



Tsunami 100™

PRODUCT DESCRIPTION

Tsunami 100™ is an EPA registered antimicrobial water additive for pathogen* reduction in fruit and vegetable processing water. Tsunami 100 is recommended for use in the process waters of post harvest, fresh cut and processed fruits and vegetables in both batch and continuous operations. Tsunami 100 is also registered for use in spraying or dipping fruits and vegetables to control microbial growth that causes decay or spoilage on the surface of produce.

Tsunami 100 may be used as a water additive in fruit and vegetable processing water on products labeled as organic in food processing facilities on both raw agricultural commodities and on fruits and vegetables that will be further processed.

Tsunami 100 is not for use to control microorganisms on hard surfaces such as tanks, lines, or flume surfaces or food processing equipment.

Used as directed, Tsunami 100 reduces 99.9% of the pathogens *Escherichia coli* O157:H7*, *Listeria monocytogenes** and *Salmonella enterica** in fruit and vegetable processing waters. Tsunami 100 also provides control of spoilage and decay causing non-public health organisms present in processing waters and on the surface of post-harvest, fresh-cut and processed fruits and vegetables.

BENEFITS

Promotes Quality Assurance

- ▲ Low reactivity with organics and soils assures consistent dosage is available for microbial control.
- ▲ Successfully applied in all major processing steps including multi-stage flumes, chill tanks, coolers and various washing equipment in fresh cut, post harvest and further processed facilities.
- ▲ Tsunami 100 is OMRI listed for organic production.
- ▲ No pH control necessary - effective microbial control at acid to slightly alkaline pH.
- ▲ Broad applicability to all vegetables and fruits, both whole and cut.
- ▲ No rinse required.

Environmental Implication

- ▲ Single product, ready-to-feed liquid; requires no precursor chemicals or on-site generation equipment.
- ▲ Rapidly breaks down after use into water, oxygen and acetic acid.

Enhances Overall Plant Economics

- ▲ Eliminates need for generation equipment, precursor chemicals and maintenance.
- ▲ Reduced labor, water and chemical costs.
- ▲ Controls fruit and vegetable surface microbial activity so product spoilage is minimized and shelf life is enhanced.

PROPERTIES

Form.....liquid
 Color.....colorless
 Odor.....acetic acid
 Foam.....none
 Spec. Grav. @ 68°F (20°C).....1.114
 Pounds per gallon.....9.28 (4.21 kg)
 1% pH.....2.83

ACTIVE INGREDIENTS:

Peroxyacetic acid.....15.2%
 Hydrogen peroxide.....11.2%

INERT INGREDIENTS:.....73.6%

TOTAL:.....100.0%

EPA Reg. No. 1677-164

STATEMENT OF ASSURANCE

This product is effective under the intended conditions of use as outlined on the product label or specified in a Sanitation Standard Operating Procedure (SSOP).

A Letter of Guaranty as is available from your Ecolab representative.

Tsunami 100™

DIRECTIONS FOR USE

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

FOR PATHOGEN* REDUCTION AND CONTROL IN FRUIT AND VEGETABLE PROCESSING WATERS IN FOOD FACILITIES:

A. Batch systems with no makeup water added:

1. Ensure that water is mixing in the processing vessel.
2. Add Tsunami 100 at a rate from 2.5-6.7 fluid ounces per 100 gallons of process water. This will produce about 215-575 ppm total product and about 30-80 ppm peroxyacetic acid. At this use dilution, Tsunami 100 will provide a 99.9% reduction against the pathogens *Escherichia coli* O157:H7*, *Listeria monocytogenes** and *Salmonella enterica**.
3. Measure the residual peroxyacetic acid concentration in the water using a Test Kit (consult Ecolab Representative) and adjust dose as needed. Allow a 1.5 minute mixing time.

B. Continuous systems with makeup water continuously added:

Initial dose:

1. Ensure that water is mixing in the processing vessel and/or piping.
2. Add Tsunami 100 at a rate from 2.5-6.7 fluid ounces per 100 gallons of process water. This will produce about 215-575 ppm total product and about 30-80 ppm peroxyacetic acid. At this use dilution, Tsunami 100 will provide a 99.9% reduction against the pathogens *Escherichia coli* O157:H7*, *Listeria monocytogenes** and *Salmonella enterica**.
3. Measure the residual peroxyacetic acid concentration in the water using a Test Kit (consult Ecolab Representative) and adjust dose as needed. Allow a 1.5 minute mixing time.

Continuous Dosing: Meter Tsunami 100 at a rate from 2.5-6.7 fluid ounces per 100 gallons of fresh makeup water added to the system. This will produce about 215-575 ppm total product and about 30-80 ppm peroxyacetic acid. Measure the residual peroxyacetic acid concentration in the water using a Test Kit (consult Ecolab Representative) and adjust dose as needed. Allow a 1.5 minute mixing time.

FOR TREATMENT OF FRUIT AND VEGETABLE SURFACES AND PROCESS WATERS IN FOOD FACILITIES:

This product is not intended for control of any public health organisms on fruit and vegetable surfaces. Mix Tsunami 100 with water either batchwise or continuously to produce about 36 - 575 ppm total product and about 5 - 80 ppm peroxyacetic acid in use solution. This can be accomplished by initially adding Tsunami 100 at a rate from 0.42 - 6.7 fluid ounces per 100 gallons of process water. The fruits and vegetables can be sprayed or submerged in the resulting solution for a minimum contact time of 90 seconds, followed by adequate draining. At this use dilution, Tsunami 100 will control the growth of spoilage and decay causing non-public health organisms in process waters and on the surface of fruits and vegetables. Tsunami 100 can be used on the following types of fresh, post harvest and further processed fruits and vegetables:

Vegetables

- Root and tuber vegetables: Carrot, potato, radish, rutabaga, sweet potato, yam, sugar beet
- Leaves of root and tuber vegetables: Turnip greens, and sugar beet
- Bulb vegetables: Onion (dry bulb and green), leek, garlic, shallot
- Leafy vegetables: Lettuce (head and leaf), celery, fennel, endive, escarole, parsley, radicchio, rhubarb, spinach, arugula
- Brassica leafy vegetables: Broccoli, brussel sprouts, cabbage, cauliflower, mustard greens, mustard spinach
- Legumes [succulent or dried], bean (green, kidney, lima, mung, navy, pinto, snap, wax), pea (chickpea, lentil, dwarf, garden, English, field, edible pea pod), alfalfa, and soybean
- Fruiting vegetables: Pepper (bell, pimento, hot, sweet), tomato, tomatillo, eggplant
- Cucurbits: Cucumber, melon (cantaloupe, crenshaw melon, honeydew, honey ball melon, mango melon, muskmelon, pineapple melon, watermelon), summer squash, pumpkins, winter squash

Fruits

- Citrus fruits: Sweet and sour orange, lemon, lime, tangelo, tangerine, mandarin, citrus citron, kumquats, grapefruit
- Pome fruits: Apples and pears
- Stone fruits: Sour and sweet cherry, peach, nectarine, plum, prune
- Small Fruits and berries: Blackberries, blueberries, red and black raspberries

Sprouts and seeds of: vegetables and fruits that are listed on this label including, root & tuber vegetables, bulb vegetables, leafy vegetables, Brassica leafy vegetables, legumes, fruiting vegetables, cucurbits, citrus fruits, pome fruits, stone fruits, small fruits and berries, mustard

Tree nuts: Almond, Brazil, filbert, cashew, pecan, walnut (black & English), macadamia, chestnut

Cereal grains: Corn, barley, oats, rice, wheat, triticale, wild rice, sweet corn

Herbs and Spices: Basil, chives, coriander, dill, lemongrass, marjoram, sage, savory, tarragon, thyme

Miscellaneous: Asparagus, avocado, artichoke, banana, cranberry, fig, grape, kiwifruit, mango, mushroom, okra, peanut, persimmon, pineapple, raisins, strawberry, water chestnut, watercress, coffee berry, coffee bean, seaweed

FOR TREATMENT OF SEEDS NOT INTENDED FOR HUMAN OR ANIMAL CONSUMPTION:

Apply to seeds as directed to control seedborne microorganisms that cause plant disease or spoilage and decay of developing seedlings. Only treat seeds of the crops listed on this label. Mix Tsunami 100 with clean water either batchwise or continuously to no more than 11,500 ppm total product (1750 ppm residual peroxyacetic acid) in use solution. This can be accomplished by adding 20 fluid ounces Tsunami 100 per 16.4 gallons of water. The volume of treatment solution must be at least two times greater than the volume of seeds to be treated. The seeds must be submerged in the treatment solution and agitated for 30 minutes. Following treatment, remove seeds from treatment solution and dry.

FOR PATHOGEN* REDUCTION AND CONTROL IN INDUSTRIAL PROCESSING WATERS IN FOOD FACILITIES:

A. Batch systems with no makeup water added:

1. Ensure that water is mixing in the processing vessel.
2. Add Tsunami 100 at a rate from 2.5-6.7 fluid ounces per 100 gallons of process water. This will produce about 215-575 ppm total product and about 30-80 ppm peroxyacetic acid. At this use dilution, Tsunami 100 will provide a 99.9% reduction against the pathogens *Escherichia coli* O157:H7*, *Listeria monocytogenes** and *Salmonella enterica**.
3. Measure the residual peroxyacetic acid concentration in the water using a Test Kit (consult Ecolab Representative) and adjust dose as needed. Allow a 1.5 minute mixing time.

B. Continuous systems with makeup water continuously added:

Initial dose:

1. Ensure that water is mixing in the processing vessel and/or piping.
2. Add Tsunami 100 at a rate from 2.5-6.7 fluid ounces per 100 gallons of process water. This will produce about 215-575 ppm total product and about 30-80 ppm peroxyacetic acid. At this use dilution, Tsunami 100 will provide a 99.9% reduction against the pathogens *Escherichia coli* O157:H7*, *Listeria monocytogenes** and *Salmonella enterica**.
3. Measure the residual peroxyacetic acid concentration in the water using a Test Kit (consult Ecolab Representative) and adjust dose as needed. Allow a 1.5 minute mixing time.

Continuous Dosing: Meter Tsunami 100 at a rate from 2.5-6.7 fluid ounces per 100 gallons of fresh makeup water added to the system. This will produce about 215-575 ppm total product and about 30-80 ppm peroxyacetic acid. Measure the residual peroxyacetic acid concentration in the water using a Test Kit (consult Ecolab Representative) and adjust dose as needed. Allow a 1.5 minute mixing time.

FOR TREATMENT OF INDUSTRIAL PROCESS WATERS IN FOOD FACILITIES:

This product is not intended for control of any public health organisms. Mix Tsunami 100 with water either batch-wise or continuously to produce about 36-575 ppm total product and about 5-80 ppm peroxyacetic acid in use solution. This can be accomplished by initially adding Tsunami 100 at a rate from 0.42-6.7 fluid ounces per 100 gallons of process water. At this use dilution, Tsunami 100 will control the growth of spoilage and decay causing non-public health organisms, including odor causing organisms, in process waters.

CLEANING HARD SURFACE

CLEANING HARD SURFACE FOOD PROCESSING EQUIPMENT-NO RINSE

For hard surface cleaning applications, remove gross soil particles from surfaces, then thoroughly clean surfaces with a concentration of 0.10-0.18% v/v (1000 to 1800 ppm v/v or 1 to 1.8 ounces per 8 gallons of water). Use immersion, coarse spray or circulation techniques as appropriate to clean surfaces. Allow surfaces to drain thoroughly. No rinse necessary.

FINAL BOTTLE AND CLOSURE CLEANING RINSE

Tsunami 100 may be used as a final cleaning rinse for returnable and non-returnable bottles (e.g. glass or PET) and closures not requiring a final food contact surface sanitizing rinse when used at a concentration of 0.10-0.18% v/v (1000 to 1800 ppm v/v or 1 to 1.8 ounces per 8 gallons of water). Drain thoroughly. No rinse necessary.

CLEANING HARD SURFACE PROCESSING EQUIPMENT-RINSE FOR FOOD CONTACT SURFACES

For hard surface cleaning applications, remove gross soil particles from surfaces, then thoroughly clean surfaces with 2 to 3 ounces product per 3 gallons of water (0.5% to 0.8% v/v). All treated hard non-porous food contact surfaces must be rinsed thoroughly with a potable water rinse.

FLOODING AND PRODUCED WATER IN FOOD FACILITIES:

For Water Flooding operations, add Tsunami 100 initially at 3.75 fluid ounces per 1000 gallons of water (5ppm peroxyacetic acid by weight) to 75.5 fluid ounces per 1000 gallons of water (100 ppm peroxyacetic acid by weight) and repeat until control is achieved. Subsequent treatment may be continued on a weekly basis or as required.

NOTE: This product in its use solutions is compatible with stainless steel and aluminum surfaces. If product is intended to be used on any other surface, it is recommended that you apply product to a smaller test area to determine compatibility before proceeding with its use.

For cautionary and first aid information, consult the Safety Data Sheet (SDS) or product label.