



MATERIAL SAFETY DATA SHEET

Manufacturer/information service:

ZHEJIANG RAYFULL CHEMICALS CO., LTD

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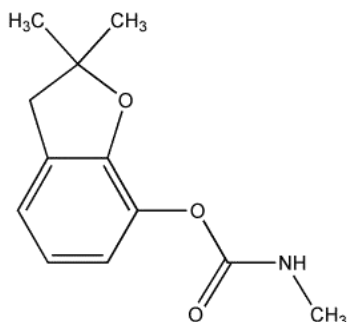
1. Chemical Product Identification

Product name: Carbofuran 98% TC

Molecular Formula: C₁₂H₁₅NO₃

Molecular Weight: 221.26 g/mol

Structural Formula:



Chemical name: 2,3-dihydro-2,2-dimethylbenzofuran-7-yl methylcarbamate

Form: Crystalline solid

Color: White

Odor: Slightly phenolic.

CAS No.: 1563-66-2

2. Composition / Information On Ingredients

Composition	CAS No.	Content %
Carbofuran	1563-66-2	98.0
Other ingredients	--	2.0



3. Hazards Identification

Effects of Overexposure

Emergency Overview: Purple granules with a slightly phenolic odor. Slight combustible. May support combustion at elevated temperatures.

Degrade 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. Moderate toxicity to fish and aquatic organisms. Keep out of drains and water courses. Moderate oral toxicity.

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, increase 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 by Exposure: None presently known.

4. First Aid Measures

Eyes: Flush with water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

Skin: Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

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

Ingestion: Drink 1 or 2 glasses of water and induce vomiting by touching the back of the throat with a finger or by giving syrup of ipecac. Never induce vomiting or give anything by mouth to an unconscious person. Contact a medical doctor.

5. Fire-Fighting Measures

Extinguishing Media: Foam, CO₂, or dry chemical. Soft stream water fog only if necessary. Contain all runoff.

Degree of Fire/Explosion Hazard: Slightly combustible. Carbofuran will burn if ignited and degrades at temperatures above 130°C (266°F).

Special Fire Fighting Procedures: Isolate fire area. Evacuate downwind.



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Wear full protective clothing and self-contained breathing apparatus. Do not breathe smoke, gases, or vapor generated.

Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide, and methyl isocyanate

6. Accidental Release Measures

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 streams and sewers. Large spills should be covered to prevent dispersal. For dry materials, 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 noncombustible 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 waste according to the method outlined in Section 13, "Disposal Considerations."

7. 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

Personal protective recommendations for mixing or applying this product are prescribed on the product label. Information stated below provides useful, additional guidance for individuals whose use or handling of this product is not guided by the product label.

Ventilation: Use local exhaust at all process locations where dust may be emitted. Ventilate all transport vehicles prior to unloading. Work 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 rubber rain 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).

Eye Protection: For dust exposure, wear chemical protective goggles or a face shield.

Respiratory Protection: For dust exposure wear, as a minimum, a properly fitted half-face or full-face air-purifying respirator which is approved for pesticides. Respirator use and selection must be based on airborne concentrations.

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.

Personal Hygiene: Clean water should be available for washing in case of eye or skin contamination. Wash skin prior to eating, drinking, or using tobacco. Shower at the end of the workday.

9. Physical and Chemical Properties

Melting point: 153.1°C

Vapor pressure: 0.08mPa at 25°C

Relative Density: 1.26 g/mL at 20°C

Partition Coefficient: Log P: 1.8 at 20°C pH 7

Water Solubility: 322 mg/L at 20°C

Solubility in Other Solvents: acetone 105.2.; methanol 71.7; n-heptane 0.11; ethyl acetate 61.5(all in mg/L at 20°C).

10. Stability and Reactivity

Stability: Stable.

Conditions/Materials to Avoid (Incompatibility): Excessive heat and fire.

11. Toxicological Information

Acute oral LD₅₀ for rat: 7 mg/kg.

Acute dermal LD₅₀ for rat: >1000 mg/kg.

Acute inhalation LC₅₀ (4 h) for rat: 0.05 mg/L.

Skin irritation: mildly-irritating to skin (rabbits).

Eye irritation: mildly-irritating to eyes (rabbits).



Skin sensitization: Not a skin sensitizer (guinea pigs).

12. Ecological and Eco-toxicological Information

Effect on birds: high toxicity to birds, acute LD₅₀ for Mallard ducks is 0.71 mg/kg.

Effect on fish: moderate toxicity to fish, acute 96 hour LC₅₀ for Bluegill sunfish is 0.18 mg/L.

Effect on aquatic invertebrates: high toxicity to aquatic invertebrates, acute 48 hour EC₅₀ for Daphnia magna is 0.0094 mg/L.

Effect on algae: moderate toxicity to algae, acute 72 hour EC₅₀ for Pseudokirchneriella subcapitata is 6.5 mg/L.

Effect on honeybees: high toxicity to honeybees, contact acute 48 hour LD₅₀ is 0.036 µg/bee; Oral acute 48 hour LD₅₀ is 0.05 µg/bee.

Effect on earthworms: moderate toxicity to earthworms, acute 14 day LC₅₀ for Eisenia foetida is 224 mg/kg.

13. Disposal Considerations

Open dumping or burning of this pesticide 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 and national laws and regulations. However, because acceptable methods of disposal may vary by location and regulatory requirements may change, the appropriate regulatory agencies should be contacted prior to disposal.

Completely empty bag into application equipment. Then dispose of empty bag by incineration, or, if allowed by national, state, and local authorities, by burning. If burned, stay out of smoke.

14. Transport Information

Class NO. : 6.1;

UN NO.: 2757;

P.G.: I

15. Reactivity data

Not Applicable



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16. Other Information

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the product as such. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear. It is the responsibility of persons on receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produce formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.