MAXIMUM ECONOMIC YIELD

Safety Data Sheet

MEYCHEM® Clethodim 50% MUP

1. PRODUCT AND COMPANY IDENTIFICATION

Product name
MEYCHEM Clethodim 50% MUP

EPA Reg. No.
95055-2-80967

Product Use
For Formulation Use Only

Common name
Clethodim

Other names
Cyclohexanedione oxime herbicide
(*E,E*)-(+)-2-[1-[[(3-chloro-2-propenyl)oxy]imino]propyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one (CAS)

Company
MEY Corporation, 121 S. Estes Drive, Suite 101, Chapel Hill, NC 27514
Telephone: (919) 338-1628
Fax: (919) 932-5820
E-mail: safetydatasheets@meycorp.com

Emergency numbers
FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC – Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 1-703-527-3887 (collect calls accepted).

2. HAZARDS IDENTIFICATION

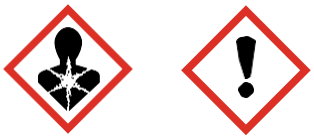
Classification

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
H227 (Category 4) Combustible liquid
H302 (Category 4) Harmful if swallowed
H305 (Category 2) May be fatal if swallowed and enters airways
H315 (Category 3) Causes mild skin irritation
H320 (Category 2B) Causes eye irritation

Label Elements

Signal word
WARNING

Hazardpictograms



Hazard statements

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood
P280 Wear protective gloves. Wear eye or face protection. Wear protective clothing.
P210 Keep away from flames and hot surfaces. - No smoking.
P273 Avoid release to the environment
P261 Avoid breathing vapor.
P270 Do not eat, drink, or smoke when using this product.
P264 Wash hands thoroughly after handling.
P272 (OSHA) Contaminated work clothing must not be allowed out of the workplace

Precautionary statements

- Wash skin thoroughly after handling.
- Do not eat, drink, or smoke when using this product.
- Wear protective gloves, eye protection/face protection.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do and continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a POISON CENTER or doctor/ physician.
- Do not use near open flame.
- Avoid release to the environment.
- Dispose of contents/container to an approved waste disposal plant.

Refer to Section 11 for toxicological and Section 12 for environmental information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

Clethodim

(*E,E*)-(+)-2-[1-[[(3-chloro-2-propenyl)oxy]imino]propyl]-5-[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one (CAS)

Composition

COMPONENT	CAS No.	% by weight (approximate)
Clethodim	99129-21-2	50
Solvent naphtha	64742-94-5	50

4. FIRST AID MEASURES

General advice

Remove the affected person from the danger zone to a well-ventilated room or to fresh air and protect from chilling. Do not administer anything by oral route and do not try to make vomit, call a treatment center for poisoning cases or a doctor. Take the label where possible.

Eye contact

If in eyes, hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, then continue rinsing. 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. Wash clothes and clean shoes thoroughly before reuse.

Inhalation

If inhaled, move person to fresh air. If person is not breathing, call the emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Ingestion

Call 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.

Note to Physician

There is no antidote. Treat symptomatically.

May be fatal if swallowed and enters airways. If swallowed, gastric lavage using an endotracheal tube may be preferred to vomiting.

5. FIRE FIGHTING MEASURES

Extinguishing media

Use dry foam, dry chemical, carbon dioxide, or soft stream water fog only when fighting fires involving this material. Contain all runoff.

Special hazards

May emit Toxic and irritating fumes under fire conditions. Normal combustion forms carbon dioxide, water vapor and may produce oxides of nitrogen. Combustion may produce toxic compounds of chlorine. Incomplete combustion can produce carbon monoxide.

Environmental precautions

Minimize use of water to prevent environmental contamination. See Section 6.

Hazardous products of combustion

Decomposition products may include the following materials: carbon dioxide, carbon, monoxide, nitrogen oxides, sulfur oxides, and halogenated compounds

Fire-fighting equipment

Self-contained breathing apparatus with full face-piece. Full firefighting turnout gear (Bunker gear). Equipment should be thoroughly decontaminated after use.

Fire-fighting guidance

Evacuate the area and fight fire upwind from a safe distance to avoid hazardous vapors and decomposition products. Remove containers from site of fire, if possible, as overheating may cause some of the containers to explode. Surrounding containers should be cooled using a fine water spray. All run-off must be contained. Dike and collect fire extinguishing water to prevent environmental damage with excessive water runoff.

Flash point

Not available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials.

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Methods for cleaning up

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material (e.g. sand, earth, vermiculite or diatomaceous earth) and place in a

container for disposal according to national, regional, and local regulations. If available, dispose of spillage via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

Refer to Section 13 for disposal of spilled material. Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

7. HANDLING AND STORAGE

Handling

Put on appropriate personal protective equipment (see Section 8). Avoid contact with eyes, skin and clothing. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Emptied packages retain vapor and product residue. FOLLOW LABELLED WARNINGS EVEN AFTER CONTAINER IS EMPTIED. Do not reuse container.

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures. Remove contaminated clothing and protective equipment before entering eating areas.

Storage

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits

Threshold Limit Value (TLV) – 100 ppm, 435 mg/m^3 TWA ACGI (liquid hydrocarbon solvent).

Engineering controls

Have eye wash facilities immediately available at locations where eye contact can occur. Use only with adequate ventilation. Provide mechanical exhaust ventilation in closed spaces. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Eye protection

Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Avoid contact with skin. Wear chemical resistant gloves such as barrier laminate or viton. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Wash hands with soap and water.

Body Protection

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Wear apron, boots, and full chemical protective suit. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

These data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Color/color range	Light yellow to brown liquid
Odor	Mild aromatic odor
Physical state	Liquid
Molecular weight	359.91
Molecular formula	$C_{17}H_{26}ClNO_3S$
Freezing/Boiling point	No data available
Flash point	65°C (Pensky Martin closed cup)
Explosive properties	Not explosive
Auto ignition temperature	No data available
Self-accelerating decomposition temperature (SADT)	No data available
Oxidizing properties	No data available
Corrosiveness	Not corrosive
Specific gravity/Density	1.00 g/ml @ 20°C
Vapor pressure	1×10^{-2} mPa
pH	4.0 – 6.0 (as aqueous emulsion)
Viscosity	4.11 mPa-s at 20°C 2.54 mPa-s at 40°C
Solubility	Emulsifiable in water

10. STABILITY AND REACTIVITY

Stability

Stable under recommended storage and handling conditions. Unstable at extreme pH's, temperature and upon exposure to UV light. Avoid direct sunlight. Isolate from sources of heat, naked flames or sparks.

Reactivity

No data available.

Possibility of hazardous reactions

No data available.

Incompatible materials

Strong oxidizing agents, such as chlorates, nitrates, and peroxides.

Hazardous decomposition

Hazardous products of combustion include toxic compounds of chlorine and carbon monoxide.

11. TOXICOLOGICAL INFORMATION

Likely routes of exposure: Skin contact, eye contact, inhalation.

Potential health effects

Eye contact: Mild eye irritant.

Skin contact: Not expected to produce significant adverse effects when used as recommended.

Inhalation, short term: Not expected to produce significant adverse effects when used as recommended.

Single ingestion: Harmful if swallowed.

Acute: Acute exposure to Clethodim or formulated products may include eye or skin irritation or central nervous system effects, e.g., salivation, decreased motor activity, incoordination, unsteady gait and hyperactivity. These latter effects may be in large measure due to the aromatic constituents of the formulation, as these effects commonly occur upon exposure to such compounds.

Chronic: This product contains a solvent mixture. Reports have associated repeated and chronic prolonged occupational overexposures to solvents with permanent brain and nervous: system damage. Symptoms reported include fatigue, concentration difficulties, anxiety, depression, rapid mood swings and short-term memory loss. Since many other diseases cause some or all of these symptoms, a doctor should be consulted if any appear. Overall, this product is not expected to be a chronic hazard when used according to the label directions.

Acute oral toxicity

Rat, LD50: 1,630 mg/kg body weight. FIFRA category III.

Acute dermal toxicity

Rabbit, LD50: > 5,000 mg/kg body weight. FIFRA category III.

Acute inhalation toxicity

Rat, LC50, 4 **hours, aerosol:** > 3.9 mg/L. FIFRA category III.

Skin irritation

Rabbit: Moderate irritation. FIFRA category III.

Eye irritation

Rabbit: Moderate irritation. FIFRA category III.

Skin sensitization

Guinea pig, Buehler test: No skin sensitization.

Genotoxicity/mutagenicity

Not genotoxic/mutagenic.

Carcinogenicity

Not carcinogenic

Reproductive/Developmental Toxicity/Teratogenicity

No adverse effects reported from developmental and reproductive animal studies.

12. ECOLOGICAL INFORMATION

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, ocean or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product in sewer systems without previously notifying the sewage treatment plant authority.

Aquatic toxicity, fish

Rainbow trout *(Oncorhynchus mykiss)*: Acute toxicity, 96 hours, LC50 67 mg/L.

Bluegill sunfish *(Lepomis macrochirus)*: Acute toxicity, 96 hours, LC50 120 mg/L.

Aquatic toxicity, invertebrates

Water flea *(Daphnia magna)*: Acute toxicity, 48 hours, EC5 >120 mg/L.

Avian toxicity

Bobwhite quail *(Colinus virginianus)*: Acute dietary toxicity, LC50 > 2,000 mg/kg.

Mallard duck *(Anas platyrhynchos)*: Acute dietary toxicity, LC50 > 6,000 mg/kg.

Arthropod toxicity

Honey bee *(Apis mellifera)*: Contact, 48 hours, LD50 > 100 µg/bee.

Soil organism toxicity, invertebrates

Earthworm *(Eisenia foetida)*: Acute toxicity, LC50 454 mg/kg soil.

Aquatic toxicity, algae/aquatic plants

Green algae: Acute toxicity, 5 days, LC50 57.8 mg/L.

Mobility in soil

Not readily leached.

Persistence and degradability

Clethodim is of low persistence in most soils with a half-life of three days. Breakdown is mainly by aerobic processes, although photolysis may make some contribution. Clethodim may be highly persistent in the aquatic environment. Reported half-lives for Clethodim in the aquatic environment are 128 days in the aqueous phase and 214 days in the sediment. The reported hydrolysis half-life at pH 7-9 is approximately 300 days.

Bioaccumulation potential

No data available.

13. DISPOSAL CONSIDERATIONS

Product

Pesticide wastes are acutely hazardous. Keep out of drains, sewers, ditches and water ways. Recycle if appropriate facilities and equipment are available or burn in an appropriate licensed commercial incinerator. Follow all local, regional, national, and international regulations.

Container

See the individual container label for disposal information. Emptied containers retain vapor and product residue. Do not reuse or refill containers. Completely empty containers into formulation equipment. Then offer for recycling if available or dispose of empty containers in a sanitary landfill, or by incineration. Follow all local, regional, national, and international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

UN number:	3082
UN class	9
UN packing group:	III
Proper shipping name:	Environmentally hazardous substance, liquid, N.O.S. (Clethodim)
Reportable quantity (RQ):	1,000 lbs.
Marine pollutant	No
Poison inhalation hazard:	No

15. REGULATORY INFORMATION

SARA Title III Rules

Section 311/312 Hazards: Immediate and Delayed Health Effects, Fire Hazard.

CERCLA Reportable quantity

1,000 lbs.

California Prop. 65 Component

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

Federal Fungicide, Insecticide, Rodenticide Act (FIFRA)

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

WARNING. Causes skin irritation and moderate eye irritation. Harmful if swallowed or absorbed through skin. Do not get on skin or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with eyes. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

Acute oral toxicity: FIFRA category III.
Acute dermal toxicity: FIFRA category III.
Acute inhalation toxicity: FIFRA category III.
Skin irritation: FIFRA category IV.
Eye irritation: FIFRA category III.
Skin sensitization: No skin sensitization.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data. Follow all local, regional, national, and international regulations. Please consult supplier if further information is needed. For more information refer to the product label. Please consult MEY Corporation if further information is needed.

	Health	Flammability	Instability	Additional Markings
NFPA	2	1	0	
0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard				

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA APPROVED PRODUCT LABELING (attached to and accompanying the product container). This SDS 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. In the USA, use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, 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.

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