

2,4-D ESTERS

DES

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Butyl 2,4-dichlorophenoxyacetate 2,4-Dichlorophenoxyacetic acid, butoxyethyl ester Isopropyl 2, 4-dichlorophenoxy acetate	Liquid Yellowish brown Fuel oil-like odor Sinks in water.
Keep people away. Shut off ignition sources. Call fire department. Avoid contact with liquid. Notify local health and pollution control agencies. Protect water intakes.	
Fire	Combustible. Irritating gases may be produced when heated. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemicals, foam or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.
Exposure	CALL FOR MEDICAL AID. LIQUID Irritating to skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED, and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.
Water Pollution	Dangerous to aquatic life in high concentrations. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Contain
Collection Systems: Skim; Pump
Clean shore line
Do not burn

2. CHEMICAL DESIGNATIONS

- 2.1 **CG Compatibility Group:** Not listed.
2.2 **Formula:** 2,4-Cl₂C₆H₃OC(=O)R, where
R=C₄H₉, C₃H₇, or CH₂CH₂OC₄H₉
2.3 **IMO/UN Designation:** Not listed
2.4 **DOT ID No.:** 2765
2.5 **CAS Registry No.:** 94-11-1
2.6 **NAERG Guide No.:** 152
2.7 **Standard Industrial Trade Classification:** 51616

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Face shield or goggles, rubber gloves
3.2 **Symptoms Following Exposure:** Contact with eyes may cause mild irritation.
3.3 **Treatment of Exposure:** INGESTION: if large amounts are swallowed, induce vomiting and get medical help. EYES: flush with plenty of water and see a doctor. SKIN: flush with water, wash with soap and water.
3.4 **TLV-TWA:** Not listed.
3.5 **TLV-STEL:** Not listed.
3.6 **TLV-Ceiling:** Not listed.
3.7 **Toxicity by Ingestion:** Grade 2 or 3; LD₅₀ = 320-617 mg/kg
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Currently not available
3.10 **Vapor (Gas) Irritant Characteristics:** Currently not available
3.11 **Liquid or Solid Characteristics:** Currently not available
3.12 **Odor Threshold:** Currently not available
3.13 **IDLH Value:** Not listed.
3.14 **OSHA PEL-TWA:** Not listed.
3.15 **OSHA PEL-STEL:** Not listed.
3.16 **OSHA PEL-Ceiling:** Not listed.
3.17 **EPA AEGL:** Not listed

4. FIRE HAZARDS

- 4.1 **Flash Point:**
> 175°F O.C.
4.2 **Flammable Limits in Air:** Currently not available
4.3 **Fire Extinguishing Agents:** Foam, dry chemical, carbon dioxide
4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective.
4.5 **Special Hazards of Combustion Products:** Irritating hydrogen chloride vapor may form in fire.
4.6 **Behavior in Fire:** Currently not available
4.7 **Auto Ignition Temperature:** Currently not available
4.8 **Electrical Hazards:** Currently not available
4.9 **Burning Rate:** Currently not available
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** Not pertinent
4.12 **Flame Temperature:** Currently not available
4.13 **Combustion Molar Ratio (Reactant to Product):** Not pertinent
4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
5.2 **Reactivity with Common Materials:** May attack some forms of plastics
5.3 **Stability During Transport:** Stable
5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
5.5 **Polymerization:** Not pertinent
5.6 **Inhibitor of Polymerization:** Not pertinent

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**
350 ppm/24 hr/bass, bluegill/50% kill/
fresh water
1.0-5.0 ppm/96 hr/oyster/39% shell
growth disease/salt water
6.2 **Waterfowl Toxicity:** LD₅₀ = 2025.0 mg/kg
6.3 **Biological Oxygen Demand (BOD):**
Currently not available
6.4 **Food Chain Concentration Potential:**
None
6.5 **GESAMP Hazard Profile:**
Bioaccumulation: T
Damage to living resources: 3
Human Oral hazard: 2
Human Contact hazard: I
Reduction of amenities: XX

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Technical, 99%; 64% in petroleum oil
7.2 **Storage Temperature:** Ambient
7.3 **Inert Atmosphere:** No requirement
7.4 **Venting:** Open
7.5 **IMO Pollution Category:** Currently not available
7.6 **Ship Type:** Currently not available
7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Keep Away From Food
8.2 **49 CFR Class:** 6.1
8.3 **49 CFR Package Group:** III
8.4 **Marine Pollutant:** Yes
8.5 **NFPA Hazard Classification:** Not listed
8.6 **EPA Reportable Quantity:** 100 pounds
8.7 **EPA Pollution Category:** B
8.8 **RCRA Waste Number:** U240
8.9 **EPA FWPCA List:** Yes

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
9.2 **Molecular Weight:** 234-291
9.3 **Boiling Point at 1 atm:** Very high
9.4 **Freezing Point:** Not pertinent
9.5 **Critical Temperature:** Not pertinent
9.6 **Critical Pressure:** Not pertinent
9.7 **Specific Gravity:** 1.088-1.237 at 20°C (liquid)
9.8 **Liquid Surface Tension:** Currently not available
9.9 **Liquid Water Interfacial Tension:** Currently not available
9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
9.11 **Ratio of Specific Heats of Vapor (Gas):**
Not pertinent
9.12 **Latent Heat of Vaporization:** Currently not available
9.13 **Heat of Combustion:** Currently not available
9.14 **Heat of Decomposition:** Not pertinent
9.15 **Heat of Solution:** Not pertinent
9.16 **Heat of Polymerization:** Not pertinent
9.17 **Heat of Fusion:** Currently not available
9.18 **Limiting Value:** Currently not available
9.19 **Reid Vapor Pressure:** Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
68	71.790		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	I N S O L U B L E		N O T P E R T I N E N T		N O T P E R T I N E N T		N O T P E R T I N E N T