

1. IDENTIFICATION

Product name: **Chlorpyrifos 4E AG**
 Chemical name of active ingredient(s): Chlorpyrifos: O,O-diethyl-O-(3,5,6-ytivhloto-2- pyridinyl) phosphorothiate
 Manufacturer: Makhteshim-Agan of North America
 551 Fifth Avenue, Suite 1100
 New York, NY 10176
 Phone: 212-661-9800
 For fire, spill, and/or leak emergencies, contact Infotrac: Phone: 1-800-535-5053
 For medical emergencies and health and safety inquiries, contact Prosar: Phone: 1-877-250-9291

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS NO.	%	OSHA PEL	ACIGH TLV
Chlorpyrifos	002921-88-2	42.0	0.2 mg/m ³ skin	0.2 mg/m ³ skin
Aromatic hydrocarbons	064742-95-6	53.0	100 ppm	Not listed
Inert Ingredients		5.0		

3. HAZARDS IDENTIFICATIONS**EMERGENCY OVERVIEW**

- Cholinesterase inhibitor; may be fatal if swallowed.
- Harmful if absorbed through skin or inhaled.
- Causes moderate eye irritation.
- Avoid breathing product vapors or spray mist.
- Avoid contact with eyes, skin or clothing.
- Keep out of reach of children.

Symptoms of over exposure are headaches, nausea, vomiting, cramps, weakness, blurred vision, pinpoint pupils, tightness in chest, labored breathing, nervousness, sweating, watering of eyes, drooling, muscle spasms and coma.

POTENTIAL HEALTH EFFECTS:

Eye: Irritating, and may injure eye tissue if not removed promptly.

Skin: Harmful if absorbed through the skin. Large exposures could be fatal.

Inhalation: Vapor or mist concentrations may be harmful if inhaled. High concentrations could be fatal.

Ingestion: May be fatal if swallowed.

POTENTIAL PHYSICAL HAZARDS: Combustible liquid and vapor.

4.FIRST AID MEASURES

FIRST AID
Organophosphate

- IF SWALLOWED:**
- Call a poison control center or doctor immediately 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 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 for treatment advice.
- 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 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 going for treatment.

Note to Physician: This product contains an organophosphate that inhibits cholinesterase. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests 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.

NOTE TO PHYSICIAN: Chlorpyrifos is a cholinesterase inhibitor.

5. FIRE FIGHTING MEASURES

FLASH POINT: 184⁰ F (84.4⁰ C)

METHOD USED: TCC

FLAMMABLE LIMITS

LFL: 1%

UFL: 6% (xylene range aromatic solvent)

EXTINGUISHING MEDIA: Foam, CO₂, dry chemical

FIRE & EXPLOSION HAZARDS: Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Toxic, irritating gases may be formed under fire conditions. Rapid decomposition above 320-392⁰ F (160-200⁰ C) can occur. Violent rupture due to over-pressurization may occur at temperatures generated during a fire.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO TAKE FOR SPILLS/LEAKS: Clean up spills immediately, using precautions described in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Small Spill: Absorb spill with inert material such as dry sand, vermiculite or fuller's earth, then place in a chemical waste container. Rinse area with dilute soda ash and place rinsate into chemical waste container.

Large Spill: Same as for small spills; may neutralize with dilute alkaline solutions of soda and ash and place into chemical waste container. Do not allow material to run off into soil, drainage systems, or bodies of water. Notify and consult with proper regulatory authorities.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children. Do not get in eyes, on skin or clothing. Avoid breathing vapor and spray mist. Users should wash hands before eating, drinking, using tobacco, or using the toilet. For handling relative to the end-use of this product, read the product label. Store in original container in a dry storage area. Do not store above 100⁰ F for extended periods of time. Storage below 20⁰ F may result in the formation of crystals. If product crystallizes, store at 50-70⁰ F and agitate to re-dissolve crystals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

RESPIRATORY PROTECTION:

Atmospheric levels should be maintained below the exposure guidelines. When respiratory protection is required, use a NIOSH approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration. For emergency and other conditions where the exposure guideline may be greatly exceeded, use a NIOSH approved positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

SKIN PROTECTION:

Use protective clothing impervious to this material. Selection of specific items such as faceshield, gloves, boots, apron, or full body suit will depend on operation.

EYE PROTECTION:

Use chemical goggles. If vapor exposure causes eye discomfort, use a NIOSH approved full-face respirator.

APPLICATORS AND ALL OTHER HANDLERS:

MATERIAL SAFETY DATA SHEET

Chlorpyrifos 4E AG

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- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate or Viton
- Shoes plus socks
- Protective eyewear

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

APPEARANCE: Red liquid

ODOR: Solvent-type odor

FLASH POINT: 184° F (84.4° C)

MOLECULAR WEIGHT: 350.5

MOLECULAR FORMULA: C₉H₁₁Cl₃NO₃PS

BOILING POINT: 290° F (143° C) (solvent)

pH: 3.8

VAPOR PRESSURE: <10 MMhG @ 25° C

SOLUBILITY IN WATER: Emulsifiable

SPECIFIC GRAVITY: 1.079

DENSITY: 9.4 lbs/gallon

10. STABILITY AND REACTIVITY

STABILITY: (CONDITIONS TO AVOID) 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.

INCOMPATIBILITY (SPECIFIC MATERIALS TO AVOID): Strong alkalis, amines and oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Under fire conditions, hydrogen chloride, ethyl sulfide, diethyl sulfide and nitrogen oxides can be formed.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION

EYE: May cause moderate eye irritation and/or corneal injury. Vapors may irritate the eyes.

SKIN: The LD₅₀ for skin absorption in male rats is >5000 mg/kg.

Prolonged exposure may cause moderate skin irritation.

A test in guinea pigs indicated that this product may have weak skin sensitization potential. However, experience in the manufacture and use of this product has not provided evidence for skin sensitizing properties. The product did not sensitize human subjects when tasted at an end-use dilution. A single prolonged exposure, is not likely to result in the material being absorbed through the skin in harmful amounts.

INGESTION: The oral LD₅₀ for rats is 776 mg/kg (males) and 300 mg/kg (females).

Single dose oral toxicity is moderate.

Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause lung damage or death due to chemical pneumonia.

INHALATION: The aerosol LC₅₀ for rats is 2.7 mg/L for 4-hour exposure.

Excessive exposure may produce organophosphate-type cholinesterase inhibition. Excessive vapor concentrations are attainable and could be hazardous on single exposure. Excessive exposure to solvent may cause respiratory irritation and central nervous system depression. Signs and symptoms of central nervous system depression are in order of increasing exposure, headache, dizziness, drowsiness, and incoordination.

SYSTEMIC (OTHER TARGET ORGAN EFFECTS): Excessive exposure may produce organophosphate-type cholinesterase inhibition. Signs and symptoms of excessive exposure to chlorpyrifos may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions. Chlorpyrifos produced mild adrenal effects when fed to rats, but only at doses that greatly exceeded any exposures that would be received during normal use of this product. Solvent has been reported to cause liver, kidney, and blood effects at high exposure levels.

CANCER INFORMATION: Chlorpyrifos did not cause cancer in laboratory animals. **TERATOLOGY (BIRTH DEFECTS):** Chlorpyrifos did not cause birth defects in laboratory animals. Solvent was toxic to the fetus in

laboratory animal tests, but only at doses that were toxic to the mothers. Very high concentrations of solvent (producing severe toxicity to adult animals induced an increase in cleft palate in mice, which is a common developmental abnormality in mice and is associated with stress to the maternal animals. No malformations were induced at exposures less than those causing severe toxicity to the adult animals.

REPRODUCTIVE EFFECTS: Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Results of in-vitro ("test tube") and animal mutagenicity tests on the aromatic solvent have been negative. Based on a majority of negative data and some equivocal or marginally positive results, chlorpyrifos is considered to have minimal mutagenic potential.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE

MOVEMENT & PARTITIONING: Based on information for chlorpyrifos and components of aromatic hydrocarbons. Bioconcentration potential is moderate (BCF is between 100 and 3000 or Log Pow between 3 and 5).

DEGRADATION & PERSISTENCE: Based on information for chlorpyrifos.

The photolysis half-life in water is 3-4 weeks.

Tropospheric half-life is estimated to be 1.4 hours.

Degradation is expected in the soil environment within days to weeks.

Under aerobic soil conditions the half-life is generally 30-60 days.

Based on information for components of aromatic hydrocarbons.

Biodegradation under aerobic static laboratory conditions is high (BOD 20 or BOD28.ThOD is >40%).

ECOTOXICOLOGY: Based on information for chlorpyrifos.

Material is very highly toxic to aquatic organisms on an acute basis (LC₅₀/EC₅₀ <0.1 MG/L in most sensitive species).

Material is highly toxic to birds on a dietary basis (LC₅₀ between 50 and 5000ppm).

Material is moderately toxic to birds on an acute basis (LD₅₀ is between 51 and 5000 mg/kg).

Based on information for Aromatic 100.

Material is moderately toxic to aquatic organisms on an acute basis (LC₅₀/EC₅₀ is between 1 and 10 mg/L in most sensitive species).

Material is practically non-toxic to birds on a dietary basis (LD₅₀ is >5000ppm).

Material is practically non-toxic to birds on an acute basis (LD₅₀ is >2000mg/kg).

13. DISPOSAL CONSIDERATIONS

PESTICIDE DISPOSAL: Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate 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 the hazardous waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL FOR REFILLABLE CONTAINERS: Replace the dry-disconnect cap, if applicable, and seal all openings that have been opened during use. Return the empty container to a collection site designated by Makhteshim-Agan of North America Inc. (MANA). If the container has been damaged and cannot be returned according to the recommended procedures, contact the MANA Customer Service Center at 1-212-661-9800 to obtain proper handling instructions.

CONTAINER DISPOSAL FOR NON-REFILLABLE CONTAINERS: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Or, triple rinse (or equivalent). Then puncture and dispose in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

DOT SHIPPING DESCRIPTION:

Non-Bulk packaging: RQ, Organophosphorus pesticide, liquid, toxic (chlorpyrifos 40.7%), 6.1, UN 3018, PG III

Bulk packaging: RQ, Organophosphorus pesticide, liquid, toxic (chlorpyrifos 40.7%), 6.1, UN 3018, PG III, Marine Pollutant

UN NUMBER: UN 3018

DOT PACKING GROUP: PG III

DOT PRIMARY/SUBSIDIARY LABEL: 6.1

DOT PRIMARY/SUBSIDIARY PLACARD: Not applicable

DOT EMERGENCY RESPONSE GUIDE #: 152

US Motor Freight Classification:

Item 45617 [Fungicides, Herbicides, Insecticides, or Rodenticides]

Class 92.5

15. REGULATORY INFORMATION

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state, or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state, or provincial, and local laws and regulations.

U.S. REGULATIONS:

SARA 313 INFORMATION: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title 111) and is considered, under applicable definitions, to meet the following categories:

- An immediate health hazard
- A delayed health hazard
- A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATING:

Category	Rating
Health	2
Flammability	2
Reactivity	1

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA, which may require reporting of releases:

Chemical Name	CAS Number	RQ	% in Product
Chlorpyrifos	002921-88-2	1	40.7%

16. OTHER INFORMATION

Revised: 3-12-04; Changes made to Sections 5, 9, and 14.

The information herein is given in good faith, but no warrant, express or implied, is made. Consult Makhteshim-Agan of North America, Inc. for further information.