



## SAFETY DATA SHEET

## SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

**Product identifier:** BOLTON™ Insecticide**Product use:** Insecticide.**Supplier's name and address:*****FMC Corporation***

2929 Walnut Street

Philadelphia, PA 19104

(215) 299-6000 (General Information)

msdsinfo@fmc.com (E-mail General Information)

**Manufacturer's name and address:**

Refer to supplier.

**Emergency Telephone #:** 1-800-424-9300 (24 Hr. Chemtrec Number)  
1-800-331-3148 (Medical Emergencies-PROSAR)**SDS Prepared by:** FMC Corporation**SDS Preparation date:** June 2, 2015

## SECTION 2 — HAZARDS IDENTIFICATION

**GHS Signal Word:**

Warning

**Classification:**

Health	Environmental	Physical
Acute toxicity – Oral – Category 4 Acute toxicity – Inhalation – Category 4 Skin irritation – Category 2 Eye irritation – Category 2A	Aquatic toxicity – Acute 1 Aquatic toxicity – Chronic 1	Flammable liquid – Category 3

**GHS Pictogram:****Hazard Statements:**

Harmful if swallowed.

Harmful if inhaled.

Causes skin irritation.

Causes serious eye irritation.

Flammable liquid and vapor.

Very toxic to aquatic life.

Very toxic to aquatic life with long lasting effects.

**Precautionary Statements:****Prevention:**

Wash hands and skin thoroughly after handling.

Do not eat, drink or smoke when using this product.

Avoid breathing mist, vapors, and spray.

Use only outdoors or in a well-ventilated area.

Wear protective gloves, eye and face protection.

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Keep away from heat, sparks and open flame. – No smoking.  
 Keep container tightly closed.  
 Use explosion-proof electrical, ventilating and lighting equipment.  
 Use only non-sparking tools.  
 Take precautionary measures against static discharge.  
 Avoid release to the environment.

**Response:**

If swallowed: Call a poison control center or doctor if you feel unwell.  
 Rinse mouth.  
 If inhaled: Remove victim to fresh air and keep comfortable for breathing.  
 Call a poison control center or doctor if you feel unwell.  
 If on skin: Wash with plenty of water.  
 Specific treatment – see label.  
 If skin irritation: Get medical advice and/or attention.  
 Take off contaminated clothing and wash it before reuse.  
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 If eye irritation persists: Get medical advice and/or attention.  
 If on skin or hair: Take off immediately all contaminated clothing. Rinse skin with water or shower.  
 In case of fire use dry chemical, carbon dioxide, water spray or foam to extinguish.  
 Collect spillage.

**Storage:**

Store in well-ventilated place.  
 Keep cool.

**Disposal:**

Dispose of contents/container according to label directions.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS				
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Ingredients	CAS #	% (weight)	ACGIH TLV (mg/m <sup>3</sup> )	OSHA PEL (mg/m <sup>3</sup> )
Chlorpyrifos (o,o-diethyl, o-(3,5,6-trichloro-2-pyridinyl) phosphorothioate)	121-75-5	<50%	0.1 (inhalable fraction, vapor)	Not listed
Gamma-cyhalothrin (Cyclopropanecarboxylic acid, (2-chloro-3,3,3-Trifluoro-1-propenyl)-2,2-dimethyl, cyano (3-phenoxyphenyl) methyl ester))	76703-62-3	<5%	Not listed	Not listed
Additional ingredients, including:				
1,2,4-Trimethylbenzene	95-63-6	22	123	Not listed
1,3,5-Trimethylbenzene	108-67-8	7	123	Not listed
Cumene	98-82-8	3	246	245

This material is classified as hazardous under OSHA regulations (29CFR 1910.1200).

SECTION 4 — FIRST AID MEASURES
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**IF IN EYES:** Hold eye 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 eye.  
 Call a poison control center or doctor immediately for treatment advice.

**IF SWALLOWED:** Call a poison control center or doctor 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.

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing.  
 Rinse skin immediately with plenty of water for 15-20 minutes.  
 Call a poison control center or doctor for treatment advice.

**IF INHALED:** Move person to fresh air.  
 If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably

by mouth-to-mouth, if possible.

Call a poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or when going for treatment. You may also contact 1-866-303-6950 (24-hours) for emergency medical treatment information.

**Note to Physician:** Organophosphate. **Chlorpyrifos** is a cholinesterase inhibitor affecting the central and peripheral nervous systems and producing cardiac and respiratory depression. **Antidote:** Administer atropine sulphate in large doses. TWO TO FOUR mg intravenously or intramuscular as soon as cyanosis is overcome. Repeat at 5 to 10 minute intervals until signs of atropinization appear. 2-PAM chloride is a pharmacological antidote and may be administered as an adjunct to, but not a substitute for, atropine, which is a symptomatic and often lifesaving antidote. DO NOT GIVE MORPHINE OR TRANQUILIZERS. At first sign of pulmonary edema, the patient should be given supplemental oxygen and treated symptomatically. Continued absorption of chlorpyrifos may occur and relapse may occur after initial improvement. VERY CLOSE SUPERVISION OF THE PATIENT IS INDICATED FOR AT LEAST 48 HOURS. Contains petroleum distillate – vomiting may cause aspiration pneumonia.

**Signs and symptoms of short-term (acute) exposure:**

*Inhalation:* BOLTON™ insecticide is a cholinesterase inhibitor of moderate mammalian toxicity. The chlorpyrifos content can affect you when breathed in and can cause organophosphorous poisoning. Symptoms of poisoning may include headache, nausea, vomiting, blurred vision, tightness in chest, drooling, frothing of mouth and nose, convulsions, coma and death.

*Skin contact:* Direct skin contact may cause slight irritation. The chlorpyrifos content can be rapidly absorbed through all skin surfaces. Causes symptoms similar to those listed for inhalation.

*Eye contact:* Direct eye contact causes irritation. The chlorpyrifos content can be rapidly absorbed through all skin and eye surfaces. Causes symptoms similar to those listed for inhalation.

*Ingestion:* The chlorpyrifos content is poisonous through ingestion. Causes symptoms similar to those listed for inhalation.

**Effects of long-term (chronic) exposures:** Prolonged or repeated overexposure may cause behavioral changes and functional changes to the central and peripheral nervous systems.

## SECTION 5 — FIRE FIGHTING MEASURES

**Flash point (Method):** 127° F (53° C) (Pensky-Martens closed up)

**Lower flammable limit (% by volume):** Not available

**Upper flammable limit (% by volume):** Not available

**Auto-ignition temperature:** Not available

**Suitable extinguishing media:** For small fires, use dry chemical or carbon dioxide. For large fires, use water spray or foam. Avoid heavy hose streams.

**Special fire-fighting procedures/equipment:** Firefighters should wear proper chemically protective equipment and self-contained breathing apparatus operated in positive pressure mode. Move containers from fire area if it can be done without risk. Dike area to prevent water run-off. Water spray may be useful in cooling equipment and containers. Avoid spreading burning material with water jet.

**Hazardous combustion products:** The essential breakdown products are volatile, toxic, irritant, malodorous and inflammable compounds such as nitrogen oxides, hydrogen chloride, ethyl mercaptan, diethyl sulphide, sulphur dioxide, hydrogen cyanide, carbon monoxide, carbon dioxide and various chlorinated and fluorinated organic compounds.

## SECTION 6 — ACCIDENTAL RELEASE MEASURES

**Personal precautions:** Stop the source of the spill immediately if safe to do so. Remove sources of ignition. Avoid and reduce mist formation as much as possible. Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate chemically protective equipment. Refer to Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

**Environmental precautions:** Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. Dike far ahead of the spill for later recovery or disposal. Washings must be prevented from entering surface water drains. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body.

**Spill response/Cleanup:** It is recommended to have a predetermined plan for the handling of spills. Eliminate all sources of heat, sparks and flame. Ventilate area of release. Stop leak if you can do so without risk. Contain the spill to prevent any further contamination of surface soil or water. Notify the appropriate authorities. For spills on the floor or other impervious surfaces, absorb spill with inert, non-combustible absorbent material, such as universal binder, hydrated lime, Fuller's earth or other absorbent clays. Scoop up and place contaminated absorbent material into suitable containers and disposed of appropriately (see Section 13). Spills in water should be contained as much as possible by isolation of the contaminated water. The contaminated water must be collected and removed for treatment or disposal. Uncontrolled discharge into water courses must be alerted to the appropriate regulatory body. The used containers should be properly closed and labeled. Notify the appropriate authorities.

**Prohibited materials:** None known.

**Special spill response procedures:** If a spill/release in excess of EPA reportable quantity is made into the environment, immediately notify the National Response Center (1-800-424-8002).

EPA/CERCLA Reportable Quantity: Chlorpyrifos (RQ 1-lbs.)

## SECTION 7 — HANDLING AND STORAGE

**Safe handling procedures:** This material is a toxic liquid. Wear full chemically protective equipment during handling. Use only in well ventilated area. Avoid all contact with eyes, skin and clothing. Do not inhale vapors or mists. Keep away from all unprotected persons and children.

This product is flammable. Formation of explosive vapor-air mixture is possible. Fire prevention measures should be taken. Keep away from sources of ignition and protect from exposure to fire and heat. Take precautions against static discharge. Do not use near sources of heat, flame or direct sunlight. BOLTON™ insecticide should never be heated about 131° F / 55° C and also local heating above this temperature should be avoided. Keep away from alkalies and incompatibles. Use caution when opening containers. Keep container tightly closed when not in use. Wash thoroughly after handling.

**Storage recommendations:** Store in cool, dry, well-ventilated area away from incompatibles. Store in tightly closed and labeled containers. Product should be stored at temperatures not exceeding 100° F for any extended time. Protect container from physical damage. No smoking in the area. Inspect containers periodically for damage or leaks.

**Special packaging materials:** Always keep in containers made of the same materials as the supply container.

## SECTION 8 — EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Ventilation and engineering controls:** If handled indoors, provide mechanical exhaust ventilation to keep concentrations below specified TLV's and PEL's.

**Respiratory protection:** Respiratory protection is required. Wear a pesticide respirator jointly approved by the MSHA and NIOSH. Advice should be sought from respiratory protection specialists.

**Protective gloves:** Wear impervious chemical-resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber. Advice should be sought from glove suppliers on the proper selection of gloves.

**Eye protection:** Wear face mask rather than goggles or safety glasses. The possibility of eye contact should be excluded.

**Other protective equipment:** Wear appropriate protective clothing to prevent skin contact, such as coveralls or long sleeved shirt, long pants, and shoes and socks. Other protective equipment, such as an eyewash station and safety shower, may be required depending on exposure and on workplace standards.

**Permissible exposure levels:** See Section 3.

**General hygiene considerations:** Do not breathe vapor or mists. Avoid all contact with eyes, skin and clothing. Before removing gloves, wash them with soap and water. Always wash hands, face and arms with soap and water before smoking, eating or drinking. After work, take off all protective equipment, work clothes and shoes, and wash with soap and water. Respirator should be cleaned and filter replaced according to manufacturer's instructions. Wear only clean, uncontaminated clothes when leaving place of work. Persons working with this product for a longer period should have frequent blood tests for cholinesterase levels. If the cholinesterase levels fall below a critical point, no further exposure should be allowed until it has been determined, by means of blood tests, that cholinesterase levels have returned to normal.

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Yellow liquid

**Odor:** Aromatic

**Odor threshold:** ND

**pH:** 5.11

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**Melting/freezing point: Chlorpyrifos:** 37.1° F (2.85° C)**Initial boiling point and boiling range:** Decomposes**Flash point:** 127° F (53° C) (Pensky-Martens closed cup)**Evaporation rate:** ND**Flammability:** Not flammable**Upper flammability or explosive limits:** N/Av**Lower flammability or explosive limits:** N/Av**Vapor pressure: Chlorpyrifos:**  $2.7 \times 10^{-3}$  Pa @ 25° C $1.8 \times 10^{-2}$  Pa @ 35° C**Gamma-cyhalothrin:**  $1.0 \times 10^{-7}$  Pa @ 20° C $3.5 \times 10^{-7}$  Pa @ 25° C**Vapor density (Air=1.0):** ND**Relative Density:** 8.42 lbs/gal**Specific gravity:** 1.01 g/ml @ 20° C**Solubility:** 0.94 mg/l in water @ 25° C**Chlorpyrifos @ 20° C:**

Toluene	miscible
Dichloromethane	miscible
Acetone	miscible
Ethyl acetate	miscible
Hexane	774 g/l (20° C)
Methanol	290 g/l (20° C)
Water	0.94 mg/l (25° C)
1,2-dichloroethane	----
p-Xylene	----
Heptane	----
n-Octanol	----

**Gamma-cyhalothrin @ 19° C**

Toluene	----
Dichloromethane	----
Acetone	>500 g/l
Ethyl acetate	>500 g/l
Hexane	----
Methanol	138 g/l
Water	0.0021 mg/l (20° C)
1,2-dichloroethane	>500 g/l
p-Xylene	>500 g/l
Heptane	30.7 g/l
n-Octanol	36.6 g/l

**Coefficient of n-Octanol/water distribution:****Chlorpyrifos:**  $\log K_{ow} = 4.7$ **Gamma-cyhalothrin:**  $\log K_{ow} = 5.65$ **Auto-ignition temperature:** ND**Decomposition temperature:** ND**Viscosity:** 2.33 mPa @ 20° C

1.70 mPa @ 40° C

**SECTION 10 — REACTIVITY AND STABILITY DATA**

**Stability and reactivity:** Stable if handled below 131° F / 55° C. At higher temperatures decomposition may take place, and the released heat from decomposition can raise the temperature further and accelerate decomposition. Chlorpyrifos can corrode iron, steel, tin plate and copper. It can be rapidly hydrolyzed at pH > 7.

**Hazardous polymerization:** Above 284 F / 140 C, Chlorpyrifos may decompose rapidly, significantly increasing the risk of inducing explosions. Direct local heating such as electric heating or by steam must be avoided. The decomposition is to a considerable extent dependant on time as well as temperature due to self-accelerating exothermic and autocatalytic reactions. The reactions involve rearrangements and polymerizations releasing volatile, malodorous and inflammable compounds such as dimethyl sulfide.

**Conditions to avoid:** Avoid heat, flame, spark and direct sunlight.

**Materials to avoid (incompatibles):** Strong alkalis, amines and strong oxidizing compounds. The product can corrode iron, steel, tin plate and copper. Chlorpyrifos is rapidly hydrolyzed at pH > 7.0.

**Hazardous combustion products:** The essential breakdown products are volatile, toxic, irritant, malodorous and inflammable compounds such as nitrogen oxides, hydrogen chloride, ethyl mercaptan, diethyl sulphide, sulphur dioxide, hydrogen cyanide, carbon monoxide, carbon dioxide and various chlorinated and fluorinated organic compounds.

**Physical or chemical hazards:** Do not use or store near heat or open flame.

**SECTION 11 — TOXICOLOGICAL INFORMATION**

**Routes of entry:** Skin contact, skin absorption, eye contact, inhalation, and ingestion.

**Target organs:** Eyes, skin, respiratory system, digestive system.

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**Toxicological data:**LD<sub>50</sub>, oral, rat (mg/kg) = 300-800LD<sub>50</sub>, dermal, rabbit (mg/kg) =>2000LC<sub>50</sub>, inhalation, rat (mg/L/4-hr) = 1-5

Eye irritation = Irritating

Skin irritation = Irritating

Skin sensitizer = Not a contact dermal sensitizer

**Carcinogenicity:** Chlorpyrifos is not classified as carcinogenic by IARC, ACGIH, OSHA or NTP.**Teratogenicity, mutagenicity, other reproductive effects:** None observed in test animals.**Sensitization to material:** None known.**Synergistic materials:** Not available.**Conditions aggravated by exposure:** Repeated exposure to cholinesterase inhibitors, such as Chlorpyrifos, may without warning cause increased susceptibility to doses of any cholinesterase inhibitor.**SECTION 12 — ECOLOGICAL INFORMATION****Chemical fate information:** The active ingredient, Chlorpyrifos, is readily biodegradable.**Environmental hazards:** This product is extremely toxic to fish, aquatic invertebrates and insects. It may be harmful to birds. It is not considered as harmful to aquatic plants and micro- and macro-organisms. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water by cleaning equipment or disposal of wastes.**Ecotoxicological information:** The ecotoxicity measured on the active ingredient is:**Chlorpyrifos:**

Fish	Zebrafish ( <i>Danio rerio</i> ).....	96-h LC <sub>50</sub> :	3.0 µg/l
Invertebrates	Daphnids ( <i>Daphnia magna</i> ) .....	48-h LC <sub>50</sub> :	1.7 µg/l
	Daphnids ( <i>Daphnia magna</i> ) .....	21-day NOEC:	0.056 µg/l
Algae	Green algae ( <i>Selenastrum subcapitus</i> ).....	96-h IC <sub>50</sub> :	0.48 mg/l
Birds	Bobwhite quail ( <i>Colinus virginianus</i> ).....	LD <sub>50</sub> :	13.3 mg/kg
	Mallard duck ( <i>Anas platyrhynchos</i> ).....	LD <sub>50</sub> :	75.6 mg/kg
Insects	Honey bees ( <i>Apis mellifera</i> ) .....	48-h LD <sub>50</sub> , oral:	0.36 µg/bee
	Honey bees ( <i>Apis mellifera</i> ) .....	24-h LD <sub>50</sub> , contact:	0.070 µg/bee

**Gamma-cyhalothrin:**

Fish	Zebrafish ( <i>Danio rerio</i> ).....	96-h LC <sub>50</sub> :	0.07 µg/l
Invertebrates	Daphnids ( <i>Daphnia magna</i> ) .....	48-h LC <sub>50</sub> :	0.1 µg/l
	Daphnids ( <i>Daphnia magna</i> ) .....	21-day NOEC:	0.0022 µg/l
Algae	Green algae ( <i>Selenastrum capricornutum</i> ....)	72-h IC <sub>50</sub> :	>2.85 mg/l
Birds	Bobwhite quail ( <i>Colinus virginianus</i> ).....	LD <sub>50</sub> :	>2000 mg/kg
Insects	Honey bees ( <i>Apis mellifera</i> ) .....	48-h LD <sub>50</sub> , oral:	4.2 µg/bee
	Honey bees ( <i>Apis mellifera</i> ) .....	24-h LD <sub>50</sub> , contact:	0.005 µg/bee

**Chemical fate:****Chlorpyrifos** is biodegradable, but does not meet the criteria for being readily biodegradable. It has the potential to bioaccumulate, but is rapidly excreted. It is not mobile in the environment, but is strongly absorbed to soil.**Gamma-cyhalothrin** is not readily biodegradable. Its half-life in soil is measured to be 4 – 8 weeks depending on circumstances. It is not toxic to microorganisms in waste water treatment plants, but it is degraded only slowly.**SECTION 13 — DISPOSAL CONSIDERATIONS****Handling for disposal:** Handle waste according to recommendations in Section 7.**Methods of disposal:** Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Refer to product label for specific container disposal instructions. Disposal of waste and packaging must always be in accordance with all applicable local regulations. Contact your local, state or federal environmental agency for specific rules.**SECTION 14 — TRANSPORTATION INFORMATION****US DOT 49 CFR information:**

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For **non-bulk** shipments:

UN2903, Pesticides, liquid, toxic, flammable, n.o.s. (chlorpyrifos, aromatic hydrocarbons), 6.1(3), PGIII, RQ

For **bulk** shipments by all modes of transportation:

UN2903, Pesticides, liquid, toxic, flammable, n.o.s. (chlorpyrifos, aromatic hydrocarbons), 6.1(3), PGIII, RQ, Marine Pollutant

**INTERNATIONAL:****IMDG/IMO (vessel):** UN2903, Pesticides, liquid, toxic, flammable, n.o.s. (chlorpyrifos, aromatic hydrocarbons), 6.1(3), PGIII, RQ, Marine Pollutant**IATA/ICAO (air):** UN2903, Pesticides, liquid, toxic, flammable, n.o.s. (chlorpyrifos, aromatic hydrocarbons), 6.1(3), PGIII, RQ, Marine Pollutant**SECTION 15 — REGULATORY INFORMATION**

**FIFRA:** This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels on non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Warning

May be fatal if swallowed.

Causes substantial but temporary eye injury or skin irritation.

Harmful if absorbed through skin or inhaled.

Do not get in eyes, on skin or on clothing.

Avoid breathing dust, vapor or spray mist.

**EPA/CERCLA Reportable Quantity (RQ):** Chlorpyrifos 1- lbs (4.56 ounces product)**SARA TITLE III:**

*Sec. 302, Extremely Hazardous Substance Notification:* This material is not known to contain any Extremely Hazardous Substances.

*Sec. 311/312, Hazard Categories*

Immediate (acute) health hazard
Chronic (delayed) health hazard
Fire

*Sec. 313, Toxic Chemicals Notification:*

1,2,4-Trimethylbenzene (CAS#: 95-63-6)	22%
Cumene (CAS#: 98-82-8)	3%

**California Proposition 65:** This product contains CUMENE which is known to the state of California to cause cancer.

**SECTION 16 — OTHER INFORMATION****HMIS Rating:** 2 Health; 2 Flammability; 1 Reactivity**NFPA Rating:** 2 Health; 2 Flammability; 1 Reactivity

0-minimal 1- slight 2-moderate 3-severe 4-extreme

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Revision note (M)SDS sections updated Disclaimer

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Prepared By: FMC Corporation

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End of Safety Data Sheet