



# POST-HARVEST SANITATION PRODUCE-SPECIFIC RATES & USAGE



Please refer to your state's product label for specific recommended rates and usage instructions.

# FRESH MARKET / RAW VEGETABLES

## Fresh Market/Raw Vegetables (StorOx 2.0, SaniDate 5.0, SaniDate 12.0 and SaniDate 15.0) <sup>A, B</sup>

VEGETABLE	PAA Concentration by Treatment Method (PPM)		
	Dump, Drench, Flotation Tanks, Flumes or Hydrocoolers	Wash Spray Bar <sup>+</sup>	Fog <sup>*</sup>
Artichoke	40–60	60–80	80–100
Asparagus	40–60	60–80	80–100
Broccoli	40–60	60–80	80–100
Brussels Sprouts	40–60	60–80	80–100
Cabbage	40–60	60–80	80–100
Cauliflower	40–60	60–80	80–100
Carrots	24–40 <sup>1</sup>	60–80	60–80
Celery	24–40 <sup>1</sup>	40–60	40–60
Sweet Corn	24–40 <sup>1</sup>	60–80	60–80
Cucumbers	40–50	60–80	60–80
Garlic	40–50	50–60	50–60
Garden Herbs	40–60	60–80	80–100
Lettuce (All Types)	40–60	60–80	70–80
Leafy Greens	40–60	70–80	80–100
Melons (All Types)	40–60	60–80	80–100
Mushrooms	24–30 <sup>1</sup>	30–40	30–40
Onions (Green)	40–60	60–80	80–100
Peas	40–60	60–80	80–100
Peppers (All Types)	40–60	60–80	80–100
Pumpkins	40–60	60–80	60–80
Radishes	24–40 <sup>1</sup>	40–50	40–50
Spinach	85	80–100	80–100
Sweet Potatoes	85	100	100
Squash (All Types)	24–30 <sup>1</sup>	30–40	30–40
Tomatoes	50–60	60–80	80–100
Turnips	40–60	60–80	80–100
Yams	85	100	100

**A** Determine the required PAA (Peroxyacetic Acid) concentration from the range listed for each vegetable based on the treatment and sensitivity of the produce to PAA solutions. If the treatment method results in contact time of ≤15 seconds, consider using rates at the high end of the range if produce is not sensitive to high PAA concentrations. Ex. If it's 40-60 ppm, use 60 ppm. For produce that might be sensitive to higher concentrations of PAA solutions or have no known history of PAA usage before, consider starting with low end of the range. Ex. If it's 40-60 ppm, use 40 ppm. **B** Once the PAA concentration is identified, pick the appropriate product by referring to the table under "Post-Harvest Product Recommendation(s)" and use dilution rate of the product by referring to the table under "Product Dilution Rates."








\*Fogging uses not approved in California.

<sup>+</sup>Wash spray bar application of SaniDate 15.0 not approved for human health pathogen control.

<sup>1</sup> Minimum rate on raw produce for SaniDate 15.0 is 30 ppm.

# PRODUCT RECOMENDATIONS

## Post-Harvest Product Recommendation(s)

State of Produce (Marketed/Consumed)	Treatment Method	StorOx 2.0	SaniDate 5.0	SaniDate 12.0	SaniDate 15.0
Fresh Market/Raw	Low-Volume Wash Spray Bar or Fogging*				
Fresh Market/Raw	High-Volume Wash Spray Bar				
Fresh Market/Raw	Dump, Drench, Flotation Tanks, Flumes or Hydrocoolers				
Processed (Chunks, cut, diced, frozen or juices)	Wash Spray Bars, Dump Tanks, Flumes, Hydrocoolers or Fogging*				

## Product Dilution Rates\*

PAA Concentration (PPM)	Dilution Rate(s)			
	StorOx 2.0	SaniDate 5.0	SaniDate 12.0	SaniDate 15.0
24–30+	1:910–1:740	1:2,460–1:1,980	1:5,600–1:4,480	1:7,060–1:5,650
24–40+	1:910–1:550	1:2,460–1:1,480	1:5,600–1:3,360	1:5,650–1:4,240
30–40	1:740–1:550	1:1,980–1:1,480	1:4,480–1:3,360	1:4,240–1:3,390
40–50	1:550–1:440	1:1,480–1:1,190	1:3,360–1:2,690	1:4,240–1:2,825
40–60	1:550–1:360	1:1,480–1:990	1:3,360–1:2,240	1:4,240–1:2,120
40–80	1:550–1:275	1:1,480–1:740	1:3,360–1:1,680	1:3,390–1:2,825
50–60	1:440–1:360	1:1,190–1:990	1:2,690–1:2,240	1:2,825–1:1,120
60–80	1:360–1:275	1:990–1:740	1:2,240–1:1,680	1:2,420–1:2,120
70–80	1:320–1:275	1:850–1:740	1:1,900–1:1,680	1:2,420–1:2,120
80–100	1:275–1:220	1:740–1:590	1:1,680–1:1,340	1:2,120–1:1,695

\* Fogging uses not approved in California.

+ Minimum rate for SaniDate 15.0 is 30 ppm.

# FRESH MARKET / RAW FRUITS

**Fresh Market/Raw Fruits** (StorOx 2.0, SaniDate 5.0, SaniDate 12.0 and SaniDate 15.0+) <sup>A, B</sup>

FRUITS	PAA Concentration by Treatment Method (PPM)		
	Dump, Drench, Flotation Tanks, Flumes or Hydrocoolers	Wash Spray Bar	Fog*
Apples	40–80	80–100	100
Blackberries	40–60	60–80	80–100
Blueberries	40–60	60–80	80–100
Cherries	40–60	60–80	80–100
Citrus (All)	40–60	60–80	80–100
Cranberries	40–60	60–80	80–100
Grapes	40–60	60–80	80–100
Kiwi	40–60	60–80	80–100
Mangoes	60–80	60–80	80–100
Nuts (Hazel Nuts, Walnuts, etc.)	60–80	80–100	100
Peaches, Nectarines and Plums	40–60	80–100	100
Pears	40–80	80–100	100
Prunes	40–80	60–80	100
Raspberries	40–80	60–80	80–100
Strawberries	40–80	60–80	60–80

**A** Determine the required PAA (Peroxyacetic Acid) concentration from the range listed for each fruit based on the treatment and sensitivity of the produce to PAA solutions. If the treatment method results in contact time of  $\leq 15$  seconds, consider using rates at the high end of the range if produce is not sensitive to high PAA concentrations. Ex. If it's 40–60 ppm, use 60 ppm. For produce that might be sensitive to higher concentrations of PAA solutions or have no known history of PAA usage before, consider starting with low end of the range. Ex. If it's 40–60 ppm, use 40 ppm. **B** Once the PAA concentration is identified, pick the appropriate product by referring to the table under “Post-Harvest Product Recommendation(s)” and use dilution rate of the product by referring to the table under “Product Dilution Rates.”

\*Fogging uses not approved in California.

\*Minimum rate for SaniDate 15.0 on raw produce in California is 85 ppm. Please refer to CA-approved SaniDate 15.0 label for recommended rates.

# PROCESSED FRUITS & VEGETABLES

**Processed Fruits** : Sliced, Diced, Peeled, Frozen and Juiced (SaniDate 15.0+ and SaniDateFD) <sup>A</sup>

FRUITS	PAA Concentration by Treatment Method (PPM)		
	Dump, Drench, Flotation Tanks, Flumes or Hydrocoolers	Wash Spray Bar	Fog*
Apples	40–80	60–80	70–80
Blackberries	40–60	60–80	60–80
Blueberries	40–60	60–80	60–80
Cherries	40–60	60–80	70–80
Citrus	40–60	60–80	70–80
Cranberries	40–60	60–80	70–80
Grapes*	24–40 <sup>†</sup>	60–80	70–80
Mangoes*	24–40 <sup>†</sup>	40–60	70–80
Peaches*	24–40 <sup>†</sup>	80	70–80
Raspberries	40–80	60–80	60–80
Strawberries	40–80	60–80	60–80

**Processed Vegetables** : Sliced, Diced, Peeled, Frozen and Juiced (SaniDate 15.0+ and SaniDateFD) <sup>A</sup>

VEGETABLES	PAA Concentration by Treatment Method (PPM)		
	Dump, Drench, Flotation Tanks, Flumes or Hydrocoolers	Wash Spray Bar	Fog*
Asparagus	40–60	60–80	60–80
Broccoli	40–60	60–80	60–80
Cauliflower	40–60	60–80	60–80
Carrots	24–40 <sup>†</sup>	60–80	60–80
Celery (Cut)	24–40 <sup>†</sup>	40–60	60–80
Corn	24–40 <sup>†</sup>	60–80	60–80
Garden Herbs	40–60	60–80	60–80
Leafy Greens	40–60	70–80	60–80
Melons (All Types)	40–60	60–80	60–80
Mushrooms	24–30 <sup>†</sup>	30–40	30–40
Onions	40–60	60–80	60–80
Peas	40–60	60–80	60–80
Peppers (All Types)	40–60	60–80	60–80
Potatoes (All Types)	60–80	60–80	60–80
Radishes (Cut/Ministicks)	24–40 <sup>†</sup>	40–50	40–50
Spinach	60–80	60–80	60–80
Sweet Potatoes	40–60	60–80	60–80

<sup>A</sup> Determine the required PAA (Peroxyacetic Acid) concentration from the range listed for each type of produce based on the treatment method and sensitivity of the produce to PAA solutions. If the treatment method results in contact time of ≤ 15 seconds, consider using rates at the high end of the range if produce is not sensitive to high PAA concentrations. Ex. If it's 40-60 ppm, use 60 ppm. For produce that might be sensitive to higher concentrations of PAA solutions or have no known history of PAA usage before, consider starting with low end of the range. Ex. If it's 40-60 ppm, use 40 ppm.

\*Fogging uses not approved in California.

<sup>†</sup>Minimum rate for SaniDate 15.0 on processed produce in California is 80 ppm. Please refer to CA-approved SaniDate 15.0 label for recommended rates.



## POST-HARVEST SANITATION PRODUCE-SPECIFIC RATES & USAGE



### **StorOx 2.0**

StorOx 2.0 is an EPA-registered peroxyacetic acid-based broad-spectrum bactericide/fungicide that is effective against post-harvest spoilage and decay-causing bacterial and fungal diseases. This safe alternative to chlorine extends shelf life and reduces spoilage of raw fruits and vegetables. Use StorOx 2.0 in fogging\* applications or with low water volume spray applications to control bacteria, yeast, molds and fungi.

*\*Fogging applications not approved for use in California.*

### **SaniDate 5.0**

SaniDate 5.0 is a 5.3% peroxyacetic acid-formulated alternative to chlorine treatments for raw fruit and vegetable processing waters. Use SaniDate 5.0 to control spoilage and decay-causing organisms in process waters, on the surface of fruits and vegetables, and for both food contact and non-food contact hard surface sanitation.

### **SaniDate 12.0**

SaniDate 12.0 wash-water treatment is a high strength, 12% peroxyacetic acid-formulated alternative to chlorine treatments for raw fruit and vegetable washes and water treatment. Use SaniDate 12.0 to control spoilage and decay organisms in process waters and on the surface of fruits and vegetables in wash tanks, flumes, hydrocoolers and spray applications.

### **SaniDate 15.0**

SaniDate 15.0 is a microbicide approved to treat raw produce wash and process waters for human health pathogens\* (*E. coli*, *Salmonella enterica* and *Listeria monocytogenes*), as well as controlling spoilage and decay-causing bacteria, yeast, molds and fungi. This ideal chlorine alternative can also be used to combat non-human health pathogens in the treatment of processed produce.

*\*SaniDate 15.0 is not approved for controlling human health pathogens in California.*

### **SaniDate FD**

SaniDateFD is a peroxyacetic acid-based antimicrobial specially blended for use in federally inspected meat, poultry and seafood plants and fruit and vegetable processing facilities. It is approved for direct and indirect food contact in accordance with 21 CFR 173.315. For processed fruit and vegetables, SaniDateFD may be used in sprays, dips, wash tanks and hydrocoolers at a rate not to exceed 1 oz. per 16 gallons of water.

