

# MATERIAL SAFETY DATA SHEET

## FURADAN® 15 G (GR) INSECTICIDE/NEMATICIDE



MSDS Ref. No.: 1563-66-2-4

Date Approved: 01/07/2010

Revision No.: 16

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This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200. The information contained herein is for the concentrate as packaged, unless otherwise noted.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** FURADAN® 15 G (GR) INSECTICIDE/NEMATICIDE  
**PRODUCT CODE:** 3669  
**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):** Furadan 15 G

### MANUFACTURER

FMC CORPORATION  
Agricultural Products Group  
1735 Market Street  
Philadelphia, PA 19103  
(215) 299-6000 (General Information)  
msdsinfo@fmc.com (Email - General Information)

### EMERGENCY TELEPHONE NUMBERS

(800) 331-3148 (Medical - U.S.A. & Canada)  
(651) 632-6793 (Medical - Collect - All Other Countries)

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

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## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW:

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

- Moderate oral toxicity, and is 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.

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### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt. %	EC No.	EC Class
Carbofuran	1563-66-2	15	216-353-0	T+, N; R26/28-50/53
Surfactant Blend		<1	None	Not classified
Silica, amorphous	7631-86-9	<0.4	231-545-4	Not classified

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### 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. 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 moderate oral and low dermal toxicity. It is expected to have high inhalation toxicity. It is slightly irritating to the skin, and non-irritating to the eyes. This product contains a granular material (clay) 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.

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## 5. FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Foam, CO<sub>2</sub> 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.

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## 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".

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## 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 <sup>3</sup> (TWA)	0.1 mg/m <sup>3</sup> (TWA)	
Silica, amorphous		(TWA) (80/(% SiO <sub>2</sub> )) mg/m <sup>3</sup> )	

**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, neoprene or nitrile. 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.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>ODOR:</b>	Mildly phenolic
<b>APPEARANCE:</b>	Red or purple granules
<b>DENSITY / WEIGHT PER VOLUME:</b>	(Bulk) 1.39 g/mL 85 - 89 lb/cu ft. (1390 g/L)
<b>MOLECULAR WEIGHT:</b>	221.26 (carbofuran)

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## 10. STABILITY AND REACTIVITY

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

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## 11. TOXICOLOGICAL INFORMATION

**EYE EFFECTS:** Non-irritating

**SKIN EFFECTS:** Minimally irritating

**DERMAL LD<sub>50</sub>:** > 2,000 mg/kg (rabbit)

**ORAL LD<sub>50</sub>:** 69.9 mg/kg (rat)

**INHALATION LC<sub>50</sub>:** Carbofuran: 0.10 mg/l (1 h) (rat)

**ACUTE EFFECTS FROM OVEREXPOSURE:** This product has moderate oral and low dermal toxicity. It is expected to have high inhalation toxicity. It is slightly irritating to the skin, and non-irritating to the eyes. Dust generated from granule pulverization during shipping and handling may be toxic if inhaled. 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. Excessive exposure to dust may irritate the respiratory system, skin and eyes.

**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:**

<b>NTP:</b>	Not listed
<b>IARC:</b>	Not listed
<b>OSHA:</b>	Not listed
<b>OTHER:</b>	Not Listed (ACGIH)

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## 12. ECOLOGICAL INFORMATION

**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 LC<sub>50</sub> values between 13.6 to 63.6 µg/L to aquatic arthropods and fish in the laboratory, Furadan 15 G (GR) 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 LD<sub>50</sub> of 0.7 to 8 mg/kg. Care should be taken to avoid contamination of the terrestrial environment. Carbofuran is easily metabolized and, because it is a rapidly reversible acetylcholinesterase inhibitor, recovery from symptoms of a sublethal exposure occurs quickly.

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## 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)

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>PROPER SHIPPING NAME:</b>	Carbamate pesticide, solid, toxic
<b>TECHNICAL NAME(S):</b>	Carbofuran
<b>PRIMARY HAZARD CLASS / DIVISION:</b>	6.1
<b>UN/NA NUMBER:</b>	UN 2757
<b>PACKING GROUP:</b>	III
<b>LABEL(S):</b>	6.1
<b>PLACARD(S):</b>	6.1
<b>MARKING(S):</b>	Carbamate pesticide, solid, toxic (carbofuran), UN 2757
<b>REPORTABLE QUANTITY (RQ):</b>	Carbofuran
<b>ADDITIONAL INFORMATION:</b>	Carbofuran is in an "RQ" quantity when this material meets or exceeds 66.7 pounds per package.

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

### INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>PROPER SHIPPING NAME:</b>	Carbamate pesticide, solid, toxic

<b>TECHNICAL NAME(S):</b>	Carbofuran
<b>PRIMARY HAZARD CLASS / DIVISION:</b>	6.1
<b>UN/NA NUMBER:</b>	UN 2757
<b>PACKING GROUP:</b>	III
<b>MARINE POLLUTANT:</b>	Carbofuran
<b>LABEL(S):</b>	6.1
<b>PLACARD(S):</b>	6.1
<b>MARKING(S):</b>	Carbamate pesticide, solid, toxic (carbofuran), UN 2757 + Marine Pollutant
<b>ADDITIONAL INFORMATION:</b>	EmS Number: F-A, S-A

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

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

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

<b>PACKAGING TYPE:</b>	Non-Bulk
<b>PROPER SHIPPING NAME:</b>	Carbamate pesticide, solid, toxic
<b>TECHNICAL NAME(S):</b>	Carbofuran
<b>PRIMARY HAZARD CLASS / DIVISION:</b>	6.1
<b>UN/NA NUMBER:</b>	UN2757

**LABEL(S):** 6.1

**ADDITIONAL INFORMATION:** Marks: Carbamate pesticide, solid, toxic (carbofuran), UN 2757 + Marine Pollutant

**OTHER INFORMATION:**

This material is not respirable as shipped.

**HARMONIZED SYSTEM NUMBERS:**

Import to the U.S.A.: 3808.91.2500

Export from the U.S.A.: 3808.91.0000

## 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:**

Chemical Name

Carbofuran

RQ

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

Chemical Name

Carbofuran

RQ

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: DANGER-POISON

**HAZARD AND RISK PHRASE DESCRIPTIONS:**

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

EC Risk Phrases: R26/28 (Very toxic by inhalation and if swallowed)  
 R50/53 (Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.)

**16. OTHER INFORMATION**

**NFPA**

Health	2
Flammability	1
Reactivity	0
Special	None

No special requirements

NFPA (National Fire Protection Association)

Degree of Hazard Code:

- 4 = Extreme
- 3 = High
- 2 = Moderate
- 1 = Slight
- 0 = Insignificant

**REVISION SUMMARY:**

This MSDS replaces Revision #15, dated October 24, 2005.

Changes in information are as follows:

- Section 1 (Product and Company Identification)
- Section 3 (Composition / Information on Ingredients)
- Section 14 (Transport Information)
- Section 15 (Regulatory Information)
- Section 16 (Other Information)

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