

MATERIAL SAFETY DATA SHEET

FURADAN® 10 G (GR) INSECTICIDE/NEMATICIDE



MSDS Ref. No.: 1563-66-2-5

Date Approved: 10/24/2005

Revision No.: 14

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200; the EC directive, 2001/58/EC 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® 10 G (GR) INSECTICIDE/NEMATICIDE
PRODUCT CODE: 3330; 6026
ACTIVE INGREDIENT(S): Carbofuran
CHEMICAL FAMILY: Carbamate Pesticide
MOLECULAR FORMULA: $C_{12}H_{15}NO_3$ (carbofuran)
SYNONYMS: FMC 10242; 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate; IUPAC: 2,3-dihydro-2,2-dimethylbenzofuran-7-yl methylcarbamate
ALTERNATE PRODUCT NAME(S): Bastion™ 10 G; Carborossi 10 G; Curateer®; Furadan 10 G Red; Furadan 100 g/kg GR

MANUFACTURER

FMC CORPORATION
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103
(215) 299 6000 (General Information)

EMERGENCY TELEPHONE NUMBERS

(800) 331-3148 (FMC - U.S.A. & Canada)
(716) 735-3765 (FMC - Reverse charges)

For leak, fire, spill, or accident emergencies, call:
(800) 424-9300 (CHEMTREC - U.S.A. & Canada)
(703) 527-3887 (CHEMTREC - All Other Countries)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Purple or red granules with a slightly phenolic odor.
- Slightly combustible. May support combustion at elevated temperatures. Finely dispersed particles can form explosive mixtures in air.
- 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.

- Expected to be highly toxic if inhaled.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either swallowing or absorption through the skin, and may result from breathing the dust. Conditions of increased temperature and humidity may aid skin absorption of this product and, therefore, promote increased 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.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Carbofuran	1563-66-2	10	216-353-0	R26/28-50/53; S1/2-36/37-45-60-61
Silica, amorphous	7631-86-9	<0.55	231-545-4	Not classified
Surfactant Blend		<0.94	None	Not classified

4. FIRST AID MEASURES

EYES: Flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

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

INGESTION: Drink 2 glasses of water and induce vomiting by touching the back of the throat with a finger. 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 has low toxicity if absorbed through the skin and is moderately toxic if swallowed. It is mildly irritating to the skin and minimally irritating to the eyes. This product contains a granular material (sand) that may cause mechanical irritation to the eyes. This product contains carbofuran, 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. May support combustion at elevated temperatures. Finely dispersed particles can form explosive mixtures in air.

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

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. Large spills should be covered to prevent dispersal. For dry material, use a wet sweeping compound or water to prevent the formation of dust. If water is used, prevent runoff or dispersion of excess liquid by diking and absorbing with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump all waste material, including absorbent, 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

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. 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

EXPOSURE LIMITS

Chemical Name	ACGIH	OSHA	Supplier
Carbofuran	0.1 mg/m ³ (TWA)	0.1 mg/m ³ (PEL)	
Silica, amorphous		0.1 mg/m ³ (PEL)	

ENGINEERING CONTROLS: No open flames. Prevent deposition of dust; use closed system, consider use of dust explosion-proof electrical equipment and lighting. Use local exhaust at all process locations where dust may be emitted. Ventilate all transport vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For dust exposure, wear chemical protective goggles or a face shield.

RESPIRATORY: For dust exposures 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).

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

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

COMMENTS:

Personal protective recommendations for mixing or applying this product are prescribed on the product label. Information stated above provides useful, additional guidance for individuals whose use or handling of this product is not guided by the product label.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR:	Slightly phenolic
APPEARANCE:	Purple or red granules
DENSITY / WEIGHT PER VOLUME:	85 - 89 lb/cu ft. (1360 - 1420 g/L)
MOLECULAR WEIGHT:	221.26 (carbofuran)
SOLUBILITY IN WATER:	351 µg/mL (carbofuran)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:	Excessive heat and fire.
STABILITY:	Stable
POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	Carbon monoxide, carbon dioxide, nitrogen oxides, and methyl isocyanate.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Minimally irritating

SKIN EFFECTS: Mildly irritating

DERMAL LD₅₀: > 2,000 mg/kg (rabbit)

ORAL LD₅₀: 71 mg/kg (rat)

INHALATION LC₅₀: Carbofuran: 0.10 mg/l (1 h) (rat)

ACUTE EFFECTS FROM OVEREXPOSURE: This product has low toxicity if absorbed through the skin and is moderately toxic if swallowed. It is mildly irritating to the skin and minimally irritating to the eyes. Excessive exposure to dust may irritate the respiratory system, skin and eyes. 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.

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.

CARCINOGENICITY:

NTP:	Not listed
IARC:	Not listed
OSHA:	Not listed
OTHER:	Not Listed (ACGIH)

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 7.3 and 362.5 µg/L to fish and aquatic arthropods in the laboratory, carbofuran 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 0.7 to 8 mg/kg. Furadan 10 G (GR) is approximately 10 times less toxic to birds than the active ingredient. Carbofuran is easily metabolized, and because it is a rapidly reversible acetylcholinesterase inhibitor, recovery from symptoms of a sublethal exposure is also rapid.

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: Completely empty package into application equipment then dispose of empty package in accordance with all Federal, State and local regulations.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Carbamate pesticide, solid, toxic
TECHNICAL NAME(S):	Carbofuran
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN 2757
PACKING GROUP:	III
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	Carbamate pesticide, solid, toxic (carbofuran), UN 2757
REPORTABLE QUANTITY (RQ):	Carbofuran
U. S. SURFACE FREIGHT CLASS:	Insecticide, NOI, Poison.
ADDITIONAL INFORMATION:	Carbofuran is in an "RQ" quantity when this material meets or exceeds 100 pounds per package.

PACKAGING TYPE:	Bulk
PROPER SHIPPING NAME:	Carbamate pesticide, solid, toxic
TECHNICAL NAME(S):	Carbofuran
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN 2757
PACKING GROUP:	III
MARINE POLLUTANT:	Carbofuran
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	2757
REPORTABLE QUANTITY (RQ):	Carbofuran

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

PACKAGING TYPE:	Non-Bulk
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PROPER SHIPPING NAME:	Carbamate pesticide, solid, toxic
TECHNICAL NAME(S):	Carbofuran
PRIMARY HAZARD CLASS / DIVISION:	6.1
UN/NA NUMBER:	UN 2757
PACKING GROUP:	III
MARINE POLLUTANT:	Carbofuran
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	Carbamate pesticide, solid, toxic (carbofuran), UN 2757, Marine Pollutant
ADDITIONAL INFORMATION:	EmS Number: F-A, S-A
ADDITIONAL INFORMATION:	Carbofuran is in an "RQ" quantity when this material meets or exceeds 100 pounds per package.

**ADR - EUROPEAN AGREEMENT CONCERNING THE
INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD**

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Carbamate pesticide, solid, toxic
TECHNICAL NAME(S):	Carbofuran
PRIMARY HAZARD CLASS / DIVISION:	6.1
CLASSIFICATION CODE:	T7
UN/NA NUMBER:	UN2757
HAZARD IDENTIFICATION NUMBER:	60
MARINE POLLUTANT:	Carbofuran
LABEL(S):	6.1
PLACARD(S):	6.1
MARKING(S):	UN 2757, Marine Pollutant

**INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) /
INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)**

PACKAGING TYPE:	Non-Bulk
PROPER SHIPPING NAME:	Carbamate pesticide, solid, toxic

TECHNICAL NAME(S): Carbofuran

PRIMARY HAZARD CLASS / DIVISION: 6.1

UN/NA NUMBER: UN2757

PACKING GROUP: III

LABEL(S): 6.1

LIMITED QUANTITY: Y619 / 10 kg

LIMITED QUANTITY: PASSENGER / CARGO: 619 / 100 kg

LIMITED QUANTITY: CARGO: 619 / 200 kg

ERG NUMBER: 6L

ADDITIONAL INFORMATION: Carbofuran is in an "RQ" quantity when this material meets or exceeds 100 pounds per package.

ADDITIONAL INFORMATION: Marks: Carbamate pesticide, solid, toxic (carbofuran), UN 2757

ADDITIONAL INFORMATION: RQ: carbofuran

OTHER INFORMATION:
This material is not respirable as shipped.

HARMONIZED SYSTEM NUMBERS:

Import to the U.S.A.: 3808.10.2500
Export from the U.S.A.: 3808.10.0000

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):
Listed

REPORTABLE QUANTITY:

<u>Chemical Name</u>	<u>RQ</u>
Carbofuran	10 lb

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; however, 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)

CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):

Listed

<u>Chemical Name</u>	<u>RQ</u>
Carbofuran	10 lb

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

RCRA IDENTIFICATION OF HAZARDOUS WASTE (40 CFR 261):

Waste Number: Carbofuran, P127

FEDERAL INSECTICIDE FUNGICIDE RODENTICIDE ACT

U.S. EPA Signal Word: WARNING

INTERNATIONAL LISTINGS

Australian Hazard Code: 3XE

HAZARD, RISK AND SAFETY PHRASE DESCRIPTIONS:

Carbofuran:

EC Symbols: T+ (Very Toxic)
N (Dangerous for the environment)

EC Risk Phrases:	R26	(Very toxic by inhalation)
	R28	(Very toxic if swallowed.)
	R50	(Very toxic to aquatic organisms.)
	R53	(May cause long-term adverse effects in the aquatic environment.)
EC Safety Phrases:	S1/2	(Keep locked up and out of reach of children.)
	S36/37	(Wear suitable protective clothing and gloves.)
	S45	(In case of accident or if you feel unwell, seek medical advice immediately - show the label where possible.)
	S60	(This material and its container must be disposed of as hazardous waste)
	S61	(Avoid release to the environment. Refer to special instructions/safety data sheets.)

16. OTHER INFORMATION

REVISION SUMMARY:

This MSDS replaces Revision #13, dated October 18, 2004.

Changes in information are as follows:

Section 1 (Product and Company Identification)

Section 3 (Composition / Information on Ingredients)

Section 5 (Fire Fighting Measures)

Section 8 (Exposure Controls / Personal Protection)

Section 16 (Other Information)

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