

MATERIAL SAFETY DATA SHEET

FURADAN® 4 F Insecticide/Nematicide



MSDS Ref. No: 1563-66-2-10
 Version: Global
 Date Approved: 01/08/2001
 Revision No: 9

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the EC directive, 91/155/EEC and other regulatory requirements. The information contained herein is for the concentrate as packaged, unless otherwise noted.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: FURADAN® 4 F Insecticide/Nematicide
PRODUCT CODE: 279
ACTIVE INGREDIENT: Carbofuran
CHEMICAL FAMILY: Carbamate Pesticide
MOLECULAR FORMULA: C₁₂H₁₅NO₃ (carbofuran)
SYNONYMS: FMC 10242; 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate; IUPAC: 2,3-dihydro-2,2-dimethylbenzofuran-7-yl methylcarbamate
ALTERNATE TRADENAME(S): Curater® 47; Carbodan 48 F; Furadan 47 F; Furadan 48 F, Furadan 480 F; Furadan 480 g/L SC; Furadan 4 Flo

MANUFACTURER

FMC CORPORATION
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Emergency Telephone Numbers:

Emergency Phone (FMC) 800-331-3148 (U.S.A. & Canada)
Emergency Phone (FMC) 716-735-3765 (Reverse charges)
CHEMTREC (U.S.): (800) 424-9300 (U.S.A. & Canada)
 (202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS#</u>	<u>Wt.%</u>	<u>PEL/TLV</u>	<u>EC No.</u>	<u>EC Class</u>
Carbofuran	1563-66-2	44	0.1 mg/m ³	006-026-00-9	R26/28
Propylene Glycol	57-55-6	<6	10.0 mg/m ³ WEEL	None	None
Surfactant Blend	0000-00-0	<3	None	None	None

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

- IMMEDIATE CONCERNS:** - Creamy off-white liquid suspension with a mildly phenolic odor.
- Slightly combustible. May support combustion at elevated temperatures.
 - Degrades at temperatures above 130°C (266°F).
 - Thermal decomposition and burning may form toxic by-products.
 - For large exposures or fire, wear personal protective equipment.
 - Highly toxic to fish and aquatic organisms. Keep out of drains and water courses.
 - Highly toxic if swallowed, and could be highly toxic if absorbed through the mucous membranes of the eyes.
 - It is expected to be highly toxic by inhalation.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing, inhaling or coming into contact with the eyes or skin. Conditions of increased temperature and humidity may aid skin absorption of this product and, therefore, increase toxicity. Symptoms of overexposure include headache, light-headedness, weakness, abdominal cramps, nausea, excessive salivation, perspiration, blurred vision, tearing, pin-point pupils, blue skin color, convulsions, tremor and coma.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

4. FIRST AID MEASURES

EYES: Immediately flush with water for at least 15 minutes, lifting upper and lower eyelids intermittently. See a medical doctor immediately.

SKIN: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

INGESTION: Drink 1 or 2 glasses of water and induce vomiting by touching the back of the throat with a finger or by giving syrup of ipecac. Never induce vomiting or give anything by mouth to an unconscious person. See a medical doctor.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor immediately.

NOTES TO MEDICAL DOCTOR: This product is highly toxic if swallowed, and has low dermal toxicity. It is expected to be highly toxic by inhalation. It is minimally irritating to the skin and practically non-irritating to the eyes, however, absorption through the mucous membranes of the eyes could be highly toxic. Carbofuran is a reversible cholinesterase inhibitor. Atropine sulfate is antidotal. Support respiration as needed with removal of secretions, maintenance of a patent airway and, if necessary, artificial ventilation. If cyanosis is absent: Adults - start treatment by giving 2 mg atropine intravenously or intramuscularly, if necessary, and repeat with 0.4 - 2.0 mg atropine at 15 minute intervals until atropinization occurs (tachycardia, flushed skin, dry mouth, mydriasis); Children under 12 - initial dose = 0.05 mg/kg body weight and repeat dose = 0.02 - 0.05 mg/kg body weight. Use of oximes such as 2-PAM is controversial. Observe patient to insure that these symptoms do not recur as atropinization wears off. If in eyes, instill one drop of homatropine. Treatment is otherwise controlled removal of exposure followed by symptomatic and supportive care.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Foam, CO₂ or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

FIRE / EXPLOSION HAZARDS: Slightly combustible. Carbofuran will burn if ignited and degrades at temperatures above 130°C (266°F).

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.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, nitrogen oxides, and methyl isocyanate.

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8, "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of the area.

Keep material out of lakes, streams, ponds and sewer drains. Dike to confine spill and absorb with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.

To clean and neutralize spill area, tools and equipment, wash with a bleach or caustic/soda ash solution. Follow this by washing with a strong soap and water solution. Absorb, as above any excess liquid and add to the drums of waste already collected. Repeat if necessary. Dispose of drummed wastes according to the method outlined in Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

GENERAL PROCEDURES: 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. 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

ENGINEERING CONTROLS: Use local exhaust at all process locations where vapor or mist may be emitted. Ventilate all transport vehicles prior to unloading.

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 exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization). 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).

WORK HYGIENIC PRACTICES: Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking or using tobacco. Shower at the end of the workday.

GLOVES:

Wear chemical protective gloves made of materials such as rubber, neoprene or nitrile. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Mildly phenolic

APPEARANCE: Creamy off-white liquid suspension

SPECIFIC GRAVITY: 1.07 - 1.12 (water = 1)

MOLECULAR WEIGHT: 221.26 (carbofuran)

WEIGHT PER VOLUME: 8.91 - 9.32 lb/gal. (1070 - 1120 g/L)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.

STABILITY: Stable

POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

DERMAL LD₅₀: 6783 mg/kg (rabbit)

ORAL LD₅₀: 7.34 mg/kg (rat)

INHALATION LC₅₀: 0.10 mg/L/1 hour (rat) (carbofuran)

ACUTE EFFECTS FROM OVEREXPOSURE: This product is highly toxic if swallowed, and has low dermal toxicity. It is expected to be highly toxic by inhalation. It is minimally irritating to the skin and practically non-irritating to the eyes, however, absorption through the mucous membranes of the eyes could be highly toxic. With dermal exposure to this product, conditions of increased temperature and humidity facilitate skin absorption and, therefore, promote increased toxicity. Carbofuran is a reversible cholinesterase inhibiting pesticide which elicits symptoms in humans typical of cholinesterase inhibition including headaches, light-headedness, weakness, abdominal cramps, nausea, excessive salivation, perspiration and blurred vision. More severe signs of cholinesterase inhibition include tearing, pin-point pupils, excessive respiratory secretions, cyanosis, convulsions, generalized tremor and coma. Excessive exposure may result in death. In humans, ingestion of large amounts of propylene glycol has resulted in symptoms of reversible central nervous system depression including stupor, rapid breathing and heartbeat, profuse sweating and seizures.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the formulation. In studies with laboratory animals, carbofuran did not cause reproductive toxicity, teratogenicity, or carcinogenicity. Chronic exposure of laboratory animals to carbofuran has caused decreased cholinesterase activity (erythrocyte, plasma, and/or brain). An overall absence of genotoxicity has been demonstrated in mutagenicity testing with carbofuran. Repeated overexposure to propylene glycol can produce central nervous system depression, hemolysis and minimal kidney damage.

CARCINOGENICITY:

IARC: Not listed

NTP: Not listed

OSHA: Not listed

OTHER: (ACGIH) Not listed

12. ECOLOGICAL INFORMATION

Unless otherwise indicated, the data presented below are for the active ingredient.

ENVIRONMENTAL DATA: Carbofuran has a moderate rate of degradation in soil (half-life = 50 days). It undergoes rapid hydrolysis under alkaline (high pH) conditions, but is stable at acidic (low) pH. Carbofuran has a Log Pow of 1.4 and a bioconcentration factor of 9 (low potential for environmental accumulation). It may be mobile in soil, especially soils with a high sand content and, therefore, has a potential to contaminate groundwater. In heavier textured soils, the mobility of carbofuran is expected to be moderate.

ECOTOXICOLOGICAL INFORMATION: With LC50 values between 5.3 to 36 µg/L to fish and aquatic arthropods in the laboratory, this product is considered highly toxic. Care should be taken to avoid contamination of the aquatic environment. It is also considered highly toxic to waterfowl and upland game birds, and has an oral LD50 of 2.67 to 10.75 mg/kg. Carbofuran is easily metabolized and, because it is a rapidly reversible cholinesterase inhibitor, recovery from symptoms of sublethal exposure occurs quickly.

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 which held this material should be cleaned, prior to disposal, by triple rinsing. Containers which held this material may be cleaned by being triple-rinsed, 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

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

PROPER SHIPPING NAME: Carbamate pesticide, liquid, toxic

TECHNICAL NAME: Carbofuran

PRIMARY HAZARD CLASS/DIVISION: 6.1

UN/NA NUMBER: UN2992

PACKING GROUP: II

REPORTABLE QUANTITY (RQ): Listed (carbofuran - when net weight is 22.73 lbs. or more)

U.S. SURFACE FREIGHT CLASS: Insecticide, NOI, Poison.

MARINE POLLUTANT #1: carbofuran

NAERG: 151

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): Carbofuran

SECTION 302.4 REPORTABLE QUANTITY (40 CFR 355) The following is a list of the ingredients that are listed.

<u>Chemical Name</u>	<u>RQ</u>
Carbofuran	10 lbs.

SECTION 311 HAZARD CATEGORIES (40 CFR 370): Immediate, Delayed

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370): The threshold planning quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs. This product contains the following ingredients with a TPQ of less than 10,000 lbs.: None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372): This product contains the following ingredients subject to Section 313 reporting requirements: (carbofuran)

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT): Listed.

<u>Chemical Name</u>	<u>Wt.%</u>	<u>RQ</u>
Carbofuran	44	10 lbs.

COMMENTS: Australian Hazard Code : 3XE

U.S. EPA Hazardous Waste Number : P127 (carbofuran)

U.S. EPA Signal Word : DANGER-POISON

16. OTHER INFORMATION

REVISION SUMMARY This MSDS replaces Revision #8, dated June 12, 1998. Changes in information are as follows:

Section 15

Curaterr - Bayer-AG Trademark; Carbodan, Furadan and FMC Logo - FMC Trademarks

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