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----------ISO 9001: 2015----------

MATERIAL SAFETY DATA SHEET

1.Identification
1.1GHS Product identifier
Piperonyl butoxide, 90%+
Code P 1905

2.Hazard identification
2.1Classification of the substance or mixture
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1
2.2GHS label elements, including precautionary statements
Pictogram(s)

Signal word	Warning
Hazard statement(s)	H400 Very toxic to aquatic life
	H410 Very toxic to aquatic life with long lasting effects
Precautionary statement(s)	
Prevention	P273 Avoid release to the environment.
Response	P391 Collect spillage.
Storage	none
Disposal	P501 Dispose of contents/container to ...

2.3Other hazards which do not result in classification
none

3.Composition/information on ingredients
3.1Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
piperonyl butoxide	piperonyl butoxide	51-03-6	none	100%

4.First-aid measures
4.1Description of necessary first-aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.
If inhaled
Fresh air, rest.
In case of skin contact
Remove contaminated clothes. Rinse and then wash skin with water and soap.
In case of eye contact
First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.
If swallowed
Rinse mouth. Give one or two glasses of water to drink. Rest. Refer for medical attention .
4.2Most important symptoms/effects, acute and delayed
SYMPTOMS: Symptoms of exposure to this compound may include vomiting, diarrhea, anorexia and mild central nervous system depression. ACUTE/CHRONIC HAZARDS: When heated to decomposition this compound emits acrid smoke and fumes.
4.3Indication of immediate medical attention and special treatment needed, if necessary
Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Poisons A and B/

5.Fire-fighting measures
5.1Extinguishing media
Suitable extinguishing media
To fight fire, use foam, carbon dioxide, dry chemical.
5.2Specific hazards arising from the chemical
This chemical is combustible.

5.3Special protective actions for fire-fighters
Wear self-contained breathing apparatus for firefighting if necessary.

6.Accidental release measures
6.1Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.
6.2Environmental precautions
Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT let this chemical enter the environment.
6.3Methods and materials for containment and cleaning up
SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a permitted wastewater treatment facility is acceptable only after review by the governing authority and assurance that "pass through" violations will not occur. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must be evaluated in accordance with EPA 40 CFR Part 261, specifically Subpart B, in order to determine the appropriate local, state and federal requirements for disposal.

7.Handling and storage
7.1Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.
7.2Conditions for safe storage, including any incompatibilities
Well closed.Safe Storage of Pesticides. Always store pesticides in their original containers, complete with labels that list ingredients, directions for use, and first aid steps in case of accidental poisoning. Never store pesticides in cabinets with or near food, animal feed, or medical supplies. Do not store pesticides in places where flooding is possible or in places where they might spill or leak into wells, drains, ground water, or surface water.

8.Exposure controls/personal protection
8.1Control parameters
Occupational Exposure limit values
no data available
Biological limit values
no data available
8.2Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
8.3Individual protection measures, such as personal protective equipment (PPE)
Eye/face protection
Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin protection
Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. 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 in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
Respiratory protection
Wear dust mask when handling large quantities.
Thermal hazards
no data available

9.Physical and chemical properties

Physical state	amber coloured liquid
Colour	Colorless liquid
Odour	ODORLESS
Melting point/ freezing point	-33\u00b0C(lit.)
Boiling point or initial boiling point and boiling range	195\u00b0C/2mmHg(lit.)
Flammability	Combustible.
Lower and upper explosion limit / flammability limit	no data available
Flash point	171\u00b0C(lit.)
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	40 cP at 25\u00b0C
Solubility	less than 1 mg/mL at 17.78\u00b0C
Partition coefficient n-	log Kow = 4.75

octanol/water (log value)
Vapour pressure 5.2X10-6 mm Hg at 25\u00b0C (est)
Density and/or relative density 1.059
Relative vapour density no data available
Particle characteristics no data available

10.Stability and reactivity
10.1Reactivity
no data available
10.2Chemical stability
Very stable to hydrolysis and uv irradiation.
10.3Possibility of hazardous reactions
Combustible when exposed to heat or flame; can react with oxidizing materials.PIPERONYL BUTOXIDE can react with oxidizing materials.
10.4Conditions to avoid
no data available
10.5Incompatible materials
... Can react with oxidizing materials.
10.6Hazardous decomposition products
When heated to decomp it emits acrid smoke and irritating fumes.

11.Toxicological information
Acute toxicity
Oral: LD50 Rat oral 11.5 g/kg
Inhalation: no data available
Dermal: LD50 Rat percutaneous >7950 mg/kg
Skin corrosion/irritation
no data available
Serious eye damage/irritation
no data available
Respiratory or skin sensitization
no data available
Germ cell mutagenicity
no data available
Carcinogenicity
PBO is classified as a Group C-possible human carcinogen with no cancer quantification required for PBO risk assessments.
Reproductive toxicity
no data available
STOT-single exposure
no data available
STOT-repeated exposure
no data available
Aspiration hazard
no data available

12.Ecological information
12.1Toxicity
Toxicity to fish: LC50; Species: Lepomis macrochirus (Bluegill, weight 0.7 g); Conditions: freshwater, static, 18\u00b0C, pH 7.4, hardness 44 mg/L CaCO3; Concentration: 8200 ug/L for 24 hr (95% confidence interval: 6800-9800 ug/L) /100% purity, technical material
Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water flea, age <24 hr); Conditions: freshwater, flow through; Concentration: 100 ug/L for 48 hr (95% confidence interval: 87-120 ug/L); Effect: intoxication, immobilization /formulation
Toxicity to algae: no data available
Toxicity to microorganisms: no data available
12.2Persistence and degradability
AEROBIC: The half-life of piperonyl butoxide in aerobic soils was reported as 14 days(1). Degradation in soil or water is mainly via oxidation of the butyl side chain to form methylenedioxypropyl benzyl alcohol followed by the corresponding aldehyde, ultimately with mineralization to carbon dioxide; there is no accumulation of the metabolites(1).
12.3Bioaccumulative potential
An estimated BCF of 27 was calculated in fish for piperonyl butoxide(SRC), using a log Kow of 4.75(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low, provided the compound is not metabolized by the organism(SRC).
12.4Mobility in soil
The Koc of piperonyl butoxide ranges from 399-830(1). According to a classification scheme(2), these Koc values suggest that piperonyl butoxide is expected to have moderate to low mobility in soil.
12.5Other adverse effects
no data available

13.Disposal considerations
13.1Disposal methods
Product
The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.
Contaminated packaging
Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14.Transport information
14.1UN Number
ADR/RID: UN2810 IMDG: UN2810 IATA: UN2810
14.2UN Proper Shipping Name
ADR/RID: TOXIC LIQUID, ORGANIC, N.O.S.
IMDG: TOXIC LIQUID, ORGANIC, N.O.S.
IATA: TOXIC LIQUID, ORGANIC, N.O.S.
14.3Transport hazard class(es)
ADR/RID: 6.1 IMDG: 6.1 IATA: 6.1
14.4Packing group, if applicable
ADR/RID: II IMDG: II IATA: II
14.5Environmental hazards
ADR/RID: yes IMDG: yes IATA: yes
14.6Special precautions for user
no data available
14.7Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
no data available

15.Regulatory information
15.1Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
piperonyl butoxide	piperonyl butoxide	51-03-6	none
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.

Section 16: Other Information
This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.