

MATERIAL SAFETY DATA SHEET

Supplier information:

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1. Chemical Product Identification

Product Name: Cavalier 2L
Chemical Nature: Diflubenzuron

EPA Registration Number: 89799-1

2. Composition / Information On Ingredients

Composition	CAS No.	Content %
Diflubenzuron	35367-38-5	22.0
Other ingredients*		78.0

*Ingredients not precisely identified are non-hazardous and proprietary.

3. Hazards Identification**Emergency Overview****CAUTION:**

Form: Liquid **Color:** off-white to tan **Odor:** slight

Hazard Summary

May cause eye and skin irritation.
Prolonged and/or repeated exposure may cause the following effects:
Methemoglobinemia
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Potential Health Effects

Inhalation No short term harmful health effects are expected from vapor exposure at room temperature.

Skin May cause skin irritation.

Eyes May cause eye irritation.

Ingestion May cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Exposure: Prolonged or repeated exposure may cause the following:
Methemoglobinemia

Symptoms of Overexposure: The absorption of this product into the body may lead to the formation of Methemoglobinemia that could cause cyanosis.

4. First Aid Measures**If inhaled**

If breathed in, move person into fresh air.
Give oxygen or artificial respiration if necessary.
In case of bluish discoloration (lips, ear lobes, figure nails), give oxygen as quickly as possible.
Consult a physician.

In case of skin contact

If on clothes, remove clothes.
Wash off with soap and plenty of water immediately for at least 15 minutes.
If skin irritation happens, consult a physician.
Wash contaminated clothes, destroy contaminated shoes.

In case of eye contact

Do not wear contact lens when use this product.
Flush eyes with water for at least 15 minutes.
If symptoms persist, call s physician.

If swallowed

Do not induce vomiting.
Never give anything by mouth to an unconscious person. Rinse mouth with water.
Consult a physician.

Notes to Physician:

Symptoms: The absorption of this product into the body may lead to the formation of Methemoglobinemia that, in sufficient concentration, causes cyanosis.

Treatment: Since reversion of Methemoglobinemia to hemoglobin occurs spontaneously after termination of exposure, moderate degrees of cyanosis need to be treated only by supportive measures.

5. Fire-Fighting Measures

Flash point

>230°F (110°C)

Suitable extinguishing media

Use water spray, dry chemical or carbon dioxide for small fires. And alcohol-resistant foam for large fires.

Do not use water spray jet to extinguish fires.

Special protective equipment for firefighters

Body covering protective clothing, full “turn-out” gear. Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx), Hydrogen chloride gas, Hydrogen fluoride

Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.

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6. Accidental Release Measures

Personal precautions

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Toxic to aquatic life.

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Soak up with inert absorbent materials. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. Handling and Storage

Precautions for safe handling

Handle and open containers with care.

Protect from contamination.
Use only in well ventilated areas.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid inhalation, ingestion and contact with skin and eyes.
Wear suitable protective clothing, gloves and eye/face protection.
Wash thoroughly after done handling.
Keep containers closed when not in use.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.
Keep only in the original containers.

8. Exposure Controls / Personal Protection

Contains no substances with occupational exposure limit values.

Engineering Measures: Use mechanical ventilation for general area control.
Ensure extracted air cannot be returned to workplace through ventilation system.
Ensure that eye wash stations and safety showers are close to the workstation location.

Personal protective equipment

Respiratory protection

In case of insufficient ventilation, use respirators and components tested and approved under appropriate government standards such as NIOSH (US).

Hand protection

Handle with chemical resistant 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.

Eye 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).

Skin and body protection

Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Remove and wash contaminated clothing before re-use, discard contaminated shoes.

To protect against splashes from pouring: rubber or plastic boots and apron.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Wear suitable gloves and eye/face protection, avoid contact with skin, eyes or clothing.

Ensure adequate ventilation, especially in confined areas.

When using, do not eat, drink or smoke.

Keep working clothing separately.

Remove and wash contaminated clothing before re-use.

Contaminated clothing should not be allowed out of the work place.

9. Physical And Chemical Properties

Appearance:

Form : liquid

Color: off-white to tan

Odor: slight

Flash Point: >230°F (110°C)

PH: 5

Water Solubility: completely miscible

Solubility in Other Solvents: partly soluble in other organic solvents;

Boiling point: >212°F (100°C)
Specific gravity: 1.093 g/ml (20°C)

10. Stability And Reactivity

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Hazardous polymerization will not occur.

Conditions to avoid

no data available

Materials to avoid

Strong oxidizing agents, Strong acids, Strong bases.

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NO_x), Hydrogen chloride gas, Hydrogen fluoride

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Other decomposition products - no data available

11. Toxicological Information

Acute toxicity for diflubenzuron

Oral LD50

LD50 Oral - rat - 4,640 mg/kg

Inhalation LC50

LC50: >2.49mg/l, exposure time: 4h, rat

Dermal LD50

LD50 Dermal - rat - >10,000 mg/kg

Skin corrosion/irritation

No skin irritation, rabbit (OECD test guideline 404), exposure time: 4h

Serious eye damage/eye irritation

Rabbit, no eye irritation

Skin sensitization

Did not cause sensitization on lab animals, guinea pig, Buehler test

CMR effects

Carcinogenicity: animal testing did not show any carcinogenic effects.

Mutagenicity: animal testing did not show any mutagenic effects.

Reproductive toxicity: no toxicity to reproduction.

12. Ecological And Ecotoxicological Information

Toxicity

Toxicity to fish LC50 - Oncorhynchus mykiss (rainbow trout) - >0.2 mg/l - 96.0 h
Cyprinodon sp. (minnow), ->0.13mg/l

Toxicity to daphnia and other aquatic invertebrates: EC50: 0.003mg/l, Daphnia magna (Water flea), 48h

EC50 - Daphnia magna (Water flea) - 0.015 mg/l - 48 h

Toxicity to algae IC50: >0.3mg/l

Toxicity to fish (Chronic toxicity): NOEC: 0.10mg/l, Cyprinodon sp. (minnow)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):

NOEC <6mg/l, Daphnia magna (Water flea)

Bioaccumulation: Bioaccumulation factor (BCF): .100

Biodegradability: not readily biodegradable

13. Disposal Considerations

Dispose of waste material in compliance with all federal, state and local regulations.
Pesticide wastes are toxic.
Do not contaminate ponds, waterways or ditches with chemicals or used containers.

14. Transport Information

DOT (US)

UN number: 3082 Class: 9 Packing group: III ERG Code: 171
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, liquid, N.O.S.
(Diflubenzuron)

IMDG

UN number: 3082 Class: 9 Packing group: III ERG Code: 171
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, liquid, N.O.S.
(Diflubenzuron)

IATA

UN number: 3082 Class: 9 Packing group: III ERG Code: 171
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, liquid, N.O.S.
(Diflubenzuron)

Marine Pollutant

Yes
Diflubenzuron

15. Regulatory Information

EPA Registration Number: 89799-1

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA: All substances in this product are exempt from TSCA as this product is registered under FIFRA (Federal Insecticides Fungicides Rodenticides Act).

DSL: All components are listed on Canadian DSL list.

NZIoC: On the inventory, or in compliance with the inventory.

IECSC: On the inventory, or in compliance with the inventory.

16. Other Information

HMIS Information:

Health hazard:	1
Flammability:	0
Reactivity:	0

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the PRODUCT AS SUCH. It is the responsibility of persons on receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product.