

Innovation. Quality. Solutions.

# Surround® WP

## Crop Protectant

**PROTECTION YOU CAN SEE. PERFORMANCE YOU CAN TRUST**

### Plant Surface Protection means Higher Packout of Quality Apples and a More Profitable Orchard

Sunburn and heat stress take a toll on apple orchards. As part of a planned treatment program, Surround® can significantly reduce losses from sunburn and heat stress, resulting in increased fruit quality and higher marketable yields (packout). That can add up to greater profitability.

### Surround Represents a Breakthrough Opportunity for Plant Surface Protection in Apple Crops

When applied before severe summer conditions set in and maintained throughout the hotter months, Surround covers plant surfaces with a protective film – a layer of specially engineered kaolin particles that reflect harmful infrared and ultraviolet radiation.

### Proven to Reduce Sunburn Damage by up to 73 Percent

When applied according to label directions, Surround has been shown to reduce sunburn in apples by up to 73 percent, and improve packout by up to 34 percent, significantly increasing profitable yield potential. Damage reduction depends on application rate and timing as well as the severity of sunburn damage and tree canopy characteristics.

Sunburn can occur in apples when air temperatures reach 28°C. Some apple varieties can lose 20 to 30 percent of production to sunburn damage and heat stress, with even greater losses in times of extreme heat. On top of this loss is unmarketable fruit that is left unpicked.

Australian growers have successfully used Surround since 2001 in apples, wine grapes, citrus and other fruit and vegetables with significant reductions in sunburn, bleaching and heat stress.

The Surround particles can increase light scatter within the canopy, often improving fruit colour. Other benefits can include reduced fruit cracking and russetting.

#### Sunburn Reduction of 73 Percent in Granny Smith Apples; Potential Packout Increase of 34 Percent

Percentage of Granny Smith Apples in each of Five Sunburn rating categories					
	Category 0	Category 1	Category 2	Category 3	Category 4
Untreated	66.0	16.5	8.8	6.1	2.8
Surround® WP	88.3	5.0	3.5	2.5	0.8

Yarra Valley – Victoria. 2002/2003

#### Sunburn Reduction of 73 Percent in Fuji Apples; Potential Packout Increase of 33 Percent

Percentage of Fuji Apples in each of Five Sunburn rating categories					
	Category 0	Category 1	Category 2	Category 3	Category 4
Untreated	68.8	11.8	8.0	5.8	5.8
Surround® WP	91.6	5.8	1.5	0.6	0.5

Yarra Valley – Victoria. 2002/2003

Sunburn damage ratings:

- 0 = no sunburn
- 1 = slight yellowing on exposed side (<5% fruit area)
- 2 = noticeable yellowing on exposed side (>5% fruit area)
- 3 = moderate sunburn with pronounced lenticels (some fruit unmarketable)
- 4 = significant sunburn/fruit unmarketable

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## Engineered Particles Protect Against Heat Stress

Temperatures higher than around 28°C can both stress the tree and further damage fruit. The worst damage occurs when cooler weather precedes high temperatures and the fruit has not acclimatised. The best way to protect the orchard is to spray the fruit with Surround in order to avoid the sudden exposure of fruit to intense heat and solar radiation. The Surround protective particle film layer can lower peak apple skin temperatures by as much as 8°C.

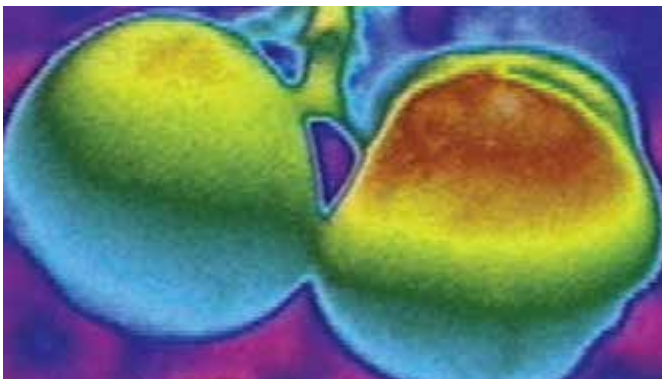
Consistent coverage with Surround can also lower canopy temperature and thus reduce heat stress on the whole tree. Ultimately, this can contribute to a net increase in photosynthesis.

**Surround can lower peak apple skin temperatures by as much as 8°C, and leaves are typically 3°C to 5°C cooler.**

**Infrared photography –**

**Left: Surround-treated apple**

**Right: Untreated apple. Orange/red indicates the hottest area.**



There is nothing like Surround. Surround provides superior reflectance of UV and infrared radiation because of its unique formulation. Based on kaolin, a naturally occurring, inert white mineral used in food and toothpaste, Surround particles are engineered to reflect significantly more of the sun's heat and radiation than any other sunscreen product.

The convenient WP formulation provides:

- Easy mixability in water
- Good coverage capacity
- Controlled adhesion to the fruit

Offering all these qualities, Surround represents a real breakthrough in plant surface protection.

**The information provided herein may include extracts from the product label and does not constitute the complete directions for use. READ THE PRODUCT LABEL THOROUGHLY BEFORE OPENING OR USING SURROUND**

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## Strategic Application Timing = Effective Protection

As a planned spray, Surround reduces sunburn and heat stress giving growers the opportunity to markedly improve quality and packout.

For best results, apply Surround before heat events to create a protective white barrier film. Build multiple layers with successive applications to improve protection.

A visual inspection of film deposition and coverage is essential to fine-tune spray coverage.

Surround applications will have no effect on sunburn damage that has taken place prior to application.

## Recommended Application Rates

Calibrate sprayer and spray according to tree row volume. Use 5 kg Surround per 100 litres of water for the first application and 2.5 kg Surround per 100 litres of water for subsequent applications.

Apply at adequate volumes to cover the fruit uniformly. Large droplets can run off and collect in the stem end of fruit which may increase difficulty of film removal at packout.

Reapply to maintain coverage after heavy rain, wind erosion or new growth. (See Figures 1 and 2)

**NOTE:** Before purchase and application, make sure that the packing plant can remove Surround. AgNova strongly recommends overhead high-pressure water sprays and brushes for this purpose. See Post-harvest Packing and Washing instructions on the label. For best results, maintain coverage (as shown in Figure 1) throughout the sunburn season. When fruit appears as in Figure 2, reapply Surround.

Figure 1



Optimum coverage

Figure 2



Apple needs re-application

**For Best Results, Maintain Surround Coverage Throughout the Sunburn Season.**