Clomazone-MATERIAL SAFETY DATA SHEET

Manufacturer/information service:

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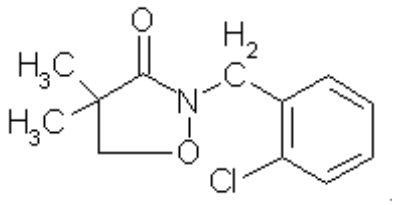
1. Chemical Product Identification

Product Name: Clomazone

Molecular Formula: $C_{12}H_{14}ClNO_2$

Molecular Weight: 239.72

Structural Formula:



Chemical Name: 2-[(2-chlorophenyl)methyl]-4,4-dimethyl-3-isooxazolone

Form: Liquid

Color: Brown

Odor: Slight aromatic

CAS No.: 8177-89-1

2. Composition / Information on Ingredients

Composition	CAS No.	Content %
Clomazone	8177-89-1	90.0
Other ingredients		10.0

3. Hazards Identification

Emergence Overview

Immediate Concerns: Brown liquid with a slightly aromatic hydrocarbon Odor; Slightly combustible. May support combustion at elevated temperatures. Thermal decomposition and burning may form toxic by-products. For large exposures or fire, wear personal protective equipment. Highly to slightly toxic to fish and aquatic organisms. Keep out of drains and water courses.

Potential Health Effects: Effects from overexposure result from coming into contact with the skin and eyes. Symptoms of overexposure include nasal discharge.

4. First Aid Measures

Eyes: Flush with plenty of water. Get medical attention if irritation occurs and persists.

Skin: Wash with plenty of soap and water.

Ingestion: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

Inhalation: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

Notes To Medical Doctor: This product has low oral, dermal and inhalation toxicity. It is non-irritating to the eyes and skin. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

5. Fire-Fighting Measures

Extinguishing Media: Foam, CO_2 or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

Fire / Explosion Hazards: Slightly combustible. This material may support combustion at elevated temperatures.

Fire Fighting Procedures: Isolate fire area. Evacuate downwind. Wear full protective clothing and self-contained breathing apparatus. Do not breathe smoke, gases or vapors generated.

6. Accidental Release Measures

Small Spills: Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contact. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers for disposal.

Large Spills: Shut off all possible sources of ignition. Wear protective equipment to prevent skin and eye contact. Avoid breathing in vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. If

contamination of crops or waterways has occurred advise emergency services or State Department of Agriculture.

7. Handling and Storage

Store in a cool, dry, well-ventilated place. Do not use or store near heat, open flame or hot surfaces. Store in original containers only. Store above-4°F (-20°C) to keep product from freeing. If frozen, thaw before reuse. For re-circulation directions, refer to the product label under "Mixing and Handling" instructions, for "Bulk/Mini-Bulk Containers". Keep out of reach of children and animals. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

8. Exposure Controls/Personal Protection

Personal protective equipment

Eyes And Face: For splash, mist or spray exposure, wear chemical protective goggles or a face shield.

Respiratory: For splash, mist or spray exposures wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides Respirator use and selection must be based on airborne concentrations.

Protective Clothing: Depending upon concentrations encountered, wear

coveralls or long-sleeved uniform and head covering. For larger exposures as in the case of spills, wear full body cover barrier suit, such as a PVC suit. Leather items - such as shoes, belts and watchbands - that become contaminated should be removed and destroyed. Launder all work clothing before reuse (separately from household laundry).

Gloves: Wear chemical protective gloves made of materials such as nitrile or Viton® brand. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

9. Physical and Chemical Properties

Water Solubility: 1100 mg/L

Solubility in Other Solvents: acetone v.s.; chloroform v.s.; cyclohexanone and methanol v.s.; toluene s.

Melting Point: 25℃

Relative density :1.192

Vapor Pressure: 19.2 mPa @ 25℃

Partition Coefficient: 2.5441

Adsorption Coefficient: 300

10. Stability and Reactivity

Conditions To Avoid: Excessive heat and fire.

Stability: Stable

Polymerization: Will not occur

Hazardous Decomposition Products: Carbon monoxide and/or carbon dioxide, oxides of nitrogen, chlorine and hydrogen chloride.

11. Toxicological Information

Eye Effects: Non-irritating

Skin Effects: Non-irritating

Dermal LD50: > 5,000 mg/kg (rat)

Oral LD50: > 5,000 mg/kg (rat)

Inhalation LC50: > 5.21 mg/l (4 h) (rat) Maximum attainable concentration - zero mortality

Reproductive effects: In a two-generation study with rats, each generation was fed clomazone at 5, 50, 100, or 200 mg/kg/day for 11 weeks in between weaning and mating. There was no effect on reproductive performance. These data suggest that it does not cause reproductive effects.

Teratogenic effects: Clomazone does not appear to be teratogenic. No birth defects were seen in the offspring of rats given 600 mg/kg/day, the highest dose tested, nor in the offspring of rabbits given 700 mg/kg/day.

Mutagenic effects: Clomazone is not mutagenic. The results of several tests, including a DNA synthesis test, reverse mutation tests, and a chromosomal aberration test, were all negative.

Carcinogenic effects: Clomazone does not appear to be carcinogenic. No tumor formation occurred in mice or rats given dietary doses as high as 100 mg/kg for 2 years.

Organ toxicity: Animal studies have shown that clomazone affects the liver

12. Ecological And Ecotoxicological Information

Effects on birds: Clomazone is practically nontoxic to birds. The oral LD50 for technical clomazone in bobwhite quail and mallard ducks is greater than 2510 mg/kg. The 8-day dietary LC50 in bobwhites and mallards is 5620 ppm.

Effects on aquatic organisms: Clomazone is moderately toxic to fish and aquatic invertebrates. The LC50 (96-hour) for technical clomazone is 19 mg/L in rainbow trout, 34 mg/L in bluegill sunfish, 6.26 mg/L in Atlantic silversides, 40.6 mg/L in sheepshead minnows, 0.566 mg/L in mysid shrimp, 5.3 mg/L in eastern oysters, and 5.2 mg/L in

Daphnia magna. The bioconcentration factor in bluegill sunfish is 40, indicating that there is only a small potential for this compound to accumulate in aquatic organisms .

Effects on other organisms: No data are currently available.

13. Disposal Considerations

Disposal Method: Open dumping or burning of this material or its packaging is prohibited. If spilled material cannot be disposed of by use according to label instructions, an acceptable method of disposal is to incinerate in accordance with local, state and national environmental laws, rules, standards and regulations. However, because acceptable methods of disposal may vary by location and regulatory requirements may change, the appropriate agencies should be contacted prior to disposal.

Empty Container: Non-returnable containers that held this material should be cleaned, prior to disposal, by triple rinsing. Containers which held this material may be cleaned by being triplerinsed, and recycled, with the rinsate being incinerated. Do not cut or weld metal containers. Vapors that form may create an explosion hazard.

14. Transport Information

Not applicable.

15. Regulatory Information

Not applicable.

16. Other Information

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. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear. 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. If the recipient subsequently produce formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.