1 Identification

Product Name: **Piperonyl Butoxide, Technical**
Other Names: Alpha-(2-(2-butoxyethoxy)ethoxy)-4,5-methylenedioxy-2-propyltoluene, PBO, PB, 419900
Uses: Insecticide Synergist, for manufacturing use only.

Supplier
Name: MGK® Asia-Pacific PTY Limited
Address: Suite 105/25 Solent Circuit
Baulkham Hills NSW 2153, Australia

24 Hour Emergency Contact numbers:
Telephone: 0412 55 10 91 / 0417 95 07 92
Chemtrec Int'l: 0011 1 703 527-3887

2 Hazards Identification

Classified as hazardous according to the criteria of Safe Work Australia.
Not classified as dangerous goods for transport according to criteria of ADG 7.

Acute toxicity – oral – Category 5
Acute dermal – oral – Category 5
Eye irritation – Category 2B
Skin Irritation – Category 3
Environment – Chronic 1

WARNING

Hazard Statements
H316: Causes mild skin irritation
H320: Causes eye irritation
H410: Very toxic to aquatic life with long lasting effects.

Prevention
P264: Wash hands and face thoroughly after handling.
P273: Avoid release to the environment

Response
P332+P313: If skin irritation occurs: Get medical advice/attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: Is eye irritation persists: Get medical advice/attention.
P391: Collect spillage.

Disposal
P501: Dispose of contents/container in accordance with local, State or Territory and National guidelines.

3 Composition / Ingredients

Identity (Other Names)	CAS Number	Proportion
Piperonyl Butoxide [Alpha-(2-(2-butoxyethoxy)ethoxy)-4,5-methylenedioxy-2-propyltoluene]	000051-03-6	94% Minimum
Other ingredients not contributing to hazard		<6%

4 First Aid Measures

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 131126.

Swallowed:	Call the Poison Information Centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the Poison Information Centre or doctor. Do not give anything by mouth to an unconscious person.
In Eye:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call the Poisons Information Centre or doctor for treatment advice.
On Skin:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call the Poisons Information Centre or doctor for treatment advice.
Inhaled:	Move person to fresh air. If person is not breathing, call an ambulance or doctor, then give artificial respiration, preferably by mouth-to-mouth.
NOTE TO PHYSICIANS:	None

5 Fire Fighting Measures

Flash Point: > 93.3 ºC (TAG Closed Cup)
Combustibility: C1
Flammability Limits:
LFL: Not Established
UFL: Not Established
Extinguishing Media: Foam, carbon dioxide, or dry chemical.
Hazardous Combustion Products: Under fire conditions this product may support combustion and may decompose to give off toxic gases such as carbon monoxide, carbon dioxide and nitrogen oxides.
Precautions for Fire Fighters: Treat as an oil fire. Use a full-faced self-contained breathing apparatus. Keep nearby containers and equipment cool with a water stream. Contain the run-off, if possible, for proper disposal.

Hazchem Code: 3X

6 Accidental Release Measures

Containment of Spill:

Small Spill: Stop release, if possible without risk. Dike or contain release, if possible, and if immediate response can prevent further damage or danger. Isolate and control access to the release area. Take actions to reduce vapours. Absorb with appropriate absorbent. Clean spill area of residues and absorbent.

Large Spill: Stop release, if possible without risk. Dike or contain release, if possible, and if immediate response can prevent further damage or danger. Isolate and control access to the release area. Take actions to reduce vapours. Collect product into drums, etc. via drains, pumps, etc. Absorb with appropriate absorbent. Clean spill area of residues and absorbent

7 Handling and Storage

Precautions for Safe Handling:

Take prudent precautions to avoid contact with skin, eyes and clothing. Take prudent precautions to avoid breathing vapours and/ or spray mists of this product. Mechanical ventilation should be used when handling this product in enclosed spaces. Wearing a respirator is not normally required when handling this material, but recommended in the absence of good mechanical ventilation. Do not contaminate water, food or feedstuffs by storage, handling or disposal. Read and observe all precautions and instructions on the label.

Conditions for Safe Storage:

Store containers upright and closed. Store in areas that are cool, dry and well-ventilated. Keep away from heat, open flame, ignition sources, and strong oxidizers. Emptied containers may retain product residues. KEEP OUT OF REACH OF CHILDREN.

WORK HYGIENIC PRACTICES:

DO NOT SMOKE, EAT, DRINK OR APPLY COSMETICS IN WORK AREA! Wash Promptly if skin becomes contaminated. Wash at the end of each work shift and before eating, smoking, and using the toilet.

8 Exposure Controls / Personal Protection

Exposure Limits:

Not established by Safe Work Australia.

Engineering Controls:

Mechanical ventilation should be used when handling this product in enclosed spaces. Local exhaust ventilation may be necessary.

Personal Protective Equipment:

RESPIRATORY PROTECTION:	Not normally required. Use in well ventilated areas. If ventilation inadequate, use of respiratory protection is recommended, e.g. respirator fitted with organic vapour cartridge.
SKIN PROTECTION:	Take prudent precautions to avoid contact with skin and clothing.
EYE PROTECTION:	Take prudent precautions to avoid contact with eyes.

9 Physical and Chemical Properties

APPEARANCE:	Pale, yellow-coloured liquid.
ODOUR:	Mild sweet-odour.
PHYSICAL STATE:	Liquid
VAPOUR PRESSURE:	Less than $1x10^{-7}$ mm Hg @ 25° C
VOC:	< 1%
VAPOUR DENSITY:	Heavier than air.
BOILING POINT:	> 300°C
MELTING POINT:	Not available
SOLUBILITY IN WATER:	25.2 mg/L @ 25ºC
Water/ Octanol Partition Coefficient:	log P_{ow} = 4.7
SPECIFIC GRAVITY:	1.059 @ 20ºC (68°F)
COLOR, (GARDNER):	3
pH:	Not established
VISCOSITY:	34 CPS @ 22°C
REFRACTIVE INDEX:	1.4990 @ 25ºC

10 Stability and Reactivity

Chemical Stability:	Stable.
Conditions to Avoid:	Excess temperatures.
Incompatible Materials:	Strong oxidisers, acidic or alkaline materials.
Hazardous Decomposition Products:	In fire, my produce acrid and irritating smoke containing oxides of carbon and nitrogen.
Hazardous Reactions:	Not known to occur

11 Toxicological Information

Acute

Swallowed:	Slightly hazardous if swallowed. LD_{50} 4.57 g/kg & 7.22 g/kg for male and female albino rats, respectively. Category 5.
In Eyes:	Minimally irritating to the eye. May cause temporary irritation, tearing, and blurred vision.
On Skin:	Minimally irritating to skin. Can cause a burning or prickling sensation on more sensitive areas (face, eyes, mouth). Not a dermal sensitiser. Moderately hazardous by skin absorption (LD_{50} >2.0 g/kg; albino rat).
Inhaled:	Excessive inhalation may be irritating to the respiratory tract. LC_{50} > 5.9mg/L/4hr

Subchronic

Dermal Irritation:	Dermal irritation observed at 100mg / kg in 21-day repeated dose study.
Inhalation Toxicity:	NOAEL 155 mg/m3 (3-month; rat)

CARCINOGENICITY:	None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as being carcinogens. PBO is listed in IARC Group 3, Not Classifiable, as to its' carcinogenicity to humans.
CARCINOGENICITY/ONCOGENICITY: PBO	Marginally higher incidences of benign liver tumours in mice were observed following lifetime high dose exposures to PBO. The doses at which tumours were observed for PBO greatly exceeded potential human exposure from labelled uses. Doses at which these effects were observed greatly exceed anticipated human dietary intake. At anticipated dietary exposure levels, it is highly unlikely that this product will result in carcinogenic effects.
CHRONIC: (NOEL) 1 Year feeding (dog)	100 ppm
TERATOGENICITY: (Rabbit)	No evidence of teratogenicity was observed at any dosage levels even at maternally toxic doses (≥ 100 mg/kg/day).
REPRODUCTION: 2 Generation (rat)	No effects on reproductive parameters even at maternally toxic doses (5000 ppm).
MUTAGENICITY: (CHO) cells	No increase in chromosome aberrations was observed with or without metabolic activation.
GENOTOXICITY: Liver cell cultures (rat)	There was no evidence of an increase in unscheduled DNA synthesis.

12 Ecological Information

Ecotoxicity: Highly toxic to aquatic invertebrates aquatic

	invertebrates (LC_{50} <1mg/L). Moderately toxic to fish (LC_{50}>1, ≤10 mg/L).
Persistence /Degradability:	Degraded in soil (half life 14 days). Readily degraded in water in presence of some light (half life 8.4 hours).
Mobility:	Expected to have moderate to low mobility in soil. Expected to readily adsorb onto suspended soil and sediments in water.
Bioaccumulation Potential:	Moderate potential for bioconcentration based on Log P 4.7.

13 Disposal Considerations

Disposal Methods:	Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Triple rinse (or equivalent) and offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or by other approved State and Local procedures.

14 Transport Information

Not classified as dangerous goods for transport by road and rail in Australia.

UN Number:	None assigned
Proper Shipping Name:	None assigned
Class (Subsidiary Risk):	None assigned
Packing Group:	None assigned
Special Precautions for User:	See Section 8
Hazchem Code:	3X recommended

Classified as Dangerous Goods for marine transport according to the criteria of the IMDG Code.

UN Number:	3082
Proper Shipping Name:	Environmental Hazardous Substance, Liquid, N.O.S.
Class (Subsidiary Risk):	9
Packing Group:	III
Special Precautions for User:	See Section 8

15 Regulatory Information

Poison Scheduling:	Listed in Appendix B of the SUSMP (Substance Considered Not to Require Control by Scheduling)
Registration/Notification:	APVMA Approval No. 45532, 60009

16 Other Information

Date Prepared:	08/10/2013
Replaces:	11/2/2013

Glossary

ACGIH - American Conference of Governmental and Industrial Hygienists.

BCF - Bioconcentration Factor - ability to accumulate a chemical in an organism to levels greater than in the surrounding medium. Calculated by dividing the concentration of a chemical in an organism by the concentration in the surrounding medium.

EC_{50} - median effective concentration. The concentration of a substance that courses a specified response/effect in an organism or population.

Explosive Limits - The range of concentrations (% by volume in air) of a flammable gas or vapour that can result in an explosion in a confined space.

K_{oc} - the organic carbon partition coefficient (mL soil water /g organic carbon)**.**

LC_{50} - Lethal Concentration 50%. The concentration of a substance that kills 50% of a target population.

LD_{50} - Lethal Dose-50%. The dose of a substance that kills 50% of a target population.

pH - Measure of how acidic or alkaline a material is using a 1 - 14 scale. pH 1 is strongly acidic and pH 14 strongly alkaline.

Polymerisation - a chemical reaction in which molecules (monomers) combine to form larger molecules (polymers). A hazardous polymerisation reaction is one that occurs at a fast rate and releases large amounts of energy.

P_{ow} - The octanol-water partition coefficient. The ratio of the concentration of octanol and in water at equilibrium and at a specified temperature used in environmental studies to indicate fate of chemicals and the environment.

STEL - Short-Term Exposure Limit. The maximum concentration of a substance that workers can be exposed to for periods up to 15 minutes without adverse effects e.g. irritation, tissue damage, narcosis (drowsiness or unconsciousness).

TWA - Time Weighted Average. The time weighted average concentration of a substance that most workers may be repeatedly exposed to over a 8-hour or 40-hour week without adverse effect.

This Safety Data Sheet has been written according to the Safe Work Australia Code of Practice titled 'Preparation of Safety Data Sheets for Hazardous Chemicals' (December 2011).
The data contained herein are based on information currently available to McLaughlin Gormley King Company and, to the best of our knowledge, are accurate and based on sound expert opinion. Our statements herein, however, are not to be taken as a warranty or representation for which McLaughlin Gormley King Company assumes legal responsibility.

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