minutes. If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not induce vomiting. IN CASE OF FIRE: Use water. IN CASE OF SPILL: Neutralize residue with acid neutralizing agent. Refer to MSDS for additional information.

TARGET ORGANS: Skin, eyes and respiratory system.

WHMIS SYMBOLS:

D1A- Poisonous and Infectious Materials
Very Toxic Materials



E- Corrosive Material



16. OTHER INFORMATION

INFORMATION SOURCE: CHEMICAL SAFETY ASSOCIATES, Inc.

PREPARED BY: BASIC CHEMICAL SOLUTIONS

THIS INFORMATION IS DRAWN FROM RECOGNIZED SOURCES BELIEVED TO BE RELIABLE. BASIC CHEMICAL SOLUTIONS MAKES NO GUARANTEES NOR ASSUMES ANY LIABILITY IN CONNECTION WITH THIS INFORMATION. THE USER SHOULD BE AWARE OF CHANGING TECHNOLOGY, RESEARCH, REGULATIONS AND ANALYTICAL PROCEDURES THAT MAY REQUIRE CHANGES HEREIN. THE ABOVE DATA IS SUPPLIED UPON THE CONDITION THAT PERSONS WILL EVALUATE THIS INFORMATION AND THEN DETERMINE ITS SUITABILITY FOR THEIR USE.

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 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.

FLAMMABILITY LIMITS IN AIR:
Much of the information related to fire and explosion is derived from the National Fire Protection Association (**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 Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Other acronyms used 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.

BCS

MATERIAL SAFETY DATA SHEET

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

BASIC CHEMICAL SOLUTIONS

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

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): **NITRIC ACID (30 – 70%)**

CHEMICAL NAME/CLASS: Nitric Acid Solution

SUPPLIER/MANUFACTURER'S NAME: **BASIC CHEMICAL SOLUTIONS**

ADDRESS: **Corporate Office**
525 Seaport Blvd.
Redwood City, CA 94063

BUSINESS PHONE: 800-411-4227

EMERGENCY PHONE: **CHEMTREC**: 800-424-9300

DATE OF PREPARATION: May 14, 2004

DATE OF REVISION: April 17, 2006

Si usted no entiende las Hojas de Informacion de Seguridad sobre Materials, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the Material Safety Data Sheet, find someone to explain it to you in detail.)

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	%w/w	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			
			TLV mg/m^3	STEL mg/m^3	PEL mg/m^3	STEL mg/m^3	IDLH	OTHER mg/m^3
Nitric Acid	7697-37-2	30-70	5.2	10	5 2, (Vacated 1989 PELs)	4, (Vacated 1989 PELs)	25 ppm	NIOSH REL: 5 STEL: 10 DFG MAKs: 5
Water and other ingredients. The other ingredients are each present in less than 1 percent concentration in this product.		Balance	The components present in the balance of this product do not contribute any significant, additional hazards. All hazard information pertinent to this product has been presented in the remaining sections of this Material Safety Data Sheet, per the requirements of Federal Occupational Safety and Health Hazard Communication Standard (29 CFR 1910.1200).					

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.
NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is a clear solution. This solution is corrosive, and can be damaging to contaminated tissue. Ingestion or inhalation of large quantities can be fatal. In the event of fire or spill, adequate precautions must be taken. This solution is an oxidizer, which can act to initiate and sustain the combustion of flammable materials. If involved in a fire, this product may decompose to produce a variety of compounds (i.e. carbon monoxide, carbon dioxide and nitrogen oxides). Emergency responders must wear the proper personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant routes of occupational overexposure are inhalation and contact with skin and eyes. The symptoms of overexposure to this product are as follows:

INHALATION: If mists or sprays of this solution are inhaled, this product may cause pulmonary irritation, irritation of the mucus membranes, coughing, and a sore throat. Inhalation of this product may cause damage to the tissues of the respiratory system, producing potentially fatal lung disorders (chemical pneumonitis and pulmonary edema). Prolonged exposure to the fumes may cause erosion of the teeth enamel.

CONTACT WITH SKIN or EYES: Contact with the eyes may cause severe irritation, eye burns and permanent eye damage. Contact with the skin may cause severe irritation, skin burns and permanent skin damage. Prolonged exposure may result in ulcerating burns which could leave scars.

SKIN ABSORPTION: Skin absorption is not anticipated to be a significant route of over-exposure to any component of this product.

INGESTION: Though ingestion is not anticipated to be a significant route of over-exposure to this product, if ingestion does occur burning and irritation of the mouth, throat, esophagus, and other tissues of the digestive system will occur immediately upon contact. Ingestion of large quantities may be fatal.

INJECTION: Though injection is not anticipated to be a significant route of over-exposure to this product, if it occurs, may cause local reddening, tissue swelling, and discomfort.

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

NITRIC ACID OTHER THAN RED FUMING <70%
HAZARDOUS MATERIALS INFORMATION SYSTEM

HEALTH	(BLUE	3
FLAMMABILITY	(RED	0
REACTIVITY	(YELLOW	0
PROTECTIVE EQUIPMENT		D

EYE	RESPIRATOR	HAND	BOD
	SEE SECTION		

For routine industrial applications

ACUTE: This solution is corrosive, and can burn and damage eyes, skin, mucous membranes, and any other exposed tissue. If inhaled, irritation of the respiratory system may occur, with coughing, and breathing difficulty. Though unlikely to occur during occupational use, ingestion or injection of large quantities may be fatal.

CHRONIC: Repeated skin contact with this product may result in dermatitis (inflammation and reddening of the skin).

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

4. FIRST-AID MEASURES

SKIN EXPOSURE: If the product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove contaminated clothing, taking care not to contaminate eyes. Victim must seek medical attention.

EYE EXPOSURE: If this product enters the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

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

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should rinse mouth with large amounts of water. Victim should drink one glass of milk or water to dilute the ingested material. 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 health professional with victim.

5. FIRE-FIGHTING MEASURES

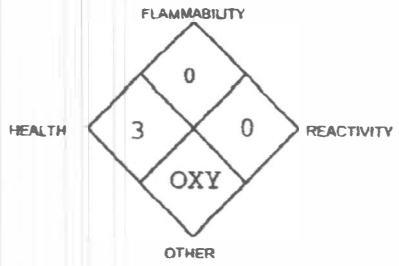
FLASH POINT, °C (method): Not flammable.
AUTOIGNITION TEMPERATURE, °C: Not flammable.
FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable.
Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES	Carbon Dioxide: NO
Foam: NO	Dry Chemical: NO
Halon: NO	Other: NO.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product is corrosive, and presents a significant contact hazard to fire-fighters. Nitric Acid, a component of this product is a strong oxidizer which can ignite many organic materials. When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (including carbon monoxide, carbon dioxide and nitrogen oxides).

NFPA RATING
Less than 71%



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. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas.

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.

The proper personal protective equipment for incidental releases (e.g.-1 L of the product released in a well-ventilated area) use impermeable gloves, specific for the material handled, goggles, face shield, and appropriate body protection. In the event of a large release, use impermeable gloves, specific for the material handled, chemically resistant suit and boots, and hard-hat. Self Contained Breathing Apparatus or respirator may be required where engineering controls are not adequate or conditions for potential exposure exist. When respirators are required, Select NIOSH/MSHA approved based on actual or potential airborne concentrations in accordance with latest OSHA and/or ANSI recommendations.
Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue with lime or soda ash or other acid neutralizing agent. Decontaminate the area thoroughly. Test area with litmus paper to confirm neutralization. Place all spill residue in a suitable container. Dispose of in accordance with Federal, State and local hazardous waste disposal regulations (see Section 13 – Disposal Considerations.)

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

7. HANDLING and STORAGE

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

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Avoid breathing mists or sprays generated by this product. Use in a well-ventilated location.

For Non-Bulk Containers: Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a diked area, as appropriate. Store containers away from incompatible chemicals. Keep container tightly closed when not in use. Wash thoroughly after using this material. Storage areas should be made of fire-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Empty containers may contain residual liquid. Therefore, empty containers should be handled with care.

Bulk Containers: All tanks and pipelines which contain this material must be labeled. Perform routine maintenance on tanks or pipelines which contain this product. Report all leaks immediately to the proper personnel.

Tank Car Shipments: Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective equipment must be used (see Section 8, Engineering Controls and Personal Protective Equipment.). All loading and unloading equipment must be inspected, prior to each use. Loading and unloading operations must be attended, at all times. Tank cars must be level, brakes must be set or wheels must be locked or blocked prior to loading or unloading. Tank car (for loading) or storage tank (for unloading) must be verified to be correct for receiving this product and be properly prepared, prior to starting the transfer operations. Hoses must be verified to be clean and free of incompatible chemicals, prior to connection to the tank car or vessel. Valves and hoses must be verified to be in the correct positions, before starting transfer operations. A sample (if required) must be taken and verified (if required) prior to starting transfer operations. All lines must be blown-down and purged before disconnecting them from the tank car or vessel.

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 before maintenance begins by a triple-rinse with water followed, if necessary, by using acid neutralizing agent and an additional rinse. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: If required use a corrosion-resistant ventilation system separate from other exhaust ventilation systems to ensure that there is no potential for overexposure to sprays, or mists of this product and that exposures are below those in section 2. Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134, or applicable State regulations. If adequate ventilation is not available or if there is potential for airborne exposure above the exposure limits (listed in Section 2) a respirator may be worn up to respirator exposure limitations, check with respirator equipment manufactures recommendations/limitations. For a higher level of protection use positive pressure supplied air respiration protection or Self Contained Breathing Apparatus or if oxygen levels are below 19.5% or are unknown. Nitric acid component has poor warning properties.

EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS:
Positive pressure, full-facepiece Self Contained Breathing Apparatus; or positive pressure, full-facepiece Self Contained Breathing Apparatus with an auxiliary positive pressure Self Contained Breathing Apparatus.

EYE PROTECTION: Splash goggles or safety glasses. Face-shields are recommended when the operation can generate splashes, sprays or mists.

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

BODY PROTECTION: Use body protection appropriate for task. Cover-all, rubber aprons, or chemical protective clothing made from natural rubber or other appropriate materials are generally acceptable, depending upon the task.

9. PHYSICAL and CHEMICAL PROPERTIES

Physical and chemical properties for Nitric Acid, a main component of this product, are as follows:

	Nitric Acid			
	30	50	60	70
PHYSICAL STATE:				
BOILING POINT @ 760 mm Hg:	107°C – 224.6°F	116.4°C – 241.5°F	120.4°C – 248.7°F	122°C – 252°F
FREEZING POINT:	-36°C - -96.8°F	-20°C - -68°F	-22°C - -71.6°F	-22°C - -71.6°F
VAPOR PRESSURE mm Hg @ 20°C:	<0.1	27.15	33.88	48
SPECIFIC GRAVITY @ 15.6°C	1.18	1.31	1.37	1.41
DENSITY – lb-gal @ 15.6°C:	9.84	10.93	11.43	11.43
VAPOR DENSITY:	Not Determined			
EVAPORATION RATE (n-BuAc = 1):	>1			
pH:	< 1 pH			
SOLUBILITY in H_2O - % by wt:	Completely Soluble			

ODOR THRESHOLD: Not available.

APPEARANCE AND COLOR: This is a clear liquid with acrid odor. The solution may turn yellow to brown upon exposure to light.

HOW TO DETECT THIS SUBSTANCE (warning properties): Litmus paper will turn red upon contact with even low concentrations of this solution.

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Thermal decomposition products of this solution can include carbon monoxide, carbon dioxide, and nitrogen oxides.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product reacts with bases, reducing agents, alcohols, alkali metals, carbides, cyanides, sulfides and metal powders. Do not mix this product with sodium hypochlorite, sodium bisulfite, Chlorine Sanitizers or Chlorinated Cleaners – a deadly gas can be formed.

HAZARDOUS POLYMERIZATION: Will not occur.

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

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

11. TOXICOLOGICAL INFORMATION

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

NITRIC ACID:

TDLo (oral, rat) = 2345 mg/kg; reproductive effects
TDLo (oral, rat) = 21150 mg/kg; teratogenic effects
LDLo (oral, human) = 430 mg/kg
LDLo (unreported, man) = 110 mg/kg

SUSPECTED CANCER AGENT: The components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA; and are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

IRRITANCY OF PRODUCT: This product is severely irritating to contaminated tissue.

SENSITIZATION TO THE PRODUCT: No component of this product is known to be a sensitizer.

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 reported to produce mutagenic effects in humans.
Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.
Teratogenicity: This product is not reported to cause teratogenic effects in humans.
Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. Studies on test animals exposed to relatively high doses of Nitric Acid (a component of this product) indicate adverse reproductive effects.

11. TOXICOLOGICAL INFORMATION--CONTINUED

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across 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: Currently there are no Biological Exposure Indices (BEIs) associated with the components of this product.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE Skin disorders can be aggravated by over-exposure to this product. Inhalation of the products mists may aggravate respiratory conditions.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate over-exposure to this product.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product are relatively stable in the environment; they may degrade, after time, into other organic and inorganic constituents.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product is harmful or fatal to plant and animal life if released into the environment. As with all chemicals, work practices should be aimed at eliminating environmental releases. Refer to Section 11 (Toxicological Information) for further toxicological data.

EFFECT OF CHEMICAL ON AQUATIC LIFE This product can substantially lower the pH of an aquatic environment and can be extremely toxic to fish and aquatic plants. As with all chemicals, work practices should be aimed at eliminating environmental releases. Additional aquatic data for the components of this product is available as follows:

NITRIC ACID:
LC_{50} (shore crab) = 180 mg/L/ 48 hours (aerated water conditions)
LC_{50} (cockle) = 330-1000 mg/L/ 48 hours (aerated water conditions)
LC_{50} (starfish) = 100-300 mg/L/ 48 hours (aerated water conditions)
Acute Hazard Level: Toxic to fish NO_3 is toxic to animal life even after neutralization.
Chronic Hazard Level: Nitrate can feed algal blooms causing eutrophication.

13. DISPOSAL CONSIDERATIONS

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

EPA WASTE NUMBER: D002 (Characteristic, Corrosivity), applicable to wastes consisting only of this solution.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:	Nitric Acid *other than red fuming, with not more than 70% nitric acid*
HAZARD CLASS NUMBER and DESCRIPTION:	8 (Corrosive Material)
UN IDENTIFICATION NUMBER:	UN 2031
PACKING GROUP:	II
DOT LABEL(S) REQUIRED:	Corrosive

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 157

MARINE POLLUTANT: This product does not contain any components which are designated by the Department of Transportation to be Marine Pollutants. (49 CFR 172.101, Appendix B).

14. TRANSPORTATION INFORMATION--CONTINUED

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

Note: The latest DOT information is provided, please verify all DOT information as it is subject to change without notice.

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: The components of this product subject to the reporting requirements of Section 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act are as follows.

COMPONENT	SARA 302	SARA 304	SARA 313
Nitric Acid	Yes	Yes	Yes

SARA Threshold Planning Quantity: Nitric Acid = 1000 lbs.

TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Nitric Acid = 1000 lbs

OTHER FEDERAL REGULATIONS: Not applicable.

STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: Nitric Acid
California - Permissible Exposure Limits for Chemical Contaminants: Nitric Acid
Florida - Substance List: Nitric Acid
Illinois - Toxic Substance List: Nitric Acid
Kansas - Section 302/313 List: Nitric Acid
Massachusetts - Substance List Nitric Acid
Minnesota - List of Hazardous Substances: Nitric Acid
Missouri - Employer Information/Toxic Substance List: Nitric Acid
New Jersey - Right to Know Hazardous Substance List: Nitric Acid
North Dakota - List of Hazardous Chemicals, Reportable Quantities: Nitric Acid
Pennsylvania - Hazardous Substance List: Nitric Acid
Rhode Island - Hazardous Substance List: Nitric Acid
Texas - Hazardous Substance List Nitric Acid
West Virginia Substance List: Nitric Acid
Wisconsin - Toxic and Hazardous Substances: Nitric Acid

CALIFORNIA PROPOSITION 65: No component of this product is on the California Proposition 65 lists.

LABELING (Precautionary Statements): **DANGER!** CORROSIVE MATERIAL! LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. MAY CAUSE LUNG DAMAGE. CONTAINS OXIDIZING MATERIAL-CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. Do not get into eyes, on skin or clothing. Avoid breathing spray or mist. Do not take internally. Use with adequate ventilation and employ respiratory protection when exposed to the mist or spray. When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing. Do not transfer to unlabeled containers. Wash thoroughly after handling. Keep container closed when not in use. FIRST AID: In case of contact, immediately flush skin or eyes for at least 15 minutes. If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not induce vomiting. IN CASE OF FIRE: Use water. IN CASE OF SPILL: Neutralize residue with acid neutralizing agent. Refer to MSDS for additional information.

TARGET ORGANS: Skin, eyes and respiratory system.

WHMIS SYMBOLS:

D1A- Poisonous and Infectious Materials
Very Toxic Materials



E- Corrosive Material



16. OTHER INFORMATION

INFORMATION SOURCE: CHEMICAL SAFETY ASSOCIATES, Inc.

PREPARED BY: BASIC CHEMICAL SOLUTIONS

THIS INFORMATION IS DRAWN FROM RECOGNIZED SOURCES BELIEVED TO BE RELIABLE. BASIC CHEMICAL SOLUTIONS MAKES NO GUARANTEES NOR ASSUMES ANY LIABILITY IN CONNECTION WITH THIS INFORMATION. THE USER SHOULD BE AWARE OF CHANGING TECHNOLOGY, RESEARCH, REGULATIONS AND ANALYTICAL PROCEDURES THAT MAY REQUIRE CHANGES HEREIN. THE ABOVE DATA IS SUPPLIED UPON THE CONDITION THAT PERSONS WILL EVALUATE THIS INFORMATION AND THEN DETERMINE ITS SUITABILITY FOR THEIR USE.

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.
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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.

FLAMMABILITY LIMITS IN AIR:
Much of the information related to fire and explosion is derived from the National Fire Protection Association (**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 Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Other acronyms used 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.



UNIVAR

Univar USA Inc.
17425 NE Union Hill Road
Redmond, WA 98052
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

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The Version Date and Number for this MSDS is : 08/18/2006 - #008

PRODUCT NAME: PHOSPHORIC ACID

MSDS NUMBER: MZP3973

DATE ISSUED: 2/15/2006

SUPERSEDES: 12/10/2004

ISSUED BY: 008614

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PHOSPHORIC ACID

==========

1. PRODUCT IDENTIFICATION

SYNONYMS: ORTHO-PHOSPHORIC ACID; WHITE PHOSPHORIC ACID
CAS NO: 7664-38-2
MOLECULAR WEIGHT: 98.00
CHEMICAL FORMULA: H_3PO_4 IN H_2O

Distributed
by:
Univar USA
Inc.
17425 NE Union Hill
Road
Redmond, WA
98052
425-889-
3400

==========

2. COMPOSITION/INFORMATION ON
INGREDIENTS

INGREDIENT	CAS NO	PERCENT	HAZARDOUS
PHOSPHORIC ACID	7664-38-2	55 - 95%	YES
WATER	7732-18-5	5 - 45%	NO

==========

3. HAZARDS
IDENTIFICATION

EMERGENCY
OVERVIEW

DANGER! CORROSIVE. CAUSES SEVERE IRRITATION AND BURNS TO EVERY AREA
OF
CONTACT. HARMFUL IF SWALLOWED OR
INHALED.

POTENTIAL HEALTH
EFFECTS

INHALATION:
INHALATION IS NOT AN EXPECTED HAZARD UNLESS MISTED OR HEATED TO
HIGH
TEMPERATURES. MIST OR VAPOR INHALATION CAN CAUSE IRRITATION TO THE
NOSE,
THROAT, AND UPPER RESPIRATORY TRACT. SEVERE EXPOSURES CAN LEAD TO

A
CHEMICAL
PNEUMONITIS.

INGESTION:
CORROSIVE. MAY CAUSE SORE THROAT, ABDOMINAL PAIN, NAUSEA, AND SEVERE
BURNS
OF THE MOUTH, THROAT, AND STOMACH. SEVERE EXPOSURES CAN LEAD TO
SHOCK,
CIRCULATORY COLLAPSE, AND
DEATH.

SKIN
CONTACT:
CORROSIVE. MAY CAUSE REDNESS, PAIN, AND SEVERE SKIN
BURNS.

EYE
CONTACT:
CORROSIVE. MAY CAUSE REDNESS, PAIN, BLURRED VISION, EYE BURNS,
AND
PERMANENT EYE
DAMAGE.

CHRONIC
EXPOSURE:
NO INFORMATION
FOUND.

AGGRAVATION OF PRE-EXISTING
CONDITIONS:
PERSONS WITH PRE-EXISTING SKIN DISORDERS OR EYE PROBLEMS, OR
IMPAIRED
RESPIRATORY FUNCTION MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF
THE
SUBSTANCE.

==========

4. FIRST AID
MEASURES

INHALATION:
REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION.
IF
BREATHING IS DIFFICULT, GIVE OXYGEN. CALL A PHYSICIAN
IMMEDIATELY.

INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE LARGE QUANTITIES OF WATER. NEVER
GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION
IMMEDIATELY.

SKIN
CONTACT:
IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE
REMOVING CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN, IMMEDIATELY.
WASH CLOTHING BEFORE
REUSE.

EYE
CONTACT:
IMMEDIATELY FLUSH EYES WITH GENTLE BUT LARGE STREAM OF WATER FOR AT LEAST
15 MINUTES, LIFTING LOWER AND UPPER EYELIDS OCCASIONALLY. CALL A PHYSICIAN
IMMEDIATELY.

==========

5. FIRE FIGHTING
MEASURES

FIRE:
NOT CONSIDERED TO BE A FIRE HAZARD. CONTACT WITH MOST METALS CAUSES
FORMATION OF FLAMMABLE AND EXPLOSIVE HYDROGEN GAS.

EXPLOSION:
NOT CONSIDERED TO BE AN EXPLOSION HAZARD.

FIRE EXTINGUISHING
MEDIA:
USE ANY MEANS SUITABLE FOR EXTINGUISHING SURROUNDING FIRE. WATER SPRAY MAY
BE USED TO KEEP FIRE EXPOSED CONTAINERS COOL. IF WATER IS USED, USE IN
ABUNDANCE TO CONTROL HEAT AND ACID BUILD-
UP.

SPECIAL
INFORMATION:
IN THE EVENT OF A FIRE, WEAR FULL PROTECTIVE CLOTHING AND NIOSH-
APPROVED
SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN
THE
PRESSURE DEMAND OR OTHER POSITIVE PRESSURE
MODE.

==========

6. ACCIDENTAL RELEASE
MEASURES

VENTILATE AREA OF LEAK OR SPILL. WEAR APPROPRIATE PERSONAL
PROTECTIVE
EQUIPMENT AS SPECIFIED IN SECTION 8. ISOLATE HAZARD AREA. KEEP
UNNECESSARY
AND UNPROTECTED PERSONNEL FROM ENTERING. CONTAIN AND RECOVER LIQUID
WHEN
POSSIBLE. NEUTRALIZE WITH ALKALINE MATERIAL (SODA ASH, LIME), THEN
ABSORB
WITH AN INERT MATERIAL (E. G., VERMICULITE, DRY SAND, EARTH), AND PLACE
IN
A CHEMICAL WASTE CONTAINER. DO NOT USE COMBUSTIBLE MATERIALS, SUCH AS
SAW
DUST. DO NOT FLUSH TO SEWER! US REGULATIONS (CERCLA) REQUIRE
REPORTING
SPILLS AND RELEASES TO SOIL, WATER AND AIR IN EXCESS OF
REPORTABLE
QUANTITIES. THE TOLL FREE NUMBER FOR THE US COAST GUARD NATIONAL
RESPONSE
CENTER IS (800) 424-
8802.

==========

7. HANDLING AND
STORAGE

KEEP IN A TIGHTLY CLOSED CONTAINER. PROTECT FROM PHYSICAL DAMAGE. STORE
IN
A COOL, DRY, VENTILATED AREA AWAY FROM SOURCES OF HEAT,
MOISTURE,
INCOMPATIBILITIES, AND DIRECT SUNLIGHT. CORROSIVE TO MILD STEEL. STORE
IN
RUBBER LINED OR 316 STAINLESS STEEL DESIGNED FOR PHOSPHORIC ACID. DO
NOT

WASH OUT CONTAINER AND USE IT FOR OTHER PURPOSES. WHEN DILUTING, THE ACID
SHOULD ALWAYS BE ADDED SLOWLY TO WATER AND IN SMALL AMOUNTS. NEVER USE HOT
WATER AND NEVER ADD WATER TO THE ACID. WATER ADDED TO ACID CAN CAUSE
UNCONTROLLED BOILING AND SPLASHING. PROTECT FROM FREEZING. CONTAINERS OF
THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY SINCE THEY RETAIN PRODUCT
RESIDUES (VAPORS, LIQUID); OBSERVE ALL WARNINGS AND PRECAUTIONS LISTED FOR
THE
PRODUCT.

==========

8. EXPOSURE CONTROLS/PERSONAL
PROTECTION

AIRBORNE EXPOSURE
LIMITS:
-OSHA PERMISSIBLE EXPOSURE LIMIT
(PEL):
1 MG/M3
(TWA)

-ACGIH THRESHOLD LIMIT VALUE
(TLV):
1 MG/M3 (TWA), 3 MG/M3
(STEL)

VENTILATION
SYSTEM:
A SYSTEM OF LOCAL AND/OR GENERAL EXHAUST IS RECOMMENDED TO KEEP EMPLOYEE
EXPOSURES BELOW THE AIRBORNE EXPOSURE LIMITS. LOCAL EXHAUST VENTILATION IS
GENERALLY PREFERRED BECAUSE IT CAN CONTROL THE EMISSIONS OF THE CONTAMINANT
AT ITS SOURCE, PREVENTING DISPERSION OF IT INTO THE GENERAL WORK AREA.
PLEASE REFER TO THE ACGIH DOCUMENT, "INDUSTRIAL VENTILATION, A MANUAL OF
RECOMMENDED PRACTICES", MOST RECENT EDITION, FOR DETAILS.

PERSONAL RESPIRATORS (NIOSH

APPROVED):
IF THE EXPOSURE LIMIT IS EXCEEDED, A FULL FACEPIECE RESPIRATOR WITH HIGH
EFFICIENCY DUST/MIST FILTER MAY BE WORN UP TO 50 TIMES THE EXPOSURE LIMIT
OR THE MAXIMUM USE CONCENTRATION SPECIFIED BY THE APPROPRIATE REGULATORY
AGENCY OR RESPIRATOR SUPPLIER, WHICHEVER IS LOWEST. FOR EMERGENCIES OR
INSTANCES WHERE THE EXPOSURE LEVELS ARE NOT KNOWN, USE A FULL-FACEPIECE
POSITIVE-PRESSURE, AIR-SUPPLIED RESPIRATOR. WARNING: AIR PURIFYING
RESPIRATORS DO NOT PROTECT WORKERS IN OXYGEN-DEFICIENT ATMOSPHERES.

SKIN
PROTECTION:
WEAR IMPERVIOUS PROTECTIVE CLOTHING, INCLUDING BOOTS, GLOVES, LAB COAT,
APRON OR COVERALLS, AS APPROPRIATE, TO PREVENT SKIN CONTACT.

EYE
PROTECTION:
USE CHEMICAL SAFETY GOGGLES AND/OR A FULL FACE SHIELD WHERE SPLASHING IS
POSSIBLE. MAINTAIN EYE WASH FOUNTAIN AND QUICK-DRENCH FACILITIES IN WORK
AREA.

==========

9. PHYSICAL AND CHEMICAL
PROPERTIES

PHYSICAL DATA BELOW REFERS TO CONCENTRATED PHOSPHORIC ACID.

APPEARANCE:	BOILING POINT:
CLEAR, COLORLESS SYRUPY LIQUID.	158C (316F)
ODOR:	MELTING POINT:
ODORLESS.	21C (70F)

SOLUBILITY:
MISCIBLE IN ALL PROPORTIONS IN
WATER.

VAPOR DENSITY
(AIR=1):
3.4

SPECIFIC GRAVITY:
1.69 @ 25C
(68F)

VAPOR PRESSURE (MM
HG):
0.03 @ 20C

PH:
1.5 (0.1 N AQUEOUS SOLUTION)
FOUND.

EVAPORATION RATE
(BUAC=1):
NO INFORMATION

% VOLATILES BY VOLUME @ 21C
(70F):
100

==========

10. STABILITY AND
REACTIVITY

STABILITY:
STABLE UNDER ORDINARY CONDITIONS OF USE AND STORAGE. SUBSTANCE
CAN
SUPERCOOL WITHOUT
CRYSTALLIZING.

HAZARDOUS DECOMPOSITION
PRODUCTS:
PHOSPHORUS OXIDES MAY FORM WHEN HEATED TO
DECOMPOSITION.

HAZARDOUS
POLYMERIZATION:
WILL NOT
OCCUR.

INCOMPATIBILITIES:
LIBERATES EXPLOSIVE HYDROGEN GAS WHEN REACTING WITH CHLORIDES AND
STAINLESS
STEEL. CAN REACT VIOLENTLY WITH SODIUM TETRAHYDROBORATE.
EXOTHERMIC
REACTIONS WITH ALDEHYDES, AMINES, AMIDES, ALCOHOLS AND

GLYCOLS,
AZO-COMPOUNDS, CARBAMATES, ESTERS, CAUSTICS, PHENOLS AND CRESOLS,
KETONES,
ORGANOPHOSPHATES, EPOXIDES, EXPLOSIVES, COMBUSTIBLE MATERIALS,
UNSATURATED
HALIDES, AND ORGANIC PEROXIDES. PHOSPHORIC ACID FORMS FLAMMABLE GASES
WITH
SULFIDES, MERCAPTANS, CYANIDES AND ALDEHYDES. IT ALSO FORMS TOXIC
FUMES
WITH CYANIDES, SULFIDE, FLUORIDES, ORGANIC PEROXIDES, AND
HALOGENATED
ORGANICS. MIXTURES WITH NITROMETHANE ARE
EXPLOSIVE.

CONDITIONS TO
AVOID:
INCOMPATIBLES.

==========

11. TOXICOLOGICAL
INFORMATION

ORAL RAT LD50: 1530 MG/KG; INVESTIGATED AS A
MUTAGEN.

--------/CANCER
LISTS/----------

	---NTP		
CARCINOGEN--- INGREDIENT	KNOWN	ANTICIPATED	IARC CATEGORY
PHOSPHORIC ACID (7664-38-2)	NO	NO	NONE
WATER (7732-18-5)	NO	NO	NONE

==========

12. ECOLOGICAL
INFORMATION

ENVIRONMENTAL
FATE:
WHEN RELEASED INTO THE SOIL, THIS MATERIAL MAY LEACH INTO GROUNDWATER.
WHEN

RELEASED TO WATER, ACIDITY MAY BE READILY REDUCED BY NATURAL WATER HARDNESS
MINERALS. THE PHOSPHATE, HOWEVER, MAY PERSIST INDEFINITELY.

ENVIRONMENTAL TOXICITY:
NO INFORMATION FOUND.

==========

13. DISPOSAL CONSIDERATIONS

WHATEVER CANNOT BE SAVED FOR RECOVERY OR RECYCLING SHOULD BE HANDLED AS
HAZARDOUS WASTE AND SENT TO A RCRA APPROVED INCINERATOR OR DISPOSED IN A
RCRA APPROVED WASTE FACILITY. PROCESSING, USE OR CONTAMINATION OF THIS
PRODUCT MAY CHANGE THE WASTE MANAGEMENT OPTIONS. STATE AND LOCAL DISPOSAL
REGULATIONS MAY DIFFER FROM FEDERAL DISPOSAL REGULATIONS.

DISPOSE OF CONTAINER AND UNUSED CONTENTS IN ACCORDANCE WITH FEDERAL, STATE
AND LOCAL REQUIREMENTS.

==========

14. TRANSPORT INFORMATION

DOMESTIC (LAND, D.O.T.)

PROPER SHIPPING NAME: PHOSPHORIC ACID SOLUTION
HAZARD CLASS:
8
UN/NA: UN1805 PACKING GROUP:
III

INTERNATIONAL (WATER, I.M.O.)

PROPER SHIPPING NAME: PHOSPHORIC ACID SOLUTION
HAZARD CLASS:
8
UN/NA: UN1805 PACKING GROUP:
III

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15. REGULATORY INFORMATION

--------/CHEMICAL INVENTORY STATUS - PART 1/----------

INGREDIENT	TSCA	EC	JAPAN	AUSTRALIA
PHOSPHORIC ACID (7664-38-2)	YES	YES	YES	YES
WATER (7732-18-5)	YES	YES	YES	YES

--------/CHEMICAL INVENTORY STATUS - PART 2/----------

INGREDIENT	KOREA	DSL	NDSL	PHIL.
PHOSPHORIC ACID (7664-38-2)	YES	YES	NO	YES
WATER (7732-18-5)	YES	YES	NO	YES

-------/FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 1/----------

	-SARA 302-		------SARA 313-----	
INGREDIENT	RQ	TPQ	LIST	CHEMICAL CATG
PHOSPHORIC ACID (7664-38-2)	NO	NO	NO	NO
WATER (7732-18-5)	NO	NO	NO	

NO

--------/FEDERAL, STATE & INTERNATIONAL REGULATIONS - PART 2/--------------

INGREDIENT	CERCLA	-RCRA- 261.33	TSCA- 8 (D)
PHOSPHORIC ACID (7664-38-2)	5000	NO	NO
WATER (7732-18-5)	NO	NO	NO

CHEMICAL WEAPONS CONVENTION: NO TSCA 12(B): NO CDTA: NO
SARA 311/312: ACUTE: YES CHRONIC: NO FIRE: NO PRESSURE: NO
REACTIVITY: NO (PURE / LIQUID)

AUSTRALIAN HAZCHEM CODE:
2R
POISON SCHEDULE:
S5

WHMIS: THIS MSDS HAS BEEN PREPARED ACCORDING TO THE HAZARD CRITERIA OF
THE CONTROLLED PRODUCTS REGULATIONS (CPR) AND THE MSDS CONTAINS
ALL OF THE INFORMATION REQUIRED BY THE CPR.

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16. OTHER INFORMATION

NFPA RATINGS:
HEALTH: 3 FLAMMABILITY: 0 REACTIVITY: 0

For Additional Information:

Contact: MSDS Coordinator - Univar USA
During business hours, Pacific Time - (425) 889-3400

NOTICE
Univar USA expressly disclaims all express or implied warranties of merchantibility and fitness for a particular purpose with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar USA Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar USA makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar USA's control. Therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes, and they assume all risks of their use, handling, and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein and does not relate to its use in combination with any other material or in any other process.

END OF MSDS

SILIPOS

GEL LINER

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:	**Silipos Mineral Oil Gel**
PART NUMBER:	ALL SILIPOS MINERAL OIL GEL FORMULATIONS
PRODUCT DESCRIPTION:	This product is designed and configured to a specific shape during manufacture which has end use function dependent in whole or in part upon its shape or design during end use, and which under normal conditions of use does not release more than very small quantities or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk.
U.N. NUMBER:	Not Applicable
U.N. DANGEROUS GOODS CLASS:	Non-Regulated Material
SUPPLIER/MANUFACTURER'S NAME:	**Silipos, Inc.**
ADDRESS:	7049 Williams Road, Niagara Falls, New York 14304
EMERGENCY PHONE:	(800) 424-9300 (**CHEMTREC – 24 hour**)
BUSINESS PHONE:	(716) 283-0700 (Product Information)
DATE OF PREPARATION:	April 13, 2012
DATE OF LAST REVISION:	New

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a white to light straw colored solid with no characteristic odor. This Gel product is formulated and produced by Silipos, Inc. This product is not expected to have any adverse health effects. It is a non-flammable solid. Release of this product to the environment is not expected cause harm to plants and animals. If accidentally released, precautions must be taken to protect the environment.

US DOT SYMBOLS	CANADA (WHMIS) SYMBOLS	EUROPEAN and (GHS) Hazard Symbols
		Not Classified
Non-Regulated	Not Controlled	Signal Word: **None**

EU LABELING AND CLASSIFICATION:

EU LABELING AND CLASSIFICATION: This product does not meet the definition of a hazardous substance or preparation according to EU Regulations (EC) No 1272/2008. The product was evaluated as an Article.

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex 1

None of the ingredients in this article are classified in the Annex I of Directive 67/548/EEC

GHS Hazard Classification(s):
None

Hazard Statement(s):
None

Precautionary Statement(s):
None

Hazard Symbol(s):
None

Risk Phrases:
None

Safety Phrases:
None

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE: INHALATION: This product is not expected to present an inhalation hazard at ambient conditions.
CONTACT WITH SKIN or EYES: This product is not expected to have any adverse effects to skin or eyes.
INGESTION: Not expected to be a normal route of entry in normal applications. Ingestion is expected to be relatively non-toxic. This product can have a laxative effect.
CHRONIC: Repeated or prolonged exposure to this product is not expected to have any chronic effects.

TARGET ORGANS: ACUTE: Sensitive skin, direct eye contact CHRONIC: None Known

MATERIAL SAFETY DATA SHEET

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS: Silipos Gel	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Mineral Oil (Paraffinum Liquidum) FCC, USP	8042-47-5	232-455-8	1597	40 – 90%	HAZARD CLASSIFICATION: NONE RISK PHRASES: None
Hydrogenated Copolymer	66070-58-4 and others	Exempt from Listing	Not Listed	9 – 30%	HAZARD CLASSIFICATION: NONE RISK PHRASES None
Triglyceride Oils	8001-31-8 and others	232-282-8	Not Listed	0 – 10%	HAZARD CLASSIFICATION: NONE RISK PHRASES None
Hydrocarbon Resins	6844-37-2 and others	Not Listed in ESIS	Not Listed	0 – 10%	HAZARD CLASSIFICATION: NONE RISK PHRASES None
Vitamins	7695-91-2 and others	231-710-0	Not Listed	0 – 4%	HAZARD CLASSIFICATION: NONE RISK PHRASES None
Silver	65997-17-3	266-046-0	Not Listed	0 – 2%	HAZARD CLASSIFICATION: NONE RISK PHRASES None
Non-Hazardous Skin Enhancers	Various	Not Listed	Not Listed	0 – 4%	HAZARD CLASSIFICATION: NONE RISK PHRASES None
Balance of other ingredients are non-hazardous or less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard *JIS Z 7250: 2000.*

SECTION 4 - FIRST-AID MEASURES

Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to health professional with contaminated individual.

EYE CONTACT: If irritation occurs thoroughly wash the exposed area and discontinue use. Seek medical attention if any adverse effect occurs.

SKIN CONTACT: If irritation occurs thoroughly wash the exposed area and discontinue use. Seek medical attention if any adverse effect occurs.

INHALATION: This product is not expected to present an inhalation hazard at ambient conditions.

INGESTION: If this product is swallowed, ingestion is relatively non-toxic. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None Known

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

SECTION 5 - FIRE-FIGHTING MEASURES

FLASH POINT: Not Applicable

AUTOIGNITION TEMPERATURE: Not Applicable

FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): NA Upper (UEL): NA

FIRE EXTINGUISHING MATERIALS: As appropriate for surrounding fire. Carbon dioxide, foam, dry chemical, halon, or water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product is non-flammable and has no known explosion hazards.

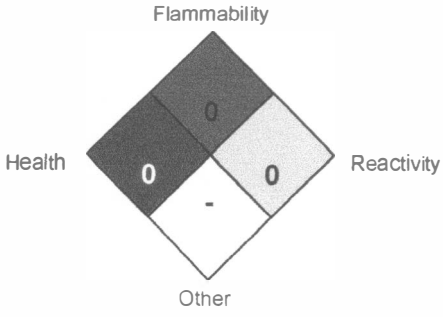
Explosion Sensitivity to Mechanical Impact: Not Sensitive.

Explosion Sensitivity to Static Discharge: Not Sensitive

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

MATERIAL SAFETY DATA SHEET

NFPA RATING SYSTEM



HMIS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD (BLUE)	0
FLAMMABILITY HAZARD (RED)	0
PHYSICAL HAZARD (YELLOW)	0

PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8

For Routine Industrial Use and Handling Applications

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILLS: Sweep and pickup spilled material and place in an appropriate container for re-use or disposal. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

STORAGE AND HANDLING PRACTICES: Containers of this product must be properly labeled. Store containers in a cool, dry location. Keep container tightly closed when not in use.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES: There are no exposure limits or guidelines for this product.

Chemical Name	CAS#	ACGIH TLV	OSHA TWA
Mineral Oil (Paraffinum Liquidum) FCC, USP	8042-47-5	5 mg/m³ Oil Mist	5 mg/m³ Oil Mist
Hydrogenated Copolymer	66070-58-4	Not Listed	Not Listed
Triglyceride Oils	8001-31-8	Not Listed	Not Listed
Hydrocarbon Resins	6844-37-2	Not Listed	Not Listed
Vitamins	7695-91-2	Not Listed	Not Listed
Silver	65997-17-3	Not Listed	Not Listed
Non-Hazardous Skin Enhancers	Various	Not Listed	Not Listed

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Not required when using this product.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Not required when using this product. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Not required when using this product. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Not required when using this product. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE: Solid

APPEARANCE & ODOR: This product is a white to light straw colored solid with no characteristic odor.

MATERIAL SAFETY DATA SHEET

ODOR THRESHOLD (PPM):	Not Available
VAPOR PRESSURE (mmHg):	Not Available
VAPOR DENSITY (AIR=1):	Not Available.
BY WEIGHT:	Not Available
EVAPORATION RATE (nBuAc = 1):	Not Available.
BOILING POINT (C°):	Not Available
FREEZING POINT (C°):	Not Available.
pH:	Not Available
SPECIFIC GRAVITY 20°C: (WATER =1)	0.860-0.880
SOLUBILITY IN WATER (%)	Insoluble

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable
DECOMPOSITION PRODUCTS: When heated to decomposition this product produces Oxides of carbon (COx)
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids and strong oxidizing agents.
HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Contact with incompatible materials.

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is available for mixture:
No LD50 Data Available Not Available
SUSPECTED CANCER AGENT: None of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore is not considered to be, nor suspected to be a cancer-causing agent by these agencies.
IRRITANCY OF PRODUCT: This product is not an irritant.
SENSITIZATION OF PRODUCT: This product is not considered a sensitizer.
REPRODUCTIVE TOXICITY INFORMATION: No information concerning the effects of this product and its components on the human reproductive system.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.
ENVIRONMENTAL STABILITY: No Data available at this time.
EFFECT OF MATERIAL ON PLANTS or ANIMALS: The components of this product are not expected to harm plants or animals.
EFFECT OF CHEMICAL ON AQUATIC LIFE: The components of this product are not expected to harm plants aquatic life.

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT; IATA; IMO; ADR:
THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.
PROPER SHIPPING NAME: Non-Regulated Material
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 (2004): Not Applicable
MARINE POLLUTANT: None of the ingredients are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

U.S. DEPARTMENT OF TRANSPORTATION (DOT) SHIPPING REGULATIONS:
This product is not classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:
This product is not classified as Dangerous Goods, per regulations of Transport Canada.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):
This product is not classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:
This product is not classified as Dangerous Goods by the International Maritime Organization.

MATERIAL SAFETY DATA SHEET

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):
This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows: None

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: No Chronic Health: No Fire: No Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): None

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): None of the ingredients are on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as Not Controlled, as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the article according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.

STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed or Exempt from Listing
Australian Inventory of Chemical Substances (AICS):	Listed or Exempt from Listing
Korean Existing Chemicals List (ECL):	Listed or Exempt from Listing
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed or Exempt from Listing
Philippines Inventory if Chemicals and Chemical Substances (PICCS):	Listed or Exempt from Listing
Swiss Giftliste List of Toxic Substances:	Listed or Exempt from Listing
U.S. TSCA:	Listed or Exempt from Listing

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett MSDS Authoring Services

Disclaimer: The information presented herein for this product or its components has been compiled from different supplier sources considered to be dependable and is accurate to the best of our knowledge as to the proper use and handling of this product under normal conditions. However, no representation, warranty, or guarantee is made as to its accuracy, reliability, or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information. Any use of this product which is not in conformance with this MSDS or which involves using the product in combination with any other product or any process is the responsibility of the user.

Material Safety Data Sheet

PLASTIC

1. Chemical product and company identification

Product name	Polypropylene Homopolymer
MSDS #	0000002006
Historic MSDS #:	None.
Code	0000002006 (NAP)
Product use	Consumer Product. Industrial applications.

2. Composition/information on ingredients

Ingredient name	CAS #	% by weight
Polypropylene	9003-07-0	>98

3. Hazards identification

Physical state	Granular solid. Pellets. Powder or flakes.
Color	White, translucent or colorless.
Emergency overview	
	This product has been evaluated and does not require any hazard warning on the label under established regulatory criteria.
	Handling and/or processing of this material may generate dust which may cause mechanical irritation of the eyes, skin, nose and throat. High dust concentrations have a potential for combustion or explosion.
Routes of entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Potential health effects	
Eyes	No significant irritation expected other than possible mechanical irritation. Heated material can cause thermal burns. When heated to decomposition it emits acrid smoke and irritating fumes.
Skin	No significant irritation expected other than possible mechanical irritation. Heated material can cause thermal burns.
Inhalation	Dust: Exposure to airborne concentrations well above the recommended exposure limits may cause irritation of the nose, throat, and lungs. Vapor: If heated to more than 300°C, the product may form vapors or fumes which could cause irritation of the respiratory tract, coughing, and shortness of breath.
Ingestion	No significant health hazards identified.
Medical conditions aggravated by over-exposure	None identified.

See toxicological information (section 11)

4. First aid measures

Eye contact	Hot material: Flush eyes with plenty of water for at least 15 minutes. Seek medical assistance for mechanical removal of this material from the eye. The use of flush fluid, other than water, is not recommended. Cold material: flush eyes with plenty of water. Get medical attention if irritation occurs.
Skin contact	If burned by contact with hot material, flush skin immediately with large amounts of cold water. If possible, submerge area in cold water. No attempt should be made to detach polymer adhering to the skin or to remove clothing attached with molten material. Thermal burns require immediate medical attention. Cold material: Wash with soap and water.
Inhalation	If affected by fumes from heated material, remove from source of exposure and move the affected person into fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

5. Fire-fighting measures

Flammability of the product	May be combustible at high temperature.
Auto-ignition temperature	388 °C
Flash point	Above 300°C decomposition occurs and flash of fumes may occur.
Products of combustion	Burning can produce carbon monoxide and/or carbon dioxide and other harmful products. The major decomposition products are low molecular weight oligmers (C6-18) of polypropylene. Degradation products may include trace amounts of acrolein, formaldehyde, aldehydes, and other organic vapors.
Unusual fire/explosion hazards	This material is not explosive as defined by established regulatory criteria. High dust concentrations have a potential for combustion or explosion.
Fire-fighting media and instructions	In case of fire, use water spray (fog), foam or dry chemicals. Do not use water jet.
Protective clothing (fire)	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

6. Accidental release measures

Personal precautions	IN CASE OF A LARGE SPILL: Contact emergency personnel. Eliminate all ignition sources. Granules spilled on the floor can cause slipping. Fine dust clouds may form explosive mixtures with air. Do not touch or walk through spilled material. Use suitable protective equipment (See Section: "Exposure controls/personal protection"). Follow all fire fighting procedures (See Section: "Fire-fighting measures").
Environmental precautions and clean-up methods	If emergency personnel are unavailable vacuum or carefully scoop up spilled materials and place in an appropriate container for disposal. Avoid creating dusty conditions and prevent wind dispersal. Avoid contact of spilled material with soil and prevent runoff entering surface waterways. (See Section 13 for Waste Disposal Information.)
Personal protection in case of a large spill	Personnel should wear protective clothing. Chemical/Dust Goggles

7. Handling and storage

Handling

There is a risk of being splashed with molten materials. Thermal burns are the most common injury caused while processing molten material. Do not inhale fumes or vapor from molten product. Use with adequate ventilation.

When handling hot material, wear heat resistant protective gloves, clothing and face shield that are able to withstand the temperature of the molten product.

Pneumatic conveying of powder and pellets can generate large static electrical charges. Electrical discharge in presence of air can cause an explosion. Earth all equipment. High dust concentrations have a potential for combustion or explosion. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Avoid strong oxidizers.

Storage

Keep container tightly closed. Keep container in a cool, well-ventilated area. Keep away from heat and direct sunlight.

The main hazards are related to pallet stock slippage and forklift truck maneuvers, which can cause injury to personnel. It is highly recommended that adequate procedures covering storage handling of pallets are established and maintained. These procedures must be kept up to date and regularly audited. In most cases, best practice is to stack pallets no more than 2 high. However, facilities responsible for storing the material should perform a site specific risk assessment to determine whether pallets can be stacked safely.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Polypropylene	**ACGIH TLV (United States, 2005).** TWA: 10 mg/m³ 8 hour(s). Form: Inhalable fraction PNOS TWA: 3 mg/m³ 8 hour(s). Form: Respirable fraction PNOS

Control Measures

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Hygiene measures

Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.

Personal protection

Eyes

Safety glasses with side shields. Use dust goggles if high dust concentration is generated.

Skin and body

Hot material: Wear heat-resistant protective gloves, clothing and face shield that are able to withstand the temperature of the molten product. Cold material: None required; however, use of protective clothing is good industrial practice.

Respiratory

Product processing, heat sealing of film, or operations involving the use of wires or blades heated above 300°C may produce dust, vapor or fumes. To minimize risk of overexposure to dust, vapor or fumes it is recommended that a local exhaust system is placed above the equipment, and that the working area is properly ventilated.

If ventilation is inadequate, use certified respirator that will protect against dust/mist.

Hands

Hot material: Wear heat-resistant protective gloves that are able to withstand the temperature of molten product. Cold material: None required; however, use of gloves is good industrial practice.

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and

with a full assessment of the working conditions.

Consult your supervisor or S.O.P. for special handling directions

Consult local authorities for acceptable exposure limits.

9. Physical and chemical properties

Physical state	Granular solid. Pellets. Powder or flakes.
Odor	Faint Odor
Color	White, translucent or colorless.
Melting point / Range	155 to 165 °C
Specific gravity	<1
Solubility	Insoluble

10. Stability and reactivity

Stability and reactivity	The product is stable.
Conditions to avoid	Stable under recommended storage and handling conditions (See Section: "Handling and storage"). If heated to more than 300°C, the product may form vapors or fumes which could cause irritation of the respiratory tract, coughing, and shortness of breath. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.
Incompatibility with various substances	Strong oxidizing materials
Hazardous decomposition products	Burning can produce carbon monoxide and/or carbon dioxide and other harmful products. The major decomposition products are low molecular weight oligmers (C6-18) of polypropylene. Degradation products may include trace amounts of acrolein, formaldehyde, aldehydes, and other organic vapors.
Hazardous polymerization	Will not occur.

11. Toxicological information

Chronic toxicity

Carcinogenic effects	No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).
Mutagenic effects	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a mutagen.
Reproductive effects	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a reproductive toxin.
Teratogenic effects	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as teratogenic or embryotoxic.