Safety Data Sheet

Issue Date: 11-Jan-2018 **Revision Date:** 22-Jan-2018 **Version** 1

1. IDENTIFICATION

Product Identifier

Product Name Chlorpyrifos Technical

Other means of identification

SDS # GCI-003

Registration Number(s) EPA Reg. No. 93182-3

UN/ID No UN2783

Recommended use of the chemical and restrictions on use

Recommended Use EPA registered insecticide. Crystalline semi-solid technical concentrate. For manufacture use in agriculture insect control products. Refer to product label for further details.

Details of the supplier of the safety data sheet

Manufacturer Address

GHARDA CHEMICALS INTERNATIONAL INC.
760 Newtown-Yardley Road
Suite 110
Newtown, PA USA 18940
Website: www.ghardausa.com
For further information contact: 1 (215) 968-9474

Emergency Telephone Number

Emergency Telephone (24 hr) MEDICAL EMERGENCY (24 hr): PROPHARMA (866)-359-5660
TRANSPORTATION OR SPILL (24 hr): CHEMTREC (800) 424-9300

2. HAZARDS IDENTIFICATION

Emergency Overview This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Pale yellow to light brown crystalline solid **Physical state** Solid **Odor** Mercaptan

Classification

Acute toxicity - Oral	Category 3

Signal Word

Danger

Hazard statements

Toxic if swallowed

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product

Precautionary Statements - Response
IF SWALLOWED: Immediately call a POISON CENTER or doctor
Rinse mouth

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other hazards
Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Weight-%
Chlorpyrifos	2921-88-2	98

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First Aid Measures

General Advice Provide this SDS to medical personnel for treatment.

Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin Contact Remove contaminated clothing and shoes immediately. Wash with soap and mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Cover the irritated skin with an emollient. Get medical attention, if needed.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion If swallowed, carry out gastric lavage under by medical personnel to prevent asphyxiation. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Most important symptoms and effects

Symptoms Toxic if swallowed. Possible symptoms: Weakness, headache, tightness in chest, blurred vision, non-reactive pin point pupil, salivation, sweating, nausea, vomiting, diarrhea, abdominal cramp, when symptoms persist, seek medical attention.

Indication of any immediate medical attention and special treatment needed

Notes to Physician ANTIDOTE: The following antidote(s) have been recommended. However, the decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by qualified medical personnel

FOR CHOLINESTERASE INHIBITORS: Establish clear airway and tissue oxygenation by aspiration of secretions, and if necessary, by assisted pulmonary ventilation with oxygen. Improve tissue oxygenation as much as possible before administering atropine to minimize the risk of ventricular fibrillation. Administer atropine sulphate intravenously or intramuscularly if iv injection is not possible. In moderately severe poisoning administer atropine sulphate, 0.4 – 2.0 mg repeated every 15 minutes until atropinization is achieved (tachycardia, flushing, dry mouth, mydriasis). Maintain atropinization by repeated doses for 2 – 12 hours, or longer, depending upon the severity of poisoning. The appearance of rales in the lung bases, miosis, salivation, nausea, bradycardia, are all indications of inadequate atropinization. Severely poisoned individuals may exhibit remarkable tolerance to atropine; two or more times the dosages suggested above may be needed. Persons not poisoned or slightly poisoned, however, may develop signs of atropine toxicity from such large dosages; Fever, muscle fibrillations, and delirium are the main signs of atropine toxicity. If these signs appear while the patient is fully atropinized, atropine administration should be discontinued, at least temporarily. Observe treated patients closely at least 24 hours to insure that symptoms (possibly pulmonary edema) do not recur as atropinization wears off. In very severe poisoning, metabolic disposition of toxicant may require several hours or days during which atropinization must be maintained. Markedly lower levels of urinary metabolites indicate that atropine dosage can be tapered off. As dosage is reduced, check the lung bases frequently for rales. If rales are heard or other symptoms return, re-establish atropinization promptly) Morgan, Recognition and Management of Pesticide Poisoning, 3rd ED.). In cases of severe poisoning by organophosphate pesticides in which respiratory depression, muscle weakness and twitchings are severe, give pralidoxime (Protopam – Ayerst, 2-PAM), 1.0 gram intravenously at no more than 0.5 gram per minute. Dosage of pralidoxime may be repeated in 1-2 hours, then at 10-12 hour intervals if needed. In very severe poisonings, dosage rates may be doubled. Treatment with pralidoxime will be most effective if Management of Pesticide Poisoning, 3rd Ed.). Antidote should be administered by qualified medical personnel.

Never give morphine or phenothiazine tranquilizers. Allow no further exposure until cholinesterase regeneration has taken place as determined by blood test.

Treat symptomatically and supportively.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Water spray (fog). Foam. Carbon dioxide (CO_2).

Unsuitable Extinguishing Media Water jet.

Specific Hazards Arising from the Chemical
Emits toxic fumes under fire conditions. Vapors may form explosive mixtures with air.

Hazardous Combustion Products Carbon monoxide. Hydrogen chloride.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Collect contaminated fire extinguishing water separately. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protection recommended in Section 8. Avoid contact with spilled product or contaminated areas. Avoid contact with skin, eyes or clothing. Keep unprotected persons away. Ensure adequate ventilation. Refer to Section 7, Handling, for additional precautionary measures.

Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up In case of spill, soak it immediately with suitable absorbent, such as sawdust or granular absorbent clay. Sweep and put it into a container for disposal. Rinse remnant with plenty of water. Do not allow to enter drains or water courses.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Avoid contact with skin and eyes. Ensure good ventilation/exhaustion at the workplace. Keep away from heat and direct sunlight.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Protect from humidity and water. Protect from moisture. Store in original labeled container. Store between 0°C and 30 °C.

Incompatible Materials Strong oxidizers. Alkaline compounds.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Chlorpyrifos 2921-88-2	TWA: 0.1 mg/m^3 inhalable fraction and vapor S*	(vacated) TWA: 0.2 mg/m^3 (vacated) S*	TWA: 0.2 mg/m^3 STEL: 0.6 mg/m^3

Appropriate engineering controls

Engineering Controls Showers. Eyewash stations. Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Tightly sealed goggles.

Skin and Body Protection Wear suitable protective clothing. Choose chemical resistant gloves. The glove material has to be impermeable and resistant to the product/substance. Recommend are gloves made of: Nitrile rubber (NBR, = 0.38 mm thickness) , Polyvinyl chloride (PVC, = 0.7 mm thickness).

Respiratory Protection Respiratory single serving mask DIN EN 149 with filter FFP2.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid		
Appearance	Pale yellow to light brown crystalline solid	**Odor**	Mercaptan
Color	Pale yellow to light brown	**Odor Threshold**	Not determined

Property	**Values**	**Remarks • Method**
pH	Not determined	
Melting Point/Freezing Point	40-42 °C / 104-107 °F	
Boiling Point/Boiling Range	Not determined	
Flash Point	> 70 °C / 158 °F	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Product is not flammable	
Flammability Limits in Air		
Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	2.7 mPa (25 ºC)	
Vapor Density	Not determined	
Relative Density	1.44 g/cm3	
Water Solubility	1.4 mg/lt	
Solubility in other solvents	In benzene 7900, acetone 6500, chloroform 6300, carbon disulfide 5900, diethyl ether 5100, xylene 5000, iso-octanol 790, methanol 450 (all in g/kg, 25 ºC)	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

Other Information

Molecular weight 350.6

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to Avoid

Keep out of reach of children.

Incompatible Materials

Strong oxidizers. Alkaline compounds.

Hazardous Decomposition Products

Emits toxic fumes of nitrogen oxides and halogenated compounds under fire conditions.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact Avoid contact with skin.

Inhalation Do not inhale.

Ingestion Toxic if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Chlorpyrifos 2921-88-2	= 135 mg/kg (Rat) = 82 mg/kg (Rat)	= 2 g/kg (Rabbit) > 5000 mg/kg (Rabbit) = 202 mg/kg (Rat)	> 200 mg/m^3 (Rat) 4 h

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Chemical Name	ACGIH	IARC	NTP	OSHA
Chlorpyrifos 2921-88-2		Group 2A		X

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 100.00 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Chlorpyrifos 2921-88-2		0.11 - 0.13: 96 h Pimephales promelas mg/L LC50 flow-through 0.008: 96 h Cyprinus carpio mg/L LC50 static 0.00717: 96 h Poecilia reticulata mg/L LC50 0.002 - 0.032: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.011: 96 h Oncorhynchus mykiss mg/L LC50 0.00717: 96 h Poecilia reticulata mg/L LC50 semi-static 0.0047 - 0.0075: 96 h Lepomis macrochirus mg/L LC50 flow-through 0.0013: 96 h Lepomis macrochirus mg/L LC50 static 0.001: 96 h Oncorhynchus mykiss mg/L LC50 static 0.0026: 96 h Lepomis macrochirus mg/L LC50	0.00012 - 0.00023: 48 h Daphnia magna mg/L EC50 Static 0.00009 - 0.00012: 48 h Daphnia magna mg/L EC50 Flow through

Persistence/Degradability
Chlorpyrifos is biodegradable. It undergoes degradation in the environment and in waste water treatment plants. No adverse effects are found at concentrations up to 100 mg/l in waste water.

Bioaccumulation
Chlorpyrifos has the potential to bioaccumulate, but is rapidly excreted (with half-life 2-3 days). The bioaccumulation factor of chlorpyrifos is measured to be 1375 for whole fish (rainbow trout). Aromatic 150 ND has a moderate potential to bioaccumulate if continuous exposure is maintained. Most components can be metabolised by many organisms. BCFs (bioaccumulation factors) of some of the main components are 715-810 by model calculation.

Mobility

Chemical Name	Partition Coefficient
Chlorpyrifos 2921-88-2	4.96

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Must not be disposed together with household garbage. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Do not reuse container. Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

Chemical Name	California Hazardous Waste Status
Chlorpyrifos 2921-88-2	Toxic

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT
UN/ID No UN2783
Proper Shipping Name Organophosphorus pesticide, solid, toxic (Chlorpyrifos)
Hazard Class 6.1
Packing Group II

IATA
UN/ID No UN2783
Proper Shipping Name Organophosphorus pesticide, solid, toxic (Chlorpyrifos)
Hazard Class 6.1
Packing Group II

IMDG
UN/ID No UN2783
Proper Shipping Name Organophosphorus pesticide, solid, toxic (Chlorpyrifos)
Hazard Class 6.1
Packing Group II
Marine Pollutant Yes

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Chlorpyrifos	X	X	X	Present	X	Present	X	X

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

AICS *- Australian Inventory of Chemical Substances*

US Federal Regulations

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Chlorpyrifos 2921-88-2	1 lb		RQ 1 lb final RQ RQ 0.454 kg final RQ

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Chlorpyrifos	1 lb			X

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Chlorpyrifos 2921-88-2	X	X	X

EPA Pesticide Registration Number EPA Reg. No. 93182-3

EPA Statement

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 of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label

SIGNAL WORD: WARNING

May be fatal if swallowed. May be fatal if inhaled. Do not breathe dust. Remove contaminated clothing and wash clothing before reuse. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Warning	Danger
Acute toxicity - Oral	May be fatal if swallowed	Toxic if swallowed
Acute toxicity - Inhalation	May be fatal if inhaled	NA

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	Not determined	Not determined	Not determined	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical hazards**	**Personal Protection**
	Not determined	Not determined	Not determined	Not determined

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Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet