Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
POTASSIUM PERMANGANATE

PROPER SHIPPING NAME
POTASSIUM PERMANGANATE

PRODUCT USE
Bleaching of waxes, fats, oils, straw, cotton, silk, chamois, other fibres Dyeing wood brown; printing fabrics; photography; tanning leathers. Disinfection; deodoriser, algaecide for water treatment, an agent for medical treatment for some poisons; an important reagent in analytical and organic chemistry.
Regeant

SUPPLIER
Company: Biotech Pharmaceuticals Pty Ltd
Address:
83 Cherry Lane
Laverton North
VIC, 3026
Australia
Telephone: +61 3 9278 7555
Fax: +61 3 9369 6730
Email: info@biotechpharma.com.au

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE
HAZARDOUS SUBSTANCE. DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

RISK

Risk Codes	Risk Phrases
R08	• Contact with combustible material may cause fire.
R22	• Harmful if swallowed.
R36	• Irritating to eyes.
R50/53	• Very toxic to aquatic organisms, may cause long- term adverse effects in the aquatic environment.

SAFETY

Safety Codes	Safety Phrases
S17	• Keep away from combustible material.
S22	• Do not breathe dust.
S24	• Avoid contact with skin.
S25	• Avoid contact with eyes.
S36	• Wear suitable protective clothing.
S37	• Wear suitable gloves.
S39	• Wear eye/face protection.
S29	• Do not empty into drains.
S40	• To clean the floor and all objects contaminated by this material, use water.
S35	• This material and its container must be disposed of in a safe way.
S13	• Keep away from food, drink and animal feeding stuffs.
S26	• In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
S46	• If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).
S57	• Use appropriate container to avoid environmental contamination.
S61	• Avoid release to the environment. Refer to special instructions/Safety data sheets.
S60	• This material and its container must be disposed of as hazardous waste.

continued...

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
potassium permanganate	7722-64-7	>99

Section 4 - FIRST AID MEASURES

SWALLOWED
- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.

EYE
■ If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN
■ If skin contact occurs:
- 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.

INHALED
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

NOTES TO PHYSICIAN
■ Both dermal and oral toxicity of manganese salts is low because of limited solubility of manganese. No known permanent pulmonary sequelae develop after acute manganese exposure.
[Ellenhorn and Barceloux: Medical Toxicology]
In clinical trials with miners exposed to manganese-containing dusts, L-dopa relieved extrapyramidal symptoms of both hypo kinetic and dystonic patients.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
■ FOR SMALL FIRE:
- USE FLOODING QUANTITIES OF WATER.
- DO NOT use dry chemical, CO2, foam or halogenated-type extinguishers.

FOR LARGE FIRE
- Flood fire area with water from a protected position.

FIRE FIGHTING
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.

FIRE/EXPLOSION HAZARD
- Will not burn but increases intensity of fire.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- Heat affected containers remain hazardous.
- Contact with combustibles such as wood, paper, oil or finely divided metal may produce spontaneous combustion or violent decomposition.

Decomposition may produce toxic fumes of: metal oxides.

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FIRE INCOMPATIBILITY
• Avoid storage with reducing agents.
• Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous.

HAZCHEM
1Y

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
• Clean up all spills immediately.
• No smoking, naked lights, ignition sources.
• Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result.
• Avoid breathing dust or vapours and all contact with skin and eyes.

MAJOR SPILLS
• Clear area of personnel and move upwind.
• Alert Fire Brigade and tell them location and nature of hazard.
• May be violently or explosively reactive.
• Wear breathing apparatus and protective gloves.

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

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
• Avoid personal contact and inhalation of dust, mist or vapours.
• Provide adequate ventilation.
• Always wear protective equipment and wash off any spillage from clothing.
• Keep material away from light, heat, flammables or combustibles.

SUITABLE CONTAINER
• Glass container is suitable for laboratory quantities.
• DO NOT repack. Use containers supplied by manufacturer only.
For low viscosity materials
• Drums and jerricans must be of the non-removable head type.
• Where a can is to be used as an inner package, the can must have a screwed enclosure. <</>.

STORAGE INCOMPATIBILITY
• Segregate permanganates from concentrated acids, tin, sulfur, alcohol, peroxides, bromides, iodides, arsenates, glycols, ammonium compounds, metallic powders, phosphorous, hydrazine, ferrous or mercury salts, oxalates and combustible materials and organic substances generally.
• Permanganates may reacts vigorously with metallic powders, ammonium compounds, phosphorous, carbon, arsenates, ethylene glycol, sulfur, hydrazine, metal hydrides, peroxides, alcohol and other combustible materials.
• Permanganates may reacts violently when exposed to sulfuric acid or hydrogen peroxide.
• May form explosive compounds with ammonium compounds, cellulosics (such as cotton, paper).
• Inorganic oxidising agents can react with reducing agents to generate heat and products that may be gaseous (causing pressurization of closed containers). The products may themselves be capable of further reactions (such as combustion in the air).
• Organic compounds in general have some reducing power and can in principle react with compounds in this class. Actual reactivity varies greatly with the identity of the organic compound.
• Inorganic oxidising agents can react violently with active metals, cyanides, esters, and thiocyanates.
• Inorganic reducing agents react with oxidizing agents to generate heat and products that may be flammable, combustible, or otherwise reactive. Their reactions with oxidizing agents may be violent.
• Incidents involving interaction of active oxidants and reducing agents, either by design or accident, are usually very energetic and examples of so-called redox reactions.
• Contact with acids produces toxic fumes.
• WARNING: Avoid or control reaction with peroxides. All transition metal peroxides should be considered as potentially explosive. For example transition metal complexes of alkyl hydroperoxides may decompose explosively.
• The pi-complexes formed between chromium(0), vanadium(0) and other transition metals (haloarene-metal complexes) and mono-or poly-fluorobenzene show extreme sensitivity to heat and are explosive.
• Avoid reaction with borohydrides or cyanoborohydrides.
• Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
• These trifluorides are hypergolic oxidisers. They ignites on contact (without external source of heat or ignition) with

continued...

recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition.
• The state of subdivision may affect the results.
• Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous.
• Avoid storage with reducing agents.

PACKAGING MATERIAL INCOMPATIBILITIES

Chemical Name	Container Type
	Hytrelr, Nylon

STORAGE REQUIREMENTS
• Store in original containers.
• Keep containers securely sealed as supplied.
• Store in a cool, well ventilated area.
• Keep dry.
In addition, Goods of Class 5.1, packing group II should be:
• stored in piles so that
• the height of the pile does not exceed 1 metre
• the maximum quantity in a pile or building does not exceed 1000 tonnes unless the area is provided with automatic fire extinguishers
• the maximum height of a pile does not exceed 3 metres where the room is provided with automatic fire extinguishers or 2 meters if not.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA mg/m³	STEL mg/m³
Australia Exposure Standards	potassium permanganate (Manganese, fume (as Mn))	1	3
Australia Exposure Standards	potassium permanganate (Manganese, dust & compounds (as Mn))	1	

MATERIAL DATA
POTASSIUM PERMANGANATE:
■ A number of studies have shown that susceptibility to the effects of manganese at or about 1 - 5 mg/m3 (TWA) can lead to clinical manifestations of manganism or more commonly to the development of indicators of sub-clinical manganism (e.g. hand tremor, exaggerated reflexes, short-term memory deficits, poor psychomotor performance). Controlling long-term exposure to the recommended ES TWA level or below should provide protection for those individuals susceptible to neurological effects of prolonged exposure.
Ceiling values were recommended for manganese and compounds in earlier publications. As manganese is a chronic toxin a TWA is considered more appropriate.

PERSONAL PROTECTION

RESPIRATOR
•Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

EYE
• 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 lens 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.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical 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.
The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and

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has to be observed when making a final choice.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:.
• DO NOT wear cotton or cotton-backed gloves.
• DO NOT wear leather gloves.
• Promptly hose all spills off leather shoes or boots or ensure that such footwear is protected with PVC over-shoes.

OTHER
• Overalls.
• PVC Apron.
• PVC protective suit may be required if exposure severe.
• Eyewash unit.
• Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.
• For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.

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.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
Purple-bronze almost black, odourless, crystals powder with metallic lustre. Sweet with an astringent after-taste; mixes with water. Solubility in water: 28.3 g/l @ 0 C. and : 250 g/l @ 65 C.
Concentrated solutions are alkaline. Decomposed by alcohol and many other organic solvents.

PHYSICAL PROPERTIES
Solid.
Mixes with water.

State	Divided solid	Molecular Weight	158.04
Melting Range (℃)	<240 (decomp.)	Viscosity	Not Applicable
Boiling Range (℃)	Decomposes	Solubility in water (g/L)	Mis cible
Flash Point (℃)	Not applicable	pH (1% solution)	>7
Decomposition Temp (℃)	Not Available	pH (as supplied)	Not a pplicable
Autoignition Temp (℃)	Not applicable	Vapour Pressure (kPa)	Not available.
Upper Explosive Limit (%)	Not applicable	Specific Gravity (water=1)	2.7
Lower Explosive Limit (%)	Not applicable	Relative Vapour Density (air=1)	Not Applicable
Volatile Component (%vol)	Not applicable.	Evaporation Rate	Not applicable

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY
• Presence of incompatible materials.
• Product is considered stable under normal handling conditions.
• Prolonged exposure to heat.
• Hazardous polymerisation will not occur.
• Presence of elevated temperatures.
• Presence of incompatible materials.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

continued...

ACUTE HEALTH EFFECTS

SWALLOWED
■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
Ingestion of permanganates may cause brown discolouration and burns to the mouth with swelling of the tongue, nausea, vomiting, diarrhoea, high-pitched noisy breathing, slow pulse, shock and fall in blood pressure. Fatal oral dose is estimated to be around 10g. Death may occur up to one month from the time of poisoning.
Poisonings rarely occur after oral administration of manganese salts because they are poorly absorbed from the gut.

EYE
■ This material can cause eye irritation and damage in some persons.
Eye contact with permanganates may produce brown discolouration.

SKIN
■ There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons.
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.

INHALED
■ Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual.
There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.
Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.
If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.
Manganese fume is toxic and produces nervous system effects characterised by tiredness. Acute poisoning is rare although acute inflammation of the lungs may occur.

CHRONIC HEALTH EFFECTS
■ Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray.
Manganese is an essential trace element. Chronic exposure to low levels of manganese can include a mask-like facial expression, spastic gait, tremors, slurred speech, disordered muscle tone, fatigue, anorexia, loss of strength and energy, apathy and poor concentration.
Long term exposures to manganese compounds may effect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's disease. Behavioural changes and handwriting differences may also appear.

TOXICITY AND IRRITATION
No data for this material.

Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
potassium permanganate	HIGH	No Data Available	LOW	HIGH

continued...

Section 13 - DISPOSAL CONSIDERATIONS

• 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 landfill.
• Where possible retain label warnings and MSDS and observe all notices pertaining to the product.
For small quantities of permanganate:
• Dissolve solid residue in water. Add a reducer (hypochlorite, a bisulfate, or a ferrous salt but not carbon, sulfur or strong reducing agent) and sulfuric acid to promote reduction.
• Neutralise with soda ash.
• Bury precipitate in an authorised landfill.
• Decontaminate empty containers with reducer, acid and soda ash, as above.
Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area.
A Hierarchy of Controls seems to be common - the user should investigate:
• Reduction.
• DO NOT allow wash water from cleaning or process equipment to enter drains.
• It may be necessary to collect all wash water for treatment before disposal.
• In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
• Where in doubt contact the responsible authority.
For small quantities of oxidising agent:
• Cautiously acidify a 3% solution to pH 2 with sulfuric acid.
• Gradually add a 50% excess of sodium bisulfite solution with stirring.
• Add a further 10% sodium bisulfite.
• If no further reaction occurs (as indicated by a rise in temperature) cautiously add more acid.
• Recycle wherever possible or consult manufacturer for recycling options.
• Consult State Land Waste Management Authority for disposal.
• Bury residue in an authorised landfill.
• Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

Labels Required: OXIDIZING AGENT

HAZCHEM:
1Y (ADG7)

ADG7:

Class or Division:	5.1	Subsidiary Risk:	None
UN No.:	1490	Packing Group:	II
Special Provision:	None	Limited Quantity:	1 kg
Portable Tanks & Bulk Containers - Instruction:	T3	Portable Tanks & Bulk Containers - Special Provision:	TP33
Packagings & IBCs - Packing Instruction:	P002 IBC08	Packagings & IBCs - Special Packing Provision:	B2, B4

Name and Description: POTASSIUM PERMANGANATE

Air Transport IATA:

ICAO/IATA Class:	5.1	ICAO/IATA Subrisk:	None
UN/ID Number:	1490	Packing Group:	II
Special provisions:	None		

Shipping name:POTASSIUM PERMANGANATE

Maritime Transport IMDG:

IMDG Class:	5.1	IMDG Subrisk:	None
UN Number:	1490	Packing Group:	II
EMS Number:	F- H, S- Q	Special provisions:	None
Limited Quantities:	1 kg	Marine Pollutant:	Yes

Shipping name:POTASSIUM PERMANGANATE

continued...

Section 15 - REGULATORY INFORMATION

Indications of Danger:

N	Dangerous for the environment
O	Oxidizing
Xn	Harmful

POISONS SCHEDULE S6, NZS4

REGULATIONS

potassium permanganate (CAS: 7722-64-7) is found on the following regulatory lists;
"Australia Customs (Prohibited Exports) Regulations 1958 - Schedule 9 Precursor substances - Part 1","Australia Exposure Standards","Australia Hazardous Substances","Australia Illicit Drug Reagents/Essential Chemicals - Category III","Australia Inventory of Chemical Substances (AICS)","Australia National Pollutant Inventory","Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)","FisherTransport Information","OECD List of High Production Volume (HPV) Chemicals","Sigma-AldrichTransport Information","United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table I","United Nations List of Precursors and Chemicals Frequently used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances Under International Control (Red List) - Table I"

Section 16 - OTHER INFORMATION

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

Issue Date: 2-Jan-2013
Print Date: 12-Mar-2013

This is the end of the MSDS.