



# KENCRO

## CHEMICALS

NITRIC ACID

### MATERIAL SAFETY DATA SHEET

#### SECTION 1: PRODUCT AND COMPANY INFORMATION

**PRODUCT IDENTIFIER:** NITRIC ACID  
**PRODUCT USE:** AGRICULTURE USE: MANUFACTURE OF FERTILIZERS.  
INDUSTRIAL APPLICATIONS: MANUFACTURE OF CHEMICALS.  
MANUFACTURE OF SPECIALTY METAL PRODUCTS.  
**CHEMICAL FAMILY:** INORGANIC ACID  
**SUPPLIER'S NAME AND ADDRESS:** KENCRO CHEMICALS LIMITED  
2172 WYECROFT RD., UNIT #4  
OAKVILLE, ON  
L6L 5V6  
905-827-4133  
**24 HR. EMERGENCY NUMBER:** 613-996-6666 (CANUTEC)

#### SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS	C.A.S. #	WT.%	LC50 (RAT)	LD50
NITRIC ACID	7697-37-2	65 - 70	244 ppm (1Hr) Acute Vapour	N/AV.

#### SECTION 3: HAZARDS IDENTIFICATION

##### EMERGENCY OVERVIEW

BROWNISH YELLOW LIQUID. PUNGENT ANTISEPTIC LIKE ODOUR.  
RESPIRATORY EFFECTS MAY BE DELAYED IN ONSET UP TO 30 HOURS.  
CORROSIVE LIQUID TO THE SKIN, EYES, NOSE, MUCOUS MEMBRANES, RESPIRATORY AND  
GASTROINTESTINAL TRACT.

##### SIGNS AND SYMPTOMS OF SHORT-TERM EXPOSURE:

**SKIN CONTACT:** CAN BE CORROSIVE TO THE SKIN. CONCENTRATED NITRIC ACID CHARS THE TISSUE WITH A CHARACTERISTIC YELLOW COLOURATION. SEVERE AND FATAL BURNS CAN OCCUR WITH NECROSIS AND SCARRING.

**SKIN ABSORPTION:** CORROSIVE.

**EYE CONTACT:** CAN BE CORROSIVE TO THE EYES. THE EYE IS ESPECIALLY SENSITIVE TO THE CORROSIVE EFFECTS AND CAN BE DESTROYED. SEVERE BURNS, WATERING, CONJUNCTIVITIS LEADING TO PERMANENT DAMAGE, POSSIBLE BLINDNESS.

**INHALATION:** RESPIRATORY EFFECTS OF ACUTE EXPOSURE INCLUDE TICKLING OF THE NOSE AND THROAT, COUGHING, SNEEZING, REFLEX BRONCHOSPASM, DYSPNEA AND PULMONARY EDEMA. DEATH MAY BE FROM SUDDEN CIRCULATORY COLLAPSE, GLOTTIC OR ESOPHAGEAL EDEMA, PERFORATION OF THE STOMACH, GASTRIC HEMORRHAGE OR DELAYED STRICTURE. Milder exposures can cause IRRITATION OF THE EYES, SKIN, MUCOUS MEMBRANES AND RESPIRATORY AND DIGESTIVE TRACTS.

**INGESTION:** INGESTION MAY CAUSE SEVERE IRRITATION, BURNS TO THE MOUTH AND THROAT, AND HEMORRHAGING, NECROSIS AND PERFORATION IN THE GASTROINTESTINAL TRACT.

**POTENTIAL CHRONIC HEALTH EFFECTS:** CHRONIC EXPOSURE TO NITRIC ACID CAN PRODUCE CHANGES IN PULMONARY FUNCTION AND/OR CHRONIC BRONCHITIS. EYE IRRITATION AND RESPIRATORY SYMPTOMS RESEMBLING FREQUENT UPPER RESPIRATORY VIRAL INFECTIONS HAVE ALSO BEEN ASSOCIATED WITH CHRONIC EXPOSURE. A YELLOW DISCOLOURATION AND/OR EROSION OF THE DENTAL ENAMEL HAS BEEN REPORTED, BUT THE EROSION IS GENERALLY NOT AS SEVERE AS WITH SULPHURIC OR HYDROCHLORIC ACIDS.

#### SECTION 4: FIRST AID MEASURES

- INHALATION:** MINOR INHALATION: ALLOW THE INDIVIDUAL TO REST IN A WELL VENTILATED AREA. WATCH FOR AIRWAY OBSTRUCTION. GIVE OXYGEN IF AVAILABLE. SEEK MEDICAL ATTENTION IMMEDIATELY.  
SEVERE INHALATION: IN EMERGENCY SITUATIONS USE PROPER RESPIRATORY PROTECTION TO EVACUATE AFFECTED INDIVIDUALS TO A SAFE AREA AS SOON AS POSSIBLE. LOOSEN TIGHT CLOTHING AROUND THE PERSON'S NECK AND WAIST. OXYGEN MAY BE ADMINISTERED IF BREATHING IS DIFFICULT. IF THE PERSON IS NOT BREATHING, PERFORM ARTIFICIAL RESPIRATION. OBTAIN IMMEDIATE MEDICAL ATTENTION.
- SKIN CONTACT:** IMMEDIATELY FLUSH SKIN WITH WATER WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. USE WARM WATER IF AVAILABLE AND CONTINUE FLUSHING FOR AT LEAST 15, BUT PREFERABLY 30 MINUTES. GET MEDICAL ATTENTION IF IRRITATION PERSISTS. CONTAMINATED CLOTHING SHOULD BE DISCARDED IN A MANNER WHICH LIMITS FURTHER EXPOSURE.
- EYE CONTACT:** IMMEDIATELY FLUSH EYES WITH RUNNING WATER FOR AT LEAST 15 MINUTES, KEEPING EYELIDS OPEN. CHECK FOR AND REMOVE ANY CONTACT LENSES. SEEK IMMEDIATE MEDICAL ATTENTION IN CASE OF EYE CONTACT.
- INGESTION:** DO NOT INDUCE VOMITING. CAREFUL REMOVAL OF THE SUBSTANCE FROM THE STOMACH BY MEDICAL PERSONNEL IS REQUIRED. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. GET MEDICAL ATTENTION. IF TOLERATED, GIVE NO MORE THAN 1 CUP OF MILK OR WATER TO RINSE THE MOUTH AND THROAT AND DILUTE THE STOMACH CONTENTS. NO MORE THAN 8 OUNZES (1 CUP) IN ADULTS AND 4 OUNZES (1/2 CUP) IN CHILDREN IS RECOMMENDED TO MINIMIZE THE RISK OF VOMITING.
- NOTES TO PHYSICIAN:**  
MEDICAL CONDITIONS THAT MAY BE AGGRAVATED BY EXPOSURE INCLUDE ASTHMA, BRONCHITIS, EMPHYSEMA AND OTHER LUNG DISEASES AND CHRONIC NOSE, SINUS OR THROAT CONDITIONS. IN THE EVENT OF SKIN OR EYE CONTACT, RAPID THROUGH FLUSHING IS ESSENTIAL.

#### SECTION 5: FIRE FIGHTING MEASURES

- FIRE HAZARDS/CONDITION OF FLAMMABILITY:**  
NOT COMBUSTIBLE. DECOMPOSES AT HIGH TEMPERATURES.
- |                                 |               |                                   |       |
|---------------------------------|---------------|-----------------------------------|-------|
| <b>FLASH POINT:</b>             | N/AV.         | <b>AUTO IGNITION TEMPERATURE:</b> | N/AV. |
| <b>FLASH POINT METHOD:</b>      | NON FLAMMABLE | <b>UPPER FLAMMABLE LIMIT:</b>     | N/AV. |
| <b>LOWER FLAMMABLE LIMIT:</b>   | N/AV.         | <b>(% BY VOL.)</b>                |       |
| <b>OXIDIZING PROPERTIES:</b>    | N/AV.         |                                   |       |
| <b>FLAME PROJECTION LENGTH:</b> | N/AV.         |                                   |       |
- EXPLOSION DATA: SENSITIVITY TO MECHANICAL IMPACT/STATIC DISCHARGE:**  
OXIDIZING ACID. MAY REACT VIOLENTLY WHEN MIXED WITH ORGANIC MATERIALS, ESPECIALLY UNDER CONDITIONS OF HEAT AND PRESSURE. WILL REACT WITH MANY METALS TO GENERATE HIGHLY FLAMMABLE AND EXPLOSIVE HYDROGEN GAS.
- SUITABLE EXTINGUISHING MEDIA:**  
COOL CONTAINING VESSELS WITH WATER JET IN ORDER TO PREVENT PRESSURE BUILD-UP, AUTOIGNITION OR EXPLOSION. USE EXTINGUISHING MEDIA SUITABLE FOR SURROUNDING MATERIALS. USE WATER ON FIRES INVOLVING NITRIC ACID TO DILUTE THE ACID AND TO ABSORB.
- SPECIAL FIRE-FIGHTING PROCEDURES/EQUIPMENT:**  
FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS (SCBA) AND FULL TURNOUT GEAR.
- HAZARDOUS COMBUSTION PRODUCTS:**  
NITROGEN OXIDES (NO, NO<sub>2</sub>). SLIGHTLY FLAMMABLE IN THE PRESENCE OF REDUCING MATERIALS, OF COMBUSTIBLE MATERIALS, OF ORGANIC MATERIALS.

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

- LEAK AND SPILL PROCEDURES:**  
CORROSIVE LIQUID. WARN PERSONNEL TO MOVE AWAY. ISOLATE HAZARD AREA. OBSERVE PROTECTIVE EQUIPMENT REQUIREMENTS. KEEP UNNECESSARY AND UNPROTECTED PERSONNEL FROM ENTERING. STOP LEAK IF POSSIBLE TO DO SO WITHOUT RISK. PREVENT FROM ENTERING SEWAGE OR DRAINAGE SYSTEMS AND BODIES OF WATER. CONTAIN SPILL WITH DRY EARTH, SAND OR OTHER NON-COMBUSTIBLE MATERIAL. NEUTRALIZE SPILL BY SLOWLY AND CAREFULLY APPLYING POWDERED LIMESTONE TO SPILL. ALLOW TIME TO NEUTRALIZE. USE APPROPRIATE TOOLS TO PUT THE SOLID MATERIAL IN A CONVENIENT WASTE DISPOSAL CONTAINER. FINISH CLEANING THE SPILL AREA WITH RUNNING WATER. SURFACES CONTAMINATED FROM SPILLS SHOULD BE COVERED WITH SODIUM BICARBONATE OR SODA ASH TO NEUTRALIZE ACID. ENSURE DISPOSAL COMPLIES WITH GOVERNMENT

REQUIREMENTS AND LOCAL REGULATIONS. CONSULT YOUR ENVIRONMENTAL ADVISOR REGARDING DISPOSAL ALTERNATIVES.

## SECTION 7: HANDLING AND STORAGE

### SAFE HANDLING PROCEDURES:

KEEP LOCKED UP. KEEP CONTAINER DRY. DO NOT INGEST. DO NOT BREATHE FUMES OR SPRAY. IN CASE OF INSUFFICIENT VENTILATION, WEAR SUITABLE RESPIRATORY EQUIPMENT. AVOID CONTACT WITH SKIN AND EYES. KEEP AWAY FROM INCOMPATIBLE MATERIALS. WEAR CHEMICAL RESISTANT GLOVES, A CHEMICAL SUIT, RUBBER BOOTS AND CHEMICAL SAFETY GOGGLES PLUS A FACE SHIELD. WHEN USING DO NOT EAT, DRINK OR SMOKE. ENSURE THAT AN EYEWASH STATION AND SAFETY SHOWER IS NEAR THE PLACE OF USE.

### STORAGE REQUIREMENTS:

CONTAINS NITRIC ACID. WILL CORRODE INCOMPATIBLE METALS AND MANY PLASTIC MATERIALS. 304 OR 316 STAINLESS STEEL ARE ACCEPTABLE MATERIALS OF CONSTRUCTION. STORAGE TANKS SHOULD BE DESIGNED TO API STANDARD 650. TANKS SHOULD BE VENTED AND PAINTED WHITE OR IN LIGHT, HEAT-REFLECTING COLORS. PIPING SHOULD BE WELDED SCHEDULE 40 STAINLESS STEEL. ENSURE THAT ALL PUMPS, VALVES AND METERS ARE OF COMPATIBLE MATERIALS. GASKETS SHOULD BE OF TEFLON. SECONDARY CONTAINMENT IS RECOMMENDED WHERE PRACTICAL OR REQUIRED BY LAW.

### INCOMPATIBLE MATERIALS:

EXTREMELY REACTIVE OR INCOMPATIBLE WITH ALKALIS. HIGHLY REACTIVE WITH REDUCING AGENTS, COMBUSTIBLE MATERIALS, METALS. SLIGHTLY REACTIVE WITH ORGANIC MATERIALS, ACIDS, MOISTURE.

## SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

### EXPOSURE LIMITS

INGREDIENTS	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
NITRIC ACID	5.2 mg/m <sup>3</sup> 2 ppm	10 mg/m <sup>3</sup> 4 ppm	2 ppm (5mg/m <sup>3</sup> ) 8Hr TWA	N/AV.

SEE COMPOSITION/INFORMATION ON INGREDIENTS, SECTION 2.

### ENGINEERING CONTROLS:

PROVIDE EXHAUST VENTILATION OR OTHER ENGINEERING CONTROLS TO KEEP THE VAPOUR CONCENTRATIONS BELOW THEIR RESPECTIVE THRESHOLD LIMIT VALUES. ENSURE THAT AN EYEWASH STATION AND SAFETY SHOWER IS NEAR THE WORK STATION.

### GLOVES/TYPE:

USE BUTYL GLOVES OR NEOPRENE GLOVES..

### RESPIRATORY/TYPE:

IF AIRBORNE CONCENTRATIONS EXCEED THE OCCUPATIONAL EXPOSURE LIMIT, USE A NIOSH/MSHA APPROVED FULL FACEPIECE RESPIRATOR WITH ACID GAS CARTRIDGES OR SCBA. DO NOT USE ORGANIC VAPOUR AND ACID GAS COMBINATION CARTRIDGES AS THESE CONTAIN CHARCOAL WHICH IS INCOMPATIBLE WITH OXIDIZING ACIDS.

### EYE/TYPE:

USE OF SPLASH GOGGLES AND A FACE SHIELD ARE RECOMMENDED.

### FOOTWEAR/TYPE:

RUBBER BOOTS.

### CLOTHING/TYPE:

THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT VARIES, DEPENDING UPON CONDITIONS OF USE. AN ACID RESISTANT SUIT SHOULD BE CONSIDERED.

### OTHER/TYPE:

PROTECTIVE CLOTHING RECOMMENDED ABOVE MIGHT NOT BE SUFFICIENT; CONSULT A SPECIALIST BEFORE HANDLING THIS PRODUCT. ENCAPSULATED "TYPE A" HAZARDOUS MATERIALS SUIT, COMPLETE WITH CONTAINED BREATHING APPARATUS IS RECOMMENDED FOR PERSONNEL REQUIRING ADDITIONAL PROTECTION.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>PHYSICAL STATE:</b>	LIQUID	<b>APPEARANCE:</b>	BROWNISH YELLOW
<b>ODOUR:</b>	PUNGENT ANTISEPTIC LIKE	<b>ODOUR THRESHOLD:</b>	0.27PPM
<b>PH:</b>	<1 (10% SOLN/WATER)	<b>BOILING POINT:</b>	~121°C (250°F)
<b>SPECIFIC GRAVITY:</b>	1.40-1.42 @ 15°C	<b>MELTING/FREEZING POINT:</b>	-20 TO -35°C (-4 TO 30°F)
<b>COEFFICIENT OF WATER/OIL</b>		<b>SOLUBILITY IN WATER:</b>	SOLUBLE IN COLD OR HOT WATER
<b>DISTRIBUTION:</b>	N/AV.	<b>VAPOUR DENSITY (AIR=1):</b>	2.2 (AIR = 1)
<b>EVAPOURATION RATE:</b>	N/AV.	<b>VAPOUR PRESSURE (mmHg @ 20°C):</b>	~47
<b>MOLECULAR WEIGHT:</b>	63.02		
<b>MOLECULAR FORMULA:</b>	HNO <sub>3</sub>		

## SECTION 10: REACTIVITY AND STABILITY DATA

### STABILITY AND REACTIVITY:

THIS PRODUCT IS STABLE. OXIDIZER. AVOID OTHER REDUCING AGENTS AND COMBUSTIBLES ORGANIC MATERIALS. CORROSIVE TO MOST METALS. WILL RELEASE FLAMMABLE AND POTENTIALLY EXPLOSIVE HYDROGEN GAS ON CONTACT WITH AMOPHETERIC METALS. HEATING MAY CAUSE RELEASE OF NITROGEN OXIDES.

**CONDITIONS TO AVOID:** NO ADDITIONAL INFORMATION. CORROSIVE TO MILD METALS SUCH AS COPPER, ALUMINUM, BRASS, IRON AD MILD STEEL. NOT CORROSIVE TO 304L OR 316 STAINLESS STEEL.

### HAZARDOUS DECOMPOSITION PRODUCTS:

WITH NITRIC ACID MIST AND VAPOUR – CAN BE PRODUCED UPON DECOMPOSITION OR REACTION OF NITRIC ACID. HAZARDOUS POLYMERIZATION WILL NOT OCCUR.

## SECTION 11: TOXICOLOGICAL INFORMATION

**TOXICOLOGICAL DATA:** REFER TO SECTION 2 FOR INDIVIDUAL INGREDIENT LD50'S AND LC50'S. HARMFUL TO FISH AND OTHER WATER ORGANISMS. MAY CAUSE BURNS TO MOUTH, THROAT AND STOMACH. MAY CAUSE CORNEAL OPACITY. HARMFUL IF INHALED.

**CARCINOGENIC STATUS:** NONE BY ACGIH, EPA, IARC, NTP, OSHA.

**REPRODUCTIVE EFFECTS:** NO INFORMATION IS AVAILABLE.

**TERATOGENICITY:** NONE BY ACGIH, EPA, IARC, NTP, OSHA.

**MUTAGENICITY:** NONE BY ACGIH, EPA, IARC, NTP, OSHA.

**SENSITIZATION TO MATERIAL:**

N/AV.

**SYNERGISTIC MATERIALS:**NONE KNOWN.

**MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:**

PROLONGED AND/OR REPEATED EXPOSURES MAY CAUSE DENTAL DISORDER AND/OR DAMAGE.

**ADDITIONAL HEALTH HAZARDS:**

DEATH DUE TO BREATHING FAILURE MAY OCCUR ALMOST IMMEDIATELY OR MAY BE DELAYED SEVERAL HOURS TO SEVERAL DAYS DEPENDING ON SEVERITY OF EXPOSURE. NITROGEN OXIDE GAS MAY BE RELEASED IF THIS MATERIAL IS OVERHEATED OR PLACED IN CONTACT WITH OXIDIZING AGENTS (EG. PEROXIDES). NITROGEN OXIDES (ESPECIALLY NITROGEN DIOXIDE) ARE TOXIC BY INHALATION.

## SECTION 12: ECOLOGICAL INFORMATION

**ENVIRONMENTAL EFFECTS:**

THE PRODUCT WILL DISPERSE IN WATER. PRODUCT MAY DEGRADE WATER QUALITY AND TASTE. NOTIFY DOWNSTREAM WATER USERS. WILL DISSOLVE AND DISPERSE IN WATER. RECLAIMING MATERIAL MAY NOT BE VIABLE.

**IMPORTANT ENVIRONMENTAL CHARACTERISTICS:**

THE PRODUCT SHOULD NOT BE ALLOWED TO ENTER DRAINS OR WATER COURSES, OR BE DEPOSITED WHERE IT CAN AFFECT GROUND OR SURFACE WATERS.

**ECOTOXICOLOGICAL:** AQUATIC/MARINE TOXICITY: HARMFUL TO FISH AND OTHER WATER ORGANISMS.

ACUTE FISH LC50 (SPECIES UNKNOWN) pH 3.71-4.0;

GROWTH INHIBITION, DIATOMS AT 6.3 mg/L

## SECTION 13: DISPOSAL CONSIDERATIONS

**HANDLING FOR DISPOSAL:**HANDLE WASTE ACCORDING TO RECOMMENDATIONS IN SECTION 7. WHEN DILUTING, ALWAYS ADD ACID TO WATER, NOT WATER TO ACID. HEAT IS GENERATED BY DILUTION. WEAR PERSONAL PROTECTIVE EQUIPMENT. AVOID CONTACT WITH ACID OR VAPOURS. AVOID ALL SKIN CONTACT AND GETTING IN EYES.

**METHOD OF DISPOSAL:** DISPOSE OF IN ACCORDANCE WITH FEDERAL, PROVINCIAL AND LOCAL HAZARDOUS WASTE LAWS.

## SECTION 14: TRANSPORTATION INFORMATION

**PROPER SHIPPING NAME:** NITRIC ACID

**TDG CLASSIFICATION:** CLASS 8, UN2031, PACKING GROUP II

**SECTION 15: REGULATORY INFORMATION**

WHMIS CLASSIFICATION: C (CORROSIVE), DIA, E (OXIDIZER)

**SECTION 16: OTHER INFORMATION**

<b>LEGEND:</b>	ACGIH	AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
	CAS #	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
	EPA	ENVIRONMENTAL PROTECTION AGENCY
	IARC	INTERNATIONAL AGENCY FOR RESEARCH ON CANCER
	LC	LETHAL CONCENTRATION
	LD	LETHAL DOSE
	MSHA	MINE SAFETY AND HEALTH ASSOCIATION
	N/AP.	NOT APPLICABLE
	N/AV.	NOT AVAILABLE
	NIOSH	NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
	NTP	NATIONAL TOXICOLOGY PROGRAM
	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
	PEL	PERMISSIBLE EXPOSURE LIMIT
	SCBA	SELF CONTAINED BREATHING APPARATUS
	STEL	SHORT TERM EXPOSURE LIMIT
	TDG	TRANSPORTATION OF DANGEROUS GOODS ACT/REGULATIONS
	TLV	THRESHOLD LIMIT VALUE
	TWA	TIME WEIGHTED AVERAGE
	WHMIS	WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM

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**DISCLAIMER OF LIABILITY**

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