



DuPont™ Kocide® Opti™

fungicide/bactericide

Technical Information

Active Ingredient:

300 g/kg COPPER present as copper hydroxide in the form of a water dispersible granule.

Pack Sizes:

1.5 kg
10 kg



GROUP

M1

FUNGICIDE

CORROSIVE**Keep out of reach of children****ECOTOXIC**

A WATER DISPERSIBLE GRANULE PROTECTANT FUNGICIDE FOR THE CONTROL OF VARIOUS DISEASES OF FRUIT AND VEGETABLE CROPS.

Registered pursuant to the ACVM Act 1997 No. P7726

See www.foodsafety.govt.nz for registration conditions.

Approved pursuant to the HSNO Act 1996 Code HSR000739

READ LABEL BEFORE MIXING AND APPLYING

HAZARD CLASSIFICATION

6.1D, 6.3B, 6.5B, 6.9B, 8.3A, 9.1A, 9.3C

APPROVED HANDLER

This product must be under the control of an approved handler during use. Use of this product in any manner contrary to this label may be an offence under the HSNO Act.

DANGER - This product is corrosive and may cause eye damage.

HARMFUL - May be harmful if swallowed, inhaled or absorbed through the skin. May cause mild skin irritation and sensitisation from prolonged skin contact. May cause lung damage from repeated oral exposure at high doses.

ECOTOXIC

Very toxic to aquatic organisms. Avoid contamination of any water supply with product or empty container. Harmful to terrestrial vertebrates.

DO NOT allow spray drift outside the target area.

PRECAUTIONS

Keep out of reach of children. Avoid skin and eye contact. Avoid breathing dust or spray mist. **DO NOT** eat, drink or smoke while using. When mixing or applying wear waterproof gloves, hat, safety goggles, overalls and footwear. Wash hands and face before meals and after work. Store in original container, tightly closed and under lock and key. **DO NOT** store with Class 1, 2, 3.2, 4 or 5 substances or feed, seeds or foodstuffs. Stores containing more than 100 kg of this product require secondary containment and are subject to signage. When stored appropriately, this product should show no significant degradation for 2 years from the date of manufacture. Contact your supplier for further information about the use of any product that is older than this.

DISPOSAL

Container disposal: Ensure container is empty. Burn, if circumstances, especially wind direction permit, otherwise bury in an approved landfill. Dispose of this product only by using according to this label. Always follow local authority requirements.

FIRST AID

If swallowed: **DO NOT** induce vomiting. For advice, contact the National Poisons Centre 0800 POISON (0800 764766) or a doctor immediately. For eyes: Hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the National Poisons Centre, or for at least 15 minutes. For skin: If skin and hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by the National Poisons Centre, or doctor.

If inhaled: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. Get medical attention.

SPILLAGE

Wear appropriate protective clothing. Shovel or sweep up and dispose of waste safely in an approved landfill.

GENERAL INSTRUCTIONS

Kocide® Opti™ is a stable form of copper hydroxide in a dry flowable formulation. It is characterized by an extremely easy to pour, free flowing formulation, fine particle size, ease of dispersion and stable spray suspensions. It has high activity in controlling a variety of plant diseases.

Kocide® Opti™ is formulated for application from all types of spray equipment. The spray volume applied per hectare will depend on the spray equipment used, the specific crop and stage of crop growth. For dilute, high volume sprays, use 200 litres (air assisted booms) to 800 litres (hydraulic booms) of water per hectare on most vegetable crops, up to 2500 litres per hectare on mature kiwifruit and grape vines, up to 3000 litres per hectare on mature citrus, and up to 6000 litres per hectare on mature avocados and fruit orchards. **FOR LOW VOLUME, SEMI CONCENTRATE SPRAYS ADJUST THE SPRAY TANK CONCENTRATION TO APPLY THE SAME QUANTITY OF KOCIDE® OPTI™ PER HECTARE AS FOR DILUTE SPRAYS.**

FROST INJURY PROTECTION (Bacterial Ice Nucleation Inhibitor)

Application of Kocide® Opti™ made to all crops listed on this label at the rates indicated, 2 - 5 days prior to anticipated frost conditions, will afford control of ice nucleating bacteria (*Pseudomonas syringae*, *Erwinia herbicola* and *Pseudomonas fluorescens*) and may therefore provide protection against light frost. Not recommended for those geographical areas where weather conditions favour severe frost.

FUNGICIDE RESISTANCE WARNING



DuPont™ Kocide® Opti™ is a member of the Inorganic group of fungicides. For resistance management the product is a Group M1 fungicide.

Some naturally occurring individual fungi resistant to Group M1 fungicides may exist through normal genetic variability in any fungal population. The resistant individuals can eventually dominate the fungal population if these fungicides are used repeatedly. These resistant fungi will not be controlled this product or other Group M1 fungicides, thus resulting in a reduction in efficacy and possible yield loss. Since the occurrence of resistant fungi is difficult to detect prior to use, DuPont accepts no liability for any losses that may result from the failure of this product to control resistant fungi. Monitor insect populations for loss of field efficacy.

For further information contact your farm chemical supplier, consultant, or local DuPont Representative.

MIXING INSTRUCTIONS

DuPont™ Kocide® Opti™ fungicide/bactericide is not water soluble, it is water dispersible and as such must have direct contact with water to disperse. Always pour DuPont™ Kocide® Opti™ fungicide/bactericide slowly into water while stirring. No additional surfactants are needed.

Fill spray tank one-half full with water. Pour the correct quantity of DuPont™ Kocide® Opti™ fungicide/bactericide slowly into the tank while hydraulic or mechanical agitation is operating and continue filling with water. Spreaders, sticker, insecticides and nutrients etc should be added last only after the DuPont™ Kocide® Opti™ fungicide/bactericide has been thoroughly mixed. Observe

all cautions and limitations on the labels of all products used in mixtures. If compatibility is in question, use the compatibility jar test before mixing.

DuPont™ Kocide® Opti™ fungicide/bactericide may be measured volumetrically. As a guide use the scale below. Pour DuPont™ Kocide® Opti™ fungicide/bactericide slowly into a dry measuring cylinder or jug.

DUPONT™ KOCIDE® OPTI™ FUNGICIDE/BACTERICIDE
50 g = 55 mL
100 g = 110 mL
150 g = 165 mL
200 g = 220 mL
250 g = 275 mL
300 g = 330 mL
500 g = 550 mL
1000 g = 1100 mL

NOTE: Measurement by weight is the most accurate.

COMPATIBILITY

DuPont™ Kocide® Opti™ fungicide/bactericide is compatible with most commonly used fungicides and insecticides as a tank mix. **DO NOT MIX** with Attack® for use on glasshouse crops. **DO NOT MIX** with diazinon or with strongly alkaline or acidic materials. If compatibility is in question, use the compatibility jar test before mixing a whole tank. For further information, consult your supplier.

The **mixing sequence recommended is:** water soluble bags, dry flowable or water dispersible granules (DuPont™ Kocide® Opti fungicide/bactericide), wettable powders, water based suspension concentrates, water soluble concentrates, oil dispersion concentrates, emulsifiable concentrates, adjuvants and surfactants, soluble fertilisers.

CROPS CULTIVARS NOT TESTED

The crop safety of all potential tank-mixes, including additives and other pesticides, on all crops has not been tested. Before applying any tank-mixture not specifically recommended on this label or other DuPont supplemental labelling, the safety to the target crop must be confirmed. To test for crop safety, apply the combination to a small area of the target crop in accordance with the label instructions to ensure that a phytotoxic response will not occur.

Not all crops within a crop group, and not all varieties, cultivars or hybrids of crops, have been individually tested for crop safety. It is not possible to evaluate for crop safety all applications of DuPont™ Kocide® Opti™ fungicide/bactericide on all crops within a crop group, on all varieties, cultivars, or hybrids of those crops, or under all environmental conditions and growing circumstances. To test for crop safety, apply the product in accordance with the label instructions to a small area of the target crop to ensure that a phytotoxic response will not occur, especially where the application is a new use of the product by the applicator.

APPLICATION PROCEDURE:

Apply with well maintained, accurately calibrated spray equipment. Complete spray coverage is essential for disease control. Forward speeds should be sufficiently slow to ensure full spray coverage of the crop being treated. For specified crops do

not apply less than the label recommended minimum rate of DuPont™ Kocide® Opti™ fungicide/bactericide. Under heavy disease pressure or when conditions favour such, use the higher rate and shorter spray intervals specified for each crop. In addition, use the higher rates for larger mature tree crops and dense foliage.

The per hectare use rate of DuPont™ Kocide® Opti™ fungicide/bactericide is applicable for both dilute and concentrate spraying. For concentrate spraying or aerial application, unless you have had specific previous experience, it is advisable to test for compatibility with other chemicals and tolerance to crop injury prior to full scale commercial utilization. While volume is important in obtaining full spray coverage, often factors such as foliage density, environmental conditions and sprayer calibrations, have a greater impact. Ensure that sprayers are calibrated to spray equipment manufacturer's specifications and environmental conditions are within acceptable tolerances.

NOTE: DuPont™ Kocide® Opti™ fungicide/bactericide should not be applied in a spray solution having a pH of less than 6.5 as phytotoxicity may occur. Applying DuPont™ Kocide® Opti™ fungicide/bactericide in a spray solution having a pH greater than 9.0 may result in reduced level of disease control. Environmental conditions such as extended periods of wet weather, which alter the pH of the leaf surface, may affect the performance of DuPont™ Kocide® Opti™ fungicide/bactericide resulting in possible phytotoxicity or loss of effectiveness.

RECORD KEEPING

Records of use, as described in The New Zealand Management of Agrichemicals (NZS8049) must be kept.

NOTICE TO BUYER

DuPont warrants that this product conforms to the chemical description on the label thereof and if reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use of application, all of which are beyond the control of DuPont. To the extent permitted at law, DuPont shall not be liable for consequential, special or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the buyer.

TO THE EXTENT PERMITTED AT LAW, DUPONT MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

DIRECTIONS FOR USE

It is an offence to use this product on animals.

CROP	DISEASE	RATE g/100 L	APPLICATION RATE AND TIMING
Apples	Black spot	110 (minimum 2.2 kg/ha)	Apply as a full cover spray. Make application between silver-tip and green-tip. CAUTION: Late application may cause phytotoxicity. Discontinue use when green-tip is 1 cm.
Asparagus	Stemphylium leaf spot	250 - 375 (minimum 2.5 kg/ha)	Commence spraying at first appearance of disease after closing up and repeat at 14 day intervals. Ensure good plant coverage. Under high disease pressure a program of up to six applications may be necessary.
Avocado	Anthrachnose	70 – 90 (minimum 2.0 kg/ha)	Apply at monthly intervals from flowering to harvest. Use the higher rate when conditions favour disease. During prolonged wet weather, reduce application intervals to 14 days.
Beans	Bacterial blight (Halo and common)	250 - 310 (minimum 1.36 kg/ha)	Apply as a protective spray at 7 -14 day intervals when plants are 15 cm high.
Bushfruit Cane	Cane wilt, Cane spot, Spur blight, Leaf spot	70 – 90 (minimum 0.65 kg/ha)	Apply at bud burst and green tip and as a seasonal spray at 10 - 14 day intervals. Use the higher rate early season or under high disease pressure.
Brassica vegetables: Cabbage Cauliflower Broccoli Brussel Sprouts	Downy mildew	70 – 90 (minimum 0.3 kg/ha)	Begin application after transplants are set in the field shortly after emergence of field seeded crops. Repeat at 10 - 14 day intervals.
Celery	Septoria Leaf spot	90 (minimum 0.44 kg/ha)	Apply as soon as the plants are set in the field, then at 5 - 7 day intervals depending on disease severity and environmental conditions. Sunspray [®] may be added at 1 litre per 100 litres of spray mix.
Citrus	Melanose Verrucosis	45 – 90 (minimum 0.44 kg/ha for mature trees)	Apply during pre and post bloom periods.
	Brown rot	90 - 110 (minimum 1.75 kg/ha for mature trees)	Apply in the autumn and continue as needed. Apply to skirts of trees to a height of at least 1 metre. Apply also to bare ground 0.5 metres beyond skirt. Use higher rates when conditions favour disease. Copper marking may occur on sensitive varieties or under slow drying conditions.
Cucurbits	Angular leaf spot Downy mildew	70 - 130 (minimum 0.65 kg/ha)	Apply at 7 day intervals after plants have started to vine.
Feijoas	Leaf spot (<i>Glomerella sphaceloma</i>)	70 - 90 (minimum 1.0 kg/ha)	Repeat as necessary.
Forestry, Pinus radiata	Pine needle blight (<i>Dothistroma pini</i>)	2.5 - 4.4 kg/ha (aerial to plantations)	Apply in 60 - 100 L/ha. Make one application in November or early December. Repeat at yearly intervals if necessary.
		1.25 - 3.1 kg/ha (ground application to nurseries)	Apply with 1% summer oil in 600 - 1,100L of water/ha. Commence spraying in October or November and repeat at monthly intervals until planting out.
Grapes	Black spot Downy mildew	65 - 130 (minimum 0.9 kg/ha)	Begin application at bud break and continue to apply during the pre and post bloom periods at 10 - 14 day intervals until harvest. NOTE: Discontinue use if signs of injury are observed.

DIRECTIONS FOR USE (continued)

CROP	DISEASE	RATE g/100 litres	APPLICATION RATE AND TIMING
Kiwifruit	Leaf spot (<i>Phomopsis</i> sp. and others), Botryosphaeria	70 to 90 The rate is for dilute spraying only (spray up to point of run-off). For concentrate spraying, adjust dilution rate accordingly.	Apply as post harvest dormant spray only. Apply after harvest but before leaf fall, after pruning, and as two sprays one month apart prior to bud burst.
	Psa (<i>Pseudomonas syringae pathovar actinidiae</i>) (suppression only)		Apply as protectant timed prior to a significant rainfall (infection) event or immediately after when crop is dry. Apply at pre- and post-flowering. DO NOT apply to open flowers. Use the higher rate if a major or extended rain event is expected. <u>Warning</u> higher rates and/or multiple applications and/or poor drying conditions can result in leaf drop, leaf marking, and marginal leaf burn. Fruit marking may occur from any application post flowering, but the risk will reduce as the season progresses. Some varieties (e.g. Hort16A, Green14) appear more sensitive than other varieties to repeated applications of copper. Tank mixing with other chemistry may increase fruit marking and leaf damage. Kocide® Opti™ must be used as part of a Psa management program. Refer to the latest Zespri Crop Protection program and Kiwigreen Best Practice guidelines for more information.
Lettuce	Downy mildew	70 - 110 (minimum 0.33 kg/ha)	Begin treatment from seed emergence or when transplants are set in the field and repeat every 7 - 10 days as needed to suppress the disease.
Onions	Downy mildew Bacterial blight	90 (minimum 1.0 kg/ha)	Apply when the disease first appears and repeat every 10 - 14 days while conditions allow infection.
Passionfruit	Septoria spot Brown rot Grease spot	45 (minimum 0.44 kg/ha)	Apply at 2 – 4 week intervals alternating with mancozeb from November to March. Where grease spot is a problem, 2 week intervals may be necessary.
Peas	Downy mildew Leaf spot	70 - 90 (minimum 0.66 kg/ha)	Apply from seed emergence and repeat at 7 - 14 day intervals depending upon disease severity.
Pear (including Nashi)	Black spot	110 (minimum 2.2 kg/ha)	Apply as full cover spray. Make application between silver-tip and green-tip. CAUTION: Late application may cause phytotoxicity. Discontinue use when green-tip is 1 cm. NON-BEARING TREES: Maintain a protective cover of regular sprays at 14 - 21 day intervals until active vegetative growth ceases. Reduce interval between sprays if wet weather persists. POST HARVEST: Apply at 110 g/100 litres at 21 day intervals from harvest to leaf fall. Reduce intervals between sprays if wet weather occurs and vegetative growth is active.
	Fire blight (<i>Erwinia amylovora</i>)	25 - 45	SMOOTH SKIN VARIETIES: DO NOT apply between green tip and harvest as russetting may occur.
Potato	Early blight Late blight	130 – 200 (minimum 1.3 kg/ha)	Apply every 7 days from when plants are 15 cm high until 2 weeks before harvest.

DIRECTIONS FOR USE (continued)

CROP	DISEASE	RATE g/100 litres	APPLICATION RATE AND TIMING
Strawberries	Leaf spot	70 - 90 (minimum 0.65 kg/ha)	Begin application when plants are established and continue on a weekly schedule throughout the season. Use the higher rate early season or under high disease pressure. NOTE: Discontinue if signs of crop injury appear.
Stone Fruit	Leaf curl Shot hole Bladder plum	110 (minimum 2.2 kg/ha)	Correct timing is critical for effective control. Apply when buds are swelling but BEFORE and within ONE WEEK OF BUD OPENING, with a second application of 115 g/100 litres of water 10 - 14 days later.
	Bacterial blast	312 (minimum 6.25 kg/ha)	Apply at leaf fall and repeat at monthly intervals throughout the winter until bud movement, then treat as for leaf curl
Tamarillo	Leaf spot	70 (minimum 0.9 kg/ha)	Apply as necessary.
Tomato	Early blight Late blight Bacterial speck Bacterial spot	70 - 130 (minimum 0.8 – 1.75 kg/ha)	Apply at 7 - 10 day intervals depending on conditions favourable for development of the disease. Ensure spray volumes are increased as crop reaches maximum growth so that full cover spraying of upper and lower leaf surfaces is obtained. Repeat application after more than 13 mm rain or irrigation.

The information set forth herein is furnished free of charge and is based on technical data that DuPont believes to be reliable. It is intended for use by persons having technical skill at their own discretion and risk. DuPont makes no warranties, expressed or implied, and assumes no liability in connection with any of this information. Nothing herein is to be taken as license to operate under or a recommendation to infringe on any patents.

© 2015 DuPont. All rights reserved. The DuPont Oval Logo, DuPont™, Opti™ are trademarks or registered trademarks of DuPont or its affiliates.

Kocide® is a registered trademark of Kocide LLC.

* Sunspray is a Registered Trademark of Sun Oil Company, USA

Attack is a Trademark of Syngenta New Zealand Limited.

Formulated for and distributed by
DuPont (New Zealand) Limited
Level 1,
14 Ormiston Road
East Tamaki, Auckland 2016
Telephone: 0800 65 8080
www.cropprotection.dupont.co.nz