Evans Vanodine
EST. 1919

MICROBIOLOGICAL PROFILE

VANODOX® FORMULA

Peracetic acid-based disinfectant

Edition 12: April 2024

VANODOX FORMULA MICROBIOLOGICAL PROFILE

INTRODUCTION

VANODOX FORMULA is a stabilised mixture of peracetic acid, acetic acid, hydrogen peroxide and surfactant.

VANODOX FORMULA has a broad spectrum of activity. It is bactericidal, fungicidal and virucidal.

VANODOX FORMULA is DEFRA approved.

VANODOX FORMULA is recommended for use in all types of livestock housing also in foot and wheel dips for vehicle disinfection.

VANODOX FORMULA is designed for use as part of an effective cleaning and disinfection (hygiene) programme.

Fast acting even at low temperatures		**Use after cleaning**
Use on feeders and drinkers	**Ideal for intensive livestock husbandry**	**Non-staining and economical in use**

VANODOX FORMULA - EFFICACY SUMMARY

VANODOX FORMULA has been tested using EN standards against a number of disease-causing micro-organisms. Tests have been carried out by expert laboratories in the UK, France, Germany, Holland and South Africa.

Field trials on broiler farms have demonstrated the effectiveness of **VANODOX FORMULA** in reducing bacterial numbers on surfaces when used as a terminal disinfectant after cleaning.

VANODOX FORMULA is approved in the UK by the Department for Environment, Food and Rural Affairs (DEFRA), for disinfection where an approved product is required https://www.gov.uk/guidance/get-your-disinfectant-approved-by-defra. This approval is also mirrored in Northern Ireland and Ireland by DARDNI and DAERA respectively.

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

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

VANODOX FORMULA MICROBIOLOGICAL PROFILE

SUMMARY OF TEST RESULTS FOR FOOD, INDUSTRIAL AND DOMESTIC AREAS

BACTERIAL TEST PROFILE

ORGANISM	DILUTION	TEST METHOD	TEMP (°C)	CONTACT TIME (MINUTES)	SOILING LEVEL
Enterococcus hirae	1:550	EN 1276	10	5	Clean
	1:220				Dirty
	1:550		20		Clean
	1:366				Dirty
Escherichia coli	1:550		10		Dirty
	1:550		20		Clean
	1:366				Dirty
Pseudomonas aeruginosa	1:550		10		Dirty
	1:550		20		Clean
	1:366				Dirty
Staphylococcus aureus	1:550		10		Clean
	1:220				Dirty
	1:550		20		Clean
Enterococcus hirae	1:220	EN 13697	10	5	Dirty
	1:366		20		Clean
Escherichia coli	1:550		10		Dirty
	1:366		20		Clean
Pseudomonas aeruginosa	1:550		10		Clean
	1:366		20		Clean
Staphylococcus aureus	1:220		10		Dirty
	1:366		20		Clean
Bacillus subtilis	1:55	EN 13704	10	30	Clean
	1:110		20		Clean

FUNGI TEST PROFILE

FUNGI	DILUTION	TEST METHOD	TEMP (°C)	CONTACT TIME (MINUTES)	SOILING LEVEL
Aspergillus brasiliensis	1:27	EN 1650	10	5	Dirty
	1:22		20		Clean
	1:73			15	Dirty
Candida albicans	1:275		10	5	Clean
	1:110				Dirty
	1:22		20	5	Clean
	1:733			15	Clean
	1:550				Dirty
Aspergillus brasiliensis	1:27	EN 13697	10	5	Dirty
	1:36				Clean
	1:36		20	15	Dirty
	1:55				Clean
Candida albicans	1:220		10	5	Dirty
	1:550		20	15	Dirty

VANODOX FORMULA MICROBIOLOGICAL PROFILE

SUMMARY OF TEST RESULTS FOR MEDICAL AREAS

VIRUS TEST PROFILE					
VIRUS	**DILUTION**	**TEST METHOD**	**TEMP (°C)**	**CONTACT TIME (MINUTES)**	**SOILING LEVEL**
Adenovirus	1:110	EN 14476	20	5	Clean
	1:55				Dirty
Bovine parvovirus	1:110		10	5	Clean
	1:36				Dirty
Poliovirus Type 1	1:55		20	5	Clean

VANODOX FORMULA MICROBIOLOGICAL PROFILE

SUMMARY OF TEST RESULTS FOR VETERINARY

BACTERIAL TEST PROFILE					
ORGANISM	**DILUTION**	**TEST METHOD**	**TEMP (°C)**	**CONTACT TIME (MINUTES)**	**SOILING LEVEL**
Enterococcus hirae	1:73	EN 1656	10	5	High
	1:366				Low
	1:220		30	1	High
	1:366		30	5	High
	1:733				Low
Listeria monocytogenes	1:800		10	30	High
Proteus hauseri	1:73		10	5	High
	1:366				Low
	1:220		30	1	High
	1:366			5	High
	1:733				Low
Pseudomonas aeruginosa	1:73		10	5	High
	1:366				Low
	1:220		30	1	High
	1:366			5	High
	1:733				Low
Staphylococcus aureus	1:73		10	5	High
	1:366				Low
	1:220		30	1	High
	1:366			5	High
	1:733				Low
Mycobacterium avium	1:27	EN 14204	10	60	High
	1:55				Low
Enterococcus hirae	1:183	EN 14349	10	30	High
Proteus hauseri	1:366				High
	1:1100				Low
Pseudomonas aeruginosa	1:220				High
	1:366				Low
Staphylococcus aureus	1:1100				High
Enterococcus hirae	1:36	EN 16437	10	30	High
	1:55				Low
	1:55		30	5	Low
Proteus hauseri	1:36		10	30	High
	1:110				Low
	1:55		30	5	Low
	1:36		30	5	High
Pseudomonas aeruginosa	1:55		30	5	Low
Staphylococcus aureus	1:36		10	30	High
	1:110				Low
	1:55		30	5	Low
Salmonella enteritidis	1:256	DEFRA	4	30	5% Yeast

VANODOX FORMULA MICROBIOLOGICAL PROFILE

FUNGI TEST PROFILE					
FUNGI	**DILUTION**	**TEST METHOD**	**TEMP (°C)**	**CONTACT TIME (MINUTES)**	**SOILING LEVEL**
Aspergillus brasiliensis	1:22	EN1657	10	30	High
	1:27				Low
	1:24		30	1	High
	1:44			5	High
Candida albicans	1:183		10	30	High
	1:733				Low
	1:183		30	1	High
	1:220			5	High
	1:550				Low
Aspergillus brasiliensis	1:22	EN 16438	10	30	High
Candida albicans	1:183				High
	1:733				Low

VIRUS TEST PROFILE					
VIRUS	**DILUTION**	**TEST METHOD**	**TEMP (°C)**	**CONTACT TIME (MINUTES)**	**SOILING LEVEL**
Bovine enterovirus	1:110	EN14675	10	30	High
	1:55			5	Low
Canine Distemper Virus	1:150		10	30	Low
Suid herpes (Aujesky's)	1:110				High
African Swine Fever Virus	1:200	In-house	20	30	1% bovine serum
Swine Vesicular Disease Virus	1:25	DEFRA	4	30	None
Foot and Mouth Disease Virus OI British field strain 1860/UK167	1:800				1% foetal bovine serum
Newcastle Disease	1:145				5% Yeast

VANODOX FORMULA MICROBIOLOGICAL PROFILE

EN TEST METHODS

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, mechanical action is also employed in one method by using wipes.

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. It will depend on the viruses tested which claim can be applied.
The interfering substances used in EN test methods are described as dirty or clean in medical, food, industrial, domestic and institutional areas, and as low or high level soiling in veterinary areas. They simulate levels of soiling encountered in practical, real-life situations.

HARD SURFACE PRODUCT TEST METHODS

For the Biocidal Product Regulation (BPR) there are two product types applicable to hard surface disinfectants. 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, and Product Type 4; Disinfectants used for the disinfection of equipment containers, consumption utensils, surfaces or pipework associated with the production, transport, storage or consumption of food or feed for humans and animals.
As a minimum for general purposes, products should be effective against bacteria and yeast.

The scope of food area EN test methods applies to disinfectants used in food, industrial, domestic, institutional areas, excluding areas and situations where disinfection in medically indicated, and products used on living tissue except those for hand hygiene in the above areas.

TEST REFERENCE		TEST TYPE	ORGANISM	TEST PASS CRITERIA
EN 1276	For bactericidal activity.	Suspension	Bacteria	≥5 log reduction
EN 1650	For fungicidal or yeasticidal activity.	Suspension	Fungi/Yeast	≥4 log reduction
EN 13697	For bacterial and/or fungicidal or yeasticidal activity on stainless steel carriers.	Surface	Bacteria	≥4 log reduction
		Surface	Fungi/Yeast	≥3 log reduction
EN 13704	For sporicidal activity	Suspension	Bacterial spores	≥3 log reduction

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 stuff.

As a minimum for general hygiene purposes products should be effective against bacteria and yeast.

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.

TEST REFERENCE		TEST TYPE	ORGANISM	TEST PASS CRITERIA
EN 14476	For virucidal activity.	Suspension	Virus	≥4 log reduction

VANODOX FORMULA MICROBIOLOGICAL PROFILE

VETERINARY DISINFECTANT TEST METHODS

Veterinary disinfectants can be used in a variety of areas e.g. the breeding, husbandry, production, transport and disposal of all animals except when in the food chain following death and entry to the processing industry.

As a minimum for general hygiene purposes, products should be effective against bacteria and yeast.

The scope of veterinary EN test methods does not specify application of the product but does include disinfection by immersion and surface disinfection by wiping, spraying, foaming or other means. It does not include aerial disinfection.

TEST REFERENCE		TEST TYPE	ORGANISM	TEST PASS CRITERIA
EN 1656	For bactericidal activity.	Suspension	Bacteria	≥5 log reduction
EN 1657	For fungicidal and/or yeasticidal activity.	Suspension	Fungi/Yeast	≥4 log reduction
EN 14204	For mycobacterial activity.	Suspension	Mycobacteria	≥4 log reduction
EN 14349	For bacterial activity on stainless steel carriers.	Surface	Bacteria	≥4 log reduction
EN 14675	For virucidal activity.	Suspension	Virus	≥4 log reduction
EN 16437	For bacterial activity on wood carriers.	Surface	Bacteria	≥4 log reduction
EN 16438	For fungicidal and/or yeasticidal activity on stainless steel carriers.	Surface	Fungi/Yeast	≥3 log reduction

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 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%