

# 2,4,5-T ESTERS

TES

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Butoxypropyl trichlorophenoxyacetate Butyl 2,4,5-trichlorophenoxyacetate Isocetyl trichlorophenoxyacetate	Liquid  Sinks in water.  Yellowish brown  Mild odor
Keep people away. Avoid contact with liquid. Notify local health and pollution control agencies.	
<b>Fire</b>	Combustible. Irritating gases may be produced when heated. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemicals or carbon dioxide. Water and foam may be ineffective on fire. Cool exposed containers with water.
<b>Exposure</b>	CALL FOR MEDICAL AID.  LIQUID Irritating to skin and eyes. If swallowed will cause nausea and vomiting. 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.
<b>Water Pollution</b>	Effect of low concentrations on aquatic life is unknown. 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  
Collection Systems: Dredge  
Do not burn

### 2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.  
2.2 **Formula:** 2, 4, 5-Cl<sub>3</sub>C<sub>6</sub>H<sub>2</sub>OCH<sub>2</sub>COOR where R=C<sub>4</sub>H<sub>9</sub>, C<sub>8</sub>H<sub>17</sub>, etc.  
2.3 **IMO/UN Designation:** Not listed  
2.4 **DOT ID No.:** Not listed  
2.5 **CAS Registry No.:** 93-79-8  
2.6 **NAERG Guide No.:** Not listed.  
2.7 **Standard Industrial Trade Classification:** 51377

### 3. HEALTH HAZARDS

3.1 **Personal Protective Equipment:** Goggles or face shield and rubber gloves  
3.2 **Symptoms Following Exposure:** Ingestion causes intestinal disturbances. Contact with eyes or skin causes mild irritation; transient corneal injury may occur.  
3.3 **Treatment of Exposure:** INGESTION: promptly induce vomiting and get medical attention. EYES: flush with flowing water and get medical attention. SKIN: 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 3; LD<sub>50</sub> = 50-500 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:** 265-420°F O.C.  
4.2 **Flammable Limits in Air:** Currently not available  
4.3 **Fire Extinguishing Agents:** Water, foam, dry chemical, carbon dioxide  
4.4 **Fire Extinguishing Agents Not to Be Used:** Water or foam may cause frothing.  
4.5 **Special Hazards of Combustion**  
**Products:** Hydrogen chloride gas and other irritating fumes may form in fires.  
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:**  
Isocetyl ester: 26 ppm/48 hr/bluegill/TL<sub>50</sub>/fresh water  
Butoxypropyl ester: 17 ppm/48 hr/bluegill/TL<sub>50</sub>/fresh water  
6.2 **Waterfowl Toxicity:** Currently not available  
6.3 **Biological Oxygen Demand (BOD):** Currently not available  
6.4 **Food Chain Concentration Potential:** Currently not available  
6.5 **GESAMP Hazard Profile:** Not listed

### 7. SHIPPING INFORMATION

7.1 **Grades of Purity:** Technical, 96-99%; 55-65% solutions in kerosene or diesel oil, which are combustible.  
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:** Not listed.  
8.2 **49 CFR Class:** Not pertinent  
8.3 **49 CFR Package Group:** Not listed.  
8.4 **Marine Pollutant:** No  
8.5 **NFPA Hazard Classification:** Not listed  
8.6 **EPA Reportable Quantity:** 1000 pounds  
8.7 **EPA Pollution Category:** C  
8.8 **RCRA Waste Number:** Not listed  
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:** Mixtures, all greater than 300  
9.3 **Boiling Point at 1 atm:** Butyl: 639°F = 337°C = 610°K  
Butoxypropyl: 651°F = 344°C = 617°K  
Isocetyl: 770°F = 410°C = 683°K  
2-Ethylhexyl: -770°F = -410°C = -683°K  
9.4 **Freezing Point:** Not pertinent  
9.5 **Critical Temperature:** Not pertinent  
9.6 **Critical Pressure:** Not pertinent  
9.7 **Specific Gravity:** 1.2 at 20°C (liquid)  
9.8 **Liquid Surface Tension:** Not pertinent  
9.9 **Liquid Water Interfacial Tension:** Not pertinent  
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

# 2,4,5-T ESTERS

TES

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
34	76.089		N		N		N
36	76.020		O		O		O
38	75.950		T		T		T
40	75.879						
42	75.809		P		P		P
44	75.740		E		E		E
46	75.669		R		R		R
48	75.599		T		T		T
50	75.530		I		I		I
52	75.459		N		N		N
54	75.389		E		E		E
56	75.320		N		N		N
58	75.250		T		T		T
60	75.179						
62	75.110						
64	75.049						
66	74.980						
68	74.910						
70	74.839						
72	74.770						
74	74.700						
76	74.629						

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
	C	430	0.859	430	0.03599		N
	U	440	1.007	440	0.04170		O
	R	450	1.176	450	0.04816		T
	R	460	1.368	460	0.05544		
	E	470	1.587	470	0.06362		P
	N	480	1.836	480	0.07279		E
	T	490	2.116	490	0.08303		R
	L	500	2.432	500	0.09444		T
	Y	510	2.787	510	0.10710		I
		520	3.186	520	0.12120		N
	N	530	3.631	530	0.13670		E
	O	540	4.128	540	0.15390		N
	T	550	4.681	550	0.17280		T
		560	5.295	560	0.19350		
	A	570	5.976	570	0.21630		
	V	580	6.728	580	0.24110		
	A	590	7.557	590	0.26830		
	I	600	8.471	600	0.29790		
	L	610	9.474	610	0.33000		
	A	620	10.570	620	0.36490		
	B	630	11.780	630	0.40280		
	L	640	13.090	640	0.44370		
	E	650	14.530	650	0.48790		
		660	16.090	660	0.53550		