# TECHNICAL DATA BULLETIN

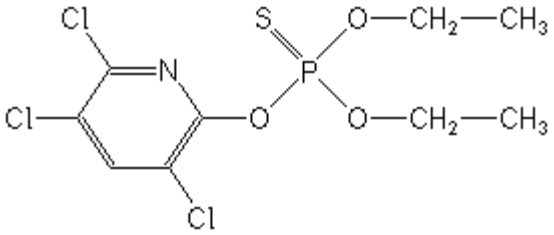
# CHLORPYRIFOS TECHNICAL

## 1 INTRODUCTION

Chlorpyrifos is a broad-spectrum organophosphate insecticide. While originally used primarily to kill mosquitoes, it is no longer registered for this use. Chlorpyrifos is effective in controlling cutworms, corn rootworms, cockroaches, grubs, flea beetles, flies, termites, fire ants, and lice. It is used as an insecticide on grain, cotton, field, fruit, nut and vegetable crops, and well as on lawns and ornamental plants. It is also registered for direct use on sheep and turkeys, for horse site treatment, dog kennels, domestic dwellings, farm buildings, storage bins, and commercial establishments. Chlorpyrifos acts on pests primarily as a contact poison, with some action as a stomach poison. It is available as granules, wettable powder, dustable powder and emulsifiable concentrate.

## 2 ACTIVE INGREDIENT

| | | |
|---|---|---|
| Common name | : | Chlorpyrifos |
| Chemical Name | : | O, O-diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate |
| Chemical Class | : | Organophosphorus Insecticide |
| CAS Registry No. | : | 2921-88-2 |
| Molecular Formula | : | $C_9H_{11}Cl_3NO_3PS$ |
| Structural Formula | : | |




| | | |
|---|---|---|
| Molecular weight | : | 350.62 |
| Technical Purity | : | 94% min |

## 3 PHYSICOCHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance | : | It is an amber to white crystalline solid with a mild sulfur odor |
| Melting Point | : | 41.5-44$^0$C |
| Water Solubility | : | 2 mg/L @ 25$^0$C |
| Kow logP | : | 4.6990 |
| S.g./density | : | 1.432 g/cc at 50$^o$C |
| Vapor Pressure | : | 2.5 mPa @ 25 C |
| Solubility In water | : | 2 mg/L @ 25 C |
| Solubility in solvents | : | Benzene s.; acetone s.; chloroform s.; carbon disulfide s.; diethyl ether s.; xylene s.; methylene chloride s.; methanol s. |
| Stability | : | Stable for 2 years when it is stored at normal temperature: |
| Adsorption Coefficient | : | 6070 |

## 4 MODE OF ACTION

Non-systemic insecticide with contact, stomach, and respiratory action

## 5. TOXICITY

| | | | |
|---|---|---|---|
| **Acute Oral LD $_{50}$ (rat)** | 135-163 mg/kg (Tech) | **Acute Dermal LD $_{50}$ (rabbit)** | >2000 mg/kg (Tech) |
| **Eye Irritation (rabbit)** | Moderate Irritant | **Skin Irritation** | Non Irritant |
| **Inhalation LC$_{50}$(rat)** | >0.2 mg/l | **Skin Sensitization** | Non-sensitizer |
| **Mutagenicity** | Non-mutagen (Technical) | **Reproductive toxicity** | None |
| **Toxicity class** | WHO (a.i) II EPA (Formulation) II | **ADI (JMPR)** | 0.01 mg/kg b.w{1999} |

## 6. ECOTOXICITY

| | | | |
|---|---|---|---|
| **Acute Oral LD $_{50}$ (Birds)** | 490 mg/kg (Mallard duck) (Technical) | **Dietary LC $_{50}$ (bobwhite quail)** | 423 ppm (Tech) |
| **Daphnia $EC_{50}$(48h)** | 1.7 µg/l (Technical) | **Bees (Contact)** | Toxic to bees |
| **Acute $LC_{50}$(Fish) 96 h** Korean shrimps | 0.05 µg/l (Technical) | **Algae $EC_{(50)}$** | 0.4 mg/l (NOEC) (Technical) |
| **Degradation** | Moderately degraded in soil. | | |

Toxic to fish.

Dangerous to bees.

Do not spray and plants in flower while bees are foraging.

Do not contaminate dams, rivers or streams with pesticide or used container.

Do not use container for any other purpose.

Triple rinse containers with water and add rinsate to the spray solution.

Puncture top, bottom and sides of empty container, then crush and bury in an approved landfill, or bury under at least 500 mm of soil in a non –crop, nonpasture area away from water sources or homes.

## 7 STABILITY & REACTIVITY

| | |
|---|---|
| Stability | Stable for two years at ambient conditions |
| Incompatibility | Incompatible with strong oxidising agents. |
| Conditions to avoid | Excessive heat and ignition sources |
| Hazardous decomposition products | Sulphurous oxides, Nitrogen oxides and phosphorus compounds |
| Hazardous Polymerization | Will not occur |

## 8 COMPATIBILITY

Chlorpyrifos can be mixed with a number of insecticides such as Dimethoate, Lindane, Dichlorvos and Primicarb. However, it is incompatible with alkaline materials.

## 9 HANDLING & STORAGE

Keep out of reach of children, do not store with food, feed or other material to be used or consumed by humans or animals. Do not contaminate water supplies, lakes, streams, or ponds. Store in a secure, dry, well-ventilated area, segregated from oxidizers and incompatible materials. Protect from moisture.

## 10. TRANSPORT INFORMATION

| | | |
|---|---|---|
| Proper Shipping Name | : | ORGANOPHOSPHORUS PESTICIDE, SOLID, TOXIC (Chlorpyrifos) |
| UN number | : | UN3017 |
| Class | : | 6.1 |
| Packing Group | : | III |
| Marine Pollutant | : | Yes |