



SAFETY DATA SHEET

Marshal 35 DS

SDS #: 1328-A

Revision date: 2018-05-21

Format: AP

Version 3

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name	Marshal 35 DS
Product Code(s)	1328-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
Alternate Commercial Name	Eltra™; Marshal® 35 ST(D); Marshal 35 DS
Chemical Family	Carbamate Pesticide
Recommended Use:	Insecticide.
Restrictions on Use:	Use as recommended by the label.
<u>Manufacturer/Supplier</u>	<p>FMC Corporation 2929 Walnut Street Philadelphia, PA 19104 (215) 299-6000 (General Information) msdsinfo@fmc.com (E-Mail General Information)</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 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin sensitization	Category 1B
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

H312 - Harmful in contact with skin
 H317 - May cause an allergic skin reaction
 H370 - Causes damage to organs
 H372 - Causes damage to organs through prolonged or repeated exposure
 H410 - Very toxic to aquatic life with long lasting effects

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
 P280 - Wear protective gloves/protective clothing/eye protection/face protection
 P271 - Use only outdoors or in a well-ventilated area
 P272 - Contaminated work clothing should not be allowed out of the workplace
 P260 - Do not breathe dust/fume/gas/mist/vapors/spray
 P273 - Avoid release to the environment

Precautionary Statements - Response

P321 - Specific treatment (see supplemental first aid instructions on this label)
 P308 + P311 - If exposed or concerned: Call a POISON CENTER or doctor
 P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
 P311 - Call a POISON CENTER or doctor
 P302 + P352 - IF ON SKIN: Wash with plenty of water and soap
 P312 - Call a POISON CENTER or doctor if you feel unwell
 P363 - Wash contaminated clothing before reuse
 P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
 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 to an approved waste disposal plant

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	36.81
Calcium Silicate	1344-95-2	35-45
Carbofuran	1563-66-2	<1

Section 4: FIRST AID MEASURES

Inhalation

Move to fresh air. If person is not breathing, contact emergency medical services, then give

artificial respiration, preferably mouth-to-mouth, if possible. 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.

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.

Ingestion

Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Symptoms of exposure may include headache, light-headedness, weakness, abdominal cramps, nausea, excessive salivation, perspiration, blurred vision, tearing, pin-point pupils, excessive respiratory secretions, cyanosis, convulsions, generalized 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 (CO₂). Dry chemical. Soft stream or water fog only if necessary.

Unsuitable extinguishing media

No information available

Specific Hazards Arising from the Chemical

Keep product and empty container away from heat and sources of ignition.

Protective equipment and precautions for firefighters

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

If appropriate, surface water drains should be covered. Minor spills on the floor or other impervious surface should immediately be swept up or preferably vacuumed up using equipment with high efficiency final filter. Transfer to suitable containers. Clean area with detergent and much water. Absorb wash liquid onto inert absorbent such as universal binder, Fuller's earth, bentonite or other absorbent clay and collect in suitable containers. The used containers should be properly closed and labelled.

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

Handling	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Remove and wash contaminated clothing before re-use. 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 out of the reach of children. Keep in properly labeled containers. Keep away from food, drink and animal feedingstuffs.
Materials to avoid	Strong acids strong bases Strong oxidizing agents

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

Component	China	Japan	Korea	Australia	Taiwan
Calcium Silicate 1344-95-2 (35-45)			TWA: 10 mg/m ³	TWA 10 mg/m ³	
Carbofuran 1563-66-2 (<1)			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. Maintain eye wash fountain and quick-drench facilities in work area.
Skin and Body Protection	Wear protective gloves/clothing.
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
Appearance	Powder
Odor	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	
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	16 - 20 lb/cu ft
Bulk density	No information available

Section 10: STABILITY AND REACTIVITY

Reactivity	Not applicable
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	Heat, flames and sparks.
Incompatible products	Strong acids. strong bases. Strong oxidizing agents.
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	131 mg/kg (rat)
LD50 Dermal	> 2,000 mg/kg (rat)
LC50 Inhalation	0.161 mg/L 4 hr (Calculated Estimated Acute Toxicity - EAT)
Skin corrosion/irritation	Non-irritating.
Serious eye damage/eye irritation	Mildly irritating.
Sensitization	May cause sensitization by skin contact.

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

Mutagenicity	Carbosulfan: Not genotoxic in laboratory studies.
Carcinogenicity	Carbosulfan: No evidence of carcinogenicity from animal studies.
Reproductive toxicity	Carbosulfan: No toxicity to reproduction in animal studies.
Developmental toxicity	Carbosulfan: Caused fetal incomplete ossification and major vessel variations 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	Effects are expected to be similar to those that are seen with acute toxicity.
Target organ effects	Nervous system, Bladder, Gastrointestinal tract, Red blood cells, Acetylcholinesterase Inhibition.
Neurological effects	Carbosulfan: Chronic exposure of laboratory animals has caused decreased cholinesterase activity (erythrocyte, plasma, and/or brain).

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.

Aspiration hazard

No information available.

Chemical name	China	IARC
Carbosulfan		Group 2A

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 a potential for bioconcentration. 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 Dispose of in accordance with local regulations.

Section 14: TRANSPORT INFORMATION

IMDG/IMO

UN/ID no UN2757
Proper Shipping Name Carbamate pesticide, solid, toxic
Hazard class 6.1
Packing Group II
EmS No. F-A, S-A
Special Provisions EmS Number: F-A, S-A

ICAO/IATA

UN/ID no UN2757
Proper Shipping Name Carbamate pesticide, solid, toxic
Hazard class 6.1
Packing Group II

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		
Calcium Silicate 1344-95-2	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

Prepared By: FMC Corporation

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Revision date: 2018-05-21

Revision note (M)SDS sections updated.

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End of Safety Data Sheet