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GROUP 24 BACTERICIDE

KASUMIN[®] 2L

Bactericide

**COMMERCIAL
LIQUID**

READ THE LABEL BEFORE USING

KEEP OUT OF REACH OF CHILDREN

POTENTIAL SENSITIZER

GUARANTEE:

Kasugamycin, present as hydrochloride hydrate ... 2.00%

Contains 1,2-benzisothiazolin-3-one at 0.02% as a preservative

REGISTRATION NO. 30591

PEST CONTROL PRODUCTS ACT

NET CONTENTS: 10 L

**Arysta LifeScience North America LLC
15401 Weston Parkway, Suite 150
Cary, NC 27513**

For Product Use Information Call 1-866-761-9397

GENERAL INFORMATION -

Kasumin 2L Bactericide is a liquid formulation of kasugamycin hydrochloride hydrate (2.3%) containing 2 % (by weight) of kasugamycin. Kasugamycin is an aminoglycosidic antibiotic (bactericide) that controls fire blight (*Erwinia amylovora*) on pome fruit, caneberry subgroup 13-07A, Saskatoon berry and suppresses walnut blight (*Xanthomonas campestris* pv. *juglandis*) on walnuts as well as bacterial spot (*Xanthomonas campestris* pv. *vesicatoria*), bacterial stem canker (*Clavibacter michiganensis* subsp. *michiganensis*) on fruiting vegetables (greenhouse and field), and blossom blast and bacterial canker (*Pseudomonas syringae*) on cherries (Crop Subgroup 12-09A).

PRECAUTIONS

- **KEEP OUT OF REACH OF CHILDREN**
- May cause sensitization.
- Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

Wear a long-sleeved shirt and long pants, chemical-resistant gloves, socks and shoes during mixing, loading, application, clean-up and repair. It is important to wear gloves for the mixing/loading operation and when making sprayer and nozzle repairs and adjustments. Do not handle this product with bare hands. Follow the manufacturer's instructions for cleaning/maintaining personal protective equipment. If no such instructions for washables are available, use detergent and hot water. Keep and wash personal protective equipment separately from other laundry.

Change contaminated clothing daily and wash before use. Remove clothing immediately if pesticide gets inside. Shower immediately and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves and leave on before removing any protective clothing. As soon as possible shower and change into clean clothing.

Apply only when the potential for drift to areas of human habitation or areas of human activity such as houses, cottages, schools and recreational areas is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment and sprayer settings.

RESTRICTED ENTRY INTERVAL: DO NOT enter or allow worker entry into treated areas (including greenhouses where crops have been treated) during the restricted-entry interval (REI) of 12 hours following application.

Note: If this pest control product is to be used on a commodity that may be exported to the US and you require information on acceptable residue levels in the US, visit CropLife Canada's web site at: www.croplife.ca.

DO NOT apply this product by air. Use only according to label directions.

FIRST AID

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. Call a poison control centre or doctor for treatment advice.
If on skin or clothing	Take off contaminated clothing. Rinse skin with plenty of water for 15–20 minutes. Call a poison control centre 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
If swallowed	Call a poison control centre or doctor 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 centre or doctor. Do not give anything by mouth to an unconscious person.
Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.	

**In case of emergency involving a major spill, fire or poisoning
call CHEMTREC 24-hours at (703) 527-3887 or 1-(800) 424-9300**

TOXICOLOGICAL INFORMATION

No specific antidote available. Treat symptomatically.

ENVIRONMENTAL HAZARDS

Toxic to non-target terrestrial plants. Observe buffer zones specified under DIRECTIONS FOR USE.

To reduce runoff from treated areas into aquatic habitats avoid application to areas with a moderate to steep slope, compacted soil, or clay.

Avoid application when heavy rain is forecast.

Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

STORAGE AND DISPOSAL

STORAGE: Store in a dry place away from excessive heat. To prevent contamination store this product away from food or feed. Store in original container only.

DISPOSAL:

DO NOT reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with 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.

DIRECTIONS FOR USE

This product contains the bactericide kasugamycin. To reduce the development of resistant plant pathogenic bacteria, this product should be used only when required.

As this product is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

Field sprayer application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** apply with spray droplets smaller than the American Society of Agricultural Engineers (ASAE) medium classification. Boom height must be 60 cm or less above the crop or ground.

Airblast application: **DO NOT** apply during periods of dead calm. Avoid application of this product when winds are gusty. **DO NOT** direct spray above plants to be treated. Turn off outward pointing nozzles at row ends and outer rows. **DO NOT** apply when wind speed is greater than 16 km/h at the application site as measured outside of the treatment area on the upwind side.

DO NOT apply by air.

Buffer zones:

Use of the following spray methods or equipment **DO NOT** require a buffer zone: hand-held or backpack sprayer and spot treatment.

The buffer zones specified in the table below are required between the point of direct application and the closest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands).

Method of application	Crop		Buffer Zones (metres) Required for the Protection of Terrestrial Habitat:
Airblast	Pome fruit, walnuts, cherry subgroup 12-09-A	Early growth stage	2
		Late growth stage	1
	Caneberry Subgroup 13-07A, Saskatoon berry	Early growth stage	3
		Late growth stage	2

For tank mixes, consult the labels of the tank-mix partners and observe the largest (most restrictive) buffer zone of the products involved in the tank mixture and apply using the coarsest spray (ASAE) category indicated on the labels for those tank mix partners.

APPLICATION GUIDELINES**Broadcast Ground Sprayers**

Thorough coverage is necessary to provide good disease control. Applications using sufficient water volume to provide thorough and uniform coverage generally provide the most effective disease control. Check the sprayer frequently to ensure proper calibration and continued uniform application. To avoid streaked, uneven or overlapped application, use appropriate marking devices.

Use Precautions

Read and understand the entire label before opening this product. If you have questions, call Arysta LifeScience North America, LLC at 1-866-761-9397 or obtain technical advice from the distributor or your provincial agricultural representative. Application of KASUMIN 2L BACTERICIDE must meet and or conform to the following:

USE DIRECTIONS FOR SPECIFIC CROPS

KASUMIN 2L BACTERICIDE provides control or suppression of important diseases of fruiting vegetables, pome fruit, walnuts, caneberry subgroup 13-07A, Saskatoon berry and cherries (Crop Subgroup 12-09A).

FRUITING VEGETABLES - CROP GROUP 8 (GREENHOUSE OR FIELD):

Eggplant, Groundcherry, Pepino, Pepper (includes bell pepper, chili pepper, cooking pepper, pimento, sweet pepper), Tomatillo, Tomato

Disease Suppression	Application Rate	Application Timing and Resistance Management
Bacterial Spot <i>(Xanthomonas campestris pv. vesicatoria)</i> Bacterial Stem Canker <i>(Clavibacter michiganensis subsp. michiganensis)</i>	100 ppm (e.g., 1.2 L/ha in 240 L/ha of water)	<ul style="list-style-type: none"> ▪ Spray volume must be sufficient to provide good coverage of treated foliage. ▪ Begin applications when conditions favour disease development. ▪ Repeat applications at intervals that are necessary or when conditions favour disease development.

RESTRICTIONS AND OTHER INFORMATION:

- Apply Kasumin at a 100 ppm concentration.
- Do not apply more than 1.2L/ha or 240L/ha carrier volume per application.
- Spray volume must be sufficient to provide good coverage of treated foliage.
- Follow the mixing directions provided in the table under “Mixing Procedures” to create the desired volume of spray solution.
- Do not apply more than 3.6 L Kasumin 2L Bactericide per hectare per year.
- Do not make more than 3 applications of Kasumin 2L Bactericide per season.
- A minimum interval of 7 days between applications is required.
- Do not make more than two consecutive applications of Kasumin 2L Bactericide. If additional applications are needed, rotate with another product with a different mode of action that is registered for this use.
- For resistance management purposes, do not apply on greenhouse vegetable transplants.
- Do not apply Kasumin 2L Bactericide within 1 day of harvest.

TANK MIXES

Kasumin 2L Bactericide may be tank-mixed with Kocide DF Fungicide/Bactericide (PCP# 24538), Kocide 101 Fungicide (PCP# 14417), or Kocide 2000 (PCP# 27348) for control of registered bacterial diseases on tomatoes and peppers (greenhouse and field). When applied as a tank-mix combination, read and observe all label directions, including rates, and

restrictions for each product used in the tank-mix. Follow the more stringent label precautionary measures for mixing, loading and applying stated on both product labels.

POME FRUIT - CROP GROUP 11-09 (BEARING AND NONBEARING):
Apple, Azarole, Crabapple, Mayhaw Medlar, Pear, Asian Pear, Quince, Chinese Quince, Japanese Quince, Tejocote, Cultivars, varieties and/or hybrids of these commodities

Disease Control	Application Rate	Application Timing and Resistance Management
Fire Blight <i>(Erwinia amylovora)</i>	100 ppm (e.g., 5.0 L/ha in 1000 L/ha of water)	<ul style="list-style-type: none"> ▪ Spray volume must be sufficient to provide good coverage of treated foliage. ▪ Reduced spray volumes may be utilized for small trees where complete coverage can be obtained with less water per hectare. ▪ Begin applications at 20 – 30% bloom or when conditions favour disease development. ▪ Repeat applications at 7-day intervals or when conditions favour disease development.

RESTRICTIONS AND OTHER INFORMATION:

- Apply Kasumin at a 100 ppm concentration.
- Do not apply more than 5L/ha or 1000 L/ha carrier volume per application.
- Spray volume must be sufficient to provide good coverage of treated foliage.
- Follow the mixing directions provided in the table under “Mixing Procedures” to create the desired volume of spray solution.
- Do not apply more than 20.0 L of Kasumin 2L Bactericide per hectare per year.
- Do not make more than 4 applications of Kasumin 2L Bactericide per season.
- Do not make more than two consecutive applications of Kasumin 2L Bactericide. If additional applications are needed, rotate with another product with a different mode of action that is registered for this use.
- Do not use alternate tree-row application method.
- Do not apply after petal fall.
- Do not apply Kasumin 2L Bactericide within 90 days of harvest.

WALNUT

Disease Suppression	Application Rate	Application Timing and Resistance Management
Walnut Blight (<i>Xanthomonas campestris</i> pv. <i>juglandis</i>)	100 ppm (e.g., 5.0 L/ha in 1000 L/ha of water)	<ul style="list-style-type: none"> ▪ Spray volume must be sufficient to provide good coverage of treated foliage. ▪ Reduced spray volumes may be utilized for small trees where complete coverage can be obtained with less water per hectare. ▪ Begin applications when conditions favour disease development.
RESTRICTIONS AND OTHER INFORMATION:		
<ul style="list-style-type: none"> • Apply Kasumin at a 100 ppm concentration. • Do not apply more than 5L/ha or 1000 L/ha carrier volume per application. • Spray volume must be sufficient to provide good coverage of treated foliage. • Follow the mixing directions provided in the table under “Mixing Procedures” to create the desired volume of spray solution. • Do not apply more than 20.0 Litres of Kasumin 2L Bactericide per hectare per year. • Do not make more than 4 applications of Kasumin 2L Bactericide per season. • A minimum interval of 14 days between applications is required. • Do not make more than two consecutive applications of Kasumin 2L Bactericide. If additional applications are needed, rotate with another product with a different mode of action that is registered for this use. • Do not use alternate tree-row application method • Do not apply Kasumin 2L Bactericide within 100 days of harvest. 		

MIXING PROCEDURES

Prepare no more spray mixture than is needed for the immediate operation. Thoroughly clean spray equipment before using this product. Agitation is necessary for proper dispersal of the product. Maintain maximum agitation throughout the spraying operation. Do not let the spray mixture stand overnight in the spray tank. Flush the spray equipment thoroughly following each use and apply the rinsate to a previously treated area.

Mixing Instructions for 100 ppm spray solution for fruiting vegetables	
Litres of Water per Hectare (L/ha)	product (L/ha)
50	0.25
100	0.5
240	1.2

Mixing Instructions for 100 ppm spray solution for treatment of fruit trees and walnuts	
Litres of Water per Hectare (L/ha)	product (L/ha)
50	0.25
100	0.5
200	1
500	2.5
1000	5

If using KASUMIN 2L BACTERICIDE in a tank-mixture with Kocide DF, Kocide 101 or Kocide 2000, observe all directions for use, crop/sites, use rates, dilution ratios, precautions, and limitations, which appear on the Kocide product label. No label dosage rate may be exceeded, and the most restrictive label precautions and limitations must be followed.

RESISTANCE MANAGEMENT RECOMMENDATIONS

For resistance management, please note that Kasumin 2L Bactericide contains a Group 24 bactericide. Any microbial population may contain individuals naturally resistant to Kasumin 2L Bactericide and other Group 24 Bactericides. A gradual or total loss of pest control may occur over time if these bactericides are used repeatedly in the same fields. Other resistance mechanisms that are not linked to the site of action but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed. To reduce the likelihood of bacteria developing resistance to kasugamycin, sound resistance management practices should be employed when using this product. Such practices include limiting the number of consecutive applications of Kasumin 2L Bactericide, and alternating Kasumin 2L Bactericide applications with other bactericides that have a different mode of action. See crop specific use directions above.

To delay resistance:

- Where possible, rotate the use of Kasumin 2L Bactericide with products from different groups that control the same pathogens.
- Do not make more than two consecutive applications of Kasumin 2L Bactericide before alternating to a registered bactericide with a different mode of action.
- Use tank-mixtures with bactericides from a different group when such use is permitted.
- Kasumin 2L Bactericide use should be based on an integrated disease management program that includes scouting, historical information related to pesticide use and crop rotation and considers host plant resistance, impact of environmental conditions on disease development, disease thresholds, as well as cultural, biological and other chemical control practices. Where possible, make use of predictive disease models to effectively time fungicide/bactericide applications.

- Monitor treated pathogen populations for resistance development. Notify Arysta LifeScience North America LLC if reduced sensitivity of the pathogen to Kasumin 2L Bactericide is suspected.
- 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 bactericide 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.
- Where possible, make use of predictive disease models to effectively time fungicide applications.
- For further information and to report suspected resistance, contact Arysta LifeScience North America LLC at 1-866-761-9397.

MINOR USES:

NOTE TO USER: READ THE FOLLOWING BEFORE USING THIS PRODUCT FOR THE INDICATED SPECIAL USE APPLICATIONS (LISTED BELOW):

The DIRECTIONS FOR USE for this product for the uses described below were developed by persons other than Arysta LifeScience (Arysta) and accepted for registration by Health Canada under the User Requested Minor Use Label Expansion program. Arysta itself makes no representation or warranty with respect to performance (efficacy) or crop tolerance (phytotoxicity) claims for this product when used on the crops listed below. Accordingly, the Buyer and User assume all risks related to performance and crop tolerance arising, and agree to hold Arysta harmless from any claims based on efficacy or phytotoxicity in connection with the uses described below.

CROP	PATHOGEN CONTROLLED	APPLICATION RATE OF KASUMIN 2L BACTERICIDE	REMARKS
Caneberry Subgroup 13-07 A ¹ (<i>Rubus</i> spp.) Saskatoon berry (<i>Amelanchier alnifolia</i>)	Fire blight (<i>Erwinia amylovora</i>)	100 ppm (e.g., 5.0 L/ha in 1000 L/ha of water)	TIME OF APPLICATION: Begin applications at beginning of bloom before the first flowers open and continue during bloom. Repeat applications every 3-4 days under warm conditions favouring disease development. Under cool conditions apply every 5-7 days.

			<p>Apply a maximum of four applications per year using ground equipment.</p> <p>Do not make more than two consecutive applications of Kasumin 2L Bactericide. If additional applications are needed, rotate with another product with a different mode of action that is registered for this use. PHI is 1 day</p>
<p>1 Caneberry subgroup: Blackberry (including Andean blackberry, arctic blackberry, bingleberry, black satin berry, boysenberry, brombeere, California blackberry, Chesterberry, Cherokee blackberry, Cheyenne blackberry, common blackberry, coryberry, darrowberry, dewberry, Dirksen thornless berry, evergreen blackberry, Himalayaberry, hullberry, lavacaberry, loganberry, lowberry, Lucretiaberry, mammoth blackberry, marionberry, mora, mures deronce, nectarberry, Northern dewberry, olallieberry, Oregon evergreen berry, phenomenalberry, rangeberry, ravenberry, rossberry, Shawnee blackberry, Southern dewberry, tayberry, youngberry, zarzamora,) loganberry, raspberry (black and red), wild raspberry and cultivars, varieties and/or hybrids of these),</p>			
<p>Cherry Subgroup 12-09A Capulin Cherry, black Cherry, Nanking, Cherry, sweet Cherry tart, and Cultivars, varieties and/or hybrids of these</p>	<p>Control of blossom blast (<i>Pseudomonas syringae</i>) and suppression of bacterial canker (<i>Pseudomonas syringae</i>)</p>	<p>100 ppm (e.g., 5.0 L/ha in 1000 L/ha of water)</p>	<p>Begin applications at the beginning of bloom. Repeat applications at 7 day intervals. Apply a maximum of four applications per year. PHI is 30 days.</p>

NOTICE TO USER

This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *PEST CONTROL PRODUCTS ACT* to use this product in a way that is inconsistent with the directions on the label. The user assumes the risk to persons or property that arises from any such use of this product.