Evans Vanodine
EST. 1919

MICROBIOLOGICAL PROFILE

Safe Zone™ Plus

Virucidal disinfectant

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SAFE ZONE PLUS MICROBIOLOGICAL PROFILE

INTRODUCTION

SAFE ZONE PLUS is a ready-to-use quaternary ammonium based cleaner and multi-surface disinfectant.

SAFE ZONE PLUS is bactericidal and yeasticidal. It is also effective against enveloped viruses including coronavirus.

SAFE ZONE PLUS is unperfumed and can be used in the healthcare and leisure industries.

SAFE ZONE PLUS is suitable for use in areas with a high level hygiene demand.

Unperfumed	**Available in trigger spray bottles**	**Non-classified formulation**
Proven to kill a wide range of bacteria, viruses and yeast		**Non-tainting and non-staining**

SAFE ZONE PLUS - EFFICACY SUMMARY

SAFE ZONE PLUS has been tested and proven to be effective against a range of micro-organisms. European Standard (EN*) test methods were used to prove efficacy against bacteria, viruses and yeast.

The UKAS accredited Microbiology Laboratory at Evans Vanodine International plc. (Testing number 1108) performed several tests with bacteria and yeast. Other tests were performed by independent expert laboratories and included the virus test EN 14476.

*EN - European Norm
Published in the UK as BS EN by the British Standards Institution.

The following tables include information of relevant, applicable test methods, conditions, organisms and contact times.

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ACTIVITY AGAINST BACTERIA

BACTERIA TEST PROFILE				
ORGANISM	**TEST METHOD**	**TEMP (°C)**	**CONTACT TIME (MINUTES)**	**SOILING LEVEL**
Enterococcus hirae	EN 1276	20	1	Dirty
Escherichia coli			1	Dirty
Escherichia coli 0157			30 Seconds	Clean
Klebsiella pneumoniae				Dirty
Leptospira interrogans			5	Clean
Listeria monocytogenes		5	1	Clean
		20	5	Dirty
Methicillin resistant *Staphylococcus aureus*			5	Dirty
Pseudomonas aeruginosa			1	Dirty
Salmonella typhimurium			5	Dirty
Staphylococcus aureus			1	Dirty
Streptococcus pyogenes			30 Seconds	Clean
Enterococcus hirae	EN 13727	20	1	Dirty
Escherichia coli K12				
Pseudomonas aeruginosa				
Staphylococcus aureus				
Mycobacterium terrae	EN 14348	20	5	Clean
Enterococcus hirae	EN 14561	20	15	Clean
Pseudomonas aeruginosa				
Staphylococcus aureus				
Enterococcus hirae	EN 16615	Room temp	1	Dirty
Escherichia coli				
Pseudomonas aeruginosa				
Staphylococcus aureus				

ACTIVITY AGAINST FUNGI

FUNGI TEST PROFILE				
ORGANISM	**TEST METHOD**	**TEMP (°C)**	**CONTACT TIME (MINUTES)**	**SOILING LEVEL**
Aspergillus brasiliensis	EN 1650	20	30	Clean
Candida albicans			15	Dirty
	EN 13624		1	Dirty
	EN 14562		15	Clean
	EN 16615	Room temp	1	Dirty
Candida auris	EN 13624	20	1	Clean
	EN 1650	20	1	Dirty

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ACTIVITY AGAINST VIRUSES

VIRUS TEST PROFILE				
VIRUS	**TEST METHOD**	**TEMP (°C)**	**CONTACT TIME (MINUTES)**	**SOILING LEVEL**
Adenovirus	EN 14476	20	15	Clean
				Dirty
Influenza A H1N1			5	Dirty
Influenza A H7N9			5	Dirty
Murine Norovirus			5	Clean
			15	Dirty
Poliovirus			30	Clean
			60	Dirty
Vaccinia virus			5	Dirty

MEDICAL AREA PRODUCT TEST METHODS

For the Biocidal Product Regulation (BPR) there is one product type applicable. Product Type 2; Disinfectants used for the disinfection of surfaces, materials, equipment and furniture which are not used for direct contact with food or feeding stuffs.

There are two types of laboratory test methods for disinfectants i.e. suspension methods and surface methods. Surface methods use different carriers depending on the application area, e.g. stainless steel discs (food), PVC tiles (medical), wood (veterinary), synthetic skin (veterinary). The inoculum is dried on to the surface before the disinfectant is applied. As a minimum for general hygiene purposes products should be effective against bacteria and yeast.

There are 3 different claims that can be made when virus tests are used, either for full virucidal activity, limited spectrum virucidal activity or activity against enveloped viruses. The virucidal claim will depend on the viruses tested.

The scope of medical area EN test methods apply to hygienic and surgical, handwash and handrubs and instrument disinfection by immersion and surface disinfection by wiping, spraying, flooding or other means. Areas and situations where disinfection or antisepsis is medically indicated for patient care e.g. hospitals, community medical facilities dental institutions clinics of schools, nurseries and nursing homes.

The interfering substances used in EN test methods are described as dirty or clean in medical, food, industrial, domestic and institutional areas.
They simulate levels of soiling encountered in practical, real-life situations.

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EN TEST METHODS

TEST REFERENCE		TEST TYPE	ORGANISM	TEST PASS CRITERIA
EN 1276	For bactericidal activity in the food, industrial, domestic and institutional areas.	Suspension	Bacteria	≥5 log reduction
EN 1650	For fungicidal or yeasticidal activity in the food, industrial, domestic and institutional areas.	Suspension	Fungi/Yeast	≥4 log reduction
EN 13624	For fungicidal or yeasticidal activity in the medical area.	Suspension	Fungi/Yeast	≥4 log reduction
EN 13727	For bactericidal activity in the medical area.	Suspension	Bacteria	≥5 log reduction
EN 14348	For mycobactericidal activity in the medical area. (This method is also applicable to demonstrate tuberculocidal activity).	Suspension	Mycobacteria	≥4 log reduction
EN 14476	For virucidal activity in the medical area.	Suspension	Virus	≥4 log reduction
EN 14561	For bactericidal activity on frosted glass carriers in the medical area.	Surface	Bacteria	≥5 log reduction
EN 14562	For fungicidal and yeasticidal activity on frosted glass carriers in the medical area.	Surface	Fungi/yeast	≥4 log reduction
EN 16615	For bactericidal and/or yeasticidal activity on PVC carriers in the medical area. For products used to disinfect non-porous surfaces with a mechanical action, including impregnated wipes.	Surface	Bacteria	≥5 log reduction
		Surface	Yeast	≥4 log reduction

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LOG REDUCTION

Products claiming they will kill 99.9% of bacteria sounds extremely efficient, however it does not prove that a product is an effective disinfectant.

In order to demonstrate effectiveness, disinfectants should be tested using European Standard Test Methods. Depending on the applicable area and test used, relevant log reductions are specified and must be achieved to claim effectiveness with a test method. This means a reduction in microbial numbers must be seen when compared to the number of organisms at the start of the test or, for surface tests, to a water control performed at the same time. As the numbers are large it is generally accepted that they are expressed as a logarithm. The reduction can be written as either a log value or a percentage i.e. a 5 log reduction is equivalent to a 99.999% reduction, a 3 log reduction is equivalent to 99.9% reduction.

Bacteria are microscopic free living single celled organisms. A surface contaminated with raw meat for example could have millions of bacteria per square centimetre e.g. a surface with 1,000,000 bacteria treated with a product that kills 99.9% of bacteria would still have 1000 bacteria remaining. **If the surface were treated with a product that kills 99.999% of bacteria only 10 bacteria would remain.**

Bacterial growth rates vary depending on the surface, type and degree of soiling, temperature and presence of water. For example, E.coli under ideal conditions multiplies every 15 minutes. If conditions are less than ideal (lowering the temperature or drying the surface) the growth rate slows down. e.g. 1,000 bacteria would increase to 2,000 after 15 minutes, after 30 minutes it would be 4,000 and after 1 hour 16,000 and 256,000 after 2 hours, **10 bacteria would only have multiplied to 2560 in the same 2 hour period.**

The presence of bacteria does not automatically lead to infection, susceptibility to disease and the infectious dose (number of bacteria required to cause infection) are vitally important. Some bacteria will cause an infection with less than 100 cells ingested or introduced into cuts or wounds. For this reason, it is important to reduce numbers of harmful bacteria to the lowest number possible wherever the risk of infection is high.

THE FOLLOWING FIGURES APPLY IF THE NUMBER AT THE START POINT WAS 1,000,000		
LOG REDUCTION	**NUMBER REMAINING**	**PERCENTAGE REDUCTION**
1	100,000	90%
2	10,000	99%
3	1,000	99.9%
4	100	99.99%
5	10	99.999%