

# EndoSan

NEXT GENERATION LEGIONELLA CONTROL





# EndoSan

"... the most developed of the silver stabilised hydrogen peroxides now available has proved particularly effective against biofilms and biofouling in water systems. Independent testing shows it provides a very wide spectrum of biocidal activity against bacteria, viruses, spores, fungi, amoebae (such as Amoeba acanthus which can act as host to Legionella bacteria) and algae."

Dr T. Makin - Independent Review on EndoSan 2014

Co-author of the HSE Approved Code of Practice and Guidance (ACOP) - The Control of Legionella Bacteria in Water Systems (L8)

Co-author of the Department of Health Technical Memorandum HTM 04-01 - Legionella Control in Healthcare Premises



## The problem: Legionella & biofilm



#### WHAT IS LEGIONELLA?

The bacterium Legionella pneumophila and related bacteria are common in natural water sources such as rivers, lakes and reservoirs, but usually in low numbers. Unfortunately, given the right conditions, Legionella bacteria can prosper in purpose built water systems in any type of premises.

When water contaminated with Legionella bacteria forms small droplets suspended in the air (aerosol or vapour), there is a very high risk of inhalation and the potential contraction of Legionnaires disease.



#### HIGH RISK LEGIONELLA AREAS

Cooling towers, evaporative condensers, spa pools/jacuzzis, hot and cold water systems. Systems that feature outlets like showers are particularly problematic, as water is turned to an aerosol and dispersed into the atmosphere.

Hospitals and nursing homes are higher risk as vulnerability to Legionnaires' disease increases with age and pre-existing health issues.



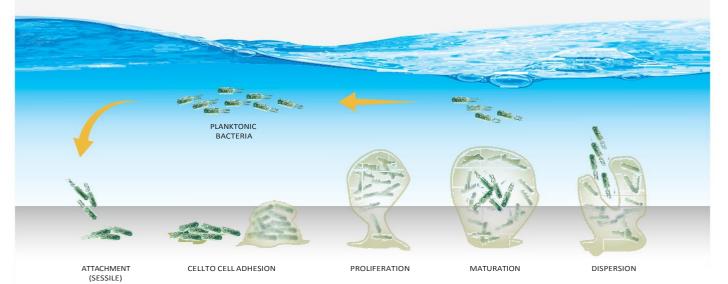
#### **BIOFILM**

A biofilm is a group of micro-organisms in which cells stick to each other and adhere to a surface. Biofilms provide bacteria a habitat that is the ideal environment for survival and replication. Additionally, the dispersal stage of the biofilm life cycle (illustrated below) enables the spread and colonisation of additional surfaces.

#### Biofilms can be found where:

- Pipework that contains deposits that could provide a source of nutrient.
- Dead legs and/or low water flow areas exist.
- Water temperature is between 25°C and 45°C.
- Water is stored and /or recirculated.

#### **BIOFILM LIFECYCLE:**



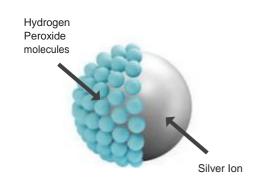
## The solution: **Endo**San<sup>™</sup>



EndoSan is a powerful, highly effective, broad spectrum disinfectant that is both stable and safe.

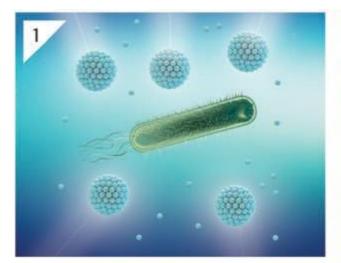
This unique product is a solution of Hydrogen Peroxide  $(H_2O_2)$  which is stabilised using a proprietary ionic silver based chemistry. As a highly effective water treatment solution it has proven to be a truly credible alternative to traditional chlorine disinfection methods.

EndoSan physically removes biofilms whilst being non-toxic and non-corrosive\*. Efficacy and stability is maintained at a wide range of temperatures and pH values.

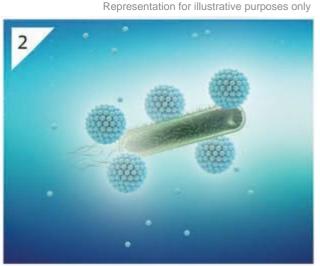


Odourless, colourless and tasteless, EndoSan lends itself to many applications in the field of water treatment and is used in over 30 countries for the effective control of legionella. After use it simply degrades into harmless water and oxygen as one of the safest forms of disinfection.

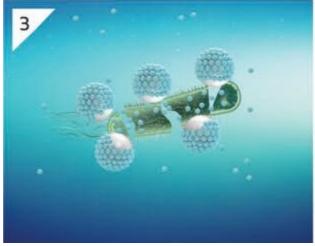
### HOW ENDOSAN WORKS - A CLOSER LOOK



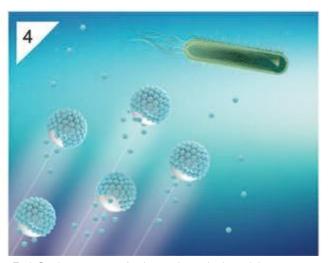
A typical bacterium naturally emits a negative charge. EndoSan is attracted by this charge to the site.



In catalase producing bacterium the presence of Endo San inhibits the defence mechanism, allowing the powerful free hydroxyl radicals to attack the cell membrane.



Thesefreehydroxylradicalspenetratethemembraneanddestroy thebacterium. Once killed the bacterium no longer emits a negative charge.



EndoSan is now attracted to the next bacteria site emitting a negative charge. Silver ions re-stabilise with excess hydrogen peroxide molecules to repeat the process.

<sup>\*</sup> At recommended dose rates.

## BENEWABLE ENERGY

#### KFY BENEFITS

• PROVEN EFFICACY WITH GLOBAL APPROVALS

• HIGHLY EFFECTIVE BIOFILM REMOVER

• NON-TOXIC AND pH NEUTRAL WHEN DOSED

• EFFECTIVE BETWEEN 0°C AND 95°C

**UNRIVALLED STABILITY** 

**COMPLIANT WITH HSG274** 

ODOUR, COLOUR & TASTE FREE

NO HARMFUL BY-PRODUCTS

BACTERICIDE, VIRUCIDE, SPORICIDE

FUNGICIDE, ALGAECIDE, AMOEBICIDE

VERSATILE & EASY TO APPLY

2 YEAR SHELF LIFE

#### UNIQUE STABILISATION

The unrivalled efficacy of EndoSan relies on its remarkable stabilisation chemistry. The silver stabiliser, which is added to the hydrogen peroxide, is a complex salt mixture formulated around ionic silver.

A silver ion is an atom of silver that is missing one electron. The outermost electrons of an atom determine the physical properties of the matter. Taking away one electron from a silver atom results in a silver ion. The ionic silver contained within EndoSan acts as a stabiliser and a catalyst, resulting in extended stability during application and giving a half-life\* of up to five weeks in potable water.

#### SAFETY

EndoSan is a 'safe biocide'. After a 2 year safety study, the globally respected National Sanitation Foundation (NSF) gave approval for the continuous addition of EndoSan to drinking water supplies.

The World Health Organization (WHO), Environmental Protection Agency (EPA) and NASA have all produced documents indicating that drinking water can contain levels up to 50ppb\*\* silver without compromising public safety. At recommended dosing levels, EndoSan would contain less than 10ppb\*\* of silver.

#### **ENVIRONMENT**

EndoSan is truly biodegradable and leaves no harmful residuals. Post disinfection, EndoSan degrades into water and oxygen, substances that are found naturally.

In addition to the number of environmental benefits EndoSan provides, the manufacturing process also complies with ISO 14001 environmental standards, ISO 9001 and ISO 13485.



Half-life is the amount of time required for the dose level to fall to half its initial value.

<sup>\*\*</sup> ppb - This measurement is the weight of chemical per unit volume of water represented here ppm - This measurement is the weight of chemical per unit volume of water represented here

## Constant dosing





It is recommended that a shock disinfection using EndoSan is undertaken on water systems to remove any historic biofilm that is present. However biofilms can re-form very quickly, meaning untreated water systems are left vulnerable to re-contamination.

Installing a 'Guardian Dosing System' ensures that your water is protected with a continuous and controlled concentration of EndoSan. EndoSan is injected directly into the water system providing a biocidal barrier against a broad spectrum of micro-organisms including Legionella, E-coli and Pseudomonas. This automated system is extremely accurate and doses proportionally to the water usage. Requiring very little maintenance it also allows the building manager or owner to save energy by reducing the temperature of the calorifiers\*.

## EndoSan Guardian Pulse Plus Dosing System



Pulse fed, proportional dosing system with traffic light chemical indicator, lance, cable, bund, pump and associated ancillary equipment.

- 'Plug and Play' system.
- Proportional dosing via direct injection.
- Drum level monitoring, warning on low readings.
- High quality pump with de-gassing head.
- Completely mounted in bespoke bund.
- Stress tested.

## EndoSan Guardian Smart Dosing System



Smart Dulcometer ( $H_2O_2$  sampling), monitoring and communication system intelligently controlling proportional dosing system with traffic light chemical indicator, lance, cable, bund, pump and associated ancillary equipment.

- Fully automated 'smart monitoring' and dosing.
- Automated adjustment via H<sub>2</sub>O<sub>2</sub> probes.
- H<sub>2</sub>O<sub>2</sub> sensor up to 200ppm.
- Probe housing with flow detection
- User friendly, large, colour changing display.
- Drum level monitoring, warning on low readings.
- High quality pump with de-gassing head.
- Dosercompletelymountedinbespokebund.
- Optional LAN or BMS interface.
- Optional control via mobile device (tablet, phone)

EndoSan Guardian Installation & Service Pack



We offer a full Installation, calibration and commissioning package carried out by a fully qualified engineer on site. This includes an extra visit to site within 12 months and a 2 year extended warranty.



<sup>\*</sup> In line with HSG274. Specific RAMS available on request.

## Case studies



EndoSan is currently used worldwide for the control of legionella and removal of biofilm. Below is a small subsection of UK case studies illustrating the spectrum of different building types and installations that are already successfully benefitting from EndoSan. Further information is available on request.

## College, South West England

- Well documented issue with Legionella
- EndoSan used as a shock disinfectant

The college, which was built as recently as 2007, has 4 floors which includes kitchens, showers and over 300 water outlets. Previous methods of control have been unsuccessful and alternatives were sought after a highly publicised outbreak of legionella bacteria in 2013.

EndoSan was used to shock dose the system and to completely remove the biofilm.

The introduction of EndoSan completely eradicated the bacteria within the DHW system. The process, which negates the use of a thermal kill also represented a significant energy saving.

## Hotel, <u>Scotla</u>nd

- Legionella Outbreak in 2006
- EndoSan used as a shock disinfectant & constant dosing

One of the largest hotels in Edinburgh originally utilised chlorine dioxide as a disinfectant until an outbreak occurred in 2006 where a guest of the hotel caught the associated Legionnaires Disease.

EndoSan was installed in December 2006. The water system was shock disinfected, then continuously dosed at  $20 \text{ppm} \, \text{H}_2\text{O}_2$  (40ml of EndoSan per 1000L of water). Since the treatment, biofilm has been removed and the legionella bacteria has been eradicated.

## Manufacturing plant, Dagenham

- EndoSan solution designed to be implemented with existing system
- Notable reduction in energy costs

EndoSan was tested at the engine plant of a well known car manufacturer in Dagenham. By continually dosing EndoSan into the water system the threat of Legionella was nullified by destroying the two main sources of infection (biofilm and amoebae).

There were also reduced energy costs due to a reduction in water storage temperature which also represented safer working conditions (reduction in the potential of scalding).

## International Airport, Glasgow, Prestwick

- EndoSan allowed the airport to comply with current hygieneregulation.
- Energy costs reduced and visitor safety increased.

With the arrival of Ryan Air and other budget airlines, traffic through the terminal was greatly increased which lead to large modernisation to match the demand. Unfortunately the water system was grossly oversized, high maintenance and required to be online 24/7. To ensure the water in the system met required standards, but with cost in mind, a water hygiene program was installed which relied on the constant dosing of EndoSan.

EndoSan maintains properly disinfected water throughout the terminal building with no taste, taint or smell, passengers are unaware of its presence. Additionally as thermal disinfection was no longer required the cost of the chemical is easily offset against the energy savings made and passengers are safeguarded again by reduced scald risk.

## The EU Biocidal Product Regulation





The EU Biocidal Products Regulation (BPR) (EU/528/2012) was adopted in 2012 and came into effect on 1st September 2013. The BPR aims to improve the market standards through the harmonisation of rules for the sale and use of biocidal products. This ensures a high level of protection for humans, animals and the environment. The BPR replaced the Biocidal Products Directive (BPD) 98/8/EC previously in force since 2000.

To market and use an active substance in the European Union in a specific 'Product Type' (application area) the 'Active Substance' needed to be notified under the BPD (98/8/EC). These substances and their relevant 'Product Types' (application areas) are now classed as 'existing active substances' in the BPR and will be shown in Article 95 as 'RP' or part of the 'Review Programme'.

EndoSan Silver Stabilised Hydrogen Peroxide contains only one active biocidal substance, which is Hydrogen Peroxide. The silver within the product is a stabiliser only and NOT a biocide. Hydrogen peroxide is included in the BPR Article 95, in 'Product Types' 1, 2, 3, 4, 5, 6, 11 and 12. For reference the Hydrogen Peroxide supplier for EndoSan is listed as an 'RP Participant'.

Dossier submission for EndoSan is estimated for 2017 in PTclasses 1-6 and 2018 in PTclasses 11 and 12.

EndoSan is compliant with the Biocidal Product Regulation process and unlike any other product of this type can be legally marketed across the EU in application classes PT1, 2, 3, 4, 5, 6, 11 and 12.

## **Global Approvals**

COUNTRY	REGISTRATION No	REGISTRATION AREA	COMPETENTAUTHORITY
NATO	6505 13 119 7486	Nato stock number	Cidmat
<b>Belgium</b>	/	Liquid cat 3 drinking water installations	Belgaqua
Germany	MULTIPLE	Multiple disinfection approvals	Multiple
Hungary	OTH 3770 3/2010	PT 2: Disinfection in public healthcare	Min.of Health Care
Hungary	6423/2010	PT 5: Disinfection of drinking water	Min.of Health Care
<b>Ireland</b>	PCS 97819	Disinfection of surfaces, air, water, soil, biocide types 1,2,3,4,5,6,11,12	Department of Agriculture, Food and the Marine
<b>I</b> Jordan	18744/1/5/3	Water treatment, water disinfection	Food and Drug Administration
<b>E</b> Kenya	DATE: 11/07/2008	For purification of drinking water	Ministry of Health
The Netherlands	K23515/01	Oxidising cleaner in drinking water sector	Kiwa
The Netherlands		Disinfection of installations that come in contact with water, biofilm removal and legionella treatment	СТВ
Spain	05 100 04047	Legionella disinfection	Min.of Health Care
Switzerland	CHZN0433/32	Disinfection in medical sector / swimming pools / agriculture / food industry / drinking water	Min.of Health Care
Turkey	151	Disinfection in food industry and hospitals	Min.of Health Care
L U.A.E		Sanitising & disinfecting the water tanks & filters, R.O. membrane, soil and agriculture	Platinum Water Treatment Technologies
₩ UK	DWI 56.4.573	Disinfestation, disinfection or cleaning agents of waterworks apparatus and distribution systems	DWI
<b>III</b> UK	2DWE/21/9	Cleaning agent for water apparatus and water distribution systems	Scottish Executive
<b>W</b> UK	2DWE/21/2	Chemicals and materials of construction for use in public water supply and swimming pools	Scottish Executive
<b>#</b> UK	HSG274 PT2	Technical guidance for legionnaires disease	Health and Safety Executive
■ US/Canada	C0038609	NSF/ANSI Standard 60 drinking water treatment chemicals	NSF

Further global approvals and information available on request





## SUMMARY OF ANTI-MICROBIAL ACTIVITY AGAINSTTEST MICRO-ORGANISMS

TEST ORGANISM	H₂O₂ CONC.
BACTERIA - NON-SPORE FORMING	
Enterococcus faecium	0.5 1%
Enterococcus hirae	1.50%
Escherichia coli	0.10%
Klebsiella pneumoniae	0.50%
Lactobacillus brevis	0.10%
Legionella pneumophila group 1	0.20%
Legionella pneumophila group 3	0.40%
Mycobacterium avium	5%
Mycobacterium smegmatis	1%
Mycobacterium terrae	2.50%
(M. tuberculoses surrogate)	
Mycobacterium tuberculosis	0.50%
Pediococcus damnosus	0.10%
Proteus mirabilis	0.10%
Pseudomonas aeruginosa	0.10%
Staphylococcus aureus	0.10%
Streptococcus faecalis	0.25%
BACTERIA - SPORE FORMING	
Bacillus cereus	0.5 1%
Bacillus subtilis	0.2 1%
Clostridium sporogenes	0.50%
YEASTS / MOULDS / FUNGI	
Absidia corymbifera	0.2 1%
Aspergillus niger	2%
Candida albicans	0.20%
Cladosporium cladosporioides	0.20%
Penicillium notatum	1%
Penicillium verrucosum	0.5 1%
Saccharomyces cerevisiae	0.10%

TEST ORGANISM	H₂O₂ CONC.
VIRUSES - ENCAPSULATED	
Newcastle disease virus	0.50%
Vaccinia virus	0.50%
VIRUSES - NON-ENCAPSULTED	
Adenovirus	1%
Echovirus	0.50%
Feline calicivirus	0.50%
(surrogate for human Norovirus)	
Poliovirus	1%
Reovirus	0.50%
PROTOZOA - AMOEBAE & AMOEBIC CYS	STS
Acanthamoeba culbertsoni	1%
Acanthamoeba MR4	1%
Hartmanella vermiformis	1%
Naegleria fowleri	1%
Naegleria gruberi	1%
YEASTS / MOULDS / FUNGI	
Cryptosporidium parvum oocysts	1%





## Efficacy data

The efficacy of EndoSan has been tested to EuroNorm (EN) standards by various world leading inspection, verification, testing and certification bodies. To be approved in accordance with each EN standard, the concentration of the test organism must be reduced to a certain level (a log reduction) within the required time frame. Log reduction provides a quantitative measurement describing what percentage of the contaminants, which were present when the test began, were killed during the test.

EndoSan anti-bacterial activity against Legionella EN 13626 SGS Belgium NV -CTS

TEST ORGANISM	STRAIN	CONCENTRATION	ENDOSAN PASS RATE	TIME
Legionella Pneumophila	ATCC 33152	EndoSan50 1%	> 4 log reduction	60 minutes contact
Legionella Pneumophila	ATCC 33152	EndoSan50 0.04%	> 4 log reduction	24 hours contact

EndoSan anti-bacterial activity against Legionella EN 13623 (1999) TNO Nutrition and Food Research

TEST ORGANISM	STRAIN	CONCENTRATION	CONCENTRATION ENDOSAN PASS RATE	
Legionella Pneumophila Group 1	ATCC 33152	EndoSan50 0.2%	> 4 log reduction	60 minutes contact
Legionella Pneumophila Group 1	ATCC 33152	EndoSan50 1%	> 5 log reduction	60 minutes contact

Environmental and process technology / PRODEM / KIWA Koen Gommers (Vito) and Koen Huysman (Pidpa)

TEST ORGANISM	TEST CONDITIONS	CONCENTRATION	ENDOSAN PASS RATE	TIME
Biofilm	Static	EndoSan50 4%	>3 log reduction	16 hours contact
Biofilm	Static	EndoSan50 2% + bio dispersants solution	>3 log reduction	16 hours contact

PRODEM report recommendation: Recirculation of the treatment solution (EndoSan) is even more effective and results in the entire physical removal of the biofilm.

BS EN 1276 : 2009 Following SGS tests were carried out using a Quantitative Suspension Test of Bactericidal Activity of Chemical Disinfectants  $^{3\%}$  H<sub>2</sub>O<sub>2</sub> concentration of EndoSan

			_	
TEST ORGANISM	TYPICAL PASS RATE	REQUIRED TIME	ENDOSAN PASS RATE	TIME
Pseudomonas aeruginosa	5 log reduction	5 minutes	> 5 log reduction	5 minutes
Staphylococcus aureus	5 log reduction	5 minutes	> 5 log reduction	5 minutes
Escherichia coli	5 log reduction	5 minutes	> 5 log reduction	5 minutes
Enterococcus hirae	5 log reduction	5 minutes	> 5 log reduction	5 minutes
Salmonella typhimurium	5 log reduction	5 minutes	> 5 log reduction	5 minutes
Lactobacillus brevis	5 log reduction	5 minutes	> 5 log reduction	5 minutes
Enterobacter cloacae	5 log reduction	5 minutes	> 5 log reduction	5 minutes
Clostridium snn	5 log reduction	5 minutes	> <sup>5</sup> log reduction	5 minutes

BS EN 1650: 2008

Quantitative Suspension Test for the Evaluation of Fungicidal Activity of Chemical Disinfectants

TESTORGANISM	TYPICAL PASS RATE	REQUIREDTIME	ENDOSAN PASS RATE	TIME
Candida albicans	4 log reduction	15 minutes	>4 log reduction	5 minutes
Aspergillus niger	4 log reduction	15 minutes	>4 log reduction	5 minutes
Saccharomyces cerevisiae	4 log reduction	15 minutes	>4 log reduction	5 minutes



#### BS EN 13697: 2001

Quantitative Surface Test for the Evaluation of Bactericidal Activity

TESTORGANISM	TYPICAL PASS RATE	REQUIREDTIME	ENDOSAN PASS RATE	TIME
Pseudomonas aeruginosa	4 log reduction	5 minutes	> 4 log reduction	5 minutes
Staphylococcus aureus	4 log reduction	5 minutes	> 4 log reduction	5 minutes
Escherichia coli	4 log reduction	5 minutes	> 4 log reduction	5 minutes
Enterococcus hirae	4 log reduction	5 minutes	> 4 log reduction	5 minutes

#### BS EN 13697: 2001

Quantitative Surface Test for the Evaluation of Fungicidal Activity

TESTORGANISM	TYPICAL PASS RATE	REQUIREDTIME	ENDOSAN PASS RATE	TIME
Candida albicans	3 log reduction	15 minutes	> 4 log reduction	5 minutes
Aspergillus niger	3 log reduction	15 minutes	> 4 log reduction	5 minutes

## **Approvals**











DWI - Drinking Water Inspectorate (UK)

EndoSan is listed as Huwa-San with the DWI under Reg 31 for the public water supplies (mains system):

Roam Chemie NV - DWI 56/4/573 Huwa-San TR50 (EndoSan is the authorised brand name of Huwa-San in the UK)

The DWI give responsibility to the HSE for matters after the water meter within a building.

'Where hydrogen peroxide based products are used within buildings, it is a matter for the building owner's liaison with the local health authority regarding specific requirements for that building'.

DWI INSPECTOR COMMUNICATION, FEB 2011

### HSE - Health & Safety Executive UK

EndoSan is listed as an approved constant dose biocide in the HSE ACOP HSG274 Pt2:

'Silver stabilised hydrogen peroxide has a history of use in the control of legionella in water systems. A silver hydrogen peroxide solution is injected directly into the water system and if applied and maintained according to the manufacturers instructions, can be an effective means of control. However, this should not be used in water systems supplying dialysis units'.

HGS274 (2014) TECHNICAL GUIDANCE FOR LEGIONNAIRES DISEASE, PART 2 (PAGE 39)

Reducing water temperatures with constant dose biocide protocols in place:

- 2.86 If hot water is not needed for other reasons, e.g. for kitchens or laundries, and there is no requirement to store hot water at 60°C (or distribute at 50°C), then hot water temperatures can be reduced. As reducing hot water temperatures will leave the system vulnerable if there are any lapses in the biocide control regime, the control system should be checked at least weekly to ensure it is operating effectively and continuing to control legionella.
- **2.87** Any reduction of hot water temperatures should be carried out in stages and temperatures only reduced when efficacy against legionella is confirmed, with monitoring for legionella and biocide levels in the water system carried out at each stage

HSG274 PART 2: WATERTREATMENT AND CONTROL PROGRAMMES FOR HOTAND COLD WATER SYSTEMS

## EndoSan



### COMPARISON WITH COMPETITOR PRODUCTS

	BIOFILM REMOVAL	GERMICIDAL EFFICACY	SPORICIDAL EFFICACY	STABILITY	LOW TOXICITY IN USE	ENVIRONMENTAL PROFILE	NON CORROSIVE
<b>Endo</b> San	<b>VVV</b>	444	444	<b>444</b>	<b>444</b>	<b>///</b>	444
Chlorine Compounds	<b>~</b>	<b>VVV</b>	X	<b>*</b>	<b>~</b>	<b>~</b>	X
Chlorine Dioxide	<b>V</b>	<b>444</b>	×	<b>~</b>	<b>~</b>	<b>/</b>	<b>~</b>
Quats	X	<b>~</b>	<b>~</b>	<b>*</b>	<b>YY</b>	<b>*</b>	<b>~</b>
Aldehydes	<b>V</b>	<b>444</b>	<b>~</b>	<b>*</b>	×	<b>✓</b>	<b>VVV</b>
Peroxide	<b>V</b> V	44	<b>VV</b>	<b>V</b>	<b>VVV</b>	<b>V</b>	<b>VVV</b>

### **AVAILABLE PRODUCT DETAILS**

		500ML	1 LTR	5 LTRs	10 LTRs	20 LTRs	IBC 1000 LTRs
	Product Number	20-03-SPR	20-03-001	20-03-005	20-03-010	20-03-020	20-03-IBC
က	Barcode (GTIN-13)	5060358050480	5060358050107	5060358050022	5060358050398	5060358050190	5060358050381
	Weight	0.5 kg	1 kg	5 kg	10 kg	20 kg	1000 kg
	Dimensions (L x W x H) mm	115 x 60 x 235	80 x 80 x 220	182 x 162 x 242	230 x 198 x 310	290 x 255 x 390	1200 x 1000 x 1155
	Full pallet qty	990	750	156	75	32	1
	Product Number	20-05-SPR	20-05-001	20-05-005	20-05-010	20-05-020	20-05-IBC
2	Barcode (GTIN-13)	5060358050503	5060358050138	5060358050039	5060358050404	5060358050206	5060358050411
	Weight	0.5 kg	1 kg	5 kg	10 kg	20 kg	1000 kg
	Dimensions (L x W x H) mm	115 x 60 x 235	80 x 80 x 220	182 x 162 x 242	230 x 198 x 310	290 x 255 x 390	1200 x 1000 x 1155
	Full pallet qty	990	750	156	75	32	1
	Product Number	-	-	-	20-20-010	20-20-020	20-20-IBC
20	Barcode (GTIN-13)	-	-	-	5060358050237	5060358050213	5060358050428
	Weight	-	-	-	11 kg	22 kg	1100 kg
	Dimensions (L x W x H) mm	-	-	-	230 x 198 x 310	290 x 255 x 390	1200 x 1000 x 1155
	Full pallet qty	-	- '	-	75	32	1
	Product Number	-	-	-	20-50-010	20-50-020	20-50-IBC
20	Barcode (GTIN-13)	-	-	-	5060358050374	5060358050053	5060358050442
	Weight	-	-	-	12 kg	24 kg	1200 kg
	Dimensions (L x W x H) mm	-	-	-	230 x 198 x 310	290 x 255 x 390	1200 x 1000 x 1155
	Full pallet qty	-	-	- '	75	32	1



## **Peace Marsh UK distributors of EndoSan**



CERTIFICATE No: 12560 ISO 9001:2008





