SAFETY DATA SHEET

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

1.1 Product identifier

- Product Name: HP2 - Hydrogen Peroxide Titrant
- Product Part Number: B100134, B102698, B101110

1.2 Relevant identified uses of the substance or mixture and uses advised against

- Use of the substance/mixture: Reagent for water analysis

1.3 Details of the supplier of the safety data sheet

- Name of Supplier: LIA International Ltd
- Address of Supplier: Unit 9, Langley Business Court
  Oxford Road
  Beedon
  Newbury
  RG20 8RY
- Telephone: +44 (0)1488 686777
- Responsible Person: James Sugden

1.4 Emergency telephone number

- Emergency Telephone: +44 (0)1488 686777 (Office Hours)
- Email: admin@liainternational.co.uk

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

- CLP: Aquatic Acute 2, Aquatic Chronic 2

2.2 Label elements

GHS09

- Signal Word: None

Hazard statements

H401 Toxic to aquatic life.
H411 Toxic to aquatic life with long lasting effects

Precautionary statements

P273 Avoid release to the environment.
P391 Collect spillage
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

- No further relevant information available.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Information on Components

SECTION 3: Composition/information on ingredients (....)

	CAS Number	Classification	Concentration
Potasium Permanganate	7722-64-7	H401 H411	0.25-<1%

SECTION 4: First aid measures

4.1 Description of first aid measures

- General information: Contact Poison centre, Symptoms of poisoning may even occur after several hours
- After Inhalation: Remove contaminated clothing, Call a doctor immediately
- After skin contact: Remove contaminated clothing, Instantly rinse with water, Seek medical treatment
- After eye contact: Rinse opened eye for several minutes under running water (at least 15 min), Call a doctor immediately
- After swallowing: Rinse out opened mouth and then drink 1-2 glasses of water, Seek medical attention

4.2 Most important symptoms and effects, both acute and delayed

- See section 2.2 and 11

4.3 Indication of any immediate medical attention and special treatment needed

- No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Use large quantities of water. Water will turn pink to purple when in contact with potassium permanganate. Dike to contain. Do not use dry chemicals, CO2, halones or foams, because they are not effective. If material is involved in fire, flood with water. Cool all affected containers with large quantities of water. Apply water from as far a distance as possible

5.2 Special hazards arising from the substance or mixture

Increases burning rate of combustible material.
Powerful oxidizing material. May decompose spontaneously if exposed to heat (135º C). May be explosive in contact with certain other chemicals (Section 10). May react violently with finely divided and readily oxidisable substances.
When involved in a fire, potassium permanganate may liberate irritating, poisonous and/or corrosive fumes. Oxides of potassium and manganese may be formed.

5.3 Advice for firefighters

Wear positive-pressure self-contained breathing apparatus and suitable protective clothing if risk of exposure to products of decomposition. Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Approach incident with caution. Do NOT allow fire-fighting water to reach waterways, drains or sewers. Store fire-fighting water for treatment and disposal.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with combustible materials. Do not touch spilled material. Stop leak if safe to do so. Move containers away from spill to a safe area. Keep unnecessary people away, isolate hazard area and deny entry. Ensure adequate ventilation. Avoid dust formation. Remove all ignition sources and incompatible materials before attempting clean up. Clean up spills immediately by sweeping or shovelling up the material. Do not return spilled material to the original container; transfer to a clean metal or plastic drum. For personal protection see Section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. If contamination of sewers or waterways has occurred, advise local emergency services. Observe all local and national regulations.

6.3 Methods and material for containment and cleaning up

Slippery when spilt. Avoid accidents, clean up immediately. Eliminate all sources of ignition. Use clean, non-sparking tools and equipment. Wear protective equipment to prevent skin and eye contact

SECTION 6: Accidental release measures (....)

and breathing in vapours. Work up wind or increase ventilation.

Option 1: Dilute to approximately 6% with water, and then reduce with sodium thiosulfate, a bisulphite or ferrous salt solution. The bisulphite or ferrous salt may require some dilute sulphuric acid (10% w/w) to promote reduction. Neutralise with sodium carbonate to neutral pH, if acid was used. Decant or filter and deposit sludge in approved landfill. Where permitted, the sludge may be drained into sewer with large quantities of water.

Option # 2: Absorb with inert media like diatomaceous earth, sand or soil, collect into a drum and dispose of properly. Do NOT use saw dust or other incompatible media. Disposal of all materials shall be in full and strict compliance with all federal, state, and local regulations pertaining to permanganates.

6.4 Reference to other sections

- See section 8 for information on personal protection equipment.
  See section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating and after handling potassium permanganate. Prohibit eating, drinking and smoking in contaminated areas. Avoid handling which leads to dust formation. Wear proper protective equipment. Provide sufficient mechanical and/or local exhaust to maintain exposure below the TLV/TWA. Wear personal protective equipment. For personal protection see section 8.
For precautions see Section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating and after handling potassium permanganate. Prohibit eating, drinking and smoking in contaminated areas. Avoid handling which leads to dust formation. Wear proper protective equipment. Provide sufficient mechanical and/or local exhaust to maintain exposure below the TLV/TWA. This material is a Scheduled Poison S6 and must be stored, maintained and used in accordance with the relevant regulations.

7.3 Specific end use(s)

- No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

- No value assigned for this specific material by SWA. However, for constituent(s):

The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.
These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Biological Limits
None allocated for this product.

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. 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. Adequate ventilation should be provided so that exposure limits are not exceeded. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Personal protective equipment (PPE)

SECTION 8: Exposure controls/personal protection (....)

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods and environmental factors.

Eye/face protection
Tight fitting chemical splash goggles and full face shield or basket shaped glasses.

Skin protection
Wear protective gloves (Natural rubber: 1mm thickness. Break through time >480 min / Nitrile rubber: 0.33mm thickness. Break through time > 480 min / Butyl-rubber: 0.7mm thickness. Break through time > 480 min) and protective, acid-proof clothing (splash apron or equivalent chemical impervious outer garment and rubber boots) appropriate for the risk of exposure.
Gloves must be inspected prior to use. Use proper glove removal technique
(without touching glove's outer surface) to avoid skin contact with this product.
Dispose of contaminated gloves after use. Wash and dry hands. Wash contaminated clothing and other protective equipment before storage or re-use.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination or type ABEK respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Odour:	Odourless
Odour Threshold:	No data available
pH:	No data available
Melting Point:	No data available
Boiling Point / Range	No data available
Decomposition Temperature:	No data available
Evaporation Rate:	No data available
Flash Point:	Not applicable
Flammability Limits:	Not applicable
Specific Gravity:	No data available
Vapour Density (air=1):	No data available
Vapour Pressure:	No data available
% Volatiles:	No data available
Solubility in water:	Miscible

9.2 Other information

- No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity

- Reacts vigorously with acid and hydrogen peroxide.

10.2 Chemical stability

Stable under recommended storage conditions. Commercial products are stabilised to reduce risk of decomposition due to contamination.

10.3 Possibility of hazardous reactions

Hazardous polymerisation will not occur. Dangerous fire and explosion risk in contact with organic materials. Contact with reducing materials may cause fire. May react violently in contact with sulphuric acid or hydrogen peroxide. May react violently and give off toxic gases in contact with concentrated acids. May react explosively in contact with antimony, arsenic, titanium, ammonium compounds and some organic chemicals such as glycerol/glycerine.

10.4 Conditions to avoid

- Keep away from heat and light

10.5 Incompatible materials

Incompatible with Powdered metals, alcohol, arsenites, bromides, iodides, phosphorus, sulphuric acid, organic compounds, sulphur, activated carbon, hydrides, strong hydrogen peroxide, ferrous or

SECTION 10: Stability and reactivity (....)

mercurous salts, hypophosphites, hyposulphites, sulphites, peroxides, and oxalates.

10.6 Hazardous decomposition products

Decomposition products under conditions of thermal decomposition: steam, oxygen, toxic metal fumes. Release of oxygen may support combustion.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Information on toxicological effects
No adverse health effects expected if the product is handled in accordance with this Material Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Acute toxicity
Harmful if swallowed. Swallowing can result in nausea, vomiting, diarrhoea, abdominal pain and chemical burns to the gastrointestinal tract. Liver and kidney injuries may occur. Death may occur if large amounts are ingested. The estimated lethal human dose is 10 g. LD50 (Oral, rat) = 780 mg/kg (male, 14 days); 525 mg/kg (female, 14 days).

Skin corrosion/irritation
Contact with skin will result in severe irritation. Corrosive to skin - may cause skin burns. Momentary contact of solution at room temperature may be irritating to the skin, leaving brown stains. Prolonged contact is damaging to the skin. Concentrated solutions at elevated temperature and crystals are damaging to the skin. The product may be absorbed into the body through the skin

Serious eye damage/eye irritation
A severe eye irritant. Corrosive to eyes; contact can cause corneal burns. Contamination of eyes can result in permanent injury.

Respiratory or skin sensitisation
Breathing in dust may result in respiratory irritation and may cause damage to the respiratory tract.
Germ cell mutagenicity: No data available

Carcinogenicity: No data available

Reproductive toxicity: No data available

Specific target organ toxicity (STOT) - single exposure: No data available

Specific target organ toxicity (STOT) - repeated exposure: No data available

Aspiration hazard No data available

Health Effects
No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Eye contact : Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

Skin contact : The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds 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.

Ingestion : Accidental ingestion of the material may be damaging to the health of the individual. Ingestion may result in nausea, abdominal irritation, pain and vomiting

Inhalation : Not normally a hazard due to non-volatile nature of product

SECTION 12: Ecological information

12.1 Toxicity

Avoid contaminating waterways. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high-water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters. Wastes resulting from use of the product must be disposed of on site or at approved waste sites. DO NOT discharge into sewer or waterways.

12.2 Persistence and degradability

Permanganate has a low estimated lifetime in the environment, being readily converted by oxidisable materials to insoluble MnO_2

12.3 Bioaccumulative potential

In non-reducing and non-acidic environments, MnO2 is insoluble and has a very low bioaccumulative potential.

12.4 Mobility in soil

- Water solubility: Soluble in water

12.5 Results of PBT and vPvB assessment

PBT: This mixture does not contain any substances that are assessed to be a PBT.
vPvB: This mixture does not contain any substances that are assessed to be a vPvB.

12.6 Endocrine disrupting properties

- No further relevant information available.

12.7 Other adverse effects

- No further relevant information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

- Must not be disposed of together with household waste. do not allow product to reach sewage system.
  Hand over to disposers of hazardous waste.
- European Waste Catelogue
  16 05 06* laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals.
- Uncleaned packagings: Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

14.1 UN number or ID number

- UN No.: ADR, IMDG, IATA: Void

14.2 UN proper shipping name

- Proper Shipping Name: ADR, IMDG, IATA: Void

14.3 Transport hazard class(es)

- Hazard Class: Void

14.4 Packing group

- Packing Group: Void

14.5 Environmental hazards

- No

14.6 Special precautions for user

- Not applicable

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

SECTION 14: Transport information (....)

- Not applicable

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

- Regulation (EU) 2019/1148 on the marketing and use of explosives precursors: Not Regulated
- Regulation (EU) No 649/2012 concerning the export and import of hazardous chemicals (PIC): Substance is not listed
- Regulation (EC) No 1334/2000 setting up a community regime for the control of the exports of dual-use items and technology: Substance is not listed
- Regulation (EC) No 273/2004 on drug precursors: Substance is not listed
- Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the community and third countries in drug precursors: Substance is not listed
- Regulation (EC) No 1005/2009 on substances that deplete the ozone layer: Substance is not listed
- REGULATION (EU) 2019/1021 on persistent organic pollutants (POP): None of the ingredients is listed.
- LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV): Substance is not listed
- Substances of very high concern (SVHC) according to REACH, Article 57: This product does not contain any substances of very high concern above the legal concentration limit of ≥ 0.1% (w/w).
- Substances of very high concern (SVHC) according to UK REACH: This product does not contain any substances of very high concern above the legal concentration limit of ≥ 0.1% (w/w).
- Named dangerous substances - ANNEX I: Substance is not listed
- Information about limitation of use: Not required

15.2 Chemical safety assessment

- A chemical safety assessment (CSA) for this product has not yet been completed

SECTION 16: Other information

- Training hints: Provide adequate information, instruction and training for operators.

- Abbreviations and acronyms:

STOT: Specific Target Organ Toxicity.
: SE: Single Exposure.
: RE: Repeated Exposure.
EC50: Half Maximal Effective Concentration.
IC50: Half Maximal Inhibitory Concentration.
NOEL or NOEC: No Observed Effect Level or Concentration.
ADR: Accord relatif au transport international des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: règlement concernant le transport des marchandises dangereuses par chemin de fer(Regulations concerning the international transport of dangerous goods by rail.
IMDG: International Maritime Code for Dangerous Goods.
IATA: International Air Transport association.
GHS: Globally Harmonised Classification and Labelling of Chemicals.
EINECS: European Inventroy of Existing Commercial Chemical Substances.
ELINCS: European List of Notified Chemical Substances.
CAS: Chemical Abstract Service (Division of the American Chemical Society).
DNEL: Derived No-Effect Level (REACH)
LC50: Lethal Concentration, 50 Percent.
LD50: Lethal Dose, 50 Percent.
PBT: Persistent, Bioaccumulative and Toxic.
vPvB: Very Persistent and Very Bioaccumulative.

- Sources:
Data arise from safety data sheets, reference works and literature.
IUCLID (International Uniform Chemical Information Database)
RTECS (Registry of Toxic Effects of Chemicals)