

# ADOXYSAN N14

## Liquid Peroxygen Sanitiser

**ADOXYSAN N14** is a powerful liquid sanitizer formulated from a stabilised blend of peracetic acid and hydrogen peroxide. **ADOXYSAN N14** solutions are used cold and exhibit broad spectrum activity against all types of aerobic and anaerobic bacteria (including spore formers), fungi, yeasts, algae and viruses.

**ADOXYSAN N14** solutions are colourless, non-staining, free rinsing and virtually odourless at use concentrations.

**ADOXYSAN N14** solutions decompose to form water, oxygen, and acetic acid which is readily biodegradable. Using **ADOXYSAN N14** as a sanitiser presents no environmental problems with disposal of used solutions.

### APPLICATION

**ADOXYSAN N14** decomposes to form water, oxygen and acetic acid and can be used in *no rinse* procedures in the food industry for final sanitation of cleaned surfaces.

**ADOXYSAN N14** finds application in the food processing industries. It is suitable for use with fresh cut and processed fruit and vegetables. It is suitable for the sanitation of all food contact surfaces such as kettles, conveyors, fillers, blanches, slicers, eviscerating tables, conveyors, mincers, ovens, tanks, boning tables, syrup pans and mixers.

**ADOXYSAN N14** is non-foaming and is ideal for CIP sanitation in dairy, food, water treatment and cooling plants, laundries, animal health laboratories, soft drink, wineries and brewing industries.

**ADOXYSAN N14** may be used in animal houses for the sanitation of breeder boxes, incubators, feeders, drinking water supply lines and other surfaces.

**ADOXYSAN N14** can also be used for continuous sanitation of the drinking water in animal houses.

### FEATURES & BENEFITS

1. Non foaming formulation makes **ADOXYSAN N14** ideally suited to CIP applications.
2. Products of decomposition present no problems on food contact surfaces - can be safely used in *no rinse* sanitation procedures. It drains freely to leave no residues.
3. Products of decomposition present no environmental problems with discharge of effluent waters. Effluent waters contain low levels of BOD. It is beneficial to effluent.
4. Rapid activity against wide range of micro-organisms, even at low temperatures.
5. Easy to use. Can be used for CIP systems, flood filling, spray balls and fogging.
6. Harmless to plant. Passivates stainless steel. Will not cause corrosion.

## CHEMICAL AND PHYSICAL PROPERTIES

Appearance:	Clear, colourless, thin liquid
Flash Point:	Non-flammable
Odour (concentrate):	Acrid odour
Odour (at use solutions):	Almost odourless
Specific Gravity:	1.13
pH (Concentrate):	1
pH (1% solution):	3-5

## METHOD OF USE

**ADOXYSAN N14** solutions are relatively unaffected by organic matter. It kills micro-organisms such as aerobic and anaerobic bacteria and their spores, yeasts, moulds, fungi and their spores and viruses on contact. There are no resistant species.

**ADOXYSAN N14** solutions leave no residue and have little cleaning ability. For optimum sanitation results surfaces should be adequately precleaned prior to sanitation with **ADOXYSAN N14**.

It should not be exposed to heat, direct sunlight, sources of ignition or contamination. It is incompatible with acids, alkalies, reducing agents, oxidising agents, rust, resins and combustible materials.

**ADOXYSAN N14** exhibits optimum biocidal activity at pH < 7. Adequate rinsing of alkali cleaned surfaces should be carried out prior to final rinse sanitation with **ADOXYSAN N14**.

There is no need to post rinse after sanitising surfaces with **ADOXYSAN N14**. If post rinsing of surfaces is required it should be done with sterile water to prevent recontamination of the surfaces.

**ADOXYSAN N14** solutions should be used within one hour after dilution and should not be reused.

**ADOXYSAN N14** solutions can be used at ambient temperature (about 20°C) but are effective over the range of 5 - 80°C

**ADOXYSAN N14** is typically used at dilutions of 0.05 - 2% v/v with contact times of 10 - 30 minutes.

**ADOXYSAN N14** may be fogged onto equipment, walls, floors and into the air to kill surface and dust borne microbes.

### Use Concentrations:

Lightly soiled surfaces	0.2 % v/v
Final rinsing of surfaces	0.05% v/v
Process water streams	0.05% v/v
Fruit and vegetable surfaces	0.05% v/v
Sanitation of animal house drinking waters	0.05% v/v

## EFFECT ON MATERIALS OF CONSTRUCTION

**ADOXYSAN N14** can be used to sanitise plants containing stainless steel, glass, polyethylene, PVC, PTFE(Teflon), Viton and fluorinated silicone rubbers.

**ADOXYSAN N14** should not be used with brass, copper and its alloys, nickel and its alloys, mild steel, aluminium, natural rubbers, nitrile rubbers, neoprene or ABS.

## BACTERIACIDAL EFFECTIVENESS

### How does peracetic acid disinfectant work?

Peracetic acid as a disinfectant oxidizes the outer cell membranes of microorganisms. The oxidation mechanism consists of electron transfer. When a stronger oxidant is used, the electrons are transferred to the microorganism much faster, causing the microorganism to be rapidly deactivated.

*Table 1: oxidation capacity of various disinfectants*

Disinfectant	EV (elektronic volts)
Peracetic acid	1,81
Chlorine dioxide	1,57
Sodium hypochlorite	1,36

### Peracetic acid affectivity

Peracetic acid can be applied for the deactivation of a large variety of pathogenic microorganisms. It also deactivates viruses and spores. Peracetic acid activity is hardly influenced by organic compounds that are present in the water.

However, pH and temperature do influence peractetic acid activity. Peracetic acid is more effective when the pH value is 7 than at a pH range between 8 and 9. At a temperature of 15 °C and a pH value of 7, five times more peracetic acid is required to affectively deactivate pathogens than at a pH value of 7 and a temperature of 35 °C.

**ADOXYSAN N14** contains 15% peracetic acid. A 0.07% solution in water contains 100 ppm of peracetic acid. Test results below show that at this concentration it is effective against *Staphylococcus aureus* and *Escherichia coli*.

The antimicrobial efficacy of peracetic acid was determined using the procedure of the standard A.O.A.C. sanitizing test. The samples were diluted with 500 ppm hard water and employed at 25 degrees C.

The bacteria used in the test procedure were *S. aureus* and *E. coli*, and TGE plating medium was employed. Exposure time of the compositions to the bacteria was 30 seconds. The neutralizer employed in the testing procedure contained 0.1% thiosulfate, 1.0% peptone, and 0.025% catalase.

The antimicrobial activity is summarized in the table (*Table 2*) below.

The cidal activity of Peracetic acid is summarized below. At 176 ppm of product **ADOXYSAN N14** with 15% peracetic acid there was about 27 ppm of peracetic acid. At 700 ppm of **ADOXYSAN N14** product there was about 105 ppm of peracetic acid.

*Table 2: Cidal Activity of Peracetic Acid*

Concentration Peracetic Acid	pH	Ave. Log reduction sup.(a)	
		S. aureus	E. coli
27 ppm	3.90	NMA. sup.(b)	NMA
105 ppm	3.50	4.60	>7.12
105 ppm	3.49	6.38	6.64
105 ppm	3.49	4.17	--
105 ppm	3.45	4.77	6.44

sup.(a) Log 4 reduction reduces a bacterial population from 1,000,000 to 100. Log 6 reduction reduces bacteria from 1,000,000 to 1.

sup.(b) No measurable activity

Peracetic acid has been reported to be effective against other bacteria including Legionella pneumophila. One reference (6139756) using peracetic acid at 200 ppm to backwash swimming pool filters gave the following results.

*Table 3*

Bacteria	1 minute	2 minutes	10 minutes
E. coli	No survivors	No survivors	No survivors
Coliform germs	No survivors	No survivors	No survivors
Pseudomonas aeruginosa	No survivors	No survivors	No survivors
Legionella pneumophila	No survivors	No survivors	No survivors

### **Listeria**

In the last decade, listeriosis, caused by *L. monocytogenes*, has emerged a major food borne disease. Because the bacterium is resistant to low pH and high sodium chloride concentrations and grows at refrigeration temperatures, it is very difficult to eradicate from food processing plants. Treatment of *L. monocytogenes* is shown in the table below.

*Table 4: Treatment of Listeria monocytogenes Scott A*

Treatment	time (min)	log count	log count
None	0	5.85	.....
50 ppm Peracetic acid pH 2.8	0.5	<1	>4.85
	1	<1	>4.85
	5	<1	>4.85

The treatment of 50 ppm Peracetic acid at pH 2.8 proved very effective against *Listeria monocytogenes*.

## Fungicide Application:

**Curative:** Apply immediately at first signs of infection. Spray diseased plants using a concentration of 500mL **ADOXYSAN N14** to 150 litres of water. Where there is a high concentration rate of fungal growth apply at a spray of 500mL **ADOXYSAN N14** to 100L of water.

**Preventative:** Apply immediately at first signs of infection. Spray diseased plants using a concentration of **ADOXYSAN N14**: 500mL to 150L of water.

## Coverage:

- Spray at the rate of 1000L/per hectare to run off DEPENDING ON AMOUNT OF FOLIAGE.
- **ADOXYSAN must have full contact to be effective**
- To obtain best results a neutral wetter is advisable to aid good coverage.

**Disease targeting:** Product can be sprayed up to the day before harvest. AD-OXYSAN is effective immediately resulting in the drying up of all infected fruit.

**Mixing:** Use the spray mix within 24 hours of preparation.

WITHHOLDING PERIODS	
<b>Grapes:</b> Dried, Table And Wine <b>Brassica Vegetables:</b> Broccoli, Brussels Sprouts, Cauliflower, Cabbage <b>Fruiting Vegetables:</b> Tomatoes, Eggplant, Peppers <b>Cucurbit Vegetables:</b> Cucumber, Melons, Pumpkins, Squash, Zucchini <b>Celery</b> <b>Allium Vegetables:</b> Garlic, Leeks, Onions, Shallots, Spring Onions	<b>DO NOT APPLY LATER THAN 1 DAY BEFORE HARVEST</b>
<b>Potatoes:</b> (Seed)	<b>NOT REQUIRED WHEN USED AS DIRECTED</b>