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according to 1907/2006/EC, Article 31

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

· **1.1 Product identifier**

· **Trade name: Potassium Hydroxide Solution 1M**

· **Article number:** 40-5003-05
· **Registration number** 01-2119487136-33
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
· **Sector of Use** SU24 Scientific research and development
· **Product category** PC21 Laboratory chemicals
· **Application of the substance / the mixture** Laboratory reagent
· **Uses advised against**
Any use involving aerosol formation or vapour release in excess of the assigned WEL where workers are exposed without suitable RPE.
Any use carrying a risk of direct contact with eyes/skin where workers are exposed without adequate personal protective equipment (PPE).
Processes involving the use of incompatible substances - refer to section 10.
The product is intended exclusively for industrial and professional use.

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Severn Biotech Ltd.
Unit 2,
Park Lane,
Kidderminster,
Worcestershire.
DY11 6TJ
UK
Tel: 0044 1562 825286
Fax: 0044 1562 825284
email: info@severnbiotech.com

· **Further information obtainable from:** Product safety department.
· **1.4 Emergency telephone number:**
UK National Poisons Information Service. E-mail: npis.birmingham@nhs.net; Tel: +44 (0)344 892 0111

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**


corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

Acute Tox. 4 H302 Harmful if swallowed.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the GB CLP regulation.
· **Hazard pictograms** GHS05, GHS07
· **Signal word** Danger

· **Hazard-determining components of labelling:**
Potassium hydroxide
· **Hazard statements**
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.

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· **Precautionary statements**

P260	Do not breathe mist/vapours/spray.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352	IF ON SKIN: Wash with plenty of water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

· **3.2 Chemical characterisation: Mixtures**
· **Description:** An aqueous solution of potassium hydroxide.

· **Dangerous components:** Void
· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:**
DO NOT DELAY!
Immediately rinse with water.
If skin irritation continues, consult a doctor.
· **After eye contact:**
DO NOT DELAY!
Check for and remove any contact lenses.
Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing:**
DON'T DELAY!
Wash mouth out with water
Drink plenty of water and provide fresh air. Call for a doctor immediately.
Do not induce vomiting; call for medical help immediately.
If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
· **Information for doctor:**
Corrosive. The substance is very corrosive to the eyes, the skin and the respiratory tract. Corrosive on ingestion. Inhalation of an aerosol of this substance may cause lung oedema.
· **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

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SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.
· **5.2 Special hazards arising from the substance or mixture**
SPECIFIC HAZARDS
- Corrosive liquid.
- Not combustible.
- Gives off hydrogen by reaction with metals.
· **5.3 Advice for firefighters**
· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
Do not inhale explosion gases or combustion gases.
· **Additional information** Cool endangered receptacles with water spray.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
· **6.2 Environmental precautions:**
Do not allow to penetrate the ground/soil.
Do not allow product to reach sewage system or any water course in the undiluted form.
· **6.3 Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Send for recovery or disposal in suitable receptacles.
Ensure adequate ventilation.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Prevent formation of aerosols.
Ensure good ventilation/exhaustion at the workplace.
Avoid direct contact (skin/eye contact, ingestion and/or inhalation of fume/mist/dust) with the product in the undiluted form.
· **Information about fire - and explosion protection:** No special measures required.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:**
Prevent any seepage into the ground.
Do not store in aluminium, copper, zinc containers.
· **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from metals.
Do not store together with acids.
· **Further information about storage conditions:**
Store in cool, dry conditions in well sealed receptacles.
Protect from frost.
Store in a well-ventilated area.
Store at ambient temperature.
Keep container tightly closed.
Keep away from : heat sources, highly flammable materials, incompatible products.

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· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**
· **Additional information about design of technical facilities:** No further data; see item 7.

· **Ingredients with limit values that require monitoring at the workplace:**	
1310-58-3 Potassium hydroxide	
WEL	Short-term value: 2 mg/m³

· **DNELs**
WORKERS
Long-term exposure - local effects
Inhalation DN(M)EL
- DNEL (Derived No Effect Level): 1 mg/m³

GENERAL POPULATION
Long-term exposure - local effects
Inhalation DN(M)EL
- DNEL (Derived No Effect Level): 1 mg/m³
· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Do not eat, drink, smoke or sniff while working.
Storing food in the working area is prohibited.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Do not inhale gases / fumes / aerosols.
A safe system of work must be formulated and followed to ensure safe working with this product. Relevant workers must receive suitable and sufficient training and supervision.
Take note of assigned Workplace Exposure Limits.
Eye wash bottles or eye wash stations in compliance with applicable standards must be present within easy reach of the work station.
· **Respiratory protection:** Use suitable respiratory protective device in case of insufficient ventilation.
· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Hand protection:
- Impervious gloves
- Suitable material: PVC, Neoprene, Natural rubber, Butyl rubber
- Unsuitable material: Leather
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

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· **Eye protection:**

Tightly sealed goggles

Face shield if risk on splashes.

· **Body protection:**
Impervious protective clothing
Body protection must be chosen depending on product properties, activity and possible exposure.
Skin and body protection:
- Corrosionproof clothing.
- Suitable material: PVC, Neoprene, Natural rubber, Butyl rubber

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Fluid
Colour:	Clear
· **Odour:**	Odourless
· **pH-value at 20 °C:**	14
· **Change in condition**	
Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	98 - 138 °C
· **Flash point:**	Not applicable.
· **Auto-ignition temperature:**	Product is not self-igniting.
· **Explosive properties:**	Product does not present an explosion hazard.
· **Vapour pressure at 20 °C:**	23 hPa
· **Density at 20 °C:**	1.06 - 1.25 g/cm³
· **Solubility in / Miscibility with water:**	Fully miscible.
· **Solvent content:**	
Organic solvents:	0.00 %
VOC (EC)	0.00 %
· **9.2 Other information**	NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
· **10.3 Possibility of hazardous reactions**
Potassium hydroxide is a strong base, it reacts violently with acid and is corrosive to metals such as zinc, aluminium, tin and lead forming a combustible/explosive gas (hydrogen).
Reacts with ammonium salts to produce ammonia and causing fire hazard. Attacks some forms of plastics, rubber or coatings.
Rapidly absorbs carbon dioxide and water from air.

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Risk of explosion in contact with: fluorine; aluminium hexachloroplatinate-(2)/heat; bromoform + crown ether; but-2-ene-1,4-diol (heat); calcium powder; calcium carbide/chlorine; chlorine dioxide; cyanogen azide (rarely); 1,2-dichloroethene; magnesium; sodium azide + benzoyl chloride; nitrobenzene; nitroethane; nitromethane; nitroparaffines; N-nitrosomethylurea; phosphorus (rarely); nitrogen trichloride; tetrachloroethane/ potassium hydroxide solid/heat; tetrahydrofurane (peroxide containing, rarely); 2,4,6-trinitrotoluene; zinc ; tin

The substance can react dangerously with: acids; hydrogen peroxide; acetonitrile; acrolein; aldehydes; lower alcohols; aluminium -> hydrogen; aluminium carbide (rarely); ammonium salts/ammonia; chloroform/ methanol; cyclopentadiene; acetic acid; germanium; halogenated hydrocarbons; iodine pentafluoride; potassium peroxodisulphate; cresols; maleic anhydride; nitrophenol; phosphorus trioxide; hydrogen sulphide; tetrafluoropropanol; trichloroethene; vinyl acetate; sugars (reducing).

· **10.4 Conditions to avoid** No further relevant information available.

· **10.5 Incompatible materials:**
Finely powdered metals.
Strong acids.
Substances specificaly listed in section 10.3 as incompatible.

· **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**

· **Acute toxicity**
Harmful if swallowed.

· **LD/LC50 values relevant for classification:**		
1310-58-3 Potassium hydroxide		
Oral	LD50	333 mg/kg (rat)

· **Primary irritant effect:**

· **Skin corrosion/irritation**
Causes severe skin burns and eye damage.

· **Serious eye damage/irritation**
Causes serious eye damage.

· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.

· **Other information (about experimental toxicology):**
ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.

· **Subacute to chronic toxicity:** Repeated or prolonged contact with skin may cause dermatitis.

· **Additional toxicological information:**
Corrosive. The substance is very corrosive to the eyes, the skin and the respiratory tract. Corrosive on ingestion.
Inhalation of an aerosol of this substance may cause lung oedema. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential.

KOH is a corrosive substance at concentrations of about 2% and higher. Between about 0.5% and 2.0%, it is irritating. Case reports on human accidents or intentional exposure confirm that the risk posed by KOH for human health originates from its corrosive properties.

· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**

· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.

· **Carcinogenicity** Based on available data, the classification criteria are not met.

· **Reproductive toxicity** Based on available data, the classification criteria are not met.

· **STOT-single exposure** Based on available data, the classification criteria are not met.

· **STOT-repeated exposure** Based on available data, the classification criteria are not met.

· **Aspiration hazard** Based on available data, the classification criteria are not met.

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SECTION 12: Ecological information

· **12.1 Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **12.2 Persistence and degradability** No further relevant information available.
· **12.3 Bioaccumulative potential** Product is not expected to bioaccumulate.
· **12.4 Mobility in soil** No further relevant information available.
· **Ecotoxical effects:**
· **Other information:**
The hazard of KOH for the environment is caused by the hydroxyl ion (pH effect). For this reason the effect of KOH on the organisms depends on the buffer capacity of the aquatic or terrestrial ecosystem.
· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
Emissions will lead to a local increase in pH in the aquatic environment.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Contact waste processors for recycling information.
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Used, degraded or contaminated product may be classified as hazardous waste. Anyone classifying hazardous waste and determining its fate must be qualified in accordance with state and international legislation.

· **Uncleaned packaging:**
· **Recommendation:**
Container remains hazardous when empty. Continue to observe all precautions.
Containers, even those that are “empty,” may contain residues that can develop hazardous gases and vapours upon heating. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.
· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

· **14.1 UN-Number**	
· **ADR, IMDG, IATA**	1814
· **14.2 UN proper shipping name**	
· **ADR**	1814 POTASSIUM HYDROXIDE SOLUTION
· **IMDG, IATA**	POTASSIUM HYDROXIDE SOLUTION

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· **14.3 Transport hazard class(es)**

· **ADR, IMDG, IATA**

· **Class**	8 Corrosive substances.
· **Label**	8
· **14.4 Packing group**	
· **ADR, IMDG, IATA**	II
· **14.5 Environmental hazards:**	
· **Marine pollutant:**	No
· **14.6 Special precautions for user**	Warning: Corrosive substances.
· **Hazard identification number (Kemler code):**	80
· **EMS Number:**	F-A,S-B
· **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **ADR**	
· **Limited quantities (LQ)**	1ltr
· **Transport category**	2
· **Tunnel restriction code**	E
· **UN "Model Regulation":**	UN1814, POTASSIUM HYDROXIDE SOLUTION, 8, II

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** Product safety department.
· **Abbreviations and acronyms:**
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)
DNEL: Derived No-Effect Level (UK REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1