



SAFETY DATA SHEET

Marshal 5 G

SDS # : 7623-A

Revision date: 2018-11-29

Format: AP

Version 3

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	Marshal 5 G
Product Code(s)	7623-A
Synonyms	CARBOSULFAN (FMC 35001): 2,3-dihydro-2,2-dimethyl-7-benzofuranyl [(dibutylamino)thio]methylcarbamate (CAS name); 2,3-dihydro-2,2-dimethylbenzofuran-7-yl (dibutylaminothio)methylcarbamate (IUPAC name)
Active Ingredient(s)	Carbosulfan
Chemical Family	Carbamate Pesticide
Recommended Use:	Insecticide.
Restrictions on Use:	Use as recommended by the label.
<u>Manufacturer/Supplier</u>	<p>FMC Corporation Agricultural Solutions 2929 Walnut Street Philadelphia, PA 19104 General Information: Phone: (215) 299-6000 E-Mail: msdsinfo@fmc.com</p> <p>Telephone: 86 21 20675888 Telefax: 86 21 20675858</p>
<u>Emergency telephone</u>	86 532 8388 9090

Section 2: HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 5
Carcinogenicity	Category 1A
STOT - single exposure	Category 1
Specific target organ toxicity (repeated exposure)	Category 1
Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 1

Label Elements



Signal Word

Danger

Hazard Statements

H302 - Harmful if swallowed
 H313 - May be harmful in contact with skin
 H410 - Very toxic to aquatic life with long lasting effects
 H350 - May cause cancer
 H370 - Causes damage to organs
 H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary Statements - Prevention

P264 - Wash face, hands and any exposed skin thoroughly after handling
 P270 - Do not eat, drink or smoke when using this product
 P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
 P272 - Contaminated work clothing should not be allowed out of the workplace
 P280 - Wear protective gloves
 P273 - Avoid release to the environment
 P202 - Do not handle until all safety precautions have been read and understood
 P280 - Wear protective gloves/protective clothing/eye protection/face protection
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray
 P280 - Wear eye protection/ face protection

Precautionary Statements - Response

P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
 P330 - Rinse mouth
 P308 + P313 - IF exposed or concerned: Get medical advice/ attention
 P314 - Get medical advice/ attention if you feel unwell
 P302 + P352 - IF ON SKIN: Wash with plenty of water and soap
 P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
 P363 - Wash contaminated clothing before reuse
 P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
 P330 - Rinse mouth
 P391 - Collect spillage

Precautionary Statements - Storage

P405 - Store locked up

Precautionary Statements - Disposal

P501 - Dispose of contents/container according to label directions

Other Information

None known.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms CARBOSULFAN (FMC 35001): 2,3-dihydro-2,2-dimethyl-7-benzofuranyl [(dibutylamino)thio]methylcarbamate (CAS name); 2,3-dihydro-2,2-dimethylbenzofuran-7-yl (dibutylaminothio)methylcarbamate (IUPAC name)

Chemical name	CAS-No	Weight %
Carbosulfan	55285-14-8	5
Crystalline silica, quartz	14808-60-7	80-90
Synthetic amorphous silica	112926-00-8	<5
Carbofuran	1563-66-2	<0.5

Section 4: FIRST AID MEASURES

Inhalation	Move to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.
Skin Contact	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.
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. Drink 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.
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. 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 otherwise controlled removal of exposure followed by symptomatic and supportive care.

Section 5: FIRE FIGHTING MEASURES

Suitable Extinguishing Media	Foam. Carbon dioxide (CO ₂). Dry chemical. Soft stream or water fog only if necessary.
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 suitable protective clothing, gloves 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. Keep out of waterways.
Methods for Containment	Use a wet sweeping compound or water to prevent dust formation. Dike to confine spill and absorb with non-combustible absorbent such as clay, sand or soil. Vacuum, shovel or pump waste into a drum and label contents for disposal.
Methods for cleaning up	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. Waste must be classified and labeled prior to recycling or disposal.
Dispose of waste as indicated in Section 13.

Section 7: HANDLING AND STORAGE

Handling	Handle in accordance with good industrial hygiene and safety practice. 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	Acids Strong oxidizing agents, Strong acids, Strong bases.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

Component	China	Japan	Korea	Australia	Taiwan
Crystalline silica, quartz 14808-60-7 (80-90)	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: 1.4 mg/m ³ STEL: 0.6 mg/m ³ STEL: 2 mg/m ³ STEL: 1 mg/m ³ STEL: 0.4 mg/m ³ C1	OEL: 0.03 mg/m ³ C1	TWA: 0.05 mg/m ³	TWA 0.1 mg/m ³	
Synthetic amorphous silica 112926-00-8 (<5)	TWA: 5 mg/m ³ STEL: 10 mg/m ³		TWA: 10 mg/m ³	TWA 10 mg/m ³	
Carbofuran 1563-66-2 (<0.5)			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.
Hand Protection	Wear chemical protective gloves made of materials such as nitrile or neoprene.
Eye/Face Protection	For dust, splash, mist or spray exposure, wear chemical protective goggles.
Skin and Body Protection	Wear long-sleeved shirt, long pants, socks, and shoes.
Hygiene measures	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 or bathe at the end of working. Remove and wash contaminated clothing before re-use. Launder work clothing separately from regular household laundry.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Dry powder, Solid
Appearance	Red Granules
Odor	Slight Phenolic
Color	Red

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	No information available
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
Relative density	85 - 89 lb/ft ³
Bulk density	No information available

Section 10: STABILITY AND REACTIVITY

Reactivity	None under normal use conditions
Stability	Stable under recommended storage conditions
Hazardous reactions	Contact with aqueous acids may produce carbofuran.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to Avoid	Excessive heat. Extreme risk of explosion by shock, friction, fire or other sources of ignition.
Incompatible products	Strong oxidizing agents, Strong acids, Strong bases.
Hazardous Decomposition Products	Burning produces obnoxious and toxic fumes: Carbon oxides (COx), Sulfur oxides, Nitrogen oxides (NOx).

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

Numerical measures of toxicity - Product Information

LD50 Oral	905 mg/kg (rat)
LD50 Dermal	> 2000 mg/kg (rabbit)
LC50 Inhalation	> 4.78 mg/L 4 hr (rat)
Skin corrosion/irritation	Minimally irritating.
Serious eye damage/eye irritation	No information available.
Sensitization	Non-sensitizing.

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

Mutagenicity	Carbosulfan, Carbofuran: Not genotoxic in animal studies.
Carcinogenicity	Carbosulfan, 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

Reproductive toxicity	probable. Carbosulfan, Carbofuran: No toxicity to reproduction in animal studies.
Developmental toxicity	Carbosulfan: Caused fetal incomplete ossification and major vessel variations in animal studies. Carbofuran: Not teratogenic in animal studies.
STOT - single exposure STOT - repeated exposure	Causes damage to organs. See listed target organs below. 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, bladder, Gastrointestinal tract (GI), Red blood cells.
Neurological effects	Carbosulfan, Carbofuran: Chronic exposure of laboratory animals has caused decreased cholinesterase activity (erythrocyte, plasma, and/or brain).
Aspiration hazard	No information available.

Chemical name	China	IARC
Crystalline silica, quartz		Group 1
Synthetic amorphous silica		Group 3

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.

Carbosulfan (55285-14-8)				
Active Ingredient(s)	Duration	Species	Value	Units
Carbosulfan	48 h EC50	Crustacea	1.5	µg/L
	72 h EC50	Algae	47	mg/L
	96 h LC50	Fish	0.015	mg/L
	21 d NOEC	Crustacea	3.2	µg/L
	21 d NOEC	Fish	3.0	µg/L

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 Carbosulfan: Non-persistent. Readily hydrolyzed. Not readily biodegradable. Carbofuran: Non-persistent. Does not readily hydrolyze. Not readily biodegradable.

Bioaccumulation Carbosulfan: The substance has some potential to bioaccumulate in the environment.

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

Mobility

Carbosulfan: Slightly mobile. Not expected to reach groundwater. 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 UN3077
 Proper Shipping Name Environmentally hazardous substance, solid, n.o.s.
 Hazard class 9
 Packing Group III
 EmS No. F-A, S-F
 Marine Pollutant Carbosulfan, Carbofuran

ICAO/IATA

UN/ID no UN3077
 Proper Shipping Name Environmentally hazardous substance, solid, n.o.s.
 Hazard class 9
 Packing Group III
 Marine Pollutant Carbosulfan, 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)
Carbosulfan 55285-14-8			X			X		
Crystalline silica, quartz 14808-60-7	X	X	X	X	X	X	X	X
Synthetic amorphous silica 112926-00-8		X		X	X	X	X	X
Carbofuran 1563-66-2	X	X	X	X	X	X	X	X

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

Prepared By:

FMC Corporation

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Revision note

(M)SDS sections updated.

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End of Safety Data Sheet