

# SAFETY DATA SHEET

## VECTOR-FLEX 20:20

### 1. IDENTIFICATION

Product name: **Vector-Flex 20:20**  
Product type: Insecticide for effective control of Adult Mosquitoes  
EPA Registration No.: 53883-274  
Chemical name of active ingredient(s): **Permethrin:** 3-(Phenoxyphenyl)methyl(±)cis-trans-3-(2,2-dichloroethyl)-2,2-dimethylcyclopropanecarboxylate  
**Piperonyl Butoxide:** 5-[[2-(2-butoxyethoxy) ethoxy]methyl]-6-propyl-1,3-benzodioxole  
Manufacturer/Registrant: Control Solutions, Inc.  
5903 Genoa-Red Bluff  
Pasadena, TX 77507  
For fire, spill, and/or leak emergencies, contact Chemtrec: Phone: 1-800-424-9300  
For medical emergencies and health and safety inquiries, contact Safety Call: Phone: 1-866-897-8050  
Poison Control Center: Phone: 1-800-222-1222

### 2. HAZARDS IDENTIFICATIONS

#### OSHA HCS CLASSIFICATION (29 CFR 1910.1200)

#### Acute Toxicity:

Exposure Route	Acute oral	Acute dermal	Acute inhalation	Eye irritation	Skin irritation	Skin Sensitization
Category	4	NC	4	2B	2	1B

**NC:** Not classified

**SIGNAL WORD:** WARNING

#### HAZARD STATEMENTS:

- Harmful if swallowed
- Harmful if inhaled
- Causes eye irritation
- Causes skin irritation
- May cause allergic skin reaction
- Combustible liquid
- Suspected of causing cancer (Carcinogenicity- Category 2)

#### PICTOGRAMS:



#### PRECAUTIONARY STATEMENTS:

- Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. If swallowed: Immediately call a poison center or a doctor. Rinse mouth.
- Avoid breathing mist, vapors or spray. Use only outdoors or in a well-ventilated area. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center if you feel unwell.
- Wash hands thoroughly after handling. Wear protective gloves. If on skin, wash with plenty of water. If skin irritation occurs: Get medical advice. Take off contaminated clothing and wash it before reuse.

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- Wash hands thoroughly after handling. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice.
- Avoid breathing mist, vapors and spray. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves. If on skin: wash with plenty of water. If skin irritation or rash occurs: get medical advice. Take off contaminated clothing and wash it before reuse.
- Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
- Keep away from flames and hot surfaces. No smoking. Wear protective gloves and eye protection. In case of Fire: Use water fog, CO<sub>2</sub>, foam, or dry chemical to extinguish. Store in well ventilated place. Keep Cool.

**PHYSICAL AND CHEMICAL HAZARDS:** Combustible. Do not use or store near heat or open flame. GHS classification Category 4

Contact Safety Call<sup>®</sup> International for emergency medical treatment at (866) 897-8050.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS NO.	%	OSHA TWA	ACGIH STEL	OTHER	NTP/IARC/OSHA (Carcinogen)
Permethrin*	52645-53-1	20.6	NE	NE	NA	IARC – 3**
Piperonyl Butoxide	51-03-6	20.6	NE	NE	NA	IARC – 3**
di-Limonene	5989-27-5	15 - 20	30ppm	30 ppm	NA	IARC – 3**

NE= Not established; NA= Not applicable

\* *cis/trans* ratio: minimum 35% (±) *cis* and maximum 65% *trans*

\*\*IARC Group 3: The agent (mixture or exposure circumstance) is unclassifiable as to carcinogenicity to humans.

### 4. FIRST AID MEASURES

FIRST AID	
<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"><li>• Immediately Call a poison control center or doctor.</li><li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li><li>• Have person sip a glass of water if able to swallow.</li><li>• Do not give anything by mouth to an unconscious person.</li></ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"><li>• Take off contaminated clothing.</li><li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For information on this product, contact the National Pesticide Information Center, 1-800-858-7378, Monday-Friday, 7:30 AM-3:30 PM PST. You may also contact the National Poison Control Center, 1-800-222-1222, day or night, for emergency medical treatment information or SafetyCall <sup>®</sup> at (866) 897-8050. <b>FOR CHEMICAL EMERGENCY:</b> Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300.	

### 5. FIRE FIGHTING MEASURES

**FLASH POINT:** > 141°F (61°C) (TCC)

**FLAMMABLE LIMITS:** Not determined

**EXTINGUISHING MEDIA:** Water fog, CO<sub>2</sub>, foam, dry chemical. Soft stream water of fog only if necessary.

**UNUSUAL FIRE & EXPLOSION HAZARDS:** Pesticide fires have potential to emit hazardous decomposition products.

**FIRE-FIGHTING PROCEDURES:** Foam fire-extinguishing system is preferred because uncontrolled water can spread possible contamination. Do not allow fire-fighting water to escape into waterways or sewers. Toxic irritating gases can be formed.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Under fire conditions hydrogen chloride, oxides of chlorine, carbon dioxide, carbon monoxide, and asphyxiants can be formed.

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### 6. ACCIDENTAL RELEASE MEASURES

**IN CASE OF SPILLS OR LEAKS:** Wear protective clothing as described in Section 8 of this MSDS. Absorb liquid with material such as clay, sand, sawdust, or dirt. Sweep up and place in a suitable container for disposal and label the contents. Area can be washed down with a suitable solution of bleach or soda ash and an appropriate alcohol (methanol, ethanol, or isopropanol). Follow this by washing with a strong soap and water solution. Absorb any excess liquid as indicated above, and add to the disposal container. Keep product, contaminated materials and wash water out of streams and sewers. Wash exposed body areas thoroughly after handling.

### 7. HANDLING AND STORAGE

Do not contaminate water, food, or feed by storage or disposal. Do not use or store near heat or open flame.

**PRECAUTIONS TO BE TAKEN IN HANDLING:** Avoid dermal contact. Take precautions to avoid damaging containers. Avoid cross contamination. Always wash hands thoroughly after handling pesticides and before eating, drinking, or smoking. Clean water should be available to rinse eyes and skin in case of chemical exposure.

**PRECAUTIONS TO BE TAKEN IN STORAGE:** Store upright at room temperature. Avoid exposure to extreme temperatures. Store in a locked area out of reach of children and domestic animals. In case of spillage or leakages, soda up with an absorbent material such as same, sawdust, earth, Fuller's earth, etc. Dispose of with chemical waste.

**STORAGE TEMPERATURE (MIN/MAX):** Normal ambient temperatures.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.**

**FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.**

**SKIN PROTECTION:** Wear coveralls or long-sleeved shirt and long pants, chemical protective gloves (nitrile, neoprene, or Viton<sup>®</sup> brand), head covering and shoes plus socks.

**EYE PROTECTION:** Protective eyewear or chemical safety glasses with side shields or chemical goggles when working in non-ventilated spaces.

**RESPIRATOR REQUIREMENTS:** Atmospheric levels should be maintained below the exposure guideline. For most conditions, no respiratory protection should be needed; however, if the exposure guideline is exceeded, use an air-purifying respirator approved for pesticides (U.S. NIOSH/MSHA, EU CEN, or comparable certification organization).

**VENTILATION:** Provide general and/or local exhaust ventilation to control airborne levels below the exposure guideline. Ventilate all transport vehicles prior to unloading.

#### **WORK HYGIENIC PRACTICES:**

Clean water should be available to rinse eyes and skin in case of chemical exposure. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco.

#### **ADDITIONAL PROTECTIVE MEASURES:**

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

#### **USER SAFETY RECOMMENDATIONS:**

##### **Users Should:**

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**EXPOSURE GUIDELINES:** Refer to Section 3.

**ENGINEERING CONTROLS:** Use only in adequately ventilated areas.

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### 9. PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE:** Clear yellow liquid

**ODOR:** Citrus or Orange

**pH:** 4.25 – 5.75

**FLASH POINT:** > 141°F (61°C) (TCC)

**SPECIFIC GRAVITY:** 0.99 – 1.01 g/ml

**BULK DENSITY:** 8.26 - 8.43 lbs/gal

**SOLUBILITY IN WATER:** Does not disperse in water

**VISCOSITY:** 600 cps

### 10. STABILITY AND REACTIVITY

**STABILITY:** Stable under normal conditions.

**CONDITIONS AND MATERIALS TO AVOID:** Strong oxidizers. Avoid heating above 140° F (60° C). Contains a petroleum distillate solvent which can burn.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Under fire conditions hydrogen chloride, oxides of chlorine, carbon dioxide, carbon monoxide, and asphyxiants can be formed.

**HAZARDOUS POLYMERIZATION:** Will not occur.

### 11. TOXICOLOGICAL INFORMATION

#### ACUTE TOXICITY/IRRITATION STUDIES:

Acute Oral LD<sub>50</sub> (Rat): >500 mg/kg to ≤5,000 mg/kg

Acute Dermal LD<sub>50</sub> (Rabbit): >2,000 mg/kg

Acute Inhalation LC<sub>50</sub> (Rat): >2.06 mg/L/4 hr

Eye Irritation: Mild or slightly irritating

Skin Irritation: Mild or slightly irritating

Dermal Sensitization: Positive - Permethrin is a skin sensitizer in some individuals.

**ROUTES OF EXPOSURE:** Skin, eye, inhalation, ingestion.

**SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:** Excessive exposure may produce effects on the nervous system such as sensitivity to touch and sound, tremors, abnormal movement, and clonic convulsions. Long-term studies with permethrin in laboratory animal resulted in increased liver and kidney weights, induction of the liver microsomal drug metabolizing enzyme system, and histopathological changes in the lungs and liver. Long-term studies with piperonyl butoxide indicated increased organ weights in the liver, kidney, and adrenal glands.

#### CHRONIC TOXICITY:

Permethrin caused neurobehavioral effects (e.g., tremors) and/or organ effects (liver, lung, and kidney) in chronic studies in rats, mice and dogs.

Piperonyl butoxide caused decreased body weights and/or increased organ weights (liver, kidney, adrenal) in chronic studies in rats and dogs.

#### CARCINOGENICITY:

Permethrin has low oncogenic potential in mice and no oncogenic potential in rats, therefore, EPA has concluded the likelihood of oncogenicity effects in humans from permethrin to be extremely low or nonexistent.

Piperonyl butoxide gave no evidence of a carcinogenic potential in a lifetime feeding study in rats. In an oncogenicity study in mice, piperonyl butoxide caused an increased incidence of liver tumors. The US EPA has categorized piperonyl butoxide as a group C carcinogen, possible human carcinogen, based on limited evidence of cancer in laboratory animals.

#### REPRODUCTIVE TOXICITY:

Permethrin was not a reproductive toxicant in multi-generation reproduction studies in rats.

Piperonyl butoxide was not a reproductive toxicant in a two-generation study in rats.

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### DEVELOPMENTAL TOXICITY:

Permethrin was not a primary developmental toxicant in rats, mice and rabbits. Developmental effects (e.g., decreased fetal weights) were observed in rats and rabbits but were considered secondary to maternal toxicity.

Piperonyl butoxide did not cause developmental, embryotoxic or teratogenic effects in developmental toxicity studies in rats and rabbits.

### NEUROTOXICITY:

Permethrin caused neurobehavioral effects (e.g., tremors) in an acute and subchronic neurotoxicity screening study in rats without any correlating neuropathological changes.

Piperonyl butoxide did not demonstrate the potential to cause neurotoxicity in standard toxicity studies submitted to the Agency. EPA has concluded that there is not a concern for neurotoxicity resulting from exposure to piperonyl butoxide.

### MUTAGENICITY:

Permethrin was not mutagenic or genotoxic in a battery of in vitro and in vivo mutagenicity studies. Piperonyl butoxide does not have significant potential for mutagenicity based on sufficient evidence.

## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL HAZARDS:** This pesticide is extremely toxic to aquatic organisms, including fish and aquatic invertebrates. Runoff from treated areas or deposition of spray droplets into a body of water may be hazardous to fish and aquatic invertebrates.

**Bee Warning:** This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply to blooming crops or weeds while bees are visiting the treatment areas

**BIOACCUMULATION** (Permethrin & Piperonyl butoxide): Will not bioaccumulate.

### ENVIRONMENTAL FATE

**Permethrin:** The average half-life of permethrin in aerobic soils is 39.5 days, with a range from 11.6 to 113 days. Permethrin binds tightly to soil and is broken down primarily by microorganisms, but also by photolysis.

**Piperonyl Butoxide:** Reported to have a maximum half-life of 4.3 days in soil and from 0.55 to 1.64 days in aqueous environments. Gravitational settling removes piperonyl butoxide released in the atmosphere as an aerosol. Gaseous piperonyl butoxide degrades in the atmosphere with an estimated half-life of 3.4 hours.

### ECOTOXICOLOGICAL INFORMATION

#### Permethrin: (EPA Ecotox Database)

Rain trout LC<sub>50</sub> (96-h): 0.62 µg/L

Bluegill LC<sub>50</sub> (96-h): 0.79 µg/L

Bobwhite quail LD<sub>50</sub> (8-day): 5,200 ppm

#### Piperonyl Butoxide: (Based on Piperonyl Butoxide Technical)

Rainbow trout LC<sub>50</sub> (96-h): 6.12 ppm

Bluegill Sunfish LC<sub>50</sub> (96-h): 5.37 ppm

Bobwhite Quail LD<sub>50</sub> (Oral): > 2,250 mg/kg

Bobwhite Quail LC<sub>50</sub> (5-day dietary): > 5,620 ppm

Mallard Duck LC<sub>50</sub> (5-d dietary): > 5,620 ppm

## 13. DISPOSAL CONSIDERATIONS

**PESTICIDE DISPOSAL:** Pesticide wastes are toxic. Do not contaminate water, food, or feed by storage or disposal. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. Dispose of excess or waste pesticide by use according to label directions, or contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL:** Dispose of product containers, waste containers, and residues according to label instructions and local, state, and federal health and environmental regulations.

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### 14. TRANSPORT INFORMATION

**DOT CLASSIFICATION:**

UN2319, Terpene Hydrocarbon Solution, (Permethrin 20.6%), Class 3, PG III, Marine Pollutant

**INTERNATIONAL TRANSPORTATION:**

**IMO (vessel):** UN2319, Terpene Hydrocarbons, N.O.S. (D-Limonene, Permethrin 20.6%), Class 3, PG III, marine pollutant

**IATA (air):** UN2319, Terpene Hydrocarbons, N.O.S. (D-Limonene, Permethrin 20.6%), Class 3, PG III

### 15. REGULATORY INFORMATION

**FIFRA INFORMATION:**

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information for safety data sheet, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label.

**CAUTION** Harmful if absorbed through skin. Harmful if swallowed. Avoid contact with skin, eyes and clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

**SARA TITLE III CLASSIFICATION:**

Section 302: Not applicable.

Section 311/312: Acute health hazard (immediate)

Chronic health hazard (delayed)

Section 313: Permethrin (20.6%) CAS #:52645-53-1

Piperonyl Butoxide (20.6%) CAS #: 51-03-6

**CA PROPOSITION 65:** Not applicable

**CERCLA RQ:** Not applicable.

**RCRA CLASSIFICATION:** Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

**TSCA STATUS:** The ingredients of this product are listed on the TSCA inventory or are exempt.

### 16. OTHER INFORMATION

HAZARD RATINGS	NFPA	HMIS	
HEALTH:	1	1	0 MINIMAL
FLAMMABILITY:	2	2	1 SLIGHT
REACTIVITY:	0	0	2 MODERATE
			3 HIGH
			4 SEVERE

**MSDS DATE:** 07-05-2013. Supersedes version dated 08-09-2011. Changes made to all sections.

The information and recommendations contained herein are based upon data believed to be correct. However, no warranty of any kind, expressed or implied, is made with respect to the information contained herein.