

Confidential: Proprietary information of Ivorychem Pte Ltd. Not to be disclosed to third parties without prior consent of Ivorychem Pte Ltd

READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

USE ONLY IN ACCORDANCE WITH INSTRUCTIONS.

KEEP OUT OF REACH OF CHILDREN

## RAPIDOX 500 WP

### INGREDIENTS

Copper oxychloride ..... 50%  
Other ingredients .....50%

RAPIDOX 500 WP is a wettable powder fungicide and contains as its active ingredient, copper oxychloride.

### PRECAUTIONS

KEEP OUT OF REACH OF CHILDREN.

Hazardous if swallowed, inhaled or absorbed through the skin. Avoid breathing dust or spray mist. Avoid contact with the eyes, skin and clothing. After handling, wash thoroughly with soap and water before eating, drinking or smoking and change to clean clothing. Do not apply or allow to drift to area occupied by unprotected persons and animals or to streams, lakes or ponds to protect wildlife. Avoid contamination of feed or food, including such crops on which residue is unsafe. Add Hydrated lime when treating copper sensitive crops.

### FIRST AID

If swallowed: Induce vomiting. Repeat until vomit is clear. Seek medical attention or contact a poison control centre IMMEDIATELY. In case of skin contact, remove contaminated clothing and wash skin with soap and water. If in eyes, flush with plenty of water for 15 minutes and seek medical attention or contact a poison control centre. Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

### MEDICAL TREATMENT

No specific antidote. Treat symptomatically

### DIRECTION FOR USE

Rates per 1,000 litres are based on dilute spray mixture. RAPIDOX 500 WP may be used in low volume or concentrate sprays by increasing the

dosage to apply the same quantity of RAPIDOX 500 WP per hectare as would normally be applied when spraying dilute mixtures. Apply in sufficient water for thorough coverage of all plant parts; this volume depends on spray equipment and size of plants. The spray tank should be partially filled with water and the required RAPIDOX 500 WP added with the agitator running. Keep agitator running during filling and spraying operations. The use of a surfactant (spreader sticker) according to manufacturer's recommendations will improve coverage of spray. May be used up to 1 day before harvest. DO NOT APPLY BY AIR.

### RESISTANCE MANAGEMENT

For resistance management, please note that RAPIDOX 500 WP contains a Group M2 fungicide. Any fungal population may contain individuals naturally resistant to RAPIDOX 500 WP and other Group M2 fungicides. A gradual or total loss of pest control may occur over time if these fungicides are used repeatedly in the same fields. Other resistance mechanisms that are not linked to site of action but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

To delay fungicide resistance:

- Where possible, rotate the use of RAPIDOX 500 WP or other Group M2 fungicides with different groups that control the same pathogens.
- Use tank mixtures with fungicide from a different group when such use is permitted.
- Fungicide use should be based on an IPM program that includes scouting, historical information related to pesticide use and crop rotation and considers cultural, biological and other chemical control practices.
- Monitor treated fungal populations for resistance development.
- If disease continues to progress after treatment with this product, do not increase the use rate. Discontinue use of this product, and switch to another fungicide with a different target site of action, if available.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for specific crops and pathogens.

### COMPATABILITY

RAPIDOX 500 WP without lime can be mixed with most insecticides, spreader-stickers and

superior oil. RAPIDOX 500 WP with lime cannot be mixed with insecticide wettable powders. When adding oil or an insecticide, observe the cautions and intervals before harvest on edible crops printed on the insecticides label.

CROP OR PLANT	DISEASE	RATE AND METHOD
Blueberry (Highbush)	Bacterial Blight	Apply 2-4 kg in 500-1000 litres of water per hectare once before fall rains, once at 50% leaf fall and once at bud burst, followed by repeat applications at 14 day intervals during wet weather. (Maximum 6 applications per year) Ground (handgun or tractor-mounted sprayers).
Cucumber, Melon, Pumpkin, Squash	Angular leaf spot, Anthracnose, Bacterial wilt, Downy mildew, Alternaria and Septoria leaf spot.	Use 4 kg in 1000 litres of water per hectare. Spray at weekly intervals. For Bacterial Wilt control it is necessary to control cucumber beetles.
Potato	Early & late blight	Use 4 kg in 1000 litres of water per hectare. Spray to ensure thorough coverage of plants. Start applications when plants are 10-20 cm. high and repeat at 7-10 day intervals.
Tomato	Early & late blight, Septoria leaf spot, Bacterial canker	Use 4 kg in 1000 litres of water per hectare. Spray to ensure thorough coverage of plants. Start applications when plants are 10-13 cm. high and repeat at 7-10 day intervals (on green-house

		tomatoes - use 3 kg. per litres of water).
Celery	Early & late blight	Use 4 kg in 1000 litres of water per hectare. Spray to ensure thorough coverage of plants. Start applications when plants are 5 cm. high and repeat at 7-10 day intervals.
Cranberry	Leafblight, Twigblight (Phomopsis /Diaporthe Vaccinii), Fruit Rot Fungal Complex	Use 4 kg. in 500 - 1000 litres of water per hectare. Maximum of three applications per year. For twigblight apply at bud break and then at 10-14 day intervals: for fruit rot apply at early bloom and repeat at 10-14 day intervals.
Filbert/Haze Inut	Bacterial Blight, Eastern Filbert Blight	3-9 kg of product per hectare. Maximum of three applications per year: first application Aug/Sept before Autumn rains are heavy, spray when 3/4 leaves have fallen: third application in early spring before bud set: use low rate on small trees, high rate for large trees; apply in 1000 litres of water per hectare; ground spray only.  Rate: 3-9 kg of product per hectare (1.5-4.5 kg ai.per hectare). Maximum of three applications per year and repeat at 10-14 days interval. Use low rate on small trees, and high rate on large trees. Apply product in 1000 L

		water/ha. Application is needed only from budswell to budbreak (approximately late March to mid May), which is the time that the tissue is susceptible to infection. May be applied up to 1 day before harvest.
Sour Cherry Sweet & Sour Cherry	Brown rot, Leaf spot Bacterial Canker (Pseudomonas sp)	Use 2 kg plus 4 kg hydrated lime per 1000 litres of dilute spray. Consult local calendar for timing of application 6-9 kg. of product per hectare. Apply by air blast sprayer when 3/4 leaves have fallen. Make a second application in early spring before bud break. Use low rate on small trees, high rate for large trees; apply in 1000 litres of water per hectare; ground spray only. Later applications in the spring may cause injury.
Peach, Apricot (British Columbia only)	Coryneum Blight, Peach Leaf Curl	Apply 9 kg. per hectare in September AFTER the harvest is completed.  Peach Leaf Curl Apply 2 kg. in 1000 litres of water in fall after leaves have fallen or in the spring before buds break.
Pear (British Columbia Only)	Fireblight (see below)	To reduce blossom infection, apply 2.25 kg per hectare when blossoms open. In case of hail damage

Cotoneaster, Crabapple, Hawthorn, Mountain Ash, Quince	Fireblight (see below)	Apply 1.25 kg in 1000 litres. Spray several times during blossoming; also repeat during summer when bacteria spread rapidly in warm, rainy weather.
Arborvitae, Cedar, Fir, Juniper, Pine, Spruce	Leafblight, Needlecast, Tipblight, Twigblight	Apply 4 kg. in 1000 litres of water when new growth starts in spring and repeat 3 to 4 times at 10 day intervals. Further sprays are advisable during prolonged rainy periods.
Onion	Downy mildew	Apply every 10 to 14 days throughout growing season beginning in mid May for overwintered crops and mid June for spring seeded crops. Apply at rate of 3 kg in 500 litres per hectare.
Raspberry	Bacterial Blight	Apply once before Fall rains using 2.5 kg in 1000 litres per hectare and 3 times using 3 kg in 1000 litres per hectare beginning with budburst and at 14 and 28 day successive intervals.
Grapes	Downy Mildew Powdery Mildew	Mix 3 kg plus 6 kg of hydrated lime in 1000 litres. Apply at Pre-bloom at 1500 litres per hectare and at Postbloom and in cover sprays at 2000 litres per hectare until mid August. Do not apply on SEIBEL varieties.

FIREBLIGHT may be spread to healthy plants by insects such as aphids and leafhoppers. It is, therefore, of utmost importance that regular applications with an effective insecticide, such as Thiodan, are made. Diseased twigs which appear to have been "scorched", must be cut off at 15 cm. below the infected part and burned; disinfect pruning shears after each cut in solution of 1 part of bleach to 4 parts of water.

#### DISPOSAL

Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank. Follow provincial instruction for any required additional cleaning of the container prior to its disposal. Make the empty container unsuitable for further use. Dispose of the container in accordance with the provincial requirements. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

#### 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](mailto:contact@ivorychem.com) with Subject "RAPIDOX 500 WP"

More Details:

#### PRODUCT IDENTIFICATION

**CAS NO.:** 1332-40-7, 1332-65-6

**EINECS NO.:** 215-572-9

**FORMULA:**  $\text{CuCl}_2 \cdot 3\text{Cu}(\text{OH})_2$

**MOL WT.:** 232.01

**H.S.CODE:**

**TOXICITY:** Oral rat LD50: 1470 mg/kg

**SYNONYMS:** Copper chloride mixture with copper oxide, hydrate; Dicopper Chloride Trihydroxide; Cupric oxide chloride; Copper(II) Oxychloride; Copper Oxychloride; Vitigran blue; Dikupferchloridtrihydroxid (German); Trihidroxicloruro de dicobre (Spanish); Trihydroxychlorure de dicuivre (French); Tribasic copper chloride; Copper chloroxide; Copper(II) chloride hydroxide;

#### DERIVATION

#### CLASSIFICATION

#### PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** bluish to green powder

**MELTING POINT:** 140 C (Decomposes)

**BOILING POINT:**

**SPECIFIC GRAVITY:** 3.5

**SOLUBILITY IN WATER:** Insoluble

**pH:** 6 - 7

**VAPOR DENSITY:**

**AUTOIGNITION:**

**NFPA RATINGS:** Health: 2; Flammability: 0;

Reactivity: 0;

**REFRACTIVE INDEX:**

**FLASH POINT:** Not considered to be a fire hazard

**STABILITY:** Stable under ordinary conditions

#### GENERAL DESCRIPTION OF COPPER COMPOUNDS & APPLICATIONS

Copper forms compounds in the oxidation states of +1 (cuprous) and +2 (cupric); trivalent copper survives no more than a few seconds in an aqueous solution. The relatively small change in electrochemical potential between the cuprous and cupric ions in solution gives the usefulness of copper compounds in chemical reactions. Copper compounds are used as catalysts in reactions, especially oxidation (cupric chloride) and heterogeneous reactions. Cupric chloride, copper chloride ( $\text{CuCl}_2$ ) is a yellowish to brown, deliquescent powder; soluble in water, alcohol, and ammonium chloride; while the dihydrated form of cupric chloride is a green crystals; soluble in water. It is used as a mordant in dyeing and printing textile fabrics and in the refining of copper, gold, and silver as well as a catalyst in chemical reactions. Cuprous chloride ( $\text{CuCl}$  or  $\text{Cu}_2\text{Cl}_2$ ), also known as resin of copper, is a green, tetrahedral crystals; insoluble in water. The biological property of copper compounds takes important role in as fungicides in agriculture and biocides in antifouling paints for ships and wood preservations. Very low level of copper is toxic to fungi and algae but the levels for mammal is much higher. The copper ions inhibit the metabolism of the fungus when they react with sulfur containing enzymes in the plant. Copper compounds form a protective barrier on the plant surface and thereby prevent fungi from entering the plant host. The fungicidal effect of copper compounds as non-systemic fungicides are such as bordeaux mixture, cupric hydroxide, copper arsenate, copper carbonate, cuprous oxide, copper-8-quinolinolate, copper oleate, copper sulfate, or copper oxychloride. Another important biological application of copper compounds, such as copper sulfide is as an antifouling agent in paints. The description and applications of copper compounds in industry are;

Copper Arsenate,  $\text{Cu}_3(\text{AsO}_4)_2 \cdot 4\text{H}_2\text{O}$  or  $\text{Cu}_5\text{H}_2(\text{AsO}_4)_4 \cdot 2\text{H}_2\text{O}$ ; bluish powder which is insoluble in water and alcohol, soluble in ammonium hydroxide and dilute acids; used as a fungicide and insecticide.

Copper Arsenite, also known as Scheele's green,  $\text{CuHAsO}_3$ ; toxic, green powder which is soluble in acids and decomposes at the melting point; used as a pigment and insecticide;

Copper Carbonate, artificial malachite.

$\text{Cu}_2(\text{OH})_2\text{CO}_3$ , toxic, green powder which is soluble in acids and decomposes at 200 C; used in pigments and pyrotechnics and as a fungicide and feed additive; antidote for phosphorous poisoning.

Copper Gluconate  $[\text{CH}_2\text{OH}(\text{CHOH})_4\text{COO}]_2\text{Cu}$ , light blue, crystalline powder which is soluble in water; used in medicine and as a dietary supplement; scale removal in metal cleanings and can be formulated in cleaning compounds including mouthwash due to its sequestering ability in alkaline conditions.

Copper

Oleate  $\text{Cu}[\text{OOC}(\text{CH}_2)_7\text{CH}(\text{CH}_2)_7\text{CH}_3]_2$ , green to blue liquid, used as a fungicide for fruits and vegetables; used in formulating antiseptics, deodorants, antiperspirants.

Copper-8-Quinolinolate  $\text{C}_{18}\text{H}_{14}\text{N}_2\text{O}_2\text{Cu}$ , khaki-colored solid which is insoluble in water; used as a fungicide in fruit and vegetables equipments.

Copper Sulfide  $\text{CuS}$ , black, monoclinic or hexagonal crystals which decomposes at 220 C; used antifouling agent in paints.

Cupric Acetate (Copper Acetate), known as crystals of Venus,  $\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$ , blue to green crystals which is soluble in water; used as a raw material to make paris green; organic reaction catalyst; textile dyeing; fungicide.

Cupric Bromide (Copper Bromide)  $\text{CuBr}_2$ , black prismatic crystals; used in photography as an intensifier and in organic synthesis as a brominating agent.

Cupric Chloride (copper chloride)  $\text{CuCl}_2$ , yellowish to brown, deliquescent powder which is soluble in water, alcohol, and ammonium chloride; used as a mordant in dyeing and printing textile fabrics and in the refining of copper, gold, and silver.

Cupric Chromate (Copper Chromate)  $\text{CuCrO}_4$ , yellow liquid used as a mordant.

Cupric Cyanide (Copper Cyanide)  $\text{Cu}(\text{CN})_2$ , green powder which is insoluble in water; used in electroplating copper on iron.

Cupric Fluoride (Copper Fluoride)  $\text{CuF}_2$ , white crystalline powder used in ceramics and in the preparation of brazing and soldering fluxes.

Cupric Hydroxide (Copper Hydroxide)  $\text{Cu}(\text{OH})_2$ , blue microscopic crystals; used as a mordant and pigment, in manufacture of many copper salts, and for staining paper.

Cupric Nitrate (Copper Nitrate)  $\text{Cu}(\text{NO}_3)_2 \cdot n\text{H}_2\text{O}$ , green powder or blue crystals which is soluble in

water; used in electroplating copper on iron; as a catalyst and nitrating agent in organic reactions; component in rocket fuel; fungicides and wood preservatives; textile dyeing and printing; pigment in ceramics;

Cupric Oxide (Copper Oxide)  $\text{CuO}$ , black, monoclinic crystals which is insoluble in water; used in making fibers and ceramics; in organic and gas analyses; catalyst, fungicide, antiseptic; red pigment for glass, ceramics; antifouling agent; Cuprous Bromide (Copper Bromide)  $\text{Cu}_2\text{Br}_2$ , white or gray crystals slightly soluble in cold water.

Cuprous Chloride (Copper Chloride)  $\text{CuCl}$  or  $\text{Cu}_2\text{Cl}_2$ , green, tetrahedral crystals which is insoluble in water; used as a heat and light stabilizer for nylon and as a catalyst for chemical synthesis. used as a crude for phthalocyanine blue pigments; used as desulfuring agent in the refinery industry

Cuprous Fluoride (Copper Fluoride)  $\text{Cu}_2\text{F}_2$ , red crystalline powder which melts at 908 C.

Cuprous Oxide (Copper Oxide)  $\text{Cu}_2\text{O}$ , an oxide of copper found in nature as cuprite and formed on copper by heat; used chiefly as a pigment and as a fungicide; soil additive; colorant in ceramics; electroplating baths; petroleum industry; Copper sulfate is the common name for the blue crystalline cupric sulfate, in which copper has valence +2. It may also refer to cuprous sulfate ( $\text{Cu}_2\text{SO}_4$ ), in which copper has valence +1. It is soluble in water but insoluble in alcohol. It usually crystallizes as a pentahydrate compound containing five molecules of water ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ) and is known in commerce as blue vitriol. It is prepared by the treatment of copper oxides with sulfuric acid. Cupric sulfate is the most important salt of copper. Cupric sulfate is utilized chiefly for agricultural purposes, as a pesticide, germicide, feed additive, and soil additive. It is also used as a raw material in the preparation of other copper compounds, electrolyte for batteries and electroplating baths, and in medicine as a locally applied fungicide, bactericide, and astringent. It also finds wide use in the preparation of pigments. Copper is an essential trace nutrient which performs a number of diverse functions in protein biochemistry. Some copper compounds such as copper sulfate are used as a supplement for livestock.

#### SALES SPECIFICATION

APPEARANCE: bluish to green powder

CONTENT: 92.0% min

Cu: 54.5% min

WATER: 3.0% max

pH: 6 - 7

#### FEED GRADE

APPEARANCE: greenish powder

CONTENT: 98.0% min

Cu: 58.0% min

CHLORIDE: 15.0% min  
Fe: 0.1% max  
Hg: 1ppm max  
Ni: 10ppm max  
Zn: 50ppm max  
As: 2ppm max  
Cd: 2ppm max  
INSOLUBLES: 0.2% max (in acid)  
PARTICLE SIZE: 200 - 100 MESH (90.0% MIN)  
BULK DENSITY: 1760 kg/m<sup>3</sup> ± 80kg/m<sup>3</sup>  
MOISTURE: 1.5% max

TRANSPORTATION

PACKING: 25kg in bag  
HAZARD CLASS: 6.1 (Packing Group: III)  
UN NO.: 2775



IVORYCHEM PTE LIMITED  
15 Beach Road #02-09  
Beach Centre  
Singapore 189677  
Tel: +65 63377765  
Fax: +65 63377730  
contact@ivorychem.com  
www.ivorychem.com

Company Registration No 200405572W