

**TIDE INTERNATIONAL USA, INC.****-A DIVISION OF TIDE GROUP**

REVISION DATE: 09/18/2017 VERSION 2.0

[1. Identification]

Product name: Tide USA Clethodim 2EC

Chemical name: (+/-)-2-[(E)-1-(E)-3 chloroallyloxyimino] propyl]-5-[2-(ehthylthio) propyl]-3-hydroxycyclohex-2-enon

Chemical family: Cyclohexanedione oxime

EPA Reg. No.: 84229-33

Recommended Use: Post Emergent Herbicide

Importer/Supplier: Tide International USA, Inc.
21 Hubble, Irvine, CA 92618
(949) 679-3535

For medical or chemical*
emergencies: Call CHEMTREC®: 1-800-424-9300 (24 hours/day)

*Spill, leak, fire, exposure or accident Call the NATIONAL PESTICIDE INFORMATION CENTER
For non-emergency product information: 1-800-858-7378 (Monday - Friday, 8-12 PM Pacific time)

[2. Hazard(s) Identification]**According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR §1910.1200 (2012)****Classification of the substance or mixture:**

Acute Oral (Category 5)

Acute Dermal (Category 5)

Acute inhalation (Category 4)

Skin Irritation (Category 2)

Eye irritation (Category 2B)

Carcinogenicity (Category 2)

Specific target organ toxicity (Category 2)

Acute aquatic toxicity (category 3)

Chronic aquatic toxicity (category 3)

Flammable liquid (Category 4)

GHS label elements:**GHS pictograms****Signal Word: Warning**

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GHS Hazard statements

- H227 Combustible liquid
H303 May be harmful if swallowed.
H313 May be harmful in contact with skin.
H315 Causes skin irritation.
H320 Causes eye irritation.
H332 Harmful if inhaled.
H351 Suspected of causing cancer correct.
H373 May cause damage to organs through prolonged or repeated exposure.
H402 Harmful to aquatic life
H412 Harmful to aquatic life with long lasting effects

Precautionary statements:**Prevention:**

- P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection and face protection

Response:

- P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a poison center/doctor if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P321 Specific treatment (see First aid measures on the label).
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P308 + P313 If exposed or concerned: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.
P370 + P378 In case of fire: Use carbon dioxide (CO₂), dry extinguishing powder, foam or water spray.

Storage:

- P403 Store in well ventilated place.
P405 Store locked up.

Disposal:

- P501 Dispose of contents/container to hazardous or special waste collection point, in accordance with


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local, regional, national and/or international regulations.

Routes of exposure: Eyes, skin, ingestion & inhalation.

Carcinogenicity: Naphthalene is as a carcinogen. NOTE: Please refer to Section 11 for detailed toxicological information..

Other health concerns

NFPA Ratings: Health-2 Flammability-2 Reactivity-1

[3. Composition / Information on Ingredients]

According to Hazard Communication Standard (HCS) or 29 CFR §1910.1200 (2012).

Active ingredient	CAS No.	EINECS #	Content (w/w,%)
Clethodim	99129-21-2	201-360-5	26.4
Aromatic hydrocarbon	64742-94-5	265-198-5	<70
Naphthalene	91-20-3	202-049-5	>5
Calcium dodecylbenzenesulfonate	26264-06-2	247-557-8	<3
1,2,4-trimethylbenzene	95-63-6	202-436-5	>1
Other ingredients not deemed hazardous	Prop.	Prop.	Balance

[4. First aid measures]

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact CHEMTREC at 1-800-424-9300 for emergency medical treatment information.

If inhaled: Move to fresh air free from risk of further exposure. If the exposed person is not breathing call 9-1-1, then apply rescue breathing. Seek medical attention as soon as possible.

If on skin: Rinse area with clean water for 15-20 minutes. Call poison control center or doctor for treatment advice. Take off contaminated clothing and wash before reuse.

If in eyes: Flush with clean, lukewarm water raising upper and lower eyelids at low pressure for 15-minutes. Remove contact lenses, if present, after the first five minutes and continue to rinse the eyes. Seek medical attention if no relief.

If swallowed: Call a poison control center or doctor immediately for treatment advice. DO NOT INDUCE VOMITING. Lower the head when person is vomiting to minimize entry into throat and lungs.

Most important symptoms/effects, acute and delayed: No information available.

Note to physician: There is no specific antidote. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. Poisoning is accompanied by hyperactivity followed by sedation.

[5. Fire-Fighting measures]

Suitable extinguishing media: Water fog, foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media: No data available.

Special hazards arising from the chemical (hazardous combustion products): Normal combustion forms carbon dioxide, water vapor and may produce oxides of nitrogen, sulfur. Combustion may produce toxic compounds of chlorine.

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Special protective equipment and precautions for fire-fighters: A self-contained breathing apparatus and suitable protective clothing must be worn in fire conditions.

Advice for firefighters: Liquid evaporates and forms vapor (fumes), which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85°F. Products of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for firefighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and firefighting equipment before reuse. Read the entire document.

[6. Accidental release measures]

Personal precautions, protective equipment and emergency procedures:

Wear PPE; see section 8. Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Environmental precautions:

Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply where runoff is likely. Do not apply where when weather conditions favor drift from target areas. Do not contaminate water when disposing of equipment wash water or rinsate.

Methods and materials for containment and cleaning up:

Clean up spills immediately, observing precautions in Section 8 of this document. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Absorb small spills on sand, vermiculite or other inert absorbent. Place contaminated material in appropriate container for disposal. Large spills: Dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify, and scrape up for disposal. After removal, clean contaminated area thoroughly with water. Pick up wash liquid with additional absorbent and place in a disposable container.

[7. Handling and Storage]

KEEP OUT OF REACH OF CHILDREN!

Precautions for safe handling:

Use only outdoors or in a well-ventilated area. Avoid release to the environment. 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.

Use personal protective equipment as required. Wear protective gloves and eye / face protection. Avoid breathing mist / vapours. Avoid skin and eye contact and inhalation of vapour. Wash hands thoroughly after handling. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

Ground/Bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

Conditions for safe storage:



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Store locked up. Store in a cool, dry, well ventilated place and out of direct sunlight. Store away from incompatible materials described in Section 10. Store away from sources of heat or ignition. Keep containers closed tightly when not in use - check regularly for leaks.

[8. Exposure controls / Personal protection]

Control parameters:

Components.	CAS-No	Control parameters	Basis
Clethodim	99129-21-2	None	N/A
Aromatic hydrocarbon	64742-94-5	500 ppm	OSHA PEL
Naphthalene	91-20-3	TWA: 50 mg/m ³ 8 hrs. TWA: 10 ppm 8 hrs	OSHA PEL
1,2,4-Trimethylbenzene	95-63-6	25 ppm	ACGIH

Appropriate engineering controls: Provide adequate ventilation when product is used. Eyewash and shower should be provided in mixing and loading areas.

Personal protective equipment:

Always follow the label instructions when handling this product. In all other cases the following recommendations would apply. Long sleeve shirt and long pants. Chemical-resistant gloves such as barrier laminate or Viton \geq 14 mils. Shoes plus socks. Protective eyewear. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately

Respiratory protection: A combination particulate/ organic vapor respirator may be necessary until effective engineering controls are installed to comply with occupational exposure limits. Use a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with an HE prefilter.

Eye protection Use safety glasses or goggles, there is potential for vapor or mist exposure to cause injury to the eyes. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Skin and body protection: Skin and Body Protection: To avoid contact with skin, wear coveralls over with long- or short-sleeved shirt and long or short pants, chemical-resistant footwear plus socks and chemical resistant gloves. Wear chemical-resistant apron when cleaning equipment, mixing or loading. For overhead exposure, wear chemical-resistant headgear. An emergency eyewash or water supply should be readily accessible to the work area.

[9. Physical and chemical properties]

Appearance: Light Yellow Liquid.

Odor: Aromatic.

Odor threshold: No data available.

PH: No data available.

Melting point/freezing point: No data available.

Initial boiling point and boiling range: No data available.

Flash point: 142°F (61°C).

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Evaporation rate: No data available.

Flammability: Flammable liquids.

Upper/lower flammability or explosive limits: No data available.

Vapor pressure: No data available.

Vapor density: No data available.

Specific gravity (water=1): <1.

Solubility: Emulsifies.

Partition coefficient: n-octanol/water: No data available.

Auto-ignition temperature: No data available.

Decomposition temperature: No data available.

Viscosity: No data available.

Note: These physical data are typical values based on material test but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis and any specific lot or as a specification.

[10. Stability and reactivity]

Reactivity: No specific test data related to reactivity available for this product or its ingredients.

Chemical Stability: This product is stable material under normal conditions of storage and handling. Avoid contact with ignition sources.

Possibility of hazardous reactions: Will not occur hazardous polymerization.

Conditions to avoid: High temperatures and excess moisture. Do not store for prolonged periods in direct sunlight.

Incompatible Materials: Avoid strong oxidizing agents.

Hazardous decomposition products: Product will burn and the products of complete combustion are oxides of carbon and nitrogen, and sulfur.

[11. Toxicological information]

Exposure routes: Eyes, skin, ingestion & inhalation.

Toxicity:

Acute toxicity:

Acute Oral (female rat): LD₅₀ >2000 mg/kg b.w.

Acute dermal (rabbits): LD₅₀ >2000 mg/kg b.w.

Acute inhalation (Rats): LC₅₀: >2.0 mg/L (4hr).

Skin irritation (rabbits): Moderate skin irritation.

Eye irritation (rabbits): Prolonged or significant eye irritation.

Sensitization (mice): No sensitizer.

Chronic Toxicity: Increased liver weights and anemia have been observed in animals exposed to Clethodim Technical. Clethodim Technical was not carcinogenic to animals. Prolonged or repeated dermal exposures may cause drying, scaling and even blistering of the skin. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Symptoms include fatigue, concentration difficulties, anxiety, depression, rapid mood swings and short-term memory loss. The reports are not clear with regard to the types of solvents that may cause these symptoms, and there is controversy among scientists to whether the condition exists

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or is caused by this type of product. Since many other diseases cause some or all of these conditions, a doctor should be consulted if any appear. Trimethyl benzene may effect the liver and may cause changes in the blood cells and affect the blood's clotting ability. Trimethyl benzene can irritate the lungs. Repeated exposures may cause bronchitis to develop with cough, phlegm, and/or shortness breath.

Carcinogenicity: Not carcinogenic (rat); Not listed by ACGIH, NTP, IARC, or OSHA. Not known to cause reproductive or birth defects at normal exposure levels. Some teratogenic (birth defect) effects were noted in rats tested at elevated doses of 700mg/kg/day.

Teratology (Birth Defects) Information: Clethodim Technical produced developmental toxicity only at maternally toxic dose levels. It is not expected to present a hazard under normal use conditions. There is limited evidence of fetal and maternal toxicity from exposure to naphthalene. Reproduction (clethodim): No reproductive toxicity was observed in a study with rats exposed for two generations.

Mutagenicity (clethodim): Negative in the following genotoxicity assays: microbial reverse mutation (Ames Assay), in vitro chromosome aberration assay in Chinese Hamster Ovary Cells, in vivo chromosome aberration assay in Rat Bone Marrow Cells and in vivo Unscheduled DNA Synthesis Assay. Clethodim does not present a genetic hazard to intact animal systems.

Potentially Aggravated Condition: Individuals with preexisting diseases of the liver, red blood cell and central nervous system may have increased susceptibility to the toxicity of excessive exposures.

Toxicity of other ingredients: This product contains a solvent mixture. Solvents, when inhaled, can cause nasal and respiratory irritation and central nervous system effects including dizziness, weakness, fatigue, nausea, headache, and possibly unconsciousness and even death. Ingestion of solvents can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Prolonged or repeated dermal exposures may cause drying, scaling, and even blistering of the skin. Aspiration of low viscosity products can cause chemical, which can be fatal. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Symptoms include fatigue, concentration difficulties, anxiety, depression, rapid mood swings and short-term memory loss. The reports are not clear with regard to the types of solvents that may cause these symptoms, and there is controversy among scientists to whether the condition exists or is caused by this type of product. Since many other diseases cause some or all of these conditions, a doctor should be consulted if any appear. Acute exposure to naphthalene by inhalation, ingestion, and dermal contact has been associated with hemolytic anemia, damage to the kidneys, cataracts, and in infants, brain damage. There is limited evidence of fetal and maternal toxicity from exposure to naphthalene. Chronic (long-term) exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Lesions in the kidneys and thymus, signs of anemia, and reduced spleen weights have been observed in rats and mice chronically exposed via gavage. Trimethyl benzene may effect the liver and may cause changes in the blood cells and affect the blood's clotting ability. Trimethyl benzene can irritate the lungs. Repeated exposures may cause bronchitis to develop with coughing, phlegm, and shortness of breath.

[12. Ecological information]

Ecotoxicity: Avoid contamination of any water supply with chemical or empty container.

Avian toxicity: Clethodim technical

Birds (Bobwhite Quail) LD₅₀ Oral > 2000 mg/kg, Mallard Duck >6000 mg/kg.

Aquatic organism toxicity: Clethodim technical



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LC₅₀ to rainbow trout 67 mg/L (96hr); LC₅₀ to daphnia 120 mg/L (48hr).

Other non-target organism toxicity: This product is nontoxic to bees at the highest dose of 100 mg/bee.

Persistence/Degradability: Clethodim is of low persistent in most soils with T_{1/2} 3 days. Breakdown is mainly by aerobic processes and photolysis is accepted as making a contribution to breakdown. In water, clethodim is highly persistent with a half-life of 128 days in the aqueous phase and 214 days in the sediment. The reported hydrolysis half life at pH 7-9 is 300 days. Clethodim is rapidly degraded on the leaf surfaces by an acid-catalysed reaction and photolysis. The remaining clethodim will rapidly penetrate the cuticle and enter the plant.

Bioaccumulative potential: Not bioaccumulative (clethodim)

Mobility in soil: Clethodim is soluble in water and can be expected to adhere poorly to all soil types. The hazard for clethodim to move off the site of application with rain or irrigation water is rated high.

Other adverse effects: In animals, clethodim metabolizes to the sulphoxide and sulfone. In plants, clethodim metabolizes to the sulphoxide, sulfone and S (methyl sulfoxide).

Environmental Precautions: Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply where runoff is likely. Do not apply where when weather conditions favor drift from target areas. Do not contaminate water when disposing of equipment wash water or rinsate.

[13. Disposal considerations]

Dispose of product containers, water containers, and residues according to local regulations.

Pesticide disposal:

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Pesticide spray mixture or rinsate that cannot be used should be disposed of in a landfill approved for pesticides. Improper disposal of excess pesticide spray mixture or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal:

Non-refillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

[14. Transport information]

D.O.T. SHIPPING NAME: Compounds, weed killing, liquid, non-regulated.

TECHNICAL SHIPPING NAME: Clethodim 2EC Solution

D.O.T. HAZARD CLASS: NA

U.N./N.A. NUMBER: NA

REMARKS: Regulated when shipping in bulk (>119 gal).

If in bulk: NA1993, Compounds, Weed Killing, Liquid (contains naphthalene), 3, PG III.

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EXCEPTION REQUIREMENT: 49CFR 173.150(f) (3).**[15. Regulatory information]****FIFRA**

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 required for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the hazard information as required on the pesticide label:

EPA Reg. No.: 84229-33**EPA Signal word:** Warning**PRECAUTIONARY STATEMENTS****HAZARDS TO HUMANS AND DOMESTIC ANIMALS****WARNING**

Causes substantial but temporary eye irritation. Avoid contact with skin. Do not get in eyes, on skin, or on clothing. Harmful if swallowed or inhaled. Avoid breathing vapors or spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Do not apply where weather conditions favor drift from areas treated. Do not contaminate water when disposing of equipment washwater or rinsate.

The use of this product may pose a hazard to the federally designated endangered species of Solano Grass and Wild Rice. Use of this product is prohibited in the following areas where the species are known to exist:

Solano Grass: Solano County, California: the vernal lakes area bounded by the Union Pacific Railroad and Hastings Road to the north, Highway 113 to the east, Highway 12 to the south, and Travis Air Force Base to the west.

Wild Rice: Hays County, Texas.

PHYSICAL OR CHEMICAL HAZARDS

Flammable. Keep away from heat or open flame.

US Federal Regulations

TSCA list: All components are listed or exempted.

SARA Title III - section 302 - notification and information: None.

SARA Title III - section 313 - toxic chemical release reporting: Naphthalene.

CERCLA REPORTING QUANTITY: Naphthalene 100 lbs (220.4 kg.)

Calcium dodecyl benzenesulfonate 1000 lbs. (2204.6 kg.)

SARA Title III - section 311/312 - hazard identification

Acute health hazardous

Chronic health hazardous

This product contains none of the components listed as Extremely Hazardous substances.

OSHA Hazardous Components: None.

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US States Regulatory Reporting

CA Prop65: This product contains naphthalene known to the State of California to cause cancer.

State information: Naphthalene is listed in NJ as a right to know chemical.

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.

Canadian Regulations: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

Environmental**[16. Other information]**

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. Tide International USA, Inc. assumes no responsibility for results obtained or for incidental or consequential damages arising from the use of these data.

