1. IDENTIFICATION

Product Name	**Caustic Potash Liquid**
Other Names	KOH Liquid
Uses	Additive for food production; organic synthesis.
Chemical Family	No Data Available
Chemical Formula	KOH
Chemical Name	Potassium hydroxide solution
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) Schedule 6

Globally Harmonised System

Hazard Classification

Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Hazard Categories

Corrosive to Metals - Category 1

Acute Toxicity (Oral) - Category 4

Skin Corrosion/Irritation - Category 1A

Serious Eye Damage/Irritation - Category 1

Pictograms

Signal Word

Danger

Hazard Statements

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.

Precautionary Statements

Prevention	**P270**	Do not eat, drink or smoke when using this product.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P260	Do not breathe gas/mist/vapours/spray.
Response	**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.
	P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	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.
	P330	Rinse mouth.
	P363	Wash contaminated clothing before reuse.
	P390	Absorb spillage to prevent material damage.
Storage	**P405**	Store locked up.
	P406	Store in corrosive resistant container with a resistant inner liner.
Disposal	**P501**	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification

Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications

Health Hazards	**6.1D**	Substances that are acutely toxic - Harmful
	8.1A	Substances that are corrosive to metals
	8.2B	Substances that are corrosive to dermal tissue UN PGII
	8.3A	Substances that are corrosive to ocular tissue
Environmental Hazards	**9.3B**	Substances that are ecotoxic to terrestrial vertebrates

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Water	H2O	7732-18-5	48 - 80 %
Potassium hydroxide	KOH	1310-58-3	20 - 52 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth, then drink a glass of water. Do NOT induce vomiting. Immediately call a Poison Centre or doctor/physician for advice. Never give anything by mouth to an unconscious person.

Eye IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Immediately call a Poison Centre or doctor/physician for advice. Remove contact lenses if present and easy to do. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes. Transport to hospital or doctor without delay.
*Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin IF ON SKIN (or hair): Remove contaminated clothing and shoes immediately. Flush skin and hair with running water for at least 15 minutes. For minor skin contact, avoid spreading material on unaffected skin. In case of gross contamination, drench contaminated clothing and skin with plenty of water before removing clothes. Immediately call a Poison Centre or doctor/physician for advice. Wash contaminated clothing and shoes before reuse.

Inhaled IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or proper respiratory device - Administer oxygen if breathing is difficult.

Advice to Doctor Keep victim calm and warm - Obtain immediate medical care. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.

Medical Conditions Aggravated by Exposure No information available.

5. FIRE FIGHTING MEASURES

General Measures If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Avoid getting water inside containers.

Flammability Conditions Non-combustible; Material itself does not burn.

Extinguishing Media If material is involved in a fire, dry chemical, Carbon dioxide (CO2), foam or water spray for extinction.

Fire and Explosion Hazard Containers may explode when heated. Contact with metals may evolve flammable hydrogen gas.

Hazardous Products of Combustion Fire or heat will produce irritating, toxic and/or corrosive gases, including Potassium oxide.

Special Fire Fighting Instructions Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and may pollute waterways.

Personal Protective Equipment Wear self-contained breathing apparatus (SCBA) and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for this material.

Flash Point No Data Available

Lower Explosion Limit No Data Available

Upper Explosion Limit No Data Available

Auto Ignition Temperature No Data Available

Hazchem Code 2R

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Do not breathe vapours and prevent contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION 13). For large amounts, pump-off recoverable product.
Containment	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Cover with plastic sheet to prevent spreading.
Decontamination	Neutralise residues with dilute acid. Wash area down with excess water.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground. Large spill: Immediately contact Police or Fire Brigade; Consider initial downwind evacuation of areas within at least 250 m.
Personal Precautionary Measures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8). Wear SCBA and chemical splash suit. Fully-encapsulating, gas-tight suits should be worn for maximum protection.

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Do not breathe mist/vapours/aerosols and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8). Avoid contact with incompatible materials. Absorb spillage to prevent material damage (see SECTION 6).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Prevent freezing during winter. Keep container tightly closed when not in use - check regularly for leaks. Protect from water/moisture. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep only in the original container or corrosive resistant container. Do not store in aluminium or galvanised containers nor use die-cast zinc or aluminium bungs; steel bungs should be used.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	COMPONENT: Potassium hydroxide (CAS No. 1310-58-3): - Safe Work Australia Exposure Standard: TWA = 2 mg/m3 Peak limitation. - New Zealand Workplace Exposure Standard: TWA = 2 mg/m3 Ceiling. - NIOSH REL = 2 mg/m3
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. 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.
Personal Protection Equipment	- Respiratory protection: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Recommended: Particulate/mist filter respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Chemical goggles (primary); Face shield (secondary). - Hand protection: Wear protective gloves. Recommended: Long (elbow-length) impervious gloves. - Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Overalls, splash apron or equivalent chemical impervious outer garment and rubber boots.
Special Hazards Precaustions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Odourless
Colour	Transparent/Opaque
pH	>=12
Vapour Pressure	2.5 mmHg (@ 20 °C)
Relative Vapour Density	0.62 Air = 1
Boiling Point	143 °C (50% soln.)
Melting Point	No Data Available
Freezing Point	4.4 °C
Solubility	Miscible with water
Specific Gravity	1.516
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	6.0 cP (@ 15.6 °C)
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible; Material itself does not burn.
Reactions That Release Gases or Vapours	Fire or heat will produce irritating, toxic and/or corrosive gases, including Potassium oxide.
Release of Invisible Flammable Vapours and Gases	Contact with metals may evolve flammable hydrogen gas.

10. STABILITY AND REACTIVITY

Potassium hydroxide solution in water is a strong base; It reacts violently with acid and is corrosive to metals such as

General Information	aluminium, tin, lead and zinc. Reacts with ammonium salts; This produces ammonia and generates fire hazard. Contact with moisture and water may generate sufficient heat to ignite combustible materials.
Chemical Stability	This material is stable under recommended storage conditions at normal temperature and pressure.
Conditions to Avoid	Keep away from heat and sources of ignition.
Materials to Avoid	Incompatible/reactive with acids, metals, halocarbon compounds, oxidisers, ammonium salts, reducing agents, combustible materials.
Hazardous Decomposition Products	Fire or heat will produce irritating, toxic and/or corrosive gases, including Potassium oxide. Contact with metals may evolve flammable hydrogen gas.
Hazardous Polymerisation	Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: Harmful if swallowed. Corrosive on ingestion; Symptoms include abdominal pain, burns in mouth and throat, burning sensation in the throat and chest, nausea, vomiting, shock or collapse.
- Skin corrosion/irritation: Causes severe skin burns. Potassium hydroxide is very corrosive to skin; It causes deep penetrating burns and necrosis.
- Eye damage/irritation: Causes serious eye damage. Potassium hydroxide is very corrosive to the eyes; Symptoms include redness, pain, blurred vision, severe burns.
- Respiratory/skin sensitisation: Potassium hydroxide is not considered to be a skin sensitiser.
- Germ cell mutagenicity: No information available.
- Carcinogenicity: No component in this material is listed as carcinogenic according to the International Agency for Research on Cancer (IARC).
- Reproductive toxicity: No information available.
- STOT (single exposure): Potassium hydroxide is very corrosive to the respiratory tract. Breathing in mists or aerosols may produce respiratory irritation. Symptoms include cough, sore throat, burning sensation, shortness of breath.
- STOT (repeated exposure): Repeated or prolonged contact with skin may cause dermatitis.
- Aspiration toxicity: No information available.

Acute

Ingestion

Acute toxicity (Oral):
COMPONENT: Potassium hydroxide (CAS No. 1310-58-3):
- LD50, Rat: 333 mg/kg bw. [Supplier's SDS].

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic toxicity:
- LC50, Fish (Gambusia affinis): 80 mg/L (96 h).
- EC50, Crustacea (Daphnia magna): 660 mg/L (48 h).
- EC50, Algae/aquatic plants (Nitscheria linearis): 1,337 mg/L (120 h).

Persistence/Degradability	Ready biodegradation.
Mobility	No information available.
Environmental Fate	Prevent entry into drains and waterways.
Bioaccumulation Potential	- BCF: 3.162 - log Kow: -3.88
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	No information available.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	POTASSIUM HYDROXIDE SOLUTION
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	1814
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	POTASSIUM HYDROXIDE SOLUTION
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	1814
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	POTASSIUM HYDROXIDE SOLUTION
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	37 Toxic And/Or Corrosive Substances Non-Combustible
UN Number	1814
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

Land Transport (United States of America)
US DOT

Proper Shipping Name	POTASSIUM HYDROXIDE SOLUTION
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
ERG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	1814
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	POTASSIUM HYDROXIDE SOLUTION
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	1814
Hazchem	2R
Pack Group	II
Special Provision	No Data Available
EMS	F-A, S-B
Marine Pollutant	No

Air Transport
IATA DGR

Proper Shipping Name	POTASSIUM HYDROXIDE SOLUTION
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	1814
Hazchem	2R
Pack Group	II
Special Provision	No Data Available

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information	POTASSIUM HYDROXIDE
Poisons Schedule (Aust)	Schedule 6

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR001574

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	215-181-3
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Not Determined

Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Listed

16. OTHER INFORMATION

Related Product Codes	CAPOLB1000, CAPOLB1001, CAPOLB1002, CAPOLB1100, CAPOLB1200, CAPOLB1244, CAPOLB1300, CAPOLB1400, CAPOLI1000, CAPOLI1001, CAPOLI1002, CAPOLI1003, CAPOLI1004, CAPOLI1005, CAPOLI1006, CAPOLI1007, CAPOLI1008, CAPOLI1009, CAPOLI1010, CAPOLI1100, CAPOLI1101, CAPOLI1200, CAPOLI1201, CAPOLI1202, CAPOLI1203, CAPOLI1300, CAPOLI1350, CAPOLI1351, CAPOLI1352, CAPOLI1400, CAPOLI1401, CAPOLI1500, CAPOLI1600, CAPOLI1800, CAPOLI2000, CAPOLI2100, CAPOLI2101, CAPOLI2150, CAPOLI2151, CAPOLI2152, CAPOLI2155, CAPOLI2200, CAPOLI2500, CAPOLI3000, CAPOLI3001, CAPOLI3500, CAPOLI3600, CAPOLI3700, CAPOLI4000, CAPOLI8000, CAPOLI9000, CAPOLI9050, CAPOTA1721, CAPOTA1725, CAPOTA1801, CAPOTA1802, CAPOTA1803, CAPOTA1804, CAPOTA1805, CAPOTA1806, CAPOTA1807, CAPOTA1808, CAPOTA1809, CAPOTA1810, CAPOTA1811, CAPOTA1812, CAPOTA1820, CAPOTA1821, CAPOTA1822, CAPOTA1823, CAPOTA1825, CAPOTA1865, CAPOTA1866, CAPOTA1867, CAPOTA1868, CAPOTA1886, CAPOTA1887, CAPOTA1888, CAPOTA1889, CAPOTA1890, CAPOTA1891, CAPOTA1892, CAPOTA1893, CAPOTA1894, CAPOTA1895, CAPOTA1896, CAPOTA1897, CAPOTA1898, CAPOTA1899, CAPOTA1902, CAPOTA1903, CAPOTA1910, CAPOTA1915, CAPOTA1940, CAPOTA1942, CAPOTA1945, CAPOTA4500, CAPOTA8888
Revision	3
Revision Date	03 Oct 2019
Reason for Issue	Updated SDS
Key/Legend	**<** Less Than **>** Greater Than **AICS** Australian Inventory of Chemical Substances **atm** Atmosphere **CAS** Chemical Abstracts Service (Registry Number) **cm²** Square Centimetres **CO2** Carbon Dioxide **COD** Chemical Oxygen Demand **deg C (°C)** Degrees Celcius **EPA (New Zealand)** Environmental Protection Authority of New Zealand **deg F (°F)** Degrees Farenheit **g** Grams **g/cm³** Grams per Cubic Centimetre **g/l** Grams per Litre **HSNO** Hazardous Substance and New Organism **IDLH** Immediately Dangerous to Life and Health **immiscible** Liquids are insoluable in each other. **inHg** Inch of Mercury **inH2O** Inch of Water **K** Kelvin **kg** Kilogram **kg/m³** Kilograms per Cubic Metre **lb** Pound **LC50** LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours. **LD50** LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. **ltr** or **L** Litre **m³** Cubic Metre **mbar** Millibar

mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight