

ENGELHARD

Surround® WP

Crop protectant

Surround® WP crop protectant forms a barrier film which acts as a protectant against sunburn and heat stress

Contains: 950 g/kg processed and refined kaolin in the form of a wettable powder

Manufactured by:
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Distributed in Australia by:
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The use of Surround® WP crop protectant is covered by Australian Patents 731,843, 731,684 and 747,461, additional worldwide patents issued and pending.

9/04
Label – AU-04-1

Net Contents: 12.5 kg

Open here to read full label.

PRECAUTIONARY STATEMENTS:

Causes slight eye irritation. Avoid contact with eyes. May cause irritation to the respiratory system. Avoid breathing dust or mist.

PERSONAL PROTECTIVE EQUIPMENT:

Applicators and other handlers should wear a dust/mist-filtering respirator. Nuisance dust masks and goggles are recommended for harvesters especially when plants are shaken during harvest.

FIRST AID:

If in eyes, hold eyes open and flood gently with water. For further information refer to the Material Safety Data Sheet.

DIRECTIONS FOR USE

Before using this product, read the mandatory directions in I d, Post-harvest Packing and Washing.

I. GENERAL INFORMATION

Surround WP crop protectant forms a mineral-based particle film intended for protection of agricultural crops and plants in nurseries and greenhouses. When Surround WP is applied to plants, a dry white film results. Thorough, uniform, and consistent coverage is essential throughout the stress period.

Pre-harvest intervals (PHI): Surround WP may be applied up to the day of harvest. If white residues at harvest are a concern, refer to I d, Post-harvest Packing and Washing.

Plant Response Precautions: Surround WP keeps plant surfaces cooler and an advance or delay in maturity may result. Pome and stone fruit may have maturity delays of 3 to 7 days, especially in cool regions.

a. Mix Instructions:

For Agitating Sprayer Tanks

1. Slowly add Surround WP into the water in a recirculating sprayer tank, making sure to keep agitation brisk. Sprayer tanks with strong agitation are preferred. A pre-mix tank may speed up loading operations if sprayer does not have mechanical agitation. Add directly into the mix basket if pump recirculation empties into the mix basket. If there is no mix basket, add Surround WP very slowly to the recirculating water. Avoid dumping Surround WP directly into the pump intake area as this could plug the filter or intake. Mix thoroughly.
2. Add tank-mix pesticides and adjuvants after the Surround WP.
3. Continue agitation until the tank is empty.
4. At the end of the application flush system and nozzles with fresh water. Periodically check in-line strainer and clean if necessary. Properly dispose of rinse water.

For Non-Agitating Sprayer Tanks, Such as Handheld and Backpack Sprayers

The following mixing sequence must be followed:

1. Use Surround WP at a rate of 25 to 50 g of Surround WP per one liter of water. For sprayers difficult to shake, pre-mix in a bucket per the directions below and pour suspension into sprayer.
2. Add Surround WP into 1/4 to 1/2 of the water that will be used in the batch to allow adequate space for vigorous shaking. Allow Surround WP to wet and sink into the water slowly. It is not recommended to fill with a hose or shake the container while Surround WP is floating on top of the water.
3. Mix thoroughly by shaking the closed container vigorously for 30 seconds.
4. Add tank-mix pesticides and adjuvants after the Surround WP.
5. Add the remainder of the batch water and shake the closed container for an additional 30 seconds.
6. Shake the sprayer occasionally during application.
7. At the end of the application, spray until empty and flush system and nozzles. If not empty, blow air pressure out of the line and nozzle (usually by upending) and store in a cool place. Apply any leftover mix within two to three weeks to avoid spoilage. Rinse the sprayer and allow to dry before the next batch.

b. Compatibility:

Most other insecticides, miticides, and fungicides do not generally affect Surround WP. However, the user should test mixes before use for physical and biological compatibility. When mixing with other products, pre-test a small batch for curdling, precipitation, spray beading and/or excessive run-off leading to lack of film formation, or changes in viscosity which are signs of incompatibility. Use of anti-foaming agents may interfere with proper coverage. Oil tank-mixes may temporarily reduce the whiteness of the film. Tank-mixes with oil may impair wash off if used after fruit set. Oversprays of products that require absorption into the plant should use adequate fluid amounts to wet the Surround WP film.

Tank-mixing with other white mineral particulate products such as diatomaceous earth, or other sunburn materials, such as those containing wax, latex or polymer-based materials can lead to post-harvest wash off problems. Applications of Surround WP over such products or oversprays of such products over Surround WP can also impair post-harvest wash off. If tank-mixing with sulfur, use of wettable sulfur is preferred. Elemental sulfurs should not be tank-mixed with Surround WP.

Do not apply ReTain® plant growth regulator on Surround-treated fruit trees.

c. General Application Guidelines (see also, specific crop use instructions):

Rates: Unless otherwise specified in crop instructions, use 2.5 to 5.0 kg of Surround WP per 100 L of water, using sufficient spray volume to obtain thorough **near-drip** coverage. Two or more applications may be required for complete coverage. Apply an additional spray if coverage is insufficient. Spreading on waxy plant surfaces is usually better when the plant surface is warm.

Heavy rainfall, new growth, and wind erosion will affect film quality. Reapply to re-establish coverage after heavy rain as soon as the foliage is dry. Avoid excessively thick coatings.

Foliage Dryness: Applications to dripping wet foliage can provide inadequate coverage.

Under Hot, Dry Conditions: Under very hot and dry conditions, increase volume of water and droplet size to improve deposition.

Spray Methods: Air blast, high-pressure handgun, or boom sprayers provide the best results. At given concentrations, the flow rate of suspended Surround WP is similar to water. Strainers, preferably no finer than 40 mesh, in the spray system and behind each nozzle per normal practice helps to reduce nozzle clogging.

A visual inspection (after spray has dried) of film deposition and completeness of coverage is crucial for fine-tuning spray coverage.

Overhead Irrigation and Overhead Cooling: Do not apply Surround WP through any type of irrigation system. Overhead irrigation is not preferred over Surround WP treated surfaces. Do not use with overhead cooling.

Non-Target Surfaces: Do not spray where the resulting visible white film will be undesirable or cannot be washed off, such as porous wood, masonry, asphalt, and other valuable goods.

Application Guidelines For Tree Crops: Apply with an air blast sprayer calibrated to deliver the required volume based on Tree Row Volume. The equipment should be adjusted so that the spray is evenly distributed throughout the trees.

Calculation of spray volumes based on tree row volume:

Tree Row Volume

The tree row volume is calculated as follows: TREE ROW VOLUME = 10 times (HEIGHT of TREE in METRES) times (WIDTH of TREE in METRES) divided by (BETWEEN ROW SPACE in METRES).

Dilute Spraying

- Use a sprayer designed to apply high volumes of water to obtain **near-drip** coverage. Do not apply to the point of run-off.
- Set up and operate the sprayer to achieve even coverage throughout the crop canopy.

- The required water volume should be calculated using Tree Row Volume or by referring to industry guidelines or expert advice.
- Add the amount of product specified in the Directions for Use table for each 100 L of water. Spray to **near-drip**.

A visual inspection of film deposition and completeness of coverage is crucial for fine-tuning spray coverage.

Dilute Spray Volumes:

The DILUTE SPRAY VOLUME in LITRES per HECTARE is calculated as follows:

DILUTE SPRAY VOLUME = (TREE ROW VOLUME) times (SPRAY VOLUME FACTOR). The spray volume factor for trees of high foliage density is 125.

Concentrate Spraying

- Use a sprayer designed and set up for concentrate spraying (that is a sprayer which applies water volumes less than those required to reach near-drip) and matched to the crop sprayed.
- Set up and operate the sprayer to achieve even coverage to the canopy exterior using your chosen water volume.
- Determine an appropriate dilute volume (See Dilute Spraying directions) for the crop canopy. This is needed to calculate the concentrate mixing rate.

Do not apply at a concentration of greater than **2X**.

A visual inspection of film deposition and completeness of coverage is crucial for fine-tuning spray coverage.

Concentrate Spray Volumes: Concentrate sprays are applied at lower water volumes and higher concentrations than dilute sprays.

The CONCENTRATION FACTOR of these sprays is the NUMBER OF TIMES they are MORE CONCENTRATED THAN THE DILUTE SPRAY.

The mixing rate for concentrate spraying can be calculated in the following way.

EXAMPLE ONLY:

- Calculate the DILUTE SPRAY VOLUME as above. For example 1500 L/ha.
- Your chosen concentrate spray volume: For example 750 L/ha.
- The concentration factor is: 2X (i.e. $1500 \text{ L} / 750 \text{ L} = 2$).
- If the dilute rate is 5 kg/100 L, then the concentrate rate becomes $2 \times 5 \text{ kg}$; that is 10 kg/100 L of concentrate spray.

For further information on concentrate spraying, users are advised to consult relevant industry guidelines or seek expert advice.

d. Post-harvest Packing and Washing – Mandatory directions:

Crops that will be processed

Thorough washing is not generally required for crops to be processed, as light residues of Surround WP do not affect the quality of processed products.

Crops that have their skin or treated surface removed in processing, and crops that only have traces remaining at harvest, generally do not need to be washed. Check with processor before use to ensure Surround WP treated produce is acceptable for processing.

Crops for fresh market

Post-harvest washing is required unless only early-season applications are made. Most residues wash off with packing line brushing and forced water sprays.

First time users must do a small-scale field application and post-harvest film removal trial before commercial use on fresh market crops to determine if residues can be sufficiently removed.

Traces of Surround WP white film deposits may still be visible after washing, particularly in difficult-to-brush areas of the produce (e.g., calyx, stem end, creases, etc.). Modifications to the packing line may be necessary to improve film removal. Modifications considered could include; higher pressure nozzles and nozzle types, warm water, longer soak period in the dump tank, use of different brush types; including longer haired or sculptured brushes, adjustment of brush rotation speed, overhead and additional brushes in the brush bed. Produce movement through the washing and brushing process can also be slowed. Produce that shows traces of white film after a single pass through the washing process should be washed again. Waxing further improves fruit appearance.

The use of a fresh produce washing detergent that is labeled for use in the packing line and/or wash tank may assist in film removal. The detergent would need to be cleared for this purpose by the relevant authorities and potential buyers.

For fresh market crops that will not be waxed, such as fruit for organic markets or specific export markets that do not accept waxed fruit or for washed crops where traces of white residue are not acceptable:

Unless washing facilities are adequate, cease applications sufficiently in advance of harvest to allow residue to weather off completely. For 'Red Delicious' and 'Braeburn' apple varieties do not apply any later than two months prior to harvest.

For fresh market crops that will not be washed or for field packed crops where a residual white film is not desired: Do not use this product.

Special Washing Considerations for Stone Fruit: Special washing is required for fresh market fruit; especially for fuzzy peaches. Most residues wash off with brushing and forced water sprays. An approved fruit cleaning detergent may be used in the packing line and/or wash tank. Prior to brushing, a pre-soak in approved fruit cleaning detergent is usually needed for fuzzy peaches. A pre-harvest washing trial is a good practice to determine if a detergent is necessary. If fresh market peaches cannot be washed as noted above, discontinue sprays when the fruit are approximately 3 cm in diameter. Residues of Surround WP do not affect processed fruit quality.

II. USE FOR SUNBURN AND HEAT STRESS REDUCTION

Surround WP may increase plant vigor and yield on many crops. Under high ambient temperatures, Surround WP reduces canopy temperature and can therefore reduce heat and water stress. Surround WP may improve fruit color, soluble solids, smoothness, and size with less russet, dropping, sunburn, and cracking on certain fruits.

Sunburn Management: Apply to sunburn-prone fruit, leaf, limb and trunk surfaces before conditions leading to sun damage occur. Apply initial application at full rate and a second at half rate at no more than a 7 to 10 day interval. Subsequent applications may be made at half rate (but do not reduce volume). Depending upon the length of the heat period, repeat applications may be needed at intervals of 7 to 21 days.

TREE CROPS	RATE	COMMENTS
Pome and Stone Fruits, and Olives	Initial application 5.0 kg/100 L	Apply the first two applications 7 to 10 days apart and prior to the first heat event. Apply in a water volume according to Tree Row Volume. Refer to Application Guidelines.
Citrus Fruits	Subsequent applications 2.5 kg/100 L	Cherries – Apply post-harvest only. Citrus – Use of Surround in Citrus may result in an increase in Citrus scale numbers. Monitor scale closely and if necessary use registered scale insecticides according to their label instructions. If scale is of concern and use of insecticides is not desirable do not use Surround WP.
Tropical Crops such as Avocado, Banana and Mango		On hard-to-wet foliage and fruit such as Mangoes add a non-ionic surfactant/spreader, e.g., Agral® spreader at the recommended spreader label rate to the initial spray, or when reapplying after the film has worn off. Mango – Use of Surround in Mangoes may result in an increase in Mango scale numbers. Monitor scale closely and if necessary use registered scale insecticides according to their label instructions. If scale is of concern and use of insecticides is not desirable, do not use Surround WP.

FIELD CROPS	RATE	COMMENTS
<p>Tomatoes and Cucurbit Vegetables such as Cucumber, Squash, Pumpkin, Rock melon, and Watermelon.</p>	<p>Initial application 50 kg/ha</p> <p>Subsequent applications 25 kg/ha</p>	<p>Apply the first two applications 7 to 10 days apart and prior to the first heat event. Increase the volume of water used throughout the season based upon plant size. Reapply at 10 to 14 day intervals as required to maintain an even coverage on the fruit and foliage. Continue treatment as required and maintain cover up to 7 days prior to harvest.</p> <p>Cucurbits – apply to smooth-skinned cucurbits only. Refer to I d, Post-harvest Packing and Washing before use.</p>
<p>Pineapple</p>		<p>Apply in a water volume of approximately 1000 to 1250 L/ha using a calibrated boom fitted with fan nozzles. Applications near harvest are needed if the ripening fruit changes position as its weight increases.</p> <p>Heavy rainfall, new growth and wind erosion will affect film quality. Reapply to re-establish coverage after heavy rain as soon as the foliage is dry. If the entire cover is lost due to rain, recommence applications at the initial high rate, followed by subsequent applications at the lower rate.</p> <p>For fresh market pineapple, ensure that high pressure forced water sprays adequately remove white residue per I d, Post-harvest Packing and Washing.</p>

III. STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

PRODUCT STORAGE: Store in a dry, sheltered location. Product is slippery when wet. In case of spill or leak, avoid breathing dust, clean up and dispose of wastes in compliance with applicable local regulations.

PRODUCT DISPOSAL: Spray mixture or rinsate that cannot be used according to label instructions must be disposed of according to applicable local procedures.

CONTAINER DISPOSAL: Completely empty bag into application equipment. Dispose of empty bag according to local regulations.

ENVIRONMENTAL HAZARDS: Do not contaminate water when disposing of equipment wash water.

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