



Safety Data Sheet

Issue Date: 28-May-2009

Revision Date: 25-Sept-2015

Version 2

1. IDENTIFICATION

Product Identifier

Product Name

CHLORPYRIFOS 4E AG

Other means of identification

SDS #

MANA-014

Registration Number(s)

EPA Reg. No. 66222-19

UN/ID No

UN3018

Recommended use of the chemical and restrictions on use

Recommended Use

EPA registered pesticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc.
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr)

For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

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 Red liquid

Physical State Liquid

Odor Solvent like

Classification

Acute toxicity - Oral	Category 3
Acute toxicity – Inhalation (Dusts/Mists)	Category 4
Carcinogenicity	Category 1B
Aspiration toxicity	Category 1
Flammable Liquids	Category 4

Signal Word

Danger

Hazard Statements

Toxic if swallowed
 Harmful if inhaled
 May cause cancer
 May be fatal if swallowed and enters airways
 Combustible liquid



Precautionary Statements - Prevention

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Avoid breathing dust/mist
 Use only outdoors or in a well-ventilated area
 Use personal protective equipment as required
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking

Precautionary Statements - Response

If exposed or concerned: Get medical advice/attention
 IF INHALED: Remove person to fresh air and keep comfortable for breathing
 Call a poison center/doctor if you feel unwell
 IF ON SKIN: Wash with plenty of soap and water
 Remove/Take off immediately all contaminated clothing
 Wash contaminated clothing before reuse
 Call a poison center or doctor/physician if you feel unwell
 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 Do not induce vomiting
 Rinse mouth
 IN CASE OF FIRE: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage

Store locked up
 Store in a well-ventilated place. Keep cool

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	42.5
Proprietary Solvent	Proprietary	balance

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	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison control center or doctor for treatment advice.
Skin Contact	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Wash skin with soap and water. Wash contaminated clothing before reuse. Call a poison center or doctor/physician if you feel unwell.
Inhalation	Remove to fresh air. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Seek medical advice.
Ingestion	Immediately call a poison center or doctor/physician. Never give anything by mouth to an unconscious person. Obtain medical attention. Do not induce vomiting unless directed by medical personnel.

Most important symptoms and effects

Symptoms	May cause nose and throat irritation, with possible central nervous system effects. May cause gastrointestinal irritation, nausea, diarrhea, and vomiting. Liquid ingestion may result in vomiting; aspiration of liquid into the lungs must be avoided as liquid contact with the lungs can result in chemical pneumonitis and pulmonary edema/hemorrhage.
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Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically. This product contains an organophosphate that inhibits cholinesterase. If exposed, plasma and red blood cell cholinesterase test may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Contains petroleum distillate. Vomiting may induce aspiration pneumonia.
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical. Foam. Carbon dioxide (CO2).

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

Combustible liquid.

Hazardous Combustion Products Hydrogen chloride. Ethyl sulfide. Diethyl sulfide. Nitrogen oxides (NOx).

Sensitivity to Static Discharge Take precautionary measures against static discharge.

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. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

- Personal Precautions** Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
- Environmental Precautions** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

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** For small spills, absorb with sand, clay, or other inert absorbent. Place in appropriate containers for disposal. For large spills: recover free product. Dike for later disposal. Absorb with inert material, and then place in suitable container for chemical waste. Flush spill area with water, collect rinse water in containers for proper disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

- Advice on Safe Handling** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Do not breathe dust/fume/gas/mist/vapors/spray. Wash face, hands, and any exposed skin thoroughly after handling. Do not contaminate water, food or feed by storage, disposal or by cleaning equipment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

- Storage Conditions** Keep container tightly closed and store in a cool, dry and well-ventilated place. Keep out of the reach of children. Store away from incompatible materials. Protect from excessive heat. Store locked up. Do not store below 20°F (-7°C). Keep/store only in original container. Do not use food or drink containers for mixing or storage. Storage below 20°F may result in the formation of crystals. If product crystallizes, store at 50 - 70°F and agitate to re-dissolve crystals.
- Incompatible Materials** Strong alkalis. Amines. Oxidizers.

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

Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection

Use splash goggles or face shield when contact may occur.

Skin and Body Protection

Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Viton or other impervious gloves are required. Long sleeve shirt, trousers, and safety shoes.

Respiratory Protection

Ensure adequate ventilation, especially in confined areas. Wear an appropriate NIOSH/MSHA approved respirator if ventilation is inadequate.

General Hygiene Considerations

Wash hands before eating, drinking, smoking and using the toilet. Remove contaminated clothing promptly and wash thoroughly before reused. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid	Odor	Solvent like
Appearance	Red liquid	Odor Threshold	Not determined
Color	Red		
<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>	
pH	3.8		
Melting Point/Freezing Point	Not applicable		
Boiling Point/Boiling Range	143 °C / 290 °F	(solvent)	
Flash Point	84.4 °C / 184 °F	TCC	
Evaporation Rate	Not determined		
Flammability (Solid, Gas)	Liquid-not applicable		
Upper Flammability Limits	Not available		
Lower Flammability Limit	1%		
Vapor Pressure	<10 mmHg @ 25°C		
Vapor Density	Not determined		
Specific Gravity	1.079		
Water Solubility	Emulsifiable		
Solubility in other solvents	Not determined		
Partition Coefficient	Not determined		
Auto-ignition Temperature	Not available		
Decomposition Temperature	Not determined		
Kinematic Viscosity	Not determined		
Dynamic Viscosity	Not determined		
Explosive Properties	Not determined		
Oxidizing Properties	Not determined		
Bulk Density	9.4 lb/gal		

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.

Hazardous Polymerization Not known to occur.

Conditions to Avoid

Elevated temperatures. Avoid heating above 60°C (100°F). Chlorpyrifos undergoes exothermic decomposition at approximately 130°C (266°F), which can lead to higher temperatures and violent decomposition if generated heat is not removed. Contains petroleum derivative solvent-will burn.

Incompatible Materials

Strong alkalis. Amines. Oxidizers.

Hazardous Decomposition Products

Carbon monoxide. Carbon dioxide (CO₂). Hydrogen chloride. Oxides of sulfur.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Eye Contact Avoid contact with eyes.

Skin Contact Avoid contact with skin.

Inhalation Harmful if inhaled.

Ingestion Toxic if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Proprietary Solvent	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 590 mg/m ³ (Rat) 4 h
Chlorpyrifos 2921-88-2	= 82 mg/kg (Rat)	= 202 mg/kg (Rat) = 2 g/kg (Rabbit)	> 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

The table below indicates whether each agency has listed any ingredient as a carcinogen. However, the product as a whole has not been tested.

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

LEGEND

IARC (International Agency for Research on Cancer)

Group 2A - Probably Carcinogenic to Humans

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Aspiration hazard

May be fatal if swallowed and enters airways.

Product Information (Numerical measures of toxicity)

Acute Oral LD50 (Rat): >776 mg/kg (males); 300 mg/kg (females)

Acute Dermal LD50 (Rabbit): >5,000 mg/kg

Acute Inhalation LC50 (Rat): >2.7 mg/L (4-hr)

Eye Irritation: Moderately irritating.

Dermal Irritation: Moderately irritating.

Dermal Sensitization: Not a skin sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects. This pesticide is toxic to fish, aquatic invertebrates, small mammals, and birds. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment washwater or rinsate. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Proprietary Solvent	2.5: 72 h Skeletonema costatum mg/L EC50	19: 96 h Pimephales promelas mg/L LC50 static 2.34: 96 h Oncorhynchus mykiss mg/L LC50 1740: 96 h Lepomis macrochirus mg/L LC50 static 45: 96 h Pimephales promelas mg/L LC50 flow-through 41: 96 h Pimephales promelas mg/L LC50		0.95: 48 h Daphnia magna mg/L EC50

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 0.0047 - 0.0075: 96 h Lepomis macrochirus mg/L LC50 flow-through 0.0026: 96 h Lepomis macrochirus mg/L LC50 0.0013: 96 h Lepomis macrochirus mg/L LC50 static 0.002 - 0.032: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.011: 96 h Oncorhynchus mykiss mg/L LC50 0.001: 96 h Oncorhynchus mykiss mg/L LC50 static 0.00717: 96 h Poecilia reticulata mg/L LC50 0.00717: 96 h Poecilia reticulata mg/L LC50 semi-static	EC50 = 46.3 mg/L 5 min	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
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Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Chemical Name	Partition Coefficient
Proprietary Solvent	6.1
Chlorpyrifos 2921-88-2	4.96

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS. Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinse is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or Hazardous Waste representative at the nearest EPA regional office. Never place any unused product down an indoor or outdoor drain. Do not contaminate water, food or feed by disposal.

Contaminated Packaging

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

DOT

UN/ID No UN3018
 Proper Shipping Name Organophosphorus pesticide, liquid, toxic (chlorpyrifos 42.5%), RQ
 Hazard Class 6.1
 Packing Group III
 Reportable Quantity (RQ) 1 lb

IATA

UN/ID No UN3018
 Proper Shipping Name Organophosphorus pesticide, liquid, toxic (chlorpyrifos 42.5%), RQ
 Hazard Class 6.1
 Packing Group III
 Marine Pollutant Yes

IMDG

UN/ID No UN3018
 Proper Shipping Name Organophosphorus pesticide, liquid, toxic (chlorpyrifos 42.5%), RQ
 Hazard Class 6.1
 Packing Group III
 Marine Pollutant Yes

15. REGULATORY INFORMATION

International Inventories

TSCA All ingredients are listed or exempt from listing on Chemical Substance Inventory

Legend:

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

US Federal Regulations

CERCLA

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 311/312 Hazard Categories

Acute Health Hazard Yes
 Chronic Health Hazard Yes
 Fire Hazard Yes
 Sudden Release of Pressure Hazard No
 Reactive Hazard No

SARA 313

Not determined

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Chlorpyrifos 2921-88-2 (41.2 - 43.8)	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 66222-19

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. Causes substantial but temporary eye injury. Causes skin irritation. Harmful if absorbed through skin. Do not get in eyes, on skin or on clothing.

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Warning	Danger
Acute toxicity – Inhalation	N/A	Harmful if inhaled
Acute toxicity - Oral	May be fatal if swallowed	Toxic if swallowed
Acute toxicity - Dermal	Harmful if absorbed through skin	N/A
Skin corrosion/irritation	Causes skin irritation	N/A
Serious eye damage/eye irritation	Causes substantial but temporary eye injury	N/A
Carcinogenicity	N/A	May cause cancer
Aspiration Hazard	N/A	May be fatal if swallowed and enters airways

16. OTHER INFORMATION

NFPA	Health Hazards	Flammability	Instability	Special Hazards
	2	2	1	None
HMIS	Health Hazards	Flammability	Physical Hazards	Personal Protection
	2	2	1	See section 8

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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