

**MASTER LABEL**

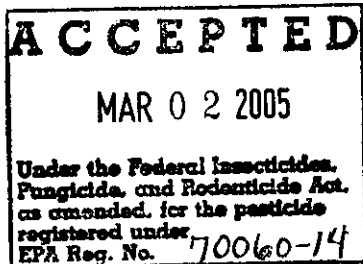


Sublabel A: Agricultural Use  
 Sublabel B: Non-Agricultural Use

**NOT A PLANT FOOD INGREDIENT**

**ACTIVE INGREDIENT:**  
 Kaolin:..... 95.0%  
 Other INGREDIENTS:.....5.0%  
 Spreader, thixotrope, sticker and diluent  
 Total: 100.0%

**KEEP OUT OF REACH OF CHILDREN**



**CAUTION**

Manufactured by:  
 Engelhard Corporation  
 101 Wood Avenue  
 Iselin, NJ 08830 USA

**Net Weight xx**

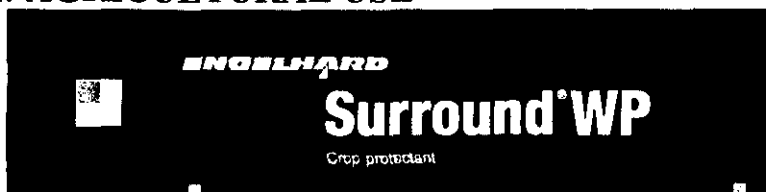
EPA Reg. No. 70060-14  
 EPA Est. No. 72797-AL-001 001 [noted as AL on lot number]  
 or 70060-GA-001 [noted as GA on lot number]

 **FOR ORGANIC PRODUCTION**

**OMRI  
 Listed  
 (Icon)**

**Growth enhancer uses are not registered in California.**

**SUBLABEL A: AGRICULTURAL USE**



Surround WP crop protectant Forms a Barrier Film, Which Acts as a Broad Spectrum Agricultural Crop Protectant for Controlling Damage from Various Insect, Mite, and Disease Pests, Growth Enhancer, and as a Protectant Against Sunburn and Heat Stress

**NOT A PLANT FOOD INGREDIENT**

**ACTIVE INGREDIENT:**

Kaolin:.....	95.0%
Other INGREDIENTS:.....	5.0%
Spreader, thixotrope, sticker and diluent	
Total: 100.0%	

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

See inside for First Aid Statements

Manufactured by:  
Engelhard Corporation  
101 Wood Avenue  
Iselin, NJ 08830 USA

**Net Weight 25 lbs (11.3 kg)**

EPA Reg. No. 70060-14  
EPA Est. No. 72797-AL-001 [noted as AL on lot number]  
or 70060-GA-001 [noted as GA on lot number]

 **FOR ORGANIC PRODUCTION**

**OMRI  
Listed**

**Growth enhancer uses are not registered in California. (Icon)**

**The use of Surround® WP product in agricultural crop protection applications is covered by US Patents 6,027,740; 6,069,112; 6,110,867 and 6,156,327.**

FIRST AID	
If in eyes	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor or gong for treatment. You may contact 1-800-424-9300 for emergency medical treatment information 24 hours a day 7 days a week	

## PRECAUTIONARY STATEMENTS

### HAZARD TO HUMANS AND DOMESTIC ANIMALS

**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

### PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers must wear:

Long sleeved shirt, long pants, socks and shoes, and a dust/mist-filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with any N. R. P. or HE filter.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Nuisance dust masks and goggles provide the best protection for harvesters especially when plants are shaken during harvest.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

### User Safety Recommendations

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using toilet.

## ENVIRONMENTAL HAZARDS

For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the state or tribal agency responsible for pesticide regulation.

Do not apply Surround WP through any type of irrigation system.

Use Surround WP in accordance with directions on this label or on separately published Engelhard supplemental labeling.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This standard contains requirements for the protection of agricultural workers on farms, in forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment. In nurseries and greenhouses workers are prohibited in the treated area and 25 feet in all directions of the nursery or the enclosed treated area until application is complete. **The restricted-entry interval (REI) is 4 hours from the time of application. Do not allow worker entry into treated areas during the restricted-entry interval (REI).** Personal protection equipment required for early entry workers are long-sleeved shirts, long pants, and shoes plus socks.

## I. GENERAL INFORMATION

Surround WP 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. Many pests are listed as suppressed, which means that full control may not be achieved, and supplemental methods may be needed to enhance the level of control. **Thorough, uniform, and consistent coverage is essential throughout the infestation or stress period.**

**Pre-harvest intervals (PHI):** Surround WP may be applied up to the day of harvest.

For fresh market crops that will not be washed or for field packed crops where a residual white film is not desired, make applications early-season only. White residue at harvest may be minimized if applications to smooth skin crops like apples stop when the fruit is approximately  $\frac{1}{4}$  of its expected size.

**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 powder into the water in a recirculating sprayer tank, making sure to keep agitation brisk. Do not add Surround WP to a sprayer tank that does not have adequate agitation. 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 pump intake area as this could plug the filter or intake. Mix thoroughly.
2. Add tank mix pesticides, if any. See compatibility section below before adding any tank mix pesticides.
3. Continue agitation until all of the material is sprayed from the tank.
4. At the end of the application, spray until empty and 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 powder at a rate of  $\frac{1}{4}$  to  $\frac{1}{2}$  lb of Surround WP powder per one gallon of water. One-half pound is approximately 3 cups. For sprayers difficult to shake, premix in a 5 gallon bucket per the directions below and pour suspension into sprayer.
2. Add Surround WP powder into  $\frac{1}{4}$  to  $\frac{1}{2}$  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. Do not fill with a hose or shake the container while powder is floating on top of the water.
3. Mix thoroughly by shaking the closed container vigorously for 30 seconds.

3. Add tank mix pesticides, if any. See compatibility section below before adding any tank mix.
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 or, blow air pressure out of the line and nozzle (usually by upending) and store in a cool place. Apply the leftover mix within two to three weeks to avoid spoilage. Rinse the sprayer and allow to air-dry before the next batch.

### **b. Compatibility:**

**SurroundWP** is not generally affected by most other insecticides, miticides, and fungicides. However, to ensure compatibility, test tank mixes before use. When mixing with other products, make up a small batch and observe slurry and film characteristics. Curdling, precipitation, spray beading and/or excessive run-off leading to lack of film formation, or changes in viscosity are signs of incompatibility. **Add tank mix pesticides after the Surround WP powder has been added.** Use of anti-foaming agents may interfere with proper coverage. Oil tank mixes may temporarily reduce the whiteness of the film. Use adequate water on oversprays of products that require absorption into the plant to ensure wetting of 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 postharvest washoff problems. Applications of **Surround WP** over such products or oversprays of such products over **Surround WP** can also impair post harvest wash off.

See Engelhard supplemental labeling for further information on use of spreader/stickers, foliage fertilizers, pesticides, PGRs and other spray materials with Surround WP.

### **c. General Application Instructions (see, also, specific crop use instructions):**

**Rates:** Rate is dependent on the amount of foliage that needs to be covered.

**Concentration** (the amount of Surround WP per 100 gallons of water): The best concentration of Surround WP is between 25 to 50 lbs Surround WP per 100 gallons, but concentrations of up to 100 lbs per 100 gallons are allowed for specific crop uses. The best concentration of Surround WP is between  $\frac{1}{4}$  to  $\frac{1}{2}$  lb (or 1.5 to 3 cups) per gallon of water.

**Coverage:** Use sufficient spray volume to obtain thorough **near-drip** coverage. Two or more applications are desirable for complete coverage. For optimal performance as an insecticide, applications must coat all portions of plant that are to be protected, including both sides of the leaves. Apply an additional spray if coverage is insufficient. Spreading on waxy plant surfaces is usually better when the plant surface is warm.

Dwarf, semi-dwarf, and otherwise well-pruned trees will be easier to cover than large trees. Optimum efficacy may be more difficult to achieve in large trees due to increased difficulty achieving thorough coverage.

Applications to tree crops can be made with commercial air blast or high-pressure sprayers that provide enough air turbulence to coat both sides of the leaves, bark, and fruit. The best coverage is achieved at a tractor speed of less than 3 mph when using airblast sprayers.

**Plant Color Change:** Plant surfaces will typically turn a hazy white color after drying. Additional treatments will turn the plant surfaces a deeper white. This is normal, and indicates appropriate film formation.

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

**Under Hot, Dry Conditions:** Best results are obtained with nozzles that produce a fine spray when using **Surround WP** under normal temperature and humidity 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. Do not apply by chemigation. Observe specific crop label instructions for directions regarding spray volume. Calibrate spray equipment per equipment manufacturer to deliver the required volume. 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.

**When the dry foliage has lost its white appearance or when gently rubbing the treated area with a dark piece of cloth does not leave a white residue on the cloth, reapplication is necessary.** 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. However, reapplication may not be necessary if all target surfaces remain thoroughly coated and insect pressure is light. Excessively thick coatings can provide poor performance.

**Overhead Irrigation and Overhead Cooling:** Overhead irrigation is not preferred. Do not use with overhead cooling.

**Aerial Application:** Surround WP applied by air will reduce heat stress and sunburn damage if sufficient coverage can be achieved and maintained. Aerial applications may not be effective for controlling insects or diseases. It is best when using aerial applications to take all precautions needed to minimize or eliminate drift, e.g., do not spray under windy or gusty conditions. It is best to make applications not more than ten feet above the top of the largest plant unless a greater height is required for aircraft safety. It is best when making applications at low relative humidity to increase droplet size to compensate for evaporation. Only use spray drift agents approved by Engelhard.

**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.

**d. Growth Enhancer, Sunburn and Heat Stress Protectant and Light Reflectant:**

When applied at given rates and frequencies, benefits such as increased plant vigor and improved yields may occur on many crops. Under high ambient temperatures, Surround WP reduces canopy temperature and, therefore, can help to reduce heat and water stress. When Surround WP is used, many fruits have shown improved fruit color, soluble solids, smoothness, and size with less russet, dropping, sunburn, and cracking.

**Sunburn Suppression:** Apply to sunburn-prone fruit, leaf, or limb and trunk bark surfaces before conditions leading to sunburn occur. If initiating sprays for sunburn suppression where there have been no prior sprays, provide thorough coverage of all fruit or other plant surfaces prior to sunburn-causing conditions with one to two full rate applications 7 days apart. Depending upon the length of the high heat period, three to four applications in total may be needed, with subsequent applications every 7 – 21 days. Good coverage on typical semi-dwarf trees is best achieved with the initial one to two sprays at 50 lbs in 100 to 200 gallons per acre to achieve near-drip coverage on the fruit or other plant surfaces. However, if allowed (see specific crop group directions), up to 100 lbs/100 gal are allowed when spray frequencies need to be reduced. Make subsequent applications at half to full rates if even coverage is maintained throughout the high heat period. Under windy conditions, Surround WP may be rubbed off by leaf movement making reapplication necessary.

**Ground Use:** Surround WP may be sprayed on the ground under crops or between rows of crops per the labeled crop rate in order to increase light reflectance into the crop.

**Aerial Application:** Aerial applications for sunburn and heat stress reduction are best made at concentrations of no more than 1 lb of Surround WP per 1 gallon of water. Use no less than 10 gallons per acre, but on trees 20 or more gallons per acre are preferred. Repeat applications 3 – 4 times per above intervals or as necessary to establish and maintain even coverage on fruit surfaces throughout the high heat period. See aerial applications under I c.

**e. Packing and Processing:**

Washing is required unless only early season applications are made and the film weathers off before harvest. Most residues wash off with packing line brushing and forced water sprays. An approved washing detergent may be helpful if used in the packing line and/or wash tank. Perform a pre-harvest washing trial to determine if a washing detergent is necessary. Waxing further improves fruit appearance.

**For fresh market apples that will not be waxed, such as apples for organic markets or specific export markets that do not accept waxed apples or for washed crops where traces of white residue are not acceptable: Unless washing facilities are adequate, cease applications enough in advance of harvest to allow residue to weather off completely. For**



'Red Delicious' and 'Braeburn' apples varieties do not apply any later than two months prior to harvest.

## II. CROP GROUPS

### a. Tree Fruit

**Volume:** Apply to near-drip. Do not apply to run-off to avoid waste and poor coverage. For typical semi-dwarf trees in full foliage, it is best to use 100 to 200 gallons per acre. Adjust volume per Tree Row Volume to achieve near drip for larger or smaller trees.

**Concentration** (the amount of Surround WP per 100 gallons of water): It is best to use 25 to 50 lbs Surround WP per 100 gallons of water, but concentrations of up to 100 lbs per 100 gallons are allowed. Early applications typically use 37.5 to 50 lbs per 100 gallons of water per acre while follow-up applications may only require 12.5 to 25 lbs (25 lbs is preferred) per 100 gallons of water per acre.

#### Pome Fruits

Such as apple, crabapple, quince, pear and locquat

PEST	LBS/ ACRE	APPLICATION INSTRUCTIONS
Pear psylla	50 <sup>1</sup>	<ul style="list-style-type: none"> <li>• On mature pear trees apply 100-200 gal/acre.</li> <li>• <b>Prebloom:</b> Apply 3 applications, applying every 7-10 days starting at delayed dormant, but no later than green cluster bud.</li> <li>• <b>Petal Fall:</b> Apply 3 applications, applying every 7-14 days starting at first petal fall.</li> <li>• Spring populations can be reduced with a fall or winter application.</li> </ul>
<b>Insects</b> <b>Pear:</b> cutworms, mealy bug, pear midge, pear rust mite, pear slug, pearleaf blister mite <b>Apple:</b> apple sucker, apple rust mite, climbing cutworm, eastern tent caterpillar, European apple sawfly, Gypsy moth, Japanese beetle, June beetle, lesser appleworm, leafminer, rosy apple aphid, spirea aphid, tufted apple bud moth <b>Pear and Apple:</b> aphid, crickets, European red mite, grasshoppers, green fruit worm, leafrollers, Lygus bug, Mormon cricket, periodical cicada, San Jose scale, stink bug, tarnished plant bug, thrips, two spotted spider mite, sawfly	25-50	Suppression only.* Start before infestation and continue at 7-14 day intervals. Do not widen respray interval past 14 days.
<b>Apple or Pear Diseases</b> Cedar apple rust, fabrea leafspot, powdery mildew, sooty blotch		Suppression only* Apply prior to conditions favoring disease development and maintain coverage throughout the disease infection period. . Supplements are generally necessary especially in high-pressure areas.

Over-wintering leafrollers, especially obliquebanded leafroller (OBLR)		Apply 2 sprays 7 days apart starting just prior to green tip or at initial emergence of leafroller larvae.
Leafhoppers <sup>2</sup>		Apply first spray within 3 days of first petal fall or at initial infestation. Continue every 7-14 days during infestation period.
Lacanobia		<ul style="list-style-type: none"> <li>• <b>Oviposition:</b> Apply at least one spray at start of oviposition. A second spray within 5-7 days improves efficacy.</li> <li>• <b>Egg Hatch:</b> Apply 2-3 sprays starting at initial egg hatch and continuing at 7-day intervals.</li> <li>• Using Surround WP or the later generation of lacanobias allowable if fruit will be thoroughly washed prior to picking or packing.</li> </ul>
Apple maggot		Apply 2 sprays 7 days apart before expected oviposition or first detection of infestation. Continue applications every 7-14 days to keep fruit completely covered during egg lay period.
Codling moth (first generation only), oriental fruit moth, plum curculio		Suppression only*. Apply at biofix or first detection. Continue applications every 7 days to keep fruit completely covered during egg lay period.
Sunburn and heat stress		See I d
<sup>1</sup> Rates of 100 lbs in 100 to 200 gallons allowed on pear trees during prebloom for high infestation. <sup>2</sup> Applications at petal fall may disrupt leaf miner parasitism, requiring control measures. * Supplemental controls may be needed for complete control		

### Horticultural Benefits

Surround WP may improve fruit quality (see I d for general horticultural benefits) if applications start at petal fall and are continued until mid to late season. For petal fall applications, see footnote 2 above about leaf miner. Many pear cultivars, particularly Comice and Anjou varieties have shown improved fruit color, smoothness, and size with less russet when Surround WP is used. Some apple cultivars have shown less bitter pit and corking in season-long programs.

### Diseases

Surround WP may enhance the efficacy of wettable sulfur and/or lime-sulfur against scab, powdery mildew, sooty blotch, and flyspeck. See Product Guides for specific mixture directions. The use of wettable type sulfurs are preferred if tank mixing sulfur with Surround WP. Do not tank-mix elemental sulfurs with Surround WP.

### Non-waxed Fresh Apples and Pears (also, see 1.e.)

For fresh market apples and pears that will not be waxed, such as fruit for organic markets or specific export markets that do not accept waxed fruit: It is best that Surround WP **not** be applied any later than two months prior to harvest as slight traces of white may still be visible after washing. This especially applies to 'Red Delicious' and 'Braeburn' cultivars.

## Stone Fruit

Such as apricot, sweet or tart cherries, nectarine, peach, plum, pluot, plumcot<sup>1</sup> and prune

PEST	LBS/ ACRE	APPLICATION INSTRUCTIONS
Japanese beetle, rose chafer	25-50	Suppression only* Start one week prior to expected infestation and follow with 3 to 4 applications at 5 – 7 day intervals
Oblique banded leafroller (OBLR), thrips		Suppression* only for OBLR. Start at pink bud and continue applications at 5 – 7 day intervals through jacket split.
Leafhoppers including sharpshooters		Suppression only*. Start before expected infestation, if possible. <ul style="list-style-type: none"> <li>• Until harvest: Apply at 7 – 14 day intervals up to bloom</li> <li>• Post harvest: Apply 2 or more applications at 7 – 14 day intervals</li> </ul>
Aphid, cherry fruit flies, crickets, European red mite, European earwig, flathead borer, grasshoppers, June beetle, leafhoppers, lesser peachtree borer, navel orange worm, oriental fruit moth, peachtree borer, peach silver mite, peach twig borer, stink bugs, tarnished plant bug, two-spotted spider mite, tufted apple bud moth		Suppression only*. Start before expected infestation, if possible and continue at 7 – 14 day intervals.
Plum curculio		Suppression only*. Apply at 7 day intervals throughout egg laying period.
Sunburn and heat stress <sup>1</sup>	25-100	See I d
* Supplemental controls may be needed for complete control.		
<sup>1</sup> Rate of 100 lbs in 100 to 200 gallons are allowed for post-harvest sunburn and heat stress use.		

## Special Directions

**Special Washing Considerations for Stone Fruit:** For fresh market fruit, special washing is required; especially for fuzzy peaches. Most residues wash off with brushing and forced water sprays. An approved fruit cleaning detergent may be used in 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. Waxing further improves fruit appearance. If fresh market stone fruit cannot be washed as noted above, discontinue sprays when the fruit are approximately ¾ inch in diameter. Residues of Surround WP do not affect processed fruit quality.

If cherries are for fresh market, discontinue application when fruit are half size (approximately ¼ inch) if no washing is available.

## Citrus Fruits

Such as lemon, lime, grapefruit, mandarin, satsuma mandarin, pummelo, manadrin, tangelos, kumquat and oranges

PEST	LBS/ ACRE	APPLICATION INSTRUCTIONS
Thrips	50-75 <sup>1</sup>	Start at pre-bloom. Continue at 5 – 7 day intervals throughout bloom. Post-bloom continue at 7 – 14 day intervals through infestation.
Leafhoppers including sharpshooters		Suppression only* <ul style="list-style-type: none"> <li>• Apply every 7 – 14 days as infestation occurs.</li> <li>• <b>Near-harvest:</b> Apply at least 2 applications 7 days apart for pre-harvest control of sharpshooters</li> </ul>
Aphids, citrus leafminer, citrus psyllid, crickets, diapaupes root weevil <sup>2</sup> , grasshoppers, mites		Suppression only*. Apply every 7 – 14 days as infestation occurs.
Sunburn and heat stress		See I d.
<sup>1</sup> 50 lbs per 200 gallons per acre preferred for 12 foot trees.		
* Supplemental controls may be needed for complete control.		

## b. Nut Crops

**Volume:** Apply to **near-drip**, not to excessive run-off. For 20-foot trees, it is best to use 200 gallons per acre. Large trees like walnut and pecan may require up to 300 gallons per acre.

**Concentration** (the amount of Surround WP per 100 gallons of water): It is best to use 25 to 50 lbs Surround WP per 100 gallons of water.

### Tree Nuts

**Such as almond, beech nut, Brazil nut, butternut, chestnut, cashew, chestnut, filbert, hickory nut, macadamia nut, pecan, walnut and including pistachio**

PEST	LBS/ ACRE	APPLICATION INSTRUCTIONS
Aphids such a pecan, black, and yellow aphid, codling moth, crickets, grasshoppers, husk fly, leafhoppers, mites, naval orangeworm, peach twigborer, stink bug	50-75 <sup>1</sup>	Suppression only*. Start at biofix or as infestation occurs. Apply every 7 – 14 days throughout infestation. For codling moth, apply a minimum of 2 sprays per generation.
Sunburn and heat stress		See I d
<sup>1</sup> 50 lbs per 200 gallons per acre preferred.		
* Supplemental controls may be needed for complete control.		

## c. Small Fruits

**Volume:** Apply to near-drip. Do not apply to run-off to avoid waste and poor coverage. The volume of water/acre required will increase throughout the growing season in relationship to the increasing size of the crop and its foliage.

**Concentration** (the amount of Surround WP per 100 gallons of water): It is best to use 25 to 50 lbs Surround WP per 100 gallons of water.

### Berries

**Such as blackberry, raspberry, dewberry, boysenberry, loganberry, elderberry, blueberry, ribes such as currant and gooseberry and including cranberry**

PEST	LBS/ ACRE	APPLICATION INSTRUCTIONS
Blackberry psyllid, crickets, European raspberry aphid, European red mite, grasshoppers, Japanese beetle, leafhoppers, leafrollers, plum curculio, rose chafer, two-spotted spider mite, thrips	25-50 <sup>1</sup>	Suppression only*. Begin applications after fruit set and prior to infestation, applying every 7 – 14 days.
Blueberry maggot		Suppression only*. Apply 2 sprays 7 days apart before expected infestation or first detection of infestation. Continue applications every 7 – 14 days during egg lay period.
Sunburn and heat stress		See I d.
<sup>1</sup> 25 lbs per 50 gallons per acre preferred		
* Supplemental controls may be needed for complete control.		

### Special Directions

Apply on fresh market berries only up to the first three weeks after fruit set as trace residues may be difficult to remove after harvest. Application of plain water via normal sprayer prior to harvest may help to reduce Surround WP residues. Processing blueberries can be washed using detergent and water sprayers capable of rinsing away residues in the packing line. Minor residues of Surround WP on blueberries for processing are acceptable provided no other pesticides are also present.

### Grapes

PEST	LBS/ ACRE	APPLICATION INSTRUCTIONS
Thrips	25-50 <sup>1</sup>	Apply 1 – 2 applications 7 days apart when pest reaches treatment threshold.
Crickets, European red mite, two-spotted spider mite, rose chafer, omnivorous leafroller, grape berry moth, grape bud beetle, grape leafroller, grape leaf folder, grasshoppers, grape leaf skeletonizer, Hoplia beetle, orange tortrix, Japanese beetle, June beetle, Mexican fruit fly		Suppression only*. Start at biofix or as infestation occurs, applying a minimum of 2 – 3 applications by applying every 7 – 14 days.
Leafhoppers including sharpshooter		Apply initial application as infestation occurs, applying at least 2 - 3 applications by applying every 7 – 14 days throughout the infestation

Sunburn and heat stress		See I.d
<sup>1</sup> 25 lbs in 50 gallons per acre preferred. * Supplemental controls may be needed for complete control.		

**Special Directions**

**Wine grapes:** Harvest parameters may be altered and maturity may be delayed especially in white wine varieties. Closely monitor harvest parameters to determine optimal time to harvest. Changes in harvest parameters can affect final taste. Wine grapes sprayed up to veraison will have minimal adherence to berries. Applications after veraison will adhere more on grape berries.

**Raisin grapes:** It is best that raisin grapes be sprayed only up to bunch closing, then may be continued post harvest.

**Table grapes:** Do not spray table grapes from first bloom to harvest as white residue may remain on the rachis and fruit until harvest. Infestations may be sprayed up to first bloom, and again after harvest.

**d. Field Vegetables**

**Volume:** Apply to **near-drip**. Do not apply to run-off to avoid waste and poor coverage. The volume of water/acre required will increase throughout the growing season in relationship to the increasing size of the crop and its foliage. Seedlings will need less water and a lower amount of Surround WP than fully mature plants to uniformly coat their surfaces. Adjust the volume of water and rate used throughout the season based upon plant size. Lower volumes and rates are typically used only for immature plants.

**Concentration** (the amount of Surround WP per 100 gallons of water): It is best to use 25 to 50 lbs Surround WP per 100 gallons of water.

**Legume Vegetables  
Such as beans, pea, chickpea, and soybean**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Alfalfa looper, aphids, bean leaf beetle, crickets, European red mite, fall armyworm, flea beetles, grasshoppers, Japanese beetle, leafhoppers, Lygus bug, Mexican bean beetle, stink bug, tarnished plant bug, three cornered alfalfa hopper, thrips, two-spotted spider mite, velvetbean caterpillar	25-50	Suppression only*. Start prior to infestation, applying every 7 – 14 days throughout infestation.
Sunburn and heat stress	25-100	See I d.
* Supplemental controls may be needed for complete control		

### Special Directions

Only spray beans that are difficult to wash, such as string beans, when beans are small. Do not apply to other field and garden vegetables if they are intended for the fresh market and cannot be adequately washed after harvest to completely remove Surround WP residues. Minor residues of Surround WP on field and garden vegetables for processing are acceptable provided no other pesticides are also present.

### Root and Tuber Vegetables

**Such as potato, garden beet, sugar beet, horseradish, radish, ginseng, rutabaga, carrot, ginger, sweet potato, yams, and turnip**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Armyworm, Boll worm, Colorado potato beetle, crickets, cutworm, European red mite, flea beetles, grasshoppers, harlequin bug, imported cabbage worm, leafhoppers, tarnished plant bug, tomato horn worm, two-spotted spider mite	25-50	Suppression only*. Start prior to infestation, applying every 7 - 14 days throughout infestation.
Sunburn and heat stress	25-50	See I d.
* Supplemental controls may be needed for complete control.		

### Fruiting Vegetables

**Such as tomato, pepper<sup>1</sup> and including eggplant<sup>1</sup>**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids, Colorado potato beetle, crickets, cucumber beetles, European red mite, flea beetles, grasshoppers, leafhoppers, lace bugs, stink bugs. Tarnished plant bug, thrips, tomato fruit worm, tomato horn worm, tomato pinworm, two-spotted spider mite	12.5-50 <sup>2</sup>	Suppression only*. Start prior to infestation, applying every 7 - 14 days throughout infestation.
Sunburn and heat stress	25-100	See I d.
<sup>1</sup> For fresh market apply only up to ¼ of fruit size unless washing capabilities are sufficient.		
<sup>2</sup> 12.5 lbs/25 gallons preferred up to fruit set		
* Supplemental controls may be needed for complete control.		

### Bulb Vegetables

**Such as onions, garlic, leek and shallot**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Thrips	25-50	Suppression only*. Start prior to infestation and apply every 5 - 7 days throughout infestation. Good coverage down into the plant crown is essential for efficacy. This may be assisted with an Engelhard-approved spreader.
Sunburn and heat stress	25-100	See I d.
* Supplemental pest control methods may be needed to aid control.		

### Cucurbit Vegetables

Such as cucumber, summer and winter squash, pumpkin, citron melon, muskmelon, and watermelon

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids, crickets, cucumber beetle, grasshoppers, squash vine borer, silver leaf whitefly, squash bugs	25-50	Suppression only*. Start prior to infestation, applying every 5 - 7 days, with the first two applications 3 days apart.
Powdery mildew		Suppression only*. Apply every 7-14 days as required to maintain coverage.
Sunburn and heat stress	25-100	See 1d
* Supplemental controls may be needed for complete control.		

### Brassica (Cole) Leafy Vegetables

Such as broccolis, Brussels sprouts, Chinese cabbages, cauliflower, collards, cabbages, mustard greens, kale, canola and kohlrabi

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Crickets, flea beetles, grasshoppers, loopers	25-50	Suppression only*. Use only in early season to avoid residue at harvest. Apply every 7 - 10 days making sure to wet the plant surface completely. See Engelhard supplementary literature for instructions to aid spreading on waxy brassica surfaces.
Sunburn and heat stress		See 1d
* Supplemental controls may be needed for complete control.		

### Leafy Vegetables (non-Brassica)

Such as arugula, celery, lettuces, parsley, rhubarb and spinach

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids, armyworm, crickets, cutworms, flea beetles, grasshoppers, leafhoppers, loopers, sea chalcids, thrips, weevils	25-50	Suppression only*. Use only in early season to avoid residue at harvest. Start prior to infestation. Apply every 3 - 5 days to maintain adequate coverage throughout infestation.
Sunburn and heat stress		See 1d
* Supplemental controls may be needed for complete control.		

### Asparagus

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids, common and spotted asparagus beetle, crickets, grasshoppers, thrips	12.5-25	Suppression only*. Start prior to infestation. Apply every 7 - 10 days being sure to maintain coverage throughout infestation
Sunburn and heat stress		See 1d
* Supplemental controls may be needed for complete control.		



**e. Other Agricultural Crops**

**Volume:** Apply to **near-drip**. Do not apply to run-off to avoid waste and poor coverage. The volume of water per acre required will increase throughout the growing season in relationship to the increasing size of the crop and its foliage.

**Concentration** (the amount of Surround WP per 100 gallons of water): It is best to use 25 to 50 lbs Surround WP per 100 gallons of water.

**Cotton**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Boll weevil, cotton fleahopper, crickets, European red mite, flea beetles, grasshoppers, tarnished plant bug, thrips, two-spotted spider mite, whitefly	25-50	Suppression only*. Start prior to infestation. Spray every 7 – 14 days with the first two sprays 7 days apart.
Heat stress	25-100	See 1d
* Supplemental controls may be needed for complete control.		

**Tobacco**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids, flea beetles, crickets, grasshoppers, leafhoppers, thrips	12.5-25	Suppression only*. Use only in early season up to 12-inch plant size to avoid residue at harvest. Start prior to infestation, applying every 7 – 14 days throughout infestation.
Sunburn and heat stress		See 1d
* Supplemental controls may be needed for complete control.		

**Cereal Grains and Nongrass Animal Feeds**

**Such as corn, popcorn, oats, barley, wheat, rice, sorghum and alfalfa**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids, armyworm, crickets, cutworms, flea beetles, grasshoppers, leafhoppers, loopers, sea chalcids, thrips, weevils	12.5-37.5	Suppression only*. Start prior to infestation. Apply every 5 – 10 days during infestation, with the first two applications 3 days apart. Tighten spray intervals during fast growing periods.
Sunburn and heat stress	25-100	See 1d
* Supplemental controls may be needed for complete control.		

**Tropical Crops**

**Such as coffee, avocado, banana, guava, mango, passion fruit, starfruit, papaya and pineapple**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
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Aphids, avocado looper, coconut bug, crickets, fruit flies, grasshoppers, leafhoppers, leafrollers, mango weevil, mites, thrips	25-50	Suppression only*. Start prior to infestation. Apply minimum of 2 applications 7 – 14 days apart during application.
Sunburn and heat stress		See Id. Aerial application is best for banana.
* Supplemental controls may be needed for complete control.		

### Special Directions

Initial application over waxy surfaces such as mango fruit may bead and not spread adequately.

### Miscellaneous Crops

**Such as artichoke, fig, hops, globe, kiwifruit, olives, okra, paw paw, peanut, persimmon, pomegranate<sup>1</sup>, strawberry and water chestnut**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids, crickets, flea beetles, fruit flies, grasshoppers, leafhoppers, leafrollers, olive fruit fly, thrips, white fly	25-50	Suppression only*. Start prior to infestation. Spray every 7 – 14 days throughout infestation.
Sunburn and heat stress		See Id.
* Supplemental controls may be needed for complete control.		
<sup>1</sup> Apply to pomegranates only post-harvest.		

## f. Non-food Crops

### Nursery and Ornamental Plants and Trees

**Such as landscape plants, flowers or ornamental tree seedlings/saplings in nurseries or field plantings  
and**

**Forest Trees\*\* (deciduous or evergreen) in nurseries or field plantings**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Aphids, black vine weevil, crickets, cutworms, diabrotica beetle, earwig, flathead borer, grasshoppers, leafhoppers including sharpshooters, Japanese beetle, thrips, whitefly,	6.25-37.5	Suppression only*. Start prior to infestation. Spray every 5 – 7 days throughout infestation.
Deer, rabbit		Suppression only*. Start prior to animal feeding and maintain coverage during feeding period. For plants on which Surround WP does not adhere well, re-spray as soon as possible following rainfall or protection will be lost.
Sunburn and heat stress		See I d. Reduces transplant shock and heat stress when transplanting nursery stock to the field or garden. Do not dip transplants into Surround WP solution.
*Supplemental pest control methods may be needed to aid control.		
**Sunburn and heat stress only.		

**Special Directions**

Plants treated with Surround WP will appear white from application. If this is undesirable, do not spray. On cut-flower plants, it is best to spray only the leafy foliage of the plant so that cuttings are not affected.

**Christmas Trees and Hybrid Poplar Plantations**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Sunburn and heat stress	25-75	See I d. Use 25-50 lbs in 100 gals of water for best results. Spray 2 applications 14 days apart prior to heat event. See Surround WP product bulletins for more information on adjuvants which may aid in product adherence. Stop sprays 30 days prior to harvest.

**g. Greenhouse Grown Plants**

**Edible and Non-food crops  
Such as all crops listed on this label**

PEST	LBS/ACRE	APPLICATION INSTRUCTIONS
Pests as listed under specific crop groups on this label.	6.25-37.5	Suppression only*. Start prior to infestation. Spray every 5 - 7 days being sure to maintain coverage, especially on new growth. Exercise extra care to cover undersides of leaves when targeting pests that inhabit leaf undersides.
* Supplemental controls may be needed for complete control.		

**h. Animals**

**Cattle and other animals**

PEST	CONCENTRATE LBS/GAL	SPRAY INTERVAL	APPLICATION INSTRUCTIONS
Flies and stinging insects	0.5 - 1.0 (50 - 100 lbs/100 gals)	Renew coating after it has worn off	Suppression only*. Coat exposed or vulnerable animal body parts by spray or dipping.
Sunburn and heat stress			
* Supplemental controls may be needed for complete control.			

**Special Directions**

Do not allow Surround WP to come in contact with the animal's eyes.

## **STORAGE AND DISPOSAL**

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

**PESTICIDE STORAGE:** Store in a dry, sheltered location {away from food or feed}. Product is slippery when wet. In case of spill or leak, avoid breathing dust, clean up and dispose of wastes in compliance with applicable Federal, State, and local regulations.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** Completely empty bag into application equipment. Dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of the smoke.

### **CONDITIONS OF SALE, WARRANTY STATEMENT, DISCLAIMER**

THE MANUFACTURER WARRANTS THAT THIS PRODUCT CONFORMS TO THE CHEMICAL DESCRIPTION ON THE LABEL AND THAT, SUBJECT TO THE INHERENT RISKS DISCUSSED BELOW, THIS PRODUCT IS REASONABLY FIT FOR THE PURPOSES SET FORTH IN THIS LABEL WHEN USED UNDER NORMAL CONDITIONS AND STRICTLY IN ACCORDANCE WITH THE DIRECTIONS, WARNINGS, AND OTHER STATEMENTS ON THIS LABEL. 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 OR APPLICATION, ALL OF WHICH ARE BEYOND THE CONTROL OF MANUFACTURER. ALL SUCH RISKS ARE ASSUMED BY BUYER/USER. THE DIRECTIONS, WARNINGS AND OTHER STATEMENTS ON THIS LABEL ARE BASED UPON REASONABLE EXPERTS' EVALUATIONS OF REASONABLE TESTS OF EFFECTIVENESS, AND UPON REPORTS OF FIELD EXPERIENCE. TESTS HAVE NOT BEEN MADE UNDER ALL CONDITIONS.

THE MANUFACTURER NEITHER INTENDS, NOR DOES IT AUTHORIZE ANY AGENT OR REPRESENTATIVE TO MAKE ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, AND IT EXPRESSLY EXCLUDES AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THIS WARRANTY DOES NOT EXTEND TO, AND THE BUYER SHALL BE SOLELY RESPONSIBLE FOR, ANY AND ALL LOSSES OR DAMAGE WHICH MAY RESULT FROM THE USE OF THIS PRODUCT IN ANY MANNER WHICH IS INCONSISTENT WITH THE LABEL, DIRECTIONS, WARNINGS OR CAUTIONS.

BUYER'S EXCLUSIVE REMEDY AND MANUFACTURER'S OR SELLER'S EXCLUSIVE LIABILITY FOR ANY AND ALL CLAIMS, LOSSES, DAMAGES OR INJURIES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, WHETHER BASED IN CONTRACT, NEGLIGENCE, STRICT LIABILITY, TORT OR OTHERWISE, SHALL BE LIMITED, AT THE MANUFACTURER'S OPTION, TO REPLACEMENT OF, OR REFUND OF THE PURCHASE PRICE FOR THE QUANTITY OF PRODUCT WITH RESPECT TO WHICH DAMAGES ARE CLAIMED. IN NO EVENT SHALL MANUFACTURER OR SELLER BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.

ENGELHARD OFFERS THIS PRODUCT FOR SALE AT ALL TIMES SUBJECT TO THE FOREGOING.

## **Surround WP crop protectant**

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Organiclabel  
12/21/04

**SUBLABEL B: NON-AGRICULTURAL USE**



Surround WP Crop Protectant Forms a Barrier Film, Which Acts as a Broad Spectrum Crop Protectant for Home, Landscape, and Garden Use for Controlling Damage from Various Insect, Mite, and Disease Pests, Growth Enhancer, and as a Protectant Against Sunburn and Heat Stress

For External Household Use Only

Do not spray where a visible white film is undesirable or cannot be washed off such as porous wood, masonry, asphalt and other valuable goods.

**NOT A PLANT FOOD INGREDIENT**

ACTIVE INGREDIENT:

Kaolin:.....	95.0%
Other INGREDIENTS:.....	5.0%
Total: 100.0%	

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION**

Manufactured by:  
ENGELHARD CORPORATION  
101 Wood Avenue  
Iselin, NJ 08830

**Net Weight 5, 10 or 25 lbs**

EPA Reg. No. 70060-14  
EPA Est. No. 72797-AL-001

 FOR ORGANIC PRODUCTION

**OMRI  
Listed  
(Icon)**

**Growth enhancer uses are not registered in California.**

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FIRST AID	
If in eyes	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may contact 1-800-424-9300 for emergency medical treatment information 24 hours a day 7 days a week.	

## PRECAUTIONARY STATEMENTS

### HAZARD TO HUMANS AND DOMESTIC ANIMALS

**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum or using tobacco. Remove contaminated clothing and wash clothing before reuse.

### ENVIRONMENTAL HAZARDS

Do not apply directly to water. Do not contaminate water when disposing of equipment wash water or rinsate.

## DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

### I. GENERAL INFORMATION

Surround WP protectant forms a mineral-based particle film intended for protection of crops, and plants in greenhouses, home landscapes and gardens. When Surround WP is applied to plants, a dry white film results. Many pests are listed as suppressed, which means that full control may not be achieved, and supplemental methods will be needed to enhance the level of control. **Thorough, uniform, and consistent coverage is essential throughout the infestation or stress period.**

For crops that will not be washed where a residual white film is not desired, make applications early-season only. White residue at harvest can be minimized if applications to smooth skin crops like apples stop when the fruit is approximately ¼ of its expected size.

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

**a. Mix Instructions:**

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

The following mixing sequence must be followed:

1. Use Surround WP powder at a rate of  $\frac{1}{4}$  to  $\frac{1}{2}$  lb of Surround WP powder per one gallon of water. One-half pound is approximately 3 cups. For sprayers difficult to shake, premix in a 5 gallon bucket, stir, and pour suspension into sprayer.
2. While stirring or swirling, slowly add Surround WP powder into  $\frac{1}{4}$  to  $\frac{1}{2}$  of the water that will be used in the batch.
3. Mix thoroughly by shaking the closed container vigorously for 30 seconds.
4. Add tank mix pesticides, if any. See compatibility section below before adding any tank mix pesticides.
5. Add the remainder of the batch water and shake 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 or, blow air pressure out of the line and nozzle then store in a cool place. Apply the leftover mix within two weeks to avoid spoilage. Rinse the sprayer before next batch.

**b. Compatibility:**

Surround WP is not generally affected by most other insecticides, miticides, and fungicides. However, to ensure compatibility test tank mixes before use. When mixing with other products, make up a small batch and observe slurry and film characteristics. Curdling, precipitation, lack of film formation, or changes in viscosity are signs of incompatibility. **Add tank mix pesticides after the Surround WP has been added.**

Do not tank mix with other white mineral particulate products like diatomaceous earth or other sunburn materials.

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

**Rates:** Rate is dependent on the amount of foliage that needs to be covered.



**Concentration** (the amount of Surround WP per 1 gallon of water): Use Surround WP at concentrations of ¼ to ½ lb (or 1.5 to 3 cups) per gallon of water.

**Coverage:** Use sufficient spray volume to obtain thorough **near drip** coverage. Two or more applications are desirable for complete coverage. For optimal performance as an insecticide, applications must coat all portions of plant that are to be protected, including both sides of the leaves. If coverage is insufficient additional sprays are necessary. Dwarf, semi-dwarf, and otherwise well-pruned trees will be easier to cover than large trees. Optimum efficacy may be more difficult to achieve in large trees due to increased difficulty achieving thorough coverage.

Reapplication is generally required every 7-14 days. Intervals can be widened to 14 to 21 days later in the season when new growth diminishes.

**Plant Color Change:** Plant surfaces will typically turn a hazy white color after drying. Additional treatments will turn the plant surfaces a deeper white. This is normal, and indicates appropriate film formation.

**Foliage Dryness:** Do not apply to dripping wet foliage.

**When the dry foliage has lost its white appearance, reapplication is necessary.** 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. However, reapplication may not be necessary if all target surfaces remain thoroughly coated. Do not apply excessively thick coatings.

**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.

#### **d. Growth Enhancer, Sunburn and Heat Stress Protectant:**

When applied at instructed rates and frequencies, benefits such as increased plant vigor and improved yields may occur on many crops. Under high ambient temperatures, **Surround WP** reduces canopy temperature and, therefore, can help to reduce heat and water stress. When Surround WP is used, many fruits have shown improved fruit color, soluble solids, smoothness, and size with less russet, dropping, sunburn, and cracking.

**Sunburn Reduction:** Apply before conditions leading to sunburn occur. If initiating sprays for sunburn reduction where there have been no prior sprays, apply initial 1-2 applications at full rates no more than 7 days apart. Depending upon the length of the high heat period, three to four applications in total may be needed, with subsequent applications every 14 – 21 days. Surround WP may be rubbed off by leaf movement making reapplication necessary.

## **II. CROP GROUPS**

### **a. Tree Fruit**

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**Volume:** Apply to near-drip. Do not apply to run-off to avoid waste and poor coverage.

**Concentration** (the amount of Surround WP per 1 gallon of water): Use concentrations of 1.5 to 3.0 cups of Surround WP per gallon of water.

**Pome Fruits**  
**Such as apple, crabapple, quince, pear and locquat**

PEST	APPLICATION INSTRUCTIONS
Pear psylla	<ul style="list-style-type: none"> <li>• <b>Prebloom:</b> Apply 3 applications, applying every 7-10 days starting at delayed dormant, but no later than green cluster bud.</li> <li>• <b>Petal Fall:</b> Apply 3 applications, applying every 7-14 days starting at first petal fall.</li> <li>• Spring populations can be reduced with a fall or winter application.</li> </ul>
<b>Insects</b> <b>Pear:</b> cutworms, mealy bug, pear midge, pear rust mite, pear slug, pearleaf blister mite <b>Apple:</b> apple sucker, apple rust mite, climbing cutworm, eastern tent caterpillar, European apple sawfly, Gypsy moth, Japanese beetle, June beetle, lesser appleworm, leafminer, rosy apple aphid, spirea aphid, tufted apple bud moth <b>Pear and Apple:</b> aphid, crickets, European red mite, grasshoppers, green fruit worm, leafrollers, Lygus bug, Mormon cricket, periodical cicada, San Jose scale, stink bug, tarnished plant bug, thrips, two spotted spider mite	Suppression only.* Start before infestation and continue at 7-14 day intervals. Longer intervals will impair performance.
<b>Apple or Pear Diseases</b> Cedar apple rust, fabrea leafspot, powdery mildew, sooty blotch	Suppression only* Supplements are generally necessary especially in high pressure areas.
Over-wintering leafrollers, especially obliquebanded leafroller (OBLR)	Apply 2 sprays 7 days apart starting just prior to green tip or at initial emergence of leafroller larvae.
Leafhoppers	Apply first spray within 3 days of first petal fall or at initial infestation. Continue every 7-14 days during infestation period.
Lacanobia	<ul style="list-style-type: none"> <li>• <b>Oviposition:</b> Apply at least one spray at start of oviposition and a second spray within 5-7 days.</li> <li>• <b>Egg Hatch:</b> Apply 2-3 sprays starting at initial egg hatch and continuing at 7 day intervals.</li> <li>• Surround WP can be used for the later generation of lacanobia if fruit will be thoroughly washed prior to picking or packing.</li> </ul>
Apple maggot	Apply 2 sprays 7 days apart before expected oviposition or first detection of infestation. Continue applications every 7-14 days to keep fruit completely covered during egg lay period.

Codling moth (first generation only), oriental fruit moth, plum curculio	Suppression only*. Apply at first detection. Continue applications every 7 days to keep fruit completely covered during egg lay period.
Sunburn and heat stress	See I d
* Supplemental controls may be needed for complete control.	

### Horticultural Benefits

Surround WP may improve fruit quality (see I d for general horticultural benefits) if applications start at petal fall and are continued up until harvest. Many pear cultivars, particularly Comice and Anjou varieties have shown improved fruit color, smoothness, and size with less russet when Surround WP is used.

### Diseases

Surround WP may enhance the efficacy of wettable sulfur and/or lime-sulfur against scab, powdery mildew, sooty blotch, and flyspeck. See Product Guides for specific mixture instructions. Fungicides, like sulfur, must be added to the tank after Surround has been mixed in. It is especially important to keep small fruit covered.

### Stone Fruit

Such as apricot, cherry<sup>1</sup>, nectarine, peach, plum, pluot, plumcot and prune

PEST	APPLICATION INSTRUCTIONS
Japanese beetle, rose chafer	Start one week prior to expected infestation and follow with 3 to 4 applications at 5 – 7 day intervals
Oblique banded leafroller (OBLR), thrips	Suppression* only for OBLR. Start at pink bud and continue applications at 5 – 7 day intervals through jacket split.
Leafhoppers including sharpshooters	Suppression only*. Start before expected infestation, if possible. <ul style="list-style-type: none"> <li>• Pre-bloom: Apply at 7 – 14 day intervals up to bloom</li> <li>• Post harvest: Apply 2 or more applications at 7 – 14 day intervals</li> </ul>
Aphid, cherry fruit flies, crickets, European red mite, European earwig, grasshoppers, June beetle, leafhoppers, lesser peachtree borer, navel orange worm, oriental fruit moth, peachtree borer, peach silver mite, peach twig borer, stink bugs, tarnished plant bug, two-spotted spider mite, tufted apple bud moth	Suppression only*. Start before expected infestation, if possible and continue at 7 – 14 day intervals.
Plum curculio	Suppression only*. Apply at 7 day intervals throughout egg laying period
Sunburn and heat stress	See I d
<sup>1</sup> For processing fruit only	
* Supplemental controls may be needed for complete control.	

### Special Directions

**Special Washing Considerations for Stone Fruit:** For fresh fruit, special washing is required; especially for fuzzy peaches. Most residues wash off with brushing and forced water sprays. Prior to brushing, a pre-soak in approved fruit cleaning detergent is usually needed for fuzzy peaches. If fresh peaches cannot be washed as noted above, discontinue sprays when the fruit are approximately ¼ inch in diameter. Residues do not affect processed fruit quality.

For cherries, discontinue applications when fruit are half size (approximately ¼ inch) if no washing is available.

### Citrus Fruits

**Such as lemon, lime, grapefruit, mandarin, and orange**

PEST	APPLICATION INSTRUCTIONS
Thrips	Start at pre-bloom. Continue at 5 – 7 day intervals throughout bloom. Post-bloom continue at 7 – 14 day intervals through infestation.
Leafhoppers including sharpshooters	<ul style="list-style-type: none"> <li>• Apply every 7 – 14 days as infestation occurs.</li> <li>• <b>Pre-harvest:</b> Apply at least 2 applications 7 days apart for pre-harvest control of sharpshooters</li> </ul>
Aphids, citrus leafminer, citrus psyllid, crickets, diapaupes root weevil, grasshoppers, mites	Suppression only*. Apply every 7 – 14 days as infestation occurs.
Sunburn and heat stress	See I d.
* Supplemental controls may be needed for complete control.	

### b. Nut Crops

**Volume:** Apply to **near-drip**, not to excessive run-off.

**Concentration** (the amount of Surround per 1 gallon of water): Use concentrations of 1.5 to 3.0 cups of Surround WP per gallon of water.

### Tree Nuts

**Such as almond, beech nut, Brazil nut, cashew, chestnut, filbert, hickory nut, macadamia nut, pecan walnut and including pistachio**

PEST	APPLICATION INSTRUCTIONS
Aphids such as pecan, black, and yellow aphid, codling moth, crickets, grasshoppers, husk fly, leafhoppers, mites, naval orangeworm, peach twigborer, stink bug	Suppression only*. Start as infestation occurs. Apply every 7 – 14 days throughout infestation. For codling moth, apply a minimum of 2 sprays per generation.
Sunburn and heat stress	See I d
* Supplemental controls may be needed for complete control	

### c. Small Fruits

**Volume:** Apply to near-drip. Do not apply to run-off to avoid waste and poor coverage. The volume of water/acre required will increase throughout the growing season in relationship to the increasing size of the crop and its foliage.

**Concentration** (the amount of Surround WP per 1 gallon of water): Use concentrations of 1.5 to 3.0 cups of Surround WP per gallon of water.

#### Berries

Such as blackberry, raspberry, dewberry, boysenberry, loganberry, elderberry, blueberry, ribes such as currant and gooseberry and including cranberry

PEST	APPLICATION INSTRUCTIONS
Blackberry psyllid, crickets, European raspberry aphid, European red mite, grasshoppers, Japanese beetle, leafhoppers, leafrollers, plum curculio, rose chafer, two-spotted spider mite, thrips	Suppression only*. Begin applications after fruit set and prior to infestation, applying every 7 – 14 days.
Blueberry maggot	Suppression only*. Apply 2 sprays 7 days apart before expected infestation or first detection of infestation. Continue applications every 7 – 14 days during egg lay period.
Sunburn and heat stress	See I d.
* Supplemental controls may be needed for complete control.	

#### Special Directions

Apply only to fruits to be used for processing (cooking) as the white film will be difficult to remove completely. Only apply on berries up to the first three weeks after fruit set as trace residues will be difficult to remove after harvest.

#### Grapes

PEST	APPLICATION INSTRUCTIONS
Thrips	Apply 1 – 2 applications 7 days apart starting at bud break
Crickets, European red mite, two-spotted spider mite, rose chafer, omnivorous leafroller, grape berry moth, grape leafroller, grape leaf folder, grasshoppers, grape leaf skeletonizer, leafhoppers, Japanese beetle, June beetle, thrips	Suppression only*. Start as infestation occurs, applying a minimum of 2 – 3 applications by applying every 7 – 14 days.
Leafhoppers including sharpshooter	Apply initial application as infestation occurs, applying at least 2 - 3 applications by applying every 7 – 14 days throughout the infestation
* Supplemental controls may be needed for complete control.	

**Special Directions**

Harvest parameters may be altered and maturity may be delayed especially in white varieties. Closely monitor harvest parameters to determine optimal time to harvest. Changes in harvest parameters can affect final taste.

Donot spray table grapes from bloom to harvest. Infestations may be sprayed up to bloom, and again after harvest.

**d. Garden Vegetables**

**Volume:** Apply to **near-drip**. Do not apply to run-off to avoid waste and poor coverage. The volume of water/acre required will increase throughout the growing season in relationship to the increasing size of the crop and its foliage. Seedlings will need less water and a lower amount of Surround WP than fully mature plants to uniformly coat their surfaces. Adjust the volume of water and rate used throughout the season based upon plant size. Lower volumes and rates are typically used only for immature plants.

**Concentration** (the amount of Surround WP per 1 gallons of water): Use concentrations of 1.5 to 3.0 cups of Surround WP per gallon of water.

Deer and rabbit damage may be reduced (suppressed) on garden vegetables. Start applications prior to animal feeding and maintain thorough coverage during feeding period. For plants on which Surround WP does not adhere well, re-sprays as soon as possible are required following rainfall or protection will be lost.

**Legume Vegetables  
Such as bean, pea and soybean**

PEST	APPLICATION INSTRUCTIONS
Alfalfa looper, aphids, bean leaf beetle, crickets, European red mite, fall armyworm, flea beetles, grasshoppers, Japanese beetle, leafhoppers, Lygus bug,, Mexican bean beetle, stink bug, tarnished plant bug, three cornered alfalfa hopper, thrips, two-spotted spider mite, velvetbean caterpillar	Suppression only*. Start prior to infestation, applying every 7 - 14 days throughout infestation.
Sunburn and heat stress	See I d.
* Supplemental controls may be needed for complete control	

**Special Directions**

Only spray beans that are difficult to wash, such as string beans when beans are small.

**Root and Tuber Vegetables**

**Such as potato, garden beet, sugar beet, horseradish, radish, rutabaga, carrot, sweet potato and turnip**

PEST	APPLICATION INSTRUCTIONS
Armyworm, Boll worm, Colorado potato beetle, crickets, cutworm, European red mite, flea beetles, grasshoppers, harlequin bug, imported cabbage worm, leafhoppers, tarnished plant bug, tomato horn worm, two-spotted spider mite	Suppression only*. Start prior to infestation, applying every 7 – 14 days throughout infestation.
Sunburn and heat stress	See I d.
* Supplemental controls may be needed for complete control	

**Fruiting Vegetables**

**Such as tomato, pepper<sup>1</sup> and including eggplant<sup>1</sup>**

PEST	APPLICATION INSTRUCTIONS
Aphids, Colorado potato beetle, crickets, European red mite, flea beetles, grasshoppers, leafhoppers, lace bugs, stink bugs. Tarnished plant bug, tomato fruit worm, tomato horn worm, tomato pinworm, two-spotted spider mite	Suppression only*. Start prior to infestation, applying every 7 – 14 days throughout infestation.
Sunburn and heat stress	See I d.
<sup>1</sup> For fresh use apply only up to ¼ fruit size.	
* Supplemental controls may be needed for complete control.	

**Bulb Vegetables**

**Such as onion, garlic, leek and shallot**

PEST	APPLICATION INSTRUCTIONS
Thrips	Suppression only*. Start prior to infestation and apply every 5 – 7 days throughout infestation. Good coverage down into the plant crown is essential for efficacy.
Sunburn and heat stress	See I d.
* Supplemental pest control methods may be needed to aid control.	

**Cucurbits**

**Such as cucumber, summer and winter squash, pumpkin, muskmelon, and watermelon**

PEST	APPLICATION INSTRUCTIONS
Aphids, crickets, cucumber beetle, grasshoppers, squash vine borer, silver leaf whitefly, squash bugs	Suppression only*. Start prior to infestation, applying every 5 – 7 days, with the first two applications 3 days apart.

Powdery mildew	Suppression only*. Apply every 7-14 days as required to maintain coverage.
Sunburn and heat stress	See 1d
* Supplemental controls may be needed for complete control.	

**Brassica (Cole) Leafy Vegetables**  
**Such as broccoli, Brussels sprouts, cauliflower, collards, cabbage, mustard greens, canola and kohlrabi**

PEST	APPLICATION INSTRUCTIONS
Crickets, flea beetles, grasshoppers, loopers	Suppression only*. Use only in early season to avoid residue at harvest. Apply every 7 – 10 days making sure to wet the plant surface completely. Spreading will be improved on waxy brassica surfaces, if the first application is tank mixed with ¼ to a full rate of potassium fatty acids such as Safer <sup>®1</sup> brand soap products.
Sunburn and heat stress	See 1d
<sup>1</sup> Registered trademark of Woodstream Corporation.	
* Supplemental controls may be needed for complete control.	

**Leafy Vegetables (non-Brassica)**  
**Such as arugula, celery, lettuce, parsley, rhubarb and spinach**

PEST	APPLICATION INSTRUCTIONS
Aphids, armyworm, crickets, cutworms, flea beetles, grasshoppers, leafhoppers, loopers, sea chalcids, thrips, weevils	Suppression only*. Use only in early season to avoid residue at harvest. Start prior to infestation. Apply every 3 – 5 days to maintain adequate coverage throughout infestation.
Sunburn and heat stress	See 1d
* Supplemental controls may be needed for complete control.	

**Asparagus**

PEST	APPLICATION INSTRUCTIONS
Aphids, common and spotted asparagus beetle, crickets, grasshoppers, thrips	Suppression only*. Start prior to infestation. Apply every 7 – 10 days being sure to maintain coverage throughout infestation
Sunburn and heat stress	See 1d
* Supplemental controls may be needed for complete control.	

**e. Other Crops**

**Volume:** Apply to **near-drip**. Do not apply to run-off to avoid waste and poor coverage. The volume of water per acre required will increase throughout the growing season in relationship to the increasing size of the crop and its foliage.



**Concentration** (the amount of Surround WP per 100 gallons of water): Use 25 to 50 lbs Surround WP per 100 gallons of water.

**Corn**

PEST	APPLICATION INSTRUCTIONS
Aphids, armyworm, crickets, cutworms, flea beetles, grasshoppers, leafhoppers, loopers, sea chalcids, thrips, weevils	Suppression only*. Start prior to infestation. Apply every 5 – 10 days during infestation, with the first two applications 3 days apart. Tighten spray intervals during fast growing periods.
Sunburn and heat stress	See I d
* Supplemental controls may be needed for complete control.	

**Tropical Crops**

**Such as avocado, banana, guava, mango, papaya and pineapple**

PEST	APPLICATION INSTRUCTIONS
Aphids, avocado looper, coconut bug, crickets, fruit flies, grasshoppers, leafhoppers, leafrollers, mango weevil, mites, thrips	Suppression only*. Start prior to infestation. Apply minimum of 2 applications 7 – 14 days apart during application.
Sunburn and heat stress	See Id.
* Supplemental controls may be needed for complete control.	

**Special Directions**

Initial application over waxy surfaces such as mango fruit may bead and not spread adequately. Spreading is improved if Surround WP is tank mixed with ¼ to a full rate of potassium fatty acid products (see instructions under Brassica section). Subsequent applications may not require the additional spreader.

**Miscellaneous Crops**

**Such as artichoke, fig, hops, ginseng, globe, kiwifruit, olives, okra, paw paw, peanut, persimmon, pomegranate, strawberry and water chestnut**

PEST	APPLICATION INSTRUCTIONS
Aphids, crickets, fleabeetles, fruit flies, grasshoppers, leafhoppers, leafrollers, olive fruit fly, thrips, white fly	Suppression only*. Start prior to infestation. Spray every 7 – 14 days throughout infestation.
Sunburn and heat stress	See Id.
* Supplemental controls may be needed for complete control.	

**f. Non-food Crops**

**Ornamental Plants**  
**Such as landscape plants, flowers and garden transplants**

PEST	APPLICATION INSTRUCTIONS
Aphids, black vine weevil, crickets, cutworms, diabrotica beetle, earwig, grasshoppers, leafhoppers including sharpshooters, Japanese beetle, thrips , whitefly,	Suppression only*. Start prior to infestation. Spray every 5 - 7 days throughout infestation.
Deer, rabbit	Suppression only*. Start prior to animal feeding and maintain coverage during feeding period. For plants on which Surround WP does not adhere well, re-spray as soon as possible following rainfall or protection will be lost.
Sunburn and heat stress	See I d. Reduces transplant shock and heat stress when transplanting nursery stock to the garden.
* Supplemental pest control methods may be needed to aid control.	

**Special Directions**

Flower and ornamental plants will obtain a white covering from applications of Surround WP. If this is undesirable do not spray. On cut-flower plants, it is best to spray only the leafy foliage of the plant, so that cuttings are not affected.

**STORAGE AND DISPOSAL**

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

**PESTICIDE STORAGE:** Store in a dry, sheltered location away from food or feed. Store the container in the upright position. Product is slippery when wet.

**PESTICIDE DISPOSAL: If partly filled:** Call your local solid waste agency or 1-800-CLEANUP (or equivalent organization) for disposal instructions. Unless otherwise instructed, discard in trash. Never pour unused product down any indoor or outdoor drain.

**CONTAINER DISPOSAL: If empty:** Do not reuse the container. Place in trash or offer for recycling if available.

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## **SURROUND WP Crop Protectant**

*An HPF® Particle Film Technology Product*

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