Material Safety Data Sheet

Pramex® B Technical Insecticide

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Pramex® B Technical Insecticide
EPA REGISTRATION NUMBER: 73049-418
PCPA REGISTRATION NUMBER: 28932
CHEMICAL DESCRIPTION: Permethrin
SYNONYM(S): None

Pramex is a registered trademark of Valent BioSciences Corporation.

MANUFACTURER
Valent BioSciences Corporation
870 Technology Way
Libertyville, IL 60048

EMERGENCY TELEPHONE NUMBERS
HEALTH EMERGENCY OR SPILL (24 hr):
Within the United States: (877) 315-9819
Outside the United States: (651) 632-6184

PRODUCT INFORMATION
ENVIRONMENTAL SCIENCE PRODUCTS:
(866) 822-3731
www.valentbiosciences.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

A VISCOUS YELLOW TO BROWN LIQUID WITH A FAINT MILD ODOR

CAUTION

- Harmful if swallowed or absorbed through skin.
- Toxic to fish.
- Slightly combustible. May support combustion at elevated temperatures.
- Do not use or store near heat or open flame.
- Keep out of reach of children.

POTENTIAL HEALTH EFFECTS

Acute Toxicity (Primary Routes of Exposure): Inhalation. ingestion and skin contact.

Signs and Symptoms of Systemic Effects: Effects from overexposure result from inhalation or coming into contact with the skin. Symptoms of overexposure include diarrhea, salivation, tremors, convulsions, hyperactivity and hypersensitivity. Contact with this product rarely produces skin sensations such as numbing, burning and tingling. These skin sensations are reversible and usually subside within 12 hours.

Acute Eye Contact: This product is expected to cause minimal or no eye irritation. The expected adverse health effects resulting from an exposure may include redness and possibly some minor swelling.

Acute Skin Contact: This product is slightly toxic when absorbed through the skin. This product can cause brief and/or minor irritation. The expected adverse health effects resulting from an exposure may include redness and possibly some minor swelling. This product is not expected to cause allergic skin reactions.

This product contains a pyrethroid. Skin contact with pyrethroids can result in a temporary burning, tingling or itching sensation.

Acute Ingestion: This product is minimally toxic when ingested.

Acute Inhalation: This product is minimally toxic when inhaled. Exposure to high concentrations in the air may result in respiratory irritation. Signs and symptoms may include, but not be limited to, nasal discharge, sore throat, coughing and difficulty in breathing.

Chronic Toxicity (including cancer): Permethrin produced an increased incidence of lung and liver tumors in female mice at elevated dietary concentrations. See Section 11 for further chronic/carcinogenic information.

Potentially Aggravated Medical Conditions: None known

For complete discussion of the toxicology data from which this evaluation was made, refer to Section 11. For Ecotox/Environmental Information, refer to Section 12. For Regulatory Information, refer to Section 15.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Weight/ Percent	Purpose
Permethrin (3-phenoxyphenyl)methyl 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate	52645-53-1	96.1	Active Ingredient
Others	Various CAS#s	3.9	Other Ingredients

Other ingredients, which are maintained as trade secrets, are any substances other than an active ingredient contained in this product. Some of these may be hazardous, but their identity is withheld because they are considered trade secrets. The hazards associated with the other ingredients are addressed in this document. Specific information on other ingredients for the management of exposures, spills, or safety assessments can be obtained by a treating physician or nurse by calling **(877) 315-9819** (within the United States) or **(651) 632-6184** (outside the United States) at any time.

4. FIRST AID MEASURES

EMERGENCY NUMBER: within the United States (877) 315-9819;
outside the United States (651) 632-6184

EYE CONTACT:
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 a poison control center or doctor for treatment advice.

SKIN CONTACT:
Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION:
Call a poison control center 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 control center or doctor. Do not give anything by mouth to an unconscious person.

INHALATION:
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

NOTES TO PHYSICIAN:
Permethrin has a low oral, dermal and inhalation toxicity, and is minimally irritating to eyes and practically non-irritating to the skin. Reversible skin sensations (parasthesia) may occur and ordinary skin salves have been found useful in reducing discomfort. Treament is otherwise controlled by removal of exposure followed by symptomatic and supportive care.

Do not administer milk, cream or other substance containing vegetable or animal fats, which enhance the absorption of lipophilic substances.

5. FIRE FIGHTING MEASURES

FLASH POINT: 268° F (131° C)
FLASH POINT METHOD: TCC

NFPA RATING:

Health:	2
Flammability:	1
Reactivity:	0
Special:	None

(Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using professional judgement. Values were not available in the guidelines or published evaluations prepared by the National Fire Protection Association, NFPA.

FIRE FIGHTING INSTRUCTIONS: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear. Keep upwind. Isolate hazard area. Avoid inhalation of smoke and fumes. Use water or foam to reduce fumes. Do not touch spilled material. If possible, move containers from area. Extinguish only if flow can be stopped. Use flooding amounts of water as a fog. Cool containers with flooding amounts of water from as far a distance as possible. Avoid breathing vapors.

HAZARDOUS COMBUSTION PRODUCTS: May form toxic materials: Carbon dioxide, carbon monoxide, various hydrocarbons, etc.

6. ACCIDENTAL RELEASE MEASURES

VALENT BIOSCIENCES EMERGENCY PHONE NUMBER:
WITHIN THE UNITED STATES: (877) 315-9819
OUTSIDE OF THE UNITED STATES: (651) 632-6184

UN/NA NUMBER: UN 3082 **EMERGENCY RESPONSE GUIDEBOOK NO.:** 171

If it is safe to do so:
- Evacuate non-essential personnel from the area to prevent human exposure.
- Remove all sources of ignition.
- Ventilate area, especially low areas where vapors may accumulate.
- Stop the source of the spill. Contain the spill to prevent further contamination of the soil, surface water, or ground water.
- May produce slippery conditions.

GENERAL AND DISPOSAL: Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the adverse effect of the spill. For additional spill response information refer to the **North American Emergency Response Guidebook.** Ensure that the disposal is in compliance with all Federal, State, and local regulations. Refer to Section 14 for applicable Reportable Quantity (RQ) and other regulatory requirements.

FOR SPILLS OR LEAKS:

CONTAINMENT:

Small spills: Absorb with an inert absorbent material such as sand, granular clay, sawdust, Fuller's earth, etc. Place in an approved chemical waste container for disposal. Where possible, drum should be oriented to prevent further leakage. Do not allow spilled material to enter any body of water.

Large Spills: Eliminate all ignition sources. Ventilate area. Stop leak if you can do so without coming into contact with spilled material. Dike far ahead of the spill for later disposal. All equipment used to clean up spill should be grounded. Prevent entry into waterways, sewers, basements, or confined areas. Inform appropriate authorities immediately if contamination occurs.

CLEANUP: Rinse spill area with small amount of soapy water. Contain and absorb the rinsate with inert absorbents and place into the same disposal container. Area can be washed with water to remove the last trace of residue. Do not allow water to contaminate water supplies or sewers.

7. HANDLING AND STORAGE

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

HANDLING PRECAUTIONS: Harmful if inhaled or absorbed through skin. Avoid contact with skin, eyes or clothing. Avoid contamination of feed and foodstuff. Do not use or store near heat or open flame.

STORAGE: Do not contaminate water, food or feed by storage or disposal. Store upright at room temperature. Avoid exposure to extreme temperature. Do not store near heat or open flame.

WORK/HYGIENIC PRACTICES: Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove contaminated clothing and wash clothing before reuse.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

EYES & FACE: Do not get this material in your eyes. Eye contact can be avoided by wearing safety glasses or goggles.

RESPIRATORY PROTECTION: Use this material only in well ventilated areas. If operating conditions result in airborne concentrations of this material, the use of a NIOSH approved air purifying respirator with organic vapor cartridge should be worn.

SKIN & HAND PROTECTION: Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves (such as butyl or nitrile rubber gloves).

ENGINEERING CONTROLS: Control airborne concentrations below appropriate exposure guidelines. Use local exhaust at all process locations where vapor or mist may be emitted. Ventilate all transport vehicles prior to unloading.

EXPOSURE LIMITS

Chemical Name	ACGIH Exposure Limits	OSHA Exposure Limits	Manufacturer's Exposure Limits
Permethrin (3-phenoxyphenyl)methyl 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate	None	None	None
Others	None	None	None

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM: viscous liquid
COLOR: Yellow to brown
ODOR: Mild odor

9. PHYSICAL AND CHEMICAL PROPERTIES

FLASH POINT:	268° F (131° C)
FLASH POINT METHOD:	TCC
BOILING POINT:	198 - 200° C @ 0.3 mmHg
BULK DENSITY:	9.91 lb/gal (1,190 - 1,272 g/L)
SPECIFIC GRAVITY:	1.22
VAPOR PRESSURE:	$3.4x10^{-7}$ Torr @ 25° C
pH:	5.0 - 6.0
SOLUBILITY:	Water: 0.02 ppm

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY:	Stable at normal ambient temperatures.
INCOMPATABILITY:	Strong acids and oxidizing agents
OXIDATION/REDUCTION PROPERTIES:	Product does not have the potential to act as a strong oxidizing or reducing agent.
EXPLODABILITY:	No data available
HAZARDOUS POLYMERIZATION :	Will not occur.
HAZARDOUS DECOMPOSITION PRODUCTS:	May form toxic materials such as: Carbon dioxide, carbon monoxide, chlorine, hydrogen chloride, various hydrocarbons, etc.
CONDITIONS TO AVOID:	Excessive heat and sources of ignition.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY:

Oral Toxicity LD_{50} (rats)	6,000 mg/kg	EPA Tox Category	IV
Dermal Toxicity LD_{50} (rabbits)	> 2,000 mg/kg	EPA Tox Category	III
Inhalation Toxicity LC_{50} (rats)	2.3 mg/L	EPA Tox Category	IV
Eye Irritation (rabbits)	Minimally irritating	EPA Tox Category	IV
Skin Irritation (rabbits)	Minimally irritating	EPA Tox Category	IV
Skin Sensitization (guinea pigs)	Non-sensitizer	EPA Tox Category	Not available

CARCINOGEN CLASSIFICATION

Chemical Name	IARC - Group 1 (carcinogenic to humans)	IARC - Group 2A (Probably carcinogenic)	IARC - Group 2B (Possibly carcinogenic)	NTP Carcinogen List
Permethrin (3-phenoxyphenyl)methyl 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate (52645-53-1)	No	No	No	Not listed
Others (Various CAS#s)	No	No	No	Not listed

TOXICITY OF ACTIVE INGREDIENTS: PERMETHRIN

CHRONIC/CARCINOGENICITY: A statistically significant increase in the incidence of lung and liver tumors was observed in female mice receiving diets containing 375 and 750 mg/kg/day of permethrin technical over 85 weeks.

Pyrethrum has been tested in lifetime feeding studies in mice and rats. Slightly elevated incidences of benign tumors of the thyroid and liver were seen in rats following high doses of Pyrethrins. Further detailed scientific studies into the mode of action responsible for these effects show that:

• Because of biological species differences, the rat thyroid tumors are not relevant to humans;
• The rat liver tumors occur in animals only at doses greatly exceeding human exposure levels and that cause cell proliferation (mitogenesis).

Based on the body of data available, the World Health Organization/Food and Agricultural Organization Joint Meeting on Pesticide Residues (JMPR) concluded that: "The increased tumor incidences associated with exposure to pyrethrins are threshold phenomenon of negligible relevance to the low concentrations to which humans are exposed and that pyrethrins have no genotoxic or mutagenic potential."

Similarly, the USEPA has classified Pyrethrins as "Not Likely to be Carcinogenic to Humans" at doses that do not cause a mitogenic response in the liver/cell proliferation." Thus, Pyrethrins can be considered to be non-carcinogenic at exposure levels relevant to human use of Pyrethrins-containing products.

DEVELOPMENTAL TOXICITY: Permethrin was not teratogenic when tested in rats.

MUTAGENICITY: Permethrin did not produce any mutagenic effects when tested in the Ames assay, Chromosome aberration test or DNA damage test.

For a summary of the potential for adverse health effects from exposure to this product, refer to Section 2. For information regarding regulations pertaining to this product, refer to Section 15.

12. ECOLOGICAL INFORMATION

AVIAN TOXICITY: Permethrin is slightly toxic to birds with oral LC50 values greater than 3,600 mg/kg. Longer dietary studies showed that concentrations of up to 500 ppm in the diet had no effects on bird reproduction.

AQUATIC ORGANISM TOXICITY: **Permethrin is highly toxic to fish** (LC50 = 0.5 ug/L to 315 ug/L) **and aquatic arthropods** (LC50 = 0.02 ug/L to 7.6 ug/L). Marine species are often more sensitive than freshwater species. Bacteria, algae, mollusks and amphibians are much more tolerant of permethrin than are fish and arthropods. Care should be taken to avoid contamination of the aquatic environment.

ENVIRONMENTAL FATE:
Permethrin is stable at a wide range of pH values. Permethrin has a moderate rate of degradation in soil and half-life is related to soil type, microbial population, concentration in the soil and the aerobic condition of the soil. Because of its high affinity for organic matter (Koc = 86,000), there is little potential for movement in soil or entry into ground water. Permethrin has a Log Pow of 6.1, but because of the ease with which biological systems degrade the molecule, the potential for bioconcentration and accumulation in the environment is low (BCF = 500).

OTHER ENVIRONMENTAL INFORMATION:
Do not discharge effluent containing this product into lakes , streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollution Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product into sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA. Do not contaminate water when disposing of equipment wash waters.

13. DISPOSAL CONSIDERATIONS

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.

PRODUCT DISPOSAL:
Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. If partly filled: Call your local solid waste agency for disposal instructions. Never place unused product down any indoor or outdoor drain.

CONTAINER DISPOSAL:
Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

DISPOSAL METHODS:
Check government regulations and local authorities for approved disposal of this material. Dispose in accordance with applicable laws and regulations.

Canadian formulators using this product should dispose of unwanted active ingredient and containers in accordance with municipal or provincial regulations. For information on disposal of unused, unwanted product, contact the provincial regulatory agency or manufacturer. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

14. TRANSPORT INFORMATION

UN/NA NUMBER:	UN 3082
DOT (ground) SHIPPING NAME:	Environmentally hazardous substance, liquid, n.o.s.
TECHNICAL NAME (hazardous material):	Permethrin
HAZARD CLASS:	9
PACKING GROUP:	III
DOT REPORTABLE QUANTITY (RQ):	None
REMARKS:	Marine pollutant when shipped in bulk or non-bulk by water. Note: For transport purposes (40 CFR 173.132), the calculated 1-hour LC_{50} (Rate) is 9.2 mg/L
EXEMPTION REQUIREMENT:	None
EMERGENCY RESPONSE GUIDEBOOK NO.:	171
MARINE POLLUTANT:	Not applicable
TDG PROPER SHIPPING NAME:	Environmentally hazardous substance, liquid, n.o.s.
UN NUMBER:	UN 3082
HAZARD CLASS:	9
PACKING GROUP:	III

15. REGULATORY INFORMATION

PESTICIDE REGULATIONS: All pesticides are governed under FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act). Therefore, the regulations presented below are pertinent only when handled outside of the normal use and applications of pesticides. This includes waste streams resulting from manufacturing/formulation facilities, spills or misuse of products, and storage of large quantities of products containing hazardous or extremely hazardous substances.

U.S. FEDERAL REGULATIONS:

Ingredients in this product are reviewed against an inclusive list of federal regulations. Therefore, the user should consult appropriate authorities. The federal regulations reviewed include: Clean Water Act, SARA, CERCLA, RCRA, DOT and OSHA. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Permethrin (3-phenoxyphenyl)methyl 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate

SARA 313 Chemicals	1.0% de minimis concentration

SARA (311, 312):

Immediate Health:	Yes
Chronic Health:	Yes
Fire:	Yes
Sudden Pressure:	No
Reactivity:	No

STATE REGULATIONS:

Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list of all state regulations. Therefore, the user should consult state or local authorities. The state regulations reviewed include: California Proposition 65, California Directors List of Hazardous Substances, Massachusetts Right to Know, Michigan Critical Materials List, New Jersey Right to Know, Pennsylvania Right to Know, Rhode Island Right to Know and the Minnesota Hazardous Substance list. For Washington State Right to Know, see Section 8 for Exposure Limit information. For Louisiana Right to Know refer to SARA information listed under U.S. Regulations above. If no components or information is listed in the space below this paragraph, then none of the regulations reviewed are applicable.

Permethrin (3-phenoxyphenyl)methyl 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate

MA Right To Know	Listed
NJ Right To Know	Listed

CANADIAN INVENTORY:

Others

Canada DSL Inventory List -	Not listed/Not determined
Canada NDSL Inventory List -	Not listed/Not determined

For information regarding potential adverse health effects from exposure to this product, refer to Sections 2 and 11.

16. OTHER INFORMATION

REASON FOR ISSUE:	Added Canadian registration number (PCPA). Added Canadian Inventory information, if listed.
EPA REGISTRATION NUMBER:	73049-418
PCPA REGISTRATION NUMBER:	28932
MSDS NO.:	ENV-0145
REVISION NUMBER:	3
REVISION DATE:	11/12/2008
SUPERCEDES DATE:	November 6, 2007
RESPONSIBLE PERSON(S):	Valent U.S.A. Corporation, Corporate EH&S, (925) 256-2803

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with label instructions.

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products is regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling. All necessary and appropriate precautionary, use, and storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

The information in this MSDS is based on data available to us as of the revision date given herein, and believed to be correct. Contact Valent Biosciences to confirm if you have the most current MSDS.

Judgements as to the suitability of information herein for the individual's own use or purposes are necessarily the individual's own responsibility. Although reasonable care has been taken in the preparation of such information, Valent extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the individual's purposes or the consequences of its use.