SAFETY DATA SHEET
Marshal 25 DS

SDS # : 50000359
Revision date:
27-04-2021
Version 2

Format: BR

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name Marshal 25 DS

Other means of identification

Product Code(s) 50000359, FO000006-CR-A

UN/ID no UN2757

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

Formula $C_{20}H_{32}N_2O_3S$ (Carbosulfan)

Chemical Family Carbamate Pesticide

Recommended use of the chemical and restrictions on use

Recommended Use: Insecticide.

Restrictions on Use: Use as recommended by the label.

Details of the supplier of the safety data sheet

Address:

FMC Corporation
2929 Walnut Street
Philadelphia, PA 19104
(800) 526-3649
SDS-Info@fmc.com

Distributor

FMC Corporation
Agricultural Solutions
2929 Walnut Street
Philadelphia, PA 19104
General Information:
Phone: (215) 299-6000
E-Mail: sdsinfo@fmc.com

Emergency telephone number:
1 703 / 741-5970 (CHEMTREC - International)
911
Guatemala - Center of Toxicological Information and Assistance - (502) 2251-3560 / 2232-0735
El Salvador - Rosales National Hospital - (503) 2231-9262
Honduras - Hospital School - (504) 232-6105

Nicaragua - National Center of Toxicology - (505) 2289-4700 ext. 1294 cel. 8755-0983
Costa Rica - National Center of Poisoning - (506) 2223-1028; 800-INTOXICA
Panama Center of Research and Information on Medications and Toxicology (507) 523-4948
Dominican Republic - Drug Information and Poisoning Center - (809) 562-6601 Ext. 1801

Section 2: HAZARDS IDENTIFICATION

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This material is considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

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

Signal Word:: **Danger**

Hazard Statements
H330 - Fatal if inhaled
H301 - Toxic if swallowed
H313 - May be harmful in contact with skin
H370 - Causes damage to organs
H372 - Causes damage to organs through prolonged or repeated exposure
Precautionary Statements
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
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P273 - Avoid release to the environment
P284 - Wear respiratory protection
P271 - Use only outdoors or in a well-ventilated area
Precautionary Statements - Response
P308 + P311 - If exposed or concerned: Call a POISON CENTER or doctor
IF ON SKIN
P302 - IF ON SKIN
P312 - Call a POISON CENTER or doctor if you feel unwell
IF INHALED
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P310 - Immediately call a POISON CENTER or doctor
IF SWALLOWED
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

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/preparation Mixture

Chemical Family Carbamate Pesticide

Hazardous Components

Chemical name	CAS-No	Weight %
Carbosulfan	55285-14-8	25
Carbofuran	1563-66-2	<1
Calcium Silicate	1344-95-2	25-35

Synonyms are provided in Section 1.

Section 4: FIRST AID MEASURES

FIRST AID MEASURES

General Advice Do not induce vomiting or give anything by mouth to an unconscious person. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Bring the SDS, product label and package insert when seeking medical assistance.

Eye Contact Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for further treatment advice.

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.

Inhalation Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. 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.

Protection of first-aiders .

Most important symptoms and effects, both acute and delayed

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.

Indication of any immediate medical attention and special treatment needed

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
Do not spread material with high pressure water streams.

Specific extinguishing methods
Evacuate area and fight fire from a safe distance. Very toxic to aquatic life with long lasting effects. Dike to prevent runoff.

Special protective equipment for fire-fighters
Wear self-contained breathing apparatus and protective suit. Use personal protective equipment.

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Hazardous Combustion Products
Carbon oxides (COx). Nitrogen oxides (NOx). Sulfur oxides.

Explosive properties

Sensitivity to Mechanical Impact No information available.
Sensitivity to Static Discharge No information available.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

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

Environmental Precautions Keep people and animals away from and upwind of spill/leak. Very toxic to aquatic life with long lasting effects. Keep material out of lakes, streams, ponds, and sewer drains. Keep out of waterways.

C. Methods and material for containment and cleaning up

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. Waste must be classified and labeled prior to recycling or disposal. Dispose of waste as indicated in Section 13.

Section 7: HANDLING AND STORAGE

Precautions for Safe Handling

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal.

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.

Conditions for safe storage, including any incompatibilities

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.

Incompatible products None known.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines
This product, as supplied, contains hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Hazardous Components

Chemical name	Brazil	Chile	Argentina	Venezuela	Mexico	ACGIH TLV
Carbofuran 1563-66-2	TWA: 0.1 mg/m³	TWA: 0.09 mg/m³	TWA: 0.1 mg/m³	TWA: 0.1 mg/m³	Mexico: TWA 0.1 mg/m³	TWA: 0.1 mg/m³
Calcium Silicate 1344-95-2			TWA: 10 mg/m³	TWA: 10 mg/m³	Mexico: TWA 10 mg/m³	

Appropriate engineering controls

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.

Individual protection measures, such as personal protective equipment

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.

Hand Protection Wear chemical protective gloves made of materials such as nitrile or neoprene

Respiratory Protection For dust, splash, mist or spray exposures wear a elastomeric full-face or half mask respirator with appropriate cartridges and/or filters which is approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification organization).

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.

General information If the product is used in mixtures, it is recommended that you contact the appropriate protective equipment suppliers. These recommendations apply to the product as supplied

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State Dry powder
Appearance Powder
Odor Phenolic
Color Red

Odor threshold	No information available
pH	7-9 (1% solution at 25°C)
Melting point/freezing point	No information available
Boiling Point/Range	
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 data available
Solubility in other solvents	No information available
Surface tension	No data 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
Explosive properties	No information available
Corrosivity	No information available
Oxidizing properties	No information available
Softening point	No information available
Molecular weight	No data available
VOC content (%)	No information available
Relative density	19 - 23
Bulk density	No information available

Section 10: STABILITY AND REACTIVITY

Reactivity
None under normal use conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
Contact with aqueous acids may produce carbofuran, carbon disulfide, and methylamine.

Hazardous polymerization
Hazardous polymerization does not occur.

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
None known.

Hazardous Decomposition Products
Burning produces obnoxious and toxic fumes: Carbon oxides (COx), Sulfur oxides, Nitrogen oxides (NOx).

Section 11: TOXICOLOGICAL INFORMATION

Product Information

LD50 Oral 107 mg/kg (rat)
LD50 Dermal > 2000 mg/kg (rat)

LC50 Inhalation (dust) 0.1 mg/L 4 hr (rat)

Information on likely routes of exposure

Inhalation: There are no data available for this product

Eye Contact: Slightly or non-irritating (rabbit).

Skin Contact: Slightly or non-irritating (rabbit).

Ingestion: Carbosulfan is a reversible cholinesterase-inhibiting pesticide, which elicits symptoms in humans typical of cholinesterase inhibition including headache, 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 cholinesterase inhibition may result in death.

Information on toxicological effects

Symptoms: This substance is a reversible cholinesterase-inhibiting pesticide, which elicits symptoms in humans typical of cholinesterase inhibition including headache, 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 cholinesterase inhibition may result in death.

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

Skin corrosion/irritation: Non-irritating

Serious eye damage/eye irritation: Minimally irritating.

Sensitization: Non-sensitizing.

Mutagenicity: Carbosulfan: Did not show mutagenic effects in animal experiments.

Carcinogenicity: Carbosulfan: Did not show carcinogenic effects in animal experiments. Not recognized as carcinogenic by Research Agencies (IARC, NTP, OSHA, ACGIH).

Reproductive toxicity: Carbosulfan: No toxicity to reproduction in animal studies.

STOT - single exposure: May cause 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.

Developmental toxicity: Carbosulfan: Not teratogenic in animal studies.

Chronic toxicity: Effects are expected to be similar to those that are seen with acute toxicity.

Target organ effects: Central Nervous System (CNS), kidney, Liver, Respiratory System, Gastrointestinal tract (GI).

Neurological effects: Carbosulfan: Chronic exposure of laboratory animals has caused decreased cholinesterase activity (erythrocyte, plasma, and/or brain).

Aspiration hazard: The product does not present an aspiration pneumonia hazard.

Section 12: ECOLOGICAL INFORMATION

The environmental impact of this product has not been fully investigated. Very toxic to aquatic life with long lasting effects.

Hazardous Components

Chemical name	**Toxicity to fish**	**Toxicity to daphnia and other aquatic invertebrates**	**Toxicity to algae**
Carbosulfan	96 h LC50: 0.015 mg/L 21 d NOEC: 0.003 mg/L	48 h EC50: 0.0015 mg/L 21 d NOEC: 0.0032 mg/L	72 h EC50: 47 mg/L
Carbofuran	96 h LC50: 0.18 mg/L 21 d NOEC: 0.0052 mg/L	48 h EC50: 0.75 mg/L 21 d NOEC: 0.00023 mg/L	72 h EC50: 19 mg/L 96 hr NOEC: 3.2 mg/L

Persistence and degradability: Carbosulfan: Non-persistent. Readily hydrolyzed. Not readily biodegradable.

Bioaccumulation: Carbosulfan: The substance has a potential for bioconcentration.

Mobility: Carbosulfan: Slightly mobile.

Other Adverse Effects: See product label for additional application instructions relating to environmental precautions

Section 13: DISPOSAL CONSIDERATIONS

Waste disposal methods Pesticide wastes are toxic. 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 containers and packages Containers must be disposed of in accordance with local regulations. Refer to the product label for container disposal instructions. Do not reuse this container for any other purpose.

Section 14: TRANSPORT INFORMATION

IMDG/IMO:

UN/ID no	UN2757
Hazard class	6.1
Packing Group	II
EmS No.	F-A, S-A
Special Provisions	EmS Number: F-A, S-A
Environmental Hazards	Carbosulfan

ICAO/IATA:

UN/ID no	UN2757
Hazard class	6.1
Packing Group	II

DOT

Hazard class	6.1
Packing Group	II
Marine Pollutant	Carbosulfan.

TDG: The "Marine Pollutant" marking is only applicable when shipped by vessel, and is not applicable when shipped only by road or rail in Canada.

UN/ID no	UN2757
Hazard class	6.1
Packing Group	II
Marine Pollutant	Carbosulfan.

Section 15: REGULATORY 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		
Carbofuran 1563-66-2	X	X	X	X	X	X	X	X
Calcium Silicate 1344-95-2	X	X	X	X	X	X	X	X

Section 16: OTHER INFORMATION

Prepared By: FMC Corporation

Revision date: 27-04-2021

Revision note Product Code, Chemtrec number.

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