



SAFETY DATA SHEET

Afulan 3 GR

SDS # : FO003461-A
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Version 3

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name Afulan 3 GR

Product Code(s) FO003461-A

Synonyms CARBOFURAN (FMC 10242): 2,3-dihydro-2,2-dimethylbenzofuran-7-yl methylcarbamate (IUPAC name); 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate (CAS name)

Active Ingredient(s) Carbofuran

Chemical Family Carbamate Pesticide

Recommended Use: Insecticide, Nematicide.

Restrictions on Use: Use as recommended by the label.

Manufacturer/Supplier

FMC Corporation
Agricultural Solutions
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Section 2: HAZARDS IDENTIFICATION

GHS - Classification

Acute toxicity - Oral	Category 3
Acute toxicity - Dermal	Category 5
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Carcinogenicity	Category 1A
STOT - single exposure	Category 1
Specific target organ toxicity (repeated exposure)	Category 1
Acute aquatic toxicity	Category 2
Chronic aquatic toxicity	Category 1

Label Elements



Signal Word

Danger

Hazard Statements

H301 - Toxic if swallowed
 H313 - May be harmful in contact with skin
 H350 - May cause cancer
 H370 - Causes damage to organs
 H372 - Causes damage to organs through prolonged or repeated exposure
 H330 - Fatal if inhaled
 H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements - Prevention

P202 - Do not handle until all safety precautions have been read and understood
 P281 - Use personal protective equipment as required
 P264 - Wash face, hands and any exposed skin thoroughly after handling
 P270 - Do not eat, drink or smoke when using this product
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray
 P273 - Avoid release to the environment
 P271 - Use only outdoors or in a well-ventilated area
 P284 - Wear respiratory protection
 P280 - Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response

P308 + P311 - If exposed or concerned: Call a POISON CENTER or doctor
 P321 - Specific treatment (see supplemental first aid instructions on this label)
 P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
 P310 - Immediately call a POISON CENTER or doctor/ physician
 P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor
 P330 - Rinse mouth
 P391 - Collect spillage

Precautionary Statements - Storage

P405 - Store locked up
 P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

P501 - Dispose of contents/container according to label directions

Other Information

Very toxic to aquatic life with long lasting effects

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms CARBOFURAN (FMC 10242): 2,3-dihydro-2,2-dimethylbenzofuran-7-yl methylcarbamate (IUPAC name);
 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate (CAS name)

Chemical name	CAS-No	Weight %
Crystalline silica, quartz	14808-60-7	85-95
Carbofuran	1563-66-2	3

Section 4: FIRST AID MEASURES

Inhalation

Move to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.

Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.
Eye Contact	Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.
Ingestion	Call a poison control center or doctor immediately for treatment advice. Do not induce vomiting or give anything by mouth to an unconscious person. Drink 2 glasses of water and induce vomiting by touching back of throat with finger.
Most important symptoms and effects, both acute and delayed	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.
Protection of first-aiders	Use personal protective equipment. See Section 8 for more detail.
Indication of immediate medical attention and special treatment needed, if necessary	This product contains 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 ensure that these symptoms do not recur as atropinization wears off. If in eyes, instill one drop of homatropine. Treatment is symptomatic and supportive.

Section 5: FIRE FIGHTING MEASURES

Suitable Extinguishing Media	Dry chemical, Carbon dioxide (CO ₂), Alcohol-resistant foam, Water spray. Avoid heavy hose streams.
Unsuitable extinguishing media	No information available
Specific Hazards Arising from the Chemical	Dry or powdered ingredients are combustible. Dispersal of finely divided dust from products into air may form mixtures that are ignitable and explosive. Minimize airborne dust generation and eliminate sources of ignition.
Protective equipment and precautions for firefighters	Isolate fire area. Evaluate upwind. As in any fire, wear self-contained breathing apparatus and full protective gear.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions	Isolate and post spill area. Remove all sources of ignition. Wear protective gloves/clothing and eye/face protection. For personal protection see section 8.
Other	For further clean-up instructions, call FMC Emergency Hotline number listed in Section 1 "Product and Company Identification" above.
Environmental Precautions	Keep people and animals away from and upwind of spill/leak. Keep material out of lakes, streams, ponds, and sewer drains.
Methods for Containment	Use a wet sweeping compound or water to prevent dust formation.
Methods for cleaning up	Sweep up and shovel into suitable containers for disposal. Clean and neutralize spill area, tools and equipment for a minimum contact of one hour with vinegar-alcohol solution, then by bleach soap and water. Absorb rinsate and add to the collected waste. Dispose of waste as indicated in Section 13.

Section 7: HANDLING AND STORAGE

Handling	Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal.
Storage	Keep in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Keep out of reach of children and animals. Keep/store only in original container.
Materials to avoid	strong oxidizing agents, Strong bases, Strong acids.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

Component	China	Japan	Korea	Australia	Taiwan
Crystalline silica, quartz 14808-60-7 (85-95)	TWA: 0.7 mg/m ³ TWA: 0.3 mg/m ³ TWA: 1 mg/m ³ TWA: 0.5 mg/m ³ TWA: 0.2 mg/m ³ STEL: 2 mg/m ³ STEL: 1.4 mg/m ³ STEL: 1 mg/m ³ STEL: 0.6 mg/m ³ STEL: 0.4 mg/m ³ C1		TWA: 0.05 mg/m ³	TWA 0.1 mg/m ³	
Carbofuran 1563-66-2 (3)			TWA: 0.1 mg/m ³	TWA 0.1 mg/m ³	STEL 0.3 mg/m ³

Engineering measures	Apply technical measures to comply with the occupational exposure limits. When working in confined spaces (tanks, containers, etc.), ensure that there is a supply of air suitable for breathing and wear the recommended equipment.
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Personal protective equipment

Respiratory Protection	The product does not automatically present an airborne exposure concern during normal handling. In the event of an accidental discharge of the material which produces a heavy vapour or mist, workers should put on officially approved respiratory protection equipment with a universal filter type including particle filter.
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Hand Protection	Wear chemical protective gloves made of materials such as nitrile or neoprene.
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Eye/Face Protection	For dust, splash, mist or spray exposure, wear chemical protective goggles.
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Skin and Body Protection	Minimize skin contamination by following good industrial hygiene practices. Wear suitable protective clothing. Protective shoes or boots.
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Hygiene measures	Handle in accordance with good industrial hygiene and safety practice.
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Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Granules
Appearance	Granules
Odor	No information available
Color	Purple
Odor threshold	No information available
pH	No information available
Melting point/freezing point	No information available
Boiling Point/Range	No information available
Flash point	No information available
Evaporation Rate	No information available
Flammability (solid, gas)	No information available
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	No information available

Vapor density	No information available
Specific gravity	No information available
Water solubility	No information available
Solubility(ies)	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Viscosity, kinematic	No information available
Viscosity, dynamic	No information available
Density	1.36 - 1.43 g/cm ³ (similar formulation)
Bulk density	No information available

Section 10: STABILITY AND REACTIVITY

Reactivity	Not applicable
Stability	Stable under recommended storage conditions
Hazardous reactions	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to Avoid	Heat, flames and sparks.
Incompatible products	strong oxidizing agents, Strong bases, Strong acids.
Hazardous Decomposition Products	None under normal use.

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Numerical measures of toxicity - Product Information

LD50 Oral	Similar formulation: 200 mg/kg
LD50 Dermal	Similar formulation: > 2000 mg/kg
LC50 Inhalation	Similar formulation: 0.5 mg/L 4 hr (Calculated Estimated Acute Toxicity - EAT)
Skin corrosion/irritation	Similar formulation: Slightly irritating.
Serious eye damage/eye irritation	Similar formulation: Non-irritating.
Sensitization	Similar formulation: Non-sensitizing.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Mutagenicity	Carbofuran: Not genotoxic in laboratory studies.
Carcinogenicity	Carbofuran: No evidence of carcinogenicity from animal studies This product contains crystalline silica (quartz) in a non-respirable form. Inhalation of crystalline silica is unlikely to occur from exposure to this product. However, if granules are pulverized or crushed into a fine, respirable powder, silica exposure via inhalation is probable.
Reproductive toxicity	Carbofuran: No toxicity to reproduction in animal studies.
Developmental toxicity	Carbofuran: Not teratogenic in animal studies.
STOT - single exposure	Causes damage to organs. See listed target organs below.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure. See listed target organs below.
Chronic toxicity	Chronic exposure to silica dust may increase the risk of developing pneumoconiosis or silicosis, chronic diseases affecting the lungs, characterized by labored breathing, cough, reduction of work capacity, reduction of lung capacity, heart enlargement and failure.
Target organ effects	Nervous system, Acetylcholinesterase Inhibition.
Neurological effects	Carbofuran: Chronic exposure to animals has caused decreased cholinesterase activity (erythrocyte, plasma, and/or brain).
Other Adverse Effects	Repeated overexposure to crystalline silica for extended periods has caused acute silicosis.

Aspiration hazard No information available.

Chemical name	China	IARC
Crystalline silica, quartz		Group 1
IARC (International Agency for Research on Cancer) Group 1 - Carcinogenic to Humans		

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity

The environmental impact of this product has not been fully investigated.

Very toxic to aquatic life with long lasting effects.

Carbofuran (1563-66-2)				
Active Ingredient(s)	Duration	Species	Value	Units
Carbofuran	48 h EC50	Crustacea	0.75	mg/L
	72 h EC50	Algae	19	mg/L
	96 h LC50	Fish	0.18	mg/L
	21 d NOEC	Crustacea	0.23	µg/L
	96 h NOEC	Algae	3.2	mg/L
	21 d NOEC	Fish	5.22	µg/L

Persistence and degradability Carbofuran: Non-persistent. Does not readily hydrolyze. Not readily biodegradable.

Bioaccumulation Carbofuran: The substance does not have a potential for bioconcentration.

Mobility Carbofuran: Moderately mobile; expected to reach groundwater.

Other Adverse Effects No information available.

Section 13: DISPOSAL CONSIDERATIONS

Waste disposal methods Improper disposal of excess pesticide, spray mixture, or rinsate is prohibited. If these wastes cannot be disposed of by use according to label instructions, contact appropriate disposal authorities for guidance. Proper personal protective equipment, as described in Sections 7 and 8, must be worn while handling materials for waste disposal.

Contaminated Packaging Containers must be disposed of in accordance with local, state and federal regulations. Refer to the product label for container disposal instructions.

Section 14: TRANSPORT INFORMATION

IMDG/IMO

UN/ID no UN2757
 Proper Shipping Name Carbamate pesticide, solid, toxic
 Hazard class 6.1
 Packing Group III
 EmS No. F-A, S-A
 Marine Pollutant Carbofuran

ICAO/IATA

UN/ID no UN2757

Proper Shipping Name Carbamate pesticide, solid, toxic
Hazard class 6.1
Packing Group III
Limited quantity Carbofuran is an "RQ" quantity when this material meets or exceeds 200 lbs per package
Marine Pollutant Carbofuran

Section 15: REGULATORY INFORMATION

International Inventories

A food, food additive, drug, cosmetic, or device, when manufactured, processed or distributed in commerce for use as a food, food additive, drug, cosmetic, or device may not be subject to local notification requirements. Check local regulations for more information.

Chemical name	TSCA (United States)	DSL (Canada)	EINECS/ELINCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)
Crystalline silica, quartz 14808-60-7	X	X	X	X	X	X	X	X
Carbofuran 1563-66-2	X	X	X	X	X	X	X	X

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

Section 16: OTHER INFORMATION

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Revision note (M)SDS sections updated.

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End of Safety Data Sheet