

PROXITANE®

UN 3149



Progress beyond

Hydrogen Peroxide And Peroxyacetic Acid Mixture

Proxitane[®] Description

Water clear, colourless liquid comprising an equilibrium mixture of hydrogen peroxide, peroxyacetic acid, water and acetic acid.

Typical properties

Peroxyacetic acid content	5% w/w
Hydrogen peroxide content	min.25% w/w
Acidity as acetic acid	~7.5% w/w

Physical properties

Density at 20°C	1.13g/ cm ³
Freezing point	below -30°C
Miscibility in water at 23°C	Miscible in all proportions

Thermal stability

Critical temperature (self accelerating decomposition temperature)	~ 60°C
Recommended storage temperature	-20°C to 30°C
Maintenance of activity at 20°C	12 months

Packaging, transport

	Net contents
HD polyethylene carboy	22kg
HD polyethylene drum	225kg
Intermediate bulk container (IBC)	1100kg

Transport temperature – ambient.

Dangerous Goods Class: 5.1, sub risk 8 UN3149 PG II

General information

Proxitane® is a widely approved cost effective sanitising solution with many years of proven performance in many practical applications. Proxitane® holds registration by the New Zealand Food Safety Authority as an approved maintenance compound (sanitiser category C43) and Approval of Dairy Maintenance Compound under the MPI.

Peroxyacetic acid, the active compound in Proxitane®, is amongst the most powerful biocides known to man. It is effective against a wide spectrum of microbiological contaminations including aerobic and anaerobic bacteria and their spores; yeasts, moulds, fungi and their spores, and viruses. It is extremely rapid in its action even at ambient temperatures.

Computer searching of the literature, both applied and academic has not revealed a reference to the induction of mutagenesis, leading to the development of resistant species, by peroxyacetic acid.

Proxitane® is used as a biocide to sanitise degreased and precleaned processing transfer and storage plant in stainless steel or glass. It can be applied or fogged on floors, walls, plant and in the atmosphere.

As Proxitane® does not contain surfactants it is ideal for use in “clean in place” systems as part of a no water rinse regimen when systems can be flushed with finished product (to drain) before normal production resumes.

In many industries, Proxitane® has replaced chlorine based formulations, quaternary ammonium compounds, iodophors and other compounds in day to day sanitisation.



Areas where Proxitane® is commonly used include:

Breweries

Since problem yeasts require powerful biocides, Proxitane® has become the sanitiser of choice in many breweries. In the fermentation/ maturation plant, the bright beer tank farms and bottling/ packing cellars fully automated clean in place (CIP) systems connected to bulk Proxitane® tanks produce a highly efficient, cost effective sanitising regime with minimal operator involvement. Another distinct advantage is that Proxitane® sanitisation can be performed under a CO2 head, reducing production down time and gas usage.

Food hygiene

In food and beverage processing and production, Proxitane® finds application in the regular cleaning cycle of syrup make-up plant, treated water carbonators, fruit crushing areas, juice concentrators and reconstitutes, food or condiment cookers and processors, transfer pumps and piping and bottling/packaging/carrying machines.

Dairies & dairy farms

In milk processing, Proxitane® is used in cream and yoghurt production areas, in dried milk product preparation and for sanitisation of plant including compatible membranes. Rinsing of lines with water just prior to resuming normal production is recommended in this application area. When used in dairy farms, after the use of Proxitane® surfaces must be drained and thoroughly rinsed with water prior to the next milking.

Laundries

The fact that Proxitane® is particularly suitable for washing at low temperatures gives the advantage of energy savings and reducing conditions that can harm cellulose fibres. In addition to savings in energy, water and time Proxitane® should not affect dyes and finishes, is compatible with fibres, has good biocidal activity and has a high level of biodegradability which should be beneficial in effluent treatment.

Additional benefits

No rinsing

Proxitane® is an approved sanitising solution which in certain circumstances allows for use of Proxitane® on food contact surfaces without rinsing as long as drainage is available. Using Proxitane® reduces cleaning/ sanitisation time and water consumption leading to lower effluent discharge costs.

No corrosion

Peroxygens in general passivate stainless steels. Any concentration of Proxitane® can be passed through stainless steel plant without problem of corrosion. This holds whether the solutions are used hot or cold. It allows for the single formulation of Proxitane® to account for any class of problem micro-organisms.

No adsorption

Results to date do not indicate adsorption of the compounds in Proxitane® to the materials of plant construction. Nor do they adsorb to the materials used in water treatment plant i.e. the membranes used in reverse osmosis and ultrafiltration, the resins used in ion exchange and the carbon or sand used in pretreatment beds. This allows fast drain down and rinse out times with quicker reuse of plant.

B.O.D. / C.O.D. reduction

Proxitane® is beneficial to plant effluent whether by direct chemical action of the hydrogen peroxide and peroxyacetic acid or by a “pay back” of developed oxygen from their decomposition, discharges from your plant to the trade waste sewers should be lower if Proxitane® is used.

Non derivatising

Peroxygens are not known for proliferating side reactions. The active constituents in Proxitane® do not derivatise organics in your trade waste to more refractory or toxic products.

Acrid odour

From the plant and operator safety viewpoint, the pungency odour of the concentrate is a benefit since it alerts operators quickly to a leakage or spillage of Proxitane®.

Handling

Transfer

If possible Proxitane® should be dosed directly from the container supplied. Alternatively, scrupulously clean plastic, glass or stainless steel pourers may be used. The equipment must be used for this purpose only and should be clearly marked to this effect. Any equipment used for storage, transfer or dosing of Proxitane® must be constructed so as to provide adequate venting and preclude the possibility of “locked-in” sections of pipework or valves. Detailed guidelines are available from Solvay.

Mixing

It is essential that undiluted Proxitane® is not mixed with incompatible materials or violent decomposition and/or an explosion may occur. Undiluted Proxitane® must not be brought into contact with other concentrated cleaning and sanitising agents.

Dilution Rates	Peracetic acid (ppm)
1:10	5,000
1:100	500
1:250	200
1:333	150
1:500	100

Example of Sanitising with Proxitane®

1. Proxitane® was formulated for use on precleaned surfaces and contains no surfactant. Its effectiveness may be impaired by any major soiling such as adherent grease, fats, oils, protein, starch, sugar, animal or vegetable matter.
2. Proxitane® concentrate should be diluted with potable water at a rate of variously 1 part to 100 parts water down to 1 part to 500 parts water giving 500 ppm to 100 ppm of peroxyacetic acid in the working solution. The actual dilution used depends on the class of contaminating micro-organism and the efficiency of plant precleaning (note 1). Guidance can be given by Solvay Interlox technical personnel or determined by in house trial.

3. Solution should contact the plant surfaces for 10 to 30 minutes depending on the degree of residual soiling (note 1) and the class of microbial contamination. Aerobic bacteria require lower concentrations of peroxyacetic acid/shorter contact times; fungi the opposite. Spray balling with falling film contact is economically preferred to flood filling especially since the fog of peroxyacetic acid generated will sterilise the void in the vessels.
4. Peroxyacetic acid sanitation is most efficient at pH<7, hence the need to rinse out the alkali. The ph of a 1: 100 dilution of Proxitane® is about 3.2 and a 1: 500 dilution about ph 4.0.
5. Working solutions should be used at ambient/warm (20 - 40oC) conditions.
6. In certain application areas there is no need to post rinse a Proxitane® sanitised plant. The plant should be sealed from the top and allowed to bottom drain. Since Proxitane® contains no surfactants the surface tension of its solutions is like water so they will drain free leaving no residues. If post rinsing is required it should be done with good quality water which should be sterilised if possible to minimise reinfection of sterilised surfaces.
7. Solutions of Proxitane® may be fogged onto walls, floors and into the air to kill surface and dust born microbes.
8. Proxitane® was developed for sanitising stainless steel or glass vessels and pipework. Compatibility with other materials such as rubbers, polymers, gaskets etc. Should be confirmed with Solvay Interlox prior to application.
9. Proxitane® solutions may not be used in systems containing mild steels or copper and copper alloys.
10. Proxitane® solutions must not be added to other chemicals or formulations. Instead of improving its biocidal performance the admixture often destabilises peroxygens giving rise to associated safety hazards.

Sequence	Operation	Contact time
1.	Hot water rinse until rinsing clear	5-10 mins
2.	Hot caustic/detergent rinse	10-30 mins
3.	Cold water rinse until rinsing is pH7	5 mins
4.	Proxitane® rinse at appropriate dilution	10-30 mins

Safe handling of Proxitane®

Properties of Proxitane®

Proxitane® is incompatible with strong acids, alkalis, reducing agents, oxidising agents, rust, metals and their compounds, resins and combustible materials. Although Proxitane® by itself is not combustible the decomposition of concentrated Proxitane® generates both heat and an oxygen rich environment which together can promote combustion of organic materials.

Safety measures

Avoid contact with eyes and skin. When working with Proxitane® always wear eye protection and protective clothes and gloves. Ensure adequate ventilation in areas where Proxitane® has ready access to the workplace atmosphere. Do not eat, drink or smoke in areas where this material is used.

First aid

If swallowed give water to drink. Do not induce vomiting. Seek medical advice from doctor or poisons information centre without delay. If eye contact occurs, immediately irrigate with water continuously until medical attention is obtained. If contact with skin occurs wash skin with ample water. Remove any contaminated clothing and launder thoroughly before re-use. Seek medical attention if symptoms develop. If inhaled, remove from source of exposure. If required, seek medical advice. Advice to doctor: treat symptomatically: if eye contact occurs, refer to eye specialist.

Fire

Not combustible. Use large quantities of fine water spray from a safe distance, to cool and extinguish fires involving this product.

Storage & Handling

Proxitane® should be stored upright in the original vented containers or approved, chemically passivated, vented storage tanks made of stainless steel grade 304L or 316L, away from sources of heat. Keep storage area free from combustible materials and incompatible chemicals. Eyewash, safety shower and water for hosing down must be available in the immediate vicinity. Storage facilities should conform to relevant regulations of the competent authority. Proxitane® must not be stored with any other dangerous goods nor any other incompatible substances. Detailed guidelines are available from Solvay Interox regarding design and fabrication of Proxitane® dosing systems and storage.

Disposal

Residues of Proxitane® must never be returned to the original storage container. Any residues or spillages should be disposed of to waste with adequate dilution. Proxitane® carboys and drums should be thoroughly washed out with water, have the labels removed before recycling or be punctured prior to disposal to landfill.





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