

Storage	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	99.99% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 99.99% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
t-Butyl methyl ether		1634-04-4	>99
Chlorothalonil		1897-45-6	0.005
Chlorthal-dimethyl		1861-32-1	0.005
BHC (delta isomer)		319-86-8	0.004
Chlorpyrifos		2921-88-2	0.0002

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Exposed individuals may experience eye tearing, redness, and discomfort. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Highly flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors or mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
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Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Vapors may form explosive mixtures with air. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not smoke. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist or vapor. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Avoid contact with clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Refrigeration recommended. Store away from incompatible materials (see Section 10 of the SDS). Keep in an area equipped with sprinklers.

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values Components

Components	Type	Value	Form
Chlorpyrifos (CAS 2921-88-2)	TWA	0.1 mg/m ³	Inhalable fraction and vapor.
t-Butyl methyl ether (CAS 1634-04-4)	TWA	50 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards Components

Components	Type	Value
Chlorpyrifos (CAS 2921-88-2)	STEL	0.6 mg/m ³
	TWA	0.2 mg/m ³

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

US - California OELs: Skin designation

Chlorpyrifos (CAS 2921-88-2) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Chlorpyrifos (CAS 2921-88-2) Skin designation applies.

US - Tennessee OELs: Skin designation

Chlorpyrifos (CAS 2921-88-2) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Chlorpyrifos (CAS 2921-88-2) Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

Chlorpyrifos (CAS 2921-88-2) Can be absorbed through the skin.

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Form	Liquid
Color	Not available.
Odor	Not available.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	-163.48 °F (-108.6 °C) estimated
Initial boiling point and boiling range	131.36 °F (55.2 °C) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	333.3 hPa estimated
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	0.740494 g/cm ³ estimated
Specific gravity	0.74 estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Expected to be a low ingestion hazard.
Inhalation	Prolonged inhalation may be harmful. May cause irritation to the respiratory system.
Skin contact	Causes skin irritation.
Eye contact	Causes eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics Exposed individuals may experience eye tearing, redness, and discomfort. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity May cause respiratory irritation. Expected to be a low hazard for usual industrial or commercial handling by trained personnel.

Components	Species	Test Results
BHC (delta isomer) (CAS 319-86-8)		
Acute		
<i>Dermal</i>		
LD50	Rat	0.9 mg/kg
<i>Oral</i>		
LD50	Rat	1000 mg/kg
<i>Other</i>		
LD50	Rabbit	75 mg/kg
Chlorothalonil (CAS 1897-45-6)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 10000 mg/kg
	Rat	> 2500 mg/kg
<i>Inhalation</i>		
LC50	Rat	0.31 mg/l, 1 Hours 0.1 mg/l, 4 Hours
<i>Oral</i>		
LD50	Dog	> 5000 mg/kg
	Mouse	3700 mg/kg
	Rat	10 mg/kg
<i>Other</i>		
LD50	Mouse	2500 mg/kg
	Rabbit	> 5000 mg/kg
	Rat	2500 mg/kg
Chlorpyrifos (CAS 2921-88-2)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	2000 mg/kg
	Rat	202 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 0.2 mg/l, 4 Hours
<i>Oral</i>		
LD50	Albino rat	179 - 252 mg/kg
	Goat	500 - 1000 mg/kg
	Guinea pig	504 mg/kg
	Mouse	60 mg/kg
	Pigeon	19 - 38 mg/kg
	Rabbit	1000 mg/kg
	Rat	82 mg/kg

Components	Species	Test Results
<i>Other</i> LD50	Mouse	192 mg/kg
Chlorthal-dimethyl (CAS 1861-32-1)		
Acute		
<i>Dermal</i> LD50	Rat	> 10000 mg/kg
<i>Inhalation</i> LC50	Rat	> 5 mg/l
<i>Oral</i> LD50	Rat	> 10000 mg/kg
t-Butyl methyl ether (CAS 1634-04-4)		
Acute		
<i>Dermal</i> LD50	Rabbit	> 10000 mg/kg
	Rat	> 2000 mg/kg
<i>Inhalation</i> LC50	Rat	85 mg/l, 4 Hours
<i>Oral</i> LD50	Rat	> 2000 mg/kg 4 ml/kg
<i>Other</i> LD50	Rabbit	> 10 ml/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Suspected of causing cancer.
IARC Monographs. Overall Evaluation of Carcinogenicity	
BHC (delta isomer) (CAS 319-86-8)	2B Possibly carcinogenic to humans.
Chlorothalonil (CAS 1897-45-6)	2B Possibly carcinogenic to humans.
t-Butyl methyl ether (CAS 1634-04-4)	3 Not classifiable as to carcinogenicity to humans.
US. National Toxicology Program (NTP) Report on Carcinogens	
BHC (delta isomer) (CAS 319-86-8)	Reasonably Anticipated to be a Human Carcinogen.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	
Not listed.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Respiratory tract irritation.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not available.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Components	Species	Test Results
BHC (delta isomer) (CAS 319-86-8)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia pulex)
Fish	LC50	Zebra danio (Danio rerio)
		0.68 mg/l, 48 hours
		1.15 - 2.17 mg/l, 96 hours

Components	Species		Test Results
Chlorothalonil (CAS 1897-45-6)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	0.081 - 0.113 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (Oncorhynchus mykiss)	0.0136 mg/l, 96 hours
Chlorpyrifos (CAS 2921-88-2)			
Aquatic			
Crustacea	EC50	Scud (Gammarus pulex)	0.0002 - 0.0005 mg/l, 48 hours
Fish	LC50	Tidewater silverside (Menidia peninsulae)	0.0007 - 0.0011 mg/l, 96 hours
Chlorthal-dimethyl (CAS 1861-32-1)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	20 - 35 mg/l, 48 hours
Fish	LC50	Bluegill (Lepomis macrochirus)	> 100 mg/l, 96 hours
t-Butyl methyl ether (CAS 1634-04-4)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	672 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential No data available.

Partition coefficient n-octanol / water (log Kow)

BHC (delta isomer)	4.14
Chlorpyrifos	5.27
Chlorthal-dimethyl	4.4
t-Butyl methyl ether	0.94

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN2398
UN proper shipping name	Methyl tert-butyl ether, solution
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB2, T7, TP1
Packaging exceptions	150
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN2398
UN proper shipping name	Methyl tert-butyl ether solution
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN2398
UN proper shipping name	METHYL tert-BUTYL ETHER solution
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-E, S-D
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not available.

DOT



IATA; IMDG



15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
One or more components are not listed on TSCA.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

BHC (delta isomer) (CAS 319-86-8) Listed.

Chlorpyrifos (CAS 2921-88-2) Listed.

t-Butyl methyl ether (CAS 1634-04-4) Listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
 Immediate Hazard - Yes
 Delayed Hazard - Yes
 Fire Hazard - Yes
 Pressure Hazard - No
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
t-Butyl methyl ether	1634-04-4	>99

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

t-Butyl methyl ether (CAS 1634-04-4)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations**US. Massachusetts RTK - Substance List**

BHC (delta isomer) (CAS 319-86-8)
 Chlorothalonil (CAS 1897-45-6)
 Chlorpyrifos (CAS 2921-88-2)
 t-Butyl methyl ether (CAS 1634-04-4)

US. New Jersey Worker and Community Right-to-Know Act

Chlorothalonil (CAS 1897-45-6) 500 LBS
 t-Butyl methyl ether (CAS 1634-04-4) 500 LBS

US. Pennsylvania RTK - Hazardous Substances

BHC (delta isomer) (CAS 319-86-8)
 Chlorothalonil (CAS 1897-45-6)
 Chlorpyrifos (CAS 2921-88-2)
 t-Butyl methyl ether (CAS 1634-04-4)

US. Rhode Island RTK

BHC (delta isomer) (CAS 319-86-8)
 Chlorothalonil (CAS 1897-45-6)
 Chlorpyrifos (CAS 2921-88-2)
 t-Butyl methyl ether (CAS 1634-04-4)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

BHC (delta isomer) (CAS 319-86-8) Listed: October 1, 1987
 Chlorothalonil (CAS 1897-45-6) Listed: January 1, 1989

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	10-10-2014
Version #	01
NFPA ratings	Health: 0 Flammability: 2 Instability: 0

Disclaimer

The above information is believed to be correct on the date it was last revised and must not be considered all inclusive. The information has been obtained only by a search of available literature and is only a guide for handling the chemicals. OSHA regulations require that if other hazards become evident, an upgraded SDS must be made available to the employee within three months. RESPONSIBILITY for updates lies with the employer and not with CHEM SERVICE, Inc.

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