Comet Chemical Company Ltd.

3463 Thomas Street Innisfil ,ON L9S 3W4
Tel: (705) 436-5580 Fax: (705) 436-7194

Materials Safety Data - NITRIC ACID

UN - 2031

Shipping Name	NITRIC ACID
Transport of Dangerous Goods Class	Class 8; Packing Group II
WHMIS Class	C; E
Material Use	explosives, fertiliser & organic dye mfg., metal etching and treatment, cellulose nitrate mfg.

1. HAZARDOUS INGREDIENTS

	CAS NUMBER	%	TWAEV (ppm mg/ m^3)	LD_{50} ORAL	(mg/kg) SKIN	LC_{50} ppm INHALATION
Nitric Acid	7697-37-2	60-70%	2ppm 5mg/m^3	110	not known	3100

2. PHYSICAL CHARACTERISTICS

Odour & Appearance	clear, colourless to yellowish, fuming liquid with suffocating odour
Odour Threshold	0.75 – 2.5mg/m^3
Vapour Pressure	5.5mmHg / 0.7kPa (20°C)
Vapour Density (air = 1)	2.2
Boiling Point	121°C
Freezing Point	-33°C
Specific Gravity	1.4 (20°C)
Water Solubility	complete
pH	below 1 - **a very strong, very aggressive acid**

3. FLAMMABILITY & REACTIVITY

Flash Point	not flammable
Autoignition Temperature	not flammable
Flammable Limits	not flammable
Hazardous Combustion Products	corrosive, choking nitrogen oxides
Firefighting Precautions	as for combustibles sustaining fire - firefighters wear SCBA & acid-proof garments
Sensitivity to Static Discharge	not sensitive
Sensitivity to Mechanical Impact	not sensitive
Chemical Stability	stable; will not polymerize
Reactive With	many organics, wood, most metals, violently reactive with alkalies; a strong oxidising agent - incompatible with reducing agents
Dangerous Decomposition Products	corrosive NO_2 vapour on warming; also other oxides of nitrogen (NO_x); generates hydrogen gas on contact with most metals

4. TOXICOLOGY

EFFECTS OF ACUTE EXPOSURE

Skin Contact	***rapidly causes severe burning, ulceration*** dilute solutions turn skin yellow/brown
Skin Absorption	nil – severe damage prevents absorption
Eye Contact	***rapidly causes severe burning; permanent damage likely!***
Inhalation	***severe irritant; vapours likely to damage the respiratory system*** symptoms (breathing difficulty) may be delayed by several hours
Ingestion	***severe burns and ulceration of mouth, throat, stomach, etc; pain may be mild or absent*** death may occur days after initial exposure

EFFECTS OF CHRONIC EXPOSURE

General	***severe damage occurs rapidly - prolonged contact very unlikely,*** however, bronchitis and lung inflammation & pneumonia may occur after prolonged inhalations repeated contact with dilute acid may cause dermatitis
Sensitising	no
Carcinogenic	no
Reproductive Effect	an experimental mutagen in rodents at high doses; no effects documented in humans
Synergistic With	vapours aggravate existing asthma bronchitis, etc.
Estimated LD_{50}	110 mg/kg (oral, human - lowest lethal dose recorded)
Estimated LC_{50}	3100 ppm (inhalation, rat, 1 hr)

5. PROTECTIVE EQUIPMENT

Hands	butyl rubber, "Viton", "Saranex"or "Barricade" gloves (*others may also work; consult supplier*)
Eyes	chemical goggles to protect eyes from vapour; face shield to guard against splashing
Respirator	mechanical ventilation is mandatory; use acid gas cartridge on respirator for *escape* only NOTE: if vapour can be detected, ventilation is not adequate
Clothing	impermeable (hands, above) apron, boots, & long sleeves mandatory

6. ENVIRONMENT

Leak Precaution	dyke to control spillage and prevent environmental contamination
Handling Spill	ventilate contaminated area and/or control vapour with water spray; recover free liquid if appropriate pumps available; neutralise with crushed limestone, slaked lime, or soda ash (sodium carbonate); dispose of neutralised sludge at an approved landfill
Waste Disposal	**do not flush to sewer**; harmful to aquatic life at low concentrations; keep away fron drinking water

7. STORAGE & HANDLING

Store and use in a cool (but above -20^{o}C) environment. Avoid heat (including direct sun) which can pressurise containers. Store away from hydrochloric and hydroflouric acids, as vapours from these can corrode storage drums. Nitric acid attacks some rubbers and plastics, and most metals. **When diluting, always add acid to water and stir.** Violent reactions occur with most powdered metals, reducing agents, and alkalies. Nitric acid fumes can rapidly overcome an individual. Use only with adequate ventilaiton. All employees working near nitric acid should have a respirator with an acid gas cartridge for escape purposes – in case of spill or ventilation failure. Avoid all contact with skin. An eye bath and safety shower must be available near the workplace.

8. FIRST AID

SKIN:	Wash with soap and plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.
EYES:	Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.
INHALATION:	Remove from contaminated area promptly. **CAUTION: Rescuer must not endanger himself!** If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION:	Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, keep victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. The risk and danger of this is greater than the risk of poisoning through absorption of this product. The stomach should be emptied under medical supervision, after the installation of an airway to protect the lungs.

Emergency telephone numbers	- weekdays from 8:00 - 5:00	(705) 436-5580
	at all other times	(800) 567-7455 (Philip Environmental)

Prepared for Comet Chemical Co. Ltd., by ***Nicholas Morgan, November 2002; Revised August 2005***