

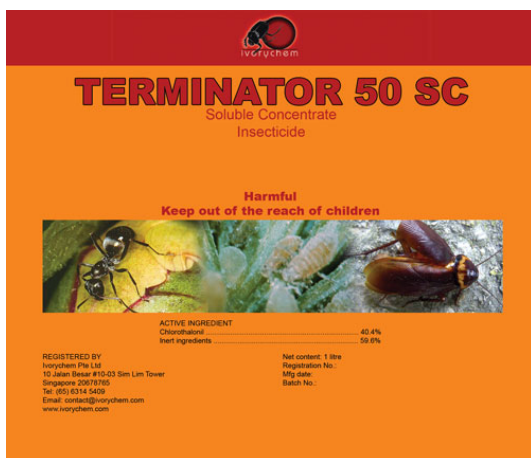
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READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

USE ONLY IN ACCORDANCE WITH INSTRUCTIONS.

KEEP OUT OF REACH OF CHILDREN

TERMINATOR 50 SC



INGREDIENTS

Chlorothalonil50%
Other ingredients50%

TERMINATOR 50 SC is a broad-spectrum organochlorine fungicide used to control fungi that threaten vegetables, trees, small fruits, turf, ornamentals, and other agricultural crops. It also controls fruit rots in cranberry bogs.

What is TERMINATOR 50 SC and how does it work?

Trade Names Of Other Firms: Trade names for products containing chlorothalonil include Bravo, Chlorothalonil, Daconil 2787, Echo, Exotherm Termil, Forturf, Mold-Ex, Nopocide N-96, Ole, Pillarich, Repulse, and Tuffcide. The compound can be found in formulations with many other pesticide compounds.

Key Benefits of TERMINATOR 50 SC:

1. Trusted performance.
2. Reliable.
3. Used worldwide by major partners.

PRECAUTIONS

Causes severe eye damage. Do not get in eyes. Keep out of reach of children. Wear overalls over long pants, and a long-sleeved shirt, goggles or a face shield, apron and chemical resistant gloves during mixing, loading, clean-up and repair activities. Wear pants, a long-sleeved shirt and chemical resistant gloves during application. DO NOT re-enter treated areas within 48 hours. If required, individuals may re-enter treated areas within 48 hours for short-term tasks not involving hand labour only if at least 4 hours has passed since application, and long pants, long-sleeved shirt, hat and chemical-resistant gloves are worn. AVOID contact with skin or clothing. Wash exposed areas of skin with soap and warm water after handling or using. DO NOT take internally. AVOID breathing spray mist. This product may produce temporary allergic side effects, characterised by redness of the eyes, mild bronchial irritation and redness or rash on exposed skin areas. DO NOT store near feed or foodstuffs. Store in a cool place. Protect from excessive heat. Apply only to areas specified on label.

SYMPTOMS OF POISONING

This product may produce temporary allergic side effects characterised by redness of the eyes, mild bronchial irritation and redness or rash on exposed skin areas. Persons having allergic reactions should contact a physician. Contains propyleneglycol that is reported to cause central nervous system depression (anesthesia, dizziness, confusion), headache and nausea.

MEDICAL TREATMENT

Treatment is symptomatic.

FIRST AID

If poisoning is suspected, immediately contact a physician or a poison control centre. Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

If skin contacts, wash exposed areas of skin with soap and warm water. This product may produce temporary allergic side effects characterised by redness of the eyes, mild bronchial irritation and redness or rash on exposed skin areas. Persons having allergic reaction should contact a physician immediately.

If eyes contact, flush for 15 minutes with large amount of water and seek medical attention immediately. If inhaled, remove patient to fresh air. In all cases, notify a physician and present this label.

Persons having allergic reaction respond to treatment with antihistamines or steroid creams and/or systemic steroids.

DIRECTIONS OF USE

Dosage rates on this label indicate litres of TERMINATOR 50 SC Agricultural Fungicide per hectare, unless otherwise stated. Applications should be made in sufficient water to obtain adequate coverage of foliage. Volume of water to be used will vary with crop and amount of plant growth. Spray volume usually will range from 225-1600 litres per hectare for dilute sprays and 50-100 litres per hectare for concentrate ground sprays and aircraft applications. Both ground and aircraft methods of application are recommended unless specific directions are given for a crop.

VEGETABLE AND FIELD CROPS

Broccoli, brussels sprouts, cabbage, cauliflower

	Directions
Alternaria leaf spot	Use 2.5-4.8 litres per hectare in sufficient water to obtain adequate coverage. Begin applications after transplants are set in the field (or shortly after emergence of field seeded crop) or when conditions favour disease development. Repeat applications at 7-10 day intervals or as necessary to maintain disease control. DO NOT apply within 7 days of harvest.
Downy mildew	

Carrot

	Directions
Early blight (Cercospora)	Use 2.4 – 3.2 litres per hectare in sufficient water to obtain adequate coverage. Start applications when disease threatens and repeat at 7-10 intervals or as necessary to maintain control. DO NOT apply within one day of harvest.
Late blight (Alternaria)	

Celery

	Directions
Early blight (Cercospora)	Use 1.6 – 2.4 litres per hectare on a 3-5 day spray schedule or use 2.4 – 4.0 litres per hectare on an 8-10 day schedule. Start applications when transplants are set in the field. Apply in sufficient water to obtain adequate coverage, DO NOT apply within 7 days of harvest. For control of early blight
Late blight (Alternaria)	

and late blight in celery seedbeds, use 2.0 – 2.8 litres of TERMINATOR 50 SC per 1000 litres of water and apply 1,400 litres per hectare twice weekly or as needed to maintain control. Start applications shortly after crop emergence. Use the higher rate under severe disease conditions.

Chickpea

	Directions
Ascochyta blight	Use 3.0 – 4.0 litres per hectare in first application and 2.0 - 3.0 litres per hectare in subsequent applications. Make first application at very early flowering and remaining applications at 10 day intervals. DO NOT make more than 3 applications per season. DO NOT apply within 48 days of harvest. Apply only with ground application equipment in 220 litres of water per hectare.

Cucumber

	Directions
Anthraco nose	Use 4.8 litrews per hectare. Apply TERMINATOR 50 SC in sufficient water to obtain adequate coverage. Begin applications when plants are in first true leaf stage or when conditions are favourable for disease development. Repeat applications at 7 day intervals. Under severe conditions, shorten spray interval. DO NOT use within 1 day of harvest.
Powdery mildew	
Scab	

Mushroom

	Directions
Dry bubble	Individuals applying TERMINATOR 50 SC in mushroom facilities should wear a full-face respirator during all activities. In addition, if re-entry into mushroom facilities within 48 hours of treatment is required wear a full-face respirator. Apply 254 milliliters per 100 square metres immediately after casing or in the casing mix

and 128 milliliters at pinning in 100 to 130 litres of water. DO NOT make more than 2 applications. DO NOT apply within 7 days of harvest.

Onion (Dry bulb and Green bunching)

Botrytis leaf blight Directions
Use 2.4 – 4.8 litres per hectare in sufficient water to obtain adequate coverage. Start applications when disease threatens and repeat at 7-10 day intervals or as necessary to obtain control. DO NOT make more than 3 applications per season to dry bulb onions and DO NOT make more than 5 applications per season to green bunching onions. DO NOT apply within 7 days of harvest to dry bulb onions and DO NOT apply within 14 days of harvest to green bunching onions.

Parsnip

Root canker Directions
Use 2.8 litres per hectare. Start applications in mid-August and repeat at 7-10 day intervals. DO NOT make more than 7 applications per season. DO NOT apply within 14 days of harvest to green bunching onions.

Potato

Late blight Directions
Use 1.2 – 2.4 litres per hectare.
Early blight
Botrytis vine rot Use 1.6 - 2.4 litres per hectare. Use sufficient water to obtain adequate spray coverage. Begin applications when plants are 15-20 cm high, or when disease threatens. Repeat applications at 7-10 day intervals, or as necessary to maintain disease control. Under severe disease conditions, use the higher rates at 7-day intervals. DO NOT apply to potato plants later than 1 day before harvest.

Sweet corn

Common rust Directions
Use 3.2 litres per hectare. Apply when symptoms are first noticed and repeat again 10-14 days later. DO NOT make more than 2 applications per season. DO NOT apply within 14 days of harvest.

Tomato (including processing tomatoes)

Early blight Directions
Late blight Use 2.4 - 4.0 litres per hectare. Apply
Septoria leaf spot TERMINATOR 50 SC in
Anthracnose sufficient water to obtain adequate coverage. Begin applications when disease threatens and spray on an 8-10 day schedule at the lower rate, or a 14 day schedule at the 4.0 litres per hectare rate. Under severe disease conditions, shorten the spray interval.
Botrytis gray mould Use 4.8 litres per hectare on an 8-10 day schedule. DO NOT apply within 1 day of harvest.

FRUIT

Blueberry

Anthracnose fruit rot Directions
Use 7,2 litres per hectare. Apply 3 applications at green tip, pink bud and petal fall. After petal fall, a protective schedule using a different registered product may be necessary to ensure continued control of fruit rot.
Alternaria fruit rot
Phomopsis canker Use 7.2 litres per hectare. Apply 3 applications at green tip, pink bud and petal fall. DO NOT apply within 54 days of harvest.

Cantaloupe, muskmelon, honeydew

Anthracnose Directions
Use 4.8 litres per hectare.
Powdery mildew Apply TERMINATOR 50 SC
Scab in sufficient water to obtain adequate coverage. Begin applications when plants are in the first true leaf stage or when conditions are favorable for disease development. Repeat

applications at 7-day intervals. Under severe disease conditions, shorten spray interval. DO NOT apply within 1 day of harvest.

Cherry (sweet and sour)

Directions
 Blossom blight Use 5 – 9 litres per hectare.
 Brown rot Apply 1-3 applications from pink through shuck split. Use higher rate per hectare for trees greater than 6 metres in height, or if weather is warm (above 16°C) and wet during bloom. Apply in 500-1000 litres of water per hectare.

Cherry (sour)

Directions
 Cherry leaf spot (pre harvest) Use 5 – 9 litres per hectare. Apply once at shuck split. Apply in 500-1000 litres of water per hectare.
 (post harvest) Apply once to foliage 1-7 days after fruit is removed. In orchards with a high leaf spot incidence, make a second application 10-14 days later. Apply in 500-1000 litres of water per hectare.
 Black knot For orchards with a history of disease, prune out, remove and burn all black knots from commercial orchard during the dormant period before bud break. Remove any infected wild cherry or plum trees surrounding commercial orchard. Use 6 – 9 litres per hectare. Follow TERMINATOR 50 SC spray schedule for blossom blight, including one application at shuck split. DO NOT apply after shuck split to avoid fruit injury. DO NOT make more than 3 pre-harvest applications per season. DO NOT apply within 40 days of harvest.

Cranberry

Directions
 Fruit rots Use 6.8 – 11.6 litres per hectare. Apply at early bloom, late bloom and 10-

Twigleaf blight and upright dieback Use 6.8 – 11.6 litres per hectare. Apply at bud break, early bloom and late blight. Use the higher rate under severe conditions. DO NOT apply within 50 days of harvest. DO NOT apply TERMINATOR 50 SC to fields when flooded or allow release of irrigation water from bogs for at least 3 days following application. TERMINATOR 50 SC may be applied through sprinkler irrigation equipment. Use 3000 litres of water per hectare through solid set systems only.

Peach and Nectarine

Directions
 Do not apply TERMINATOR 50 SC within 10 days of an oil application as it may cause burning to flowers and leaf tissue.
 Blossom blight Use 5 – 9 litres per hectare.
 Brown rot Apply 1-3 applications from pink through shuck period. Use higher rate per hectare for trees greater than 6 metres in height, or if weather is warm (above 16°C) and wet during bloom. Apply in 500-1000 litres of water per hectare. DO NOT apply after shuck split to avoid fruit injury. DO NOT apply within 60 days of harvest.
 Peach leaf curl Use 5-7 litres per hectare. Apply one application per year either as a fall dormant spray at 75-100% leaf drop or in early spring before bed swell/bud break. Apply in at least 1000 litres of water per hectare.

Strawberry

Directions
 Botrytis fruit rot Use 3.5 litres per hectare.
 Scab Use 4.8 litres per hectare. Apply TERMINATOR 50 SC in sufficient water to obtain adequate coverage. Begin applications when plants are in the first true leaf stage or when conditions are favourable for disease development. Repeat

applications at 7 day intervals. Under severe disease conditions, shorten spray interval. DO NOT apply within 1 day of harvest.

DISPOSAL METHODS

Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

STORAGE CONDITION

Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Store in a locked room or place away from children, animals, food, feedstuffs, seed and fertilizers. Triple or preferably pressure rinse containers before disposal. Add rinsing to spray tank.

For More Details including effects on environment email contact@ivorychem.com with Subject "TERMINATOR 50 SC DETAILS"

More Details:

TOXICOLOGICAL EFFECTS

- **Acute toxicity:** TERMINATOR 50 SC is slightly toxic to mammals, but it can cause severe eye and skin irritation in certain formulations [2]. Very high doses may cause a loss of muscle coordination, rapid breathing, nose bleeding, vomiting, hyperactivity, and death. Dermatitis, vaginal bleeding, bright yellow and/or bloody urine, and kidney tumors may also occur [17]. The oral LD50 is greater than 10,000 mg/kg in rats and 6000 mg/kg in mice [9,17]. The acute dermal LD50 in both albino rabbits and albino rats is 10,000 mg/kg (9,17). In albino rabbits, 3 mg of TERMINATOR 50 SC applied to the eyes caused mild irritation that subsided within 7 days of exposure [35].
- **Chronic toxicity:** In a number of tests of varying lengths of time, rats fed a range of doses of TERMINATOR 50 SC generally showed no effects on physical

appearance, behavior, or survival [35]. Skin contact with TERMINATOR 50 SC may result in dermatitis or light sensitivity [35]. Human eye and skin irritation is linked to TERMINATOR 50 SC exposure; 14 of 20 workers exposed to 0.5% TERMINATOR 50 SC in a wood preservative developed dermatitis. All workers showed swelling and inflammation of the upper eyelids [35]. Allergic skin responses have also been noted in farm workers [7].

- **Reproductive effects:** Administration of high doses of TERMINATOR 50 SC to pregnant rabbits through the stomach during the sensitive period of gestation was required to induce abortion in 4 of the 9 mothers. This and other studies suggest that TERMINATOR 50 SC will not affect human reproduction at expected exposure levels [35].
- **Teratogenic effects:** Long-term studies indicate that high doses fed to rats caused reduced weight gains for males and females in each generation studied [35]. Female rats given high doses of TERMINATOR 50 SC through the stomach during the sensitive period of gestation had normal fetuses, even though that dose was toxic to the mothers [35]. A study of birth defects in rabbits showed no effects [36]. TERMINATOR 50 SC is not expected to produce birth defects in humans.
- **Mutagenic effects:** Mutagenicity studies on various animals, bacteria, and plants indicate that TERMINATOR 50 SC does not cause any genetic changes [17,35,36]. The compound is not expected to pose mutagenic risks to humans.
- **Carcinogenic effects:** Based on evidence from animal studies, TERMINATOR 50 SC's carcinogenic potential is unclear. Male and female rats fed TERMINATOR 50 SC daily over a lifetime developed carcinogenic and benign kidney tumors at the higher doses [35]. In another study, where mice were fed high daily doses of TERMINATOR 50 SC for 2 years, females developed tumors in the fore-stomach area (attributed to irritation by the compound) and males developed carcinogenic and benign kidney tumors [35].
- **Organ toxicity:** Chronic studies of rats and dogs fed high dietary levels show that TERMINATOR 50 SC is toxic to the kidney. In addition too less urine output, changes in the kidney included enlargement, greenish-brown color, and

- development of small grains [37].
- **Fate in humans and animals:** TERMINATOR 50 SC is rapidly excreted, primarily unchanged, from the body. It is not stored in animal tissues. Rats and dogs fed very high doses for 2 years eliminated almost the entire chemical in urine, feces, and expired air [17,38]. At lower concentrations, TERMINATOR 50 SC leaves the body within 24 hours. Residues have not been found in the tissues or milk of dairy cows fed TERMINATOR 50 SC [17].

weeks. TERMINATOR 50 SC was found in one surface water location in Michigan at 6.5 mg/L [35].

- **Breakdown in vegetation:** TERMINATOR 50 SC's residues may remain on aboveground crops at harvest, but will dissipate over time. TERMINATOR 50 SC is a fairly persistent fungicide on plants, depending on the rate of application. Small amounts of one metabolite may be found in harvested crops [37].

ECOLOGICAL EFFECTS

- **Effects on birds:** TERMINATOR 50 SC is practically nontoxic to birds. The LD50 in mallard ducks is 5000 mg/kg [9]. Most avian wildlife is not significantly affected by this compound [17].
- **Effects on aquatic organisms:** TERMINATOR 50 SC and its metabolites are highly toxic to fish, aquatic invertebrates, and marine organisms. Fish, such as rainbow trout, bluegill, and channel catfish are noticeably affected even when TERMINATOR 50 SC levels are low (less than 1 mg/L). The LC50 is 0.25 mg/L in rainbow trout, 0.3 mg/L in bluegills, and 0.43 mg/L in channel catfish [9]. TERMINATOR 50 SC does not store in fatty tissues and is rapidly excreted from the body. Its bioaccumulation factor is quite low [17].
- **Effects on other organisms:** The compound is nontoxic to bees [9].

ENVIRONMENTAL FATE

- **Breakdown in soil and groundwater:** TERMINATOR 50 SC is moderately persistent. In aerobic soils, the half-life is from 1 to 3 months. Increased soil moisture or temperature increases TERMINATOR 50 SC degradation. It is not degraded by sunlight on the soil surface [17]. TERMINATORS 50 SC has high binding and low mobility in silty loam and silty clay loam soils, and has low binding and moderate mobility in sand [35]. TERMINATOR 50 SC was not found in any of 560 groundwater samples collected from 556 U.S. sites [35].
- **Breakdown in water:** In very basic water (pH 9.0), about 65% of the TERMINATOR 50 SC was degraded into two major metabolites after 10

PHYSICAL PROPERTIES AND GUIDELINES

Physical Properties:

- **Appearance:** Chlorothalonil is an aromatic halogen compound, a member of the chloronitrile chemical family. It is a grayish to colorless crystalline solid that is odorless to slightly pungent [9].
- **Chemical Name:** tetrachloroisophthalonitrile [9]
- **CAS Number:** 1897-45-6
- **Molecular Weight:** 265.92
- **Water Solubility:** 0.6 mg/L @ 25 C [9]
- **Solubility in Other Solvents:** acetone s.s.; dimethyl sulfoxide s.s.; cyclohexanone s.s.; kerosene i.s.; xylene s.s. [9]
- **Melting Point:** 250-251 C [9]
- **Vapor Pressure:** 1.3 mPa @ 40 C [9]
- **Partition Coefficient:** 437 (calc.): 20.9 [17]
- **Adsorption Coefficient:** 1380 [14]



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