



SAFETY DATA SHEET

NORTHERN CHEMICALS PTY LTD
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1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product Identifier

Product Name PLUS 1
Synonym(s) PLU5L, PLU10L, PLU20L, PLU200L

1.2 Uses and uses advised against

Use(s) Highly aggressive alkaline cleaner.

1.3 Details of the supplier of the product

Supplier Name Northern Chemicals Pty Ltd
Address 157 Hartley St, Cairns, QLD, 4870, Australia
Telephone (07) 4035 4622
Fax (07) 4035 4932
Email enquiries@northernchemicals.com.au
Website www.northernchemicals.com.au

1.4 Emergency telephone number(s)

Emergency (07) 4035 4622

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS

GHS classification(s) Eye damage / eye irritation: Category 1
Skin corrosion / irritation: Category 1A

2.2 Label elements

Signal Word DANGER

Pictogram(s)



Hazard statement(s)

H318 Causes serious eye damage.
H314 Causes severe skin burns and eye damage.

Prevention statement(s)

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/physician.

Storage statement(s)

P405 Store locked up.

Disposal statement(s)

P501 Take off contaminated clothing and wash before reuse.

2.3 Other hazards

N/A

3. COMPOSITION / INFORMATION ON INGREDIENTS**3.1 Substances / Mixtures**

INGREDIENT	CAS NUMBER	CONTENT
WATER	7732-18-5	>60%
ETHYLENE GLYCOL MONOBUTYL ETHER	111-76-2	10 - <30%
POTASSIUM HYDROXIDE	1310-58-3	<10%
NON HAZARDOUS MATERIALS	-	<10%

4. FIRST AID MEASURES**4.1 Description of first aid measures**

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If fumes, aerosols or combustion products are inhaled remove from contaminated area. Other measures are usually unnecessary.
Skin	Immediately remove all contaminated clothing, including footwear. Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.
Ingestion	Do NOT induce vomiting. Immediately give a glass of water. Urgent hospital treatment is likely to be needed. If in doubt, contact a Poisons Information Centre or a doctor.
First aid facilities	Eye wash facilities should be available.

4.2 Most important symptoms and effects, both acute and delayed**For acute or short term repeated exposures to ethylene glycol:**

Early treatment of ingestion is important. Ensure emesis is satisfactory. Test and correct for metabolic acidosis and hypocalcaemia. Apply sustained diuresis when possible with hypertonic mannitol. Evaluate renal status and begin haemodialysis if indicated. Rapid absorption is an indication that emesis or lavage is effective only in the first few hours. Cathartics and charcoal are generally not effective. Correct acidosis, fluid/electrolyte balance and respiratory depression in the usual manner. Systemic acidosis (below 7.2) can be treated with intravenous sodium bicarbonate solution. Ethanol therapy prolongs the half-life of ethylene glycol and reduces the formation of toxic metabolites. Pyridoxine and thiamine are cofactors for ethylene glycol metabolism and should be given (50 to 100 mg respectively) intramuscularly, four times per day for 2 days. Magnesium is also a cofactor and should be replenished. The status of 4-methylpyrazole, in the treatment regime, is still uncertain. For clearance of the material and its metabolites, haemodialysis is much superior to peritoneal dialysis.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically

5. FIRE FIGHTING MEASURES**5.1 Extinguishing media**

Foam, Dry Chemical Powder or Carbon Dioxide

5.2 Special hazards arising from the substance or mixture

The material is not readily combustible under normal conditions. However, it will break down under fire conditions and the organic component may burn. Not considered to be a significant fire risk. Heat may cause expansion or decomposition with violent rupture of containers. Decomposes on heating and may produce toxic fumes of carbon monoxide (CO). May emit acrid smoke.

Decomposes on heating and produces toxic fumes of: carbon dioxide (CO₂) other pyrolysis products typical of burning organic material. May emit poisonous fumes. May emit corrosive fumes.

5.3 Advice for firefighters

Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves in the event of a fire. Prevent, by any means available, spillage from entering drains or water courses. Use fire fighting procedures suitable for surrounding area. DO NOT approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. Equipment should be thoroughly decontaminated after use.

5.4 Hazchem code

N/A

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

See section 8

6.2 Environmental precautions

See section 12

6.3 Methods of cleaning up

Minor Spills

Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance, by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable, labelled container for waste disposal.

Major Spills

Moderate hazard. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. Stop leak if safe to do so. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling. Neutralise/decontaminate residue (see Section 13 for specific agent). Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains. After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using. If contamination of drains or waterways occurs, advise emergency

6.4 Reference to other sections

Personal Protective Equipment advice is contained in Section 8 of the SDS.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. DO NOT allow material to contact humans, exposed food or food utensils. Avoid contact with incompatible materials. When handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Launder contaminated clothing before re-use. Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained. DO NOT allow clothing wet with material to stay in contact with skin

7.2 Conditions for safe storage, including any incompatibilities

Suitable Container

Polyethylene or polypropylene container. Packing as recommended by manufacturer. Check all containers are clearly labelled and free from leaks.

Storage Incompatibilities

Ethylene glycol monobutyl ether (2-butoxyethanol) and its acetate: May form unstable peroxides in storage is incompatible with oxidisers, permanganates, peroxides, ammonium persulfate, bromine dioxide, nitrates, strong acids, sulfuric acid, nitric acid, perchloric acid

7.3 Specific end use(s)

N/A

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

Ingredient Data

Source	Ingredient	TWA	STEL	Peak	Notes
SWA (AUS)	ethylene glycol monobutyl ether	96.9 mg/m3 / 20 ppm	242 mg/m3 / 50ppm	N/A	Sk
SWA (AUS)	potassium hydroxide	N/A	N/A	2 mg/m3	N/A

Emergency Limits

Ingredient	Material Name	TEEL-1	TEEL-2	TEEL-3
ethylene glycol monobutyl ether	2-Butoxyethanol	60 ppm	120 ppm	700 ppm
potassium hydroxide	potassium hydroxide	0.18 mg/m3	2 mg/m3	54 mg/m3

Ingredient	Original IDLH	Revised IDLH
ethylene glycol monobutyl ether	700 ppm	700 [Unch] ppm
potassium hydroxide	N/A	N/A

8.2 Exposure controls

Engineering Controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee

Personal Protective Equipment



Eye / Face

Chemical goggles. Full face shield may be required for supplementary but never for primary protection of eyes. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]

Hands / Feet

Wear chemical protective gloves, e.g. PVC. Wear safety footwear or safety gumboots, e.g. Rubber When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.

Body

Overalls and or P.V.C apron.

Respiratory

If used in non-ventilated areas.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear Straw Liquid	Relative density	N/A
Physical state	Liquid	pH	13 - 14
Odour	N/A	Flammability	Non-flammable
Solubility in water	Miscible		

10. STABILITY AND REACTIVITY

10.1 Reactivity

See section 7

10.2 Chemical stability

Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur.

10.3 Possibility of hazardous reactions

See section 7

10.4 Conditions to avoid

See section 7

10.5 Incompatible materials

See section 7

10.6 Hazardous decomposition products

See section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Inhaled

The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhaling corrosive bases may irritate the respiratory tract. Symptoms include cough, choking, pain and damage to the mucous membrane. Not normally a hazard due to non-volatile nature of

Ingestion

Ingestion of alkaline corrosives may produce burns around the mouth, ulcerations and swellings of the mucous membranes, profuse saliva production, with an inability to speak or swallow. Both the oesophagus and stomach may experience burning pain; vomiting and diarrhoea may follow. Accidental ingestion of the material may be damaging to the health of the individual. Severe acute exposure to ethylene glycol monobutyl ether, by ingestion, may cause kidney damage, haemoglobinuria, (blood in urine) and is potentially fatal.

Skin Contact

The material can produce chemical burns following direct contact with the skin. Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. Ethylene glycol monobutyl ether penetrates the skin easily and will cause more harm on skin contact than through inhalation. Open cuts, abraded or irritated skin should not be exposed to this material. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Eye

If applied to the eyes, this material causes severe eye damage. Direct eye contact with corrosive bases can cause pain and burns. There may be swelling, epithelium destruction, clouding of the cornea and inflammation of the iris. Mild cases often resolve; severe cases can be prolonged with complications such as persistent swelling, scarring, permanent cloudiness, bulging of the eye, cataracts, eyelids glued to the eyeball and blindness. Ethylene glycol monobutyl ether may cause pain, redness and damage to the eyes.

Chronic

Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue. Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems. Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment. Ethylene glycol esters and their ethers cause wasting of the testicles, reproductive changes, infertility and changes to kidney function. Shorter chain compounds are more dangerous.

PLUS 1	TOXICITY	IRRITATION
N/A		N/A

TOXICITY		IRRITATION
Ethylene Glycol	dermal (rat) LD50: >2000 mg/kg	Eye (rabbit): 100 mg SEVERE
Monobutyl Ether	Inhalation (rat) LC50: 450 ppm/4hr	Eye (rabbit): 100 mg/24h-moderate
	Oral (rat) LD50: 250 mg/kg	Skin (rabbit): 500 mg, open; mild

TOXICITY		IRRITATION
Potassium Hydroxide	Oral (rat) LD50: 273 mg/kg	Eye (rabbit): 1mg/24h rinse-moderate
		Skin (human): 50 mg/24h SEVERE
		Skin (rabbit): 50 mg/24h SEVERE

TOXICITY		IRRITATION
Water	Oral (rat) LD50: >90000 mg/kg	N/A

Ethylene Glycol Monobutyl Ether

The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

For ethylene glycol monoalkyl ethers and their acetates (EGMAEs):

Typical members of this category are ethylene glycol propylene ether (EGPE), ethylene glycol butyl ether (EGBE) and ethylene glycol hexyl ether (EGHE) and their acetates.

EGMAEs are substrates for alcohol dehydrogenase isozyme ADH-3, which catalyses the conversion of their terminal alcohols to aldehydes (which are transient metabolites). Further, rapid conversion of the aldehydes by aldehyde dehydrogenase produces alkoxyacetic acids, which are the predominant urinary metabolites of mono substituted glycol ethers.

Acute Toxicity: Oral LD50 values in rats for all category members range from 739 (EGHE) to 3089 mg/kg bw (EGPE), with values increasing with decreasing

Exposure of pregnant rats to ethylene glycol monobutyl ether (2-butoxyethanol) at 100 ppm or rabbits at 200 ppm during organogenesis resulted in maternal toxicity and embryotoxicity including a decreased number of viable implantations per litter. Slight foetotoxicity in the form of poorly ossified or unossified skeletal elements was also apparent in rats. Teratogenic effects were not observed in other species. At least one researcher has stated that the reproductive effects were less than that of other monoalkyl ethers of ethylene glycol.

For ethylene glycol: Ethylene glycol is quickly and extensively absorbed through the gastrointestinal tract. Limited information suggests that it is also absorbed through the respiratory tract; dermal absorption is apparently slow.

Following absorption, ethylene glycol is distributed throughout the body according to total body water. In most mammalian species, including humans, ethylene glycol is initially metabolised by alcohol. NOTE: Changes in kidney, liver, spleen and lungs are observed in animals exposed to high concentrations of this substance by all routes. **

ASCC (NZ) SDS

Acute Toxicity	N/A	Carcinogenicity	NO
Skin Irritation/Corrosion	YES	Reproductivity	NO
Serious Eye Damage/Irritation	YES	STOT - Single Exposure	NO
Respiratory or Skin sensitisation	NO	STOT - Repeated Exposure	NO
Mutagenicity	NO	Aspiration Hazard	NO

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value
Ethylene glycol monobutyl ether	LC50	96	Fish	222.042mg/L
Ethylene glycol monobutyl ether	EC50	48	Crustacea	>1000mg/L
Ethylene glycol monobutyl ether	EC50	96	Algae or other aquatic plants	1081.644mg/L
Ethylene glycol monobutyl ether	EC50	384	Crustacea	51.539mg/L
Ethylene glycol monobutyl ether	NOEC	96	Crustacea	1000mg/L
Potassium Hydroxide	LC50	96	Fish	80mg/L
Potassium Hydroxide	NOEC	96	Fish	56mg/L

12.2 Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
ethylene glycol monobutyl ether	LOW (Half-life = 56 days)	LOW (Half-life = 1.37 days)
potassium hydroxide	LOW	LOW

12.3 Bioaccumulative potential

Ingredient	Bioaccumulation
ethylene glycol monobutyl ether	LOW (BCF = 2.51)

12.4 Mobility in soil

Ingredient	Mobility
ethylene glycol monobutyl ether	HIGH (KOC = 1)

12.5 Other adverse effects

N/A

13. DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods****Product / Packaging disposal**

Containers may still present a chemical hazard/ danger when empty.

Return to supplier for reuse/ recycling if possible.

Otherwise:

If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised

Where possible retain label warnings and SDS and observe all notices pertaining to the product.

Recycle wherever possible.

Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.

Treat and neutralise at an approved treatment plant.

Treatment should involve: Neutralisation with suitable dilute acid followed by: burial in a land-fill specifically licenced to accept chemical and / or pharmaceutical wastes or Incineration in a licenced apparatus (after admixture with suitable combustible material).

Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

14. TRANSPORT INFORMATION**Labels Required**

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	1760	1760	1760
14.2 Proper Shipping Name	Corrosive liquids, n.o.s.	Corrosive liquids, n.o.s.	Corrosive liquids, n.o.s.
14.3 Transport hazard class	8	8	8
14.4 Packing Group	III	III	III
14.5 Subsidiary risk(s)	None Allocated	None Allocated	None Allocated
14.6 Environmental Hazard	Not Applicable	Not Applicable	Not Applicable
14.7 Hazchem Code	2R	2R	2R

14.8 Transport in bulk according to Annex II of MARPOL and the IBC code

N/A

15. REGULATORY INFORMATION**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

ETHYLENE GLYCOL MONOBUTYL ETHER(111-76-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards	Australia Inventory of Chemical Substances (AICS)
Australia Hazardous Substances Information System - Consolidated Lists	International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs

POTASSIUM HYDROXIDE(1310-58-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards	Australia Inventory of Chemical Substances (AICS)
Australia Hazardous Substances Information System - Consolidated Lists	

WATER(7732-18-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Exposure Standards	Australia Inventory of Chemical Substances (AICS)
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16. OTHER INFORMATION**Ingredient with multiple CAS numbers**

N/A

Definitions and abbreviations

PC-TWA: Permissible Concentration-Time Weighted Average

PC-STEL: Permissible Concentration-Short Term Exposure Limit

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit.

IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection

OTV: Odour Threshold Value

BCF: BioConcentration Factors

BEI: Biological Exposure Index