



ZIRCON MICROBIOLOGICAL REPORT

SKY CHEMICALS (UK) Ltd
Tel: +44 (0)114 278 0222 Fax: +44 (0)114 272 7750
Unit 12, Sheffield Design Studios, Sheffield, UK, **S3 8DB**

ZIRCON

MICROBIOLOGICAL PROFILE

<u>CONTENTS</u>		<u>PAGE</u>
	INTRODUCTION	2
1	BACTERICIDAL ACTIVITY The following bacteria tested <i>Enterococcus hirae</i> <i>Escherichia coli</i> '0157" <i>Pseudomonas aeruginosa</i> <i>Staphylococcus aureus</i> Methicillin Resistant <i>Staphylococcus aureus</i> <i>Salmonella typhimurium</i> <i>Shigella sonnei</i> <i>Streptococcus pyogenes</i> <i>Leptospira interrogans</i>	3-7
2	VIRUCIDAL ACTIVITY The following viruses tested Hepatitis B (HBV) Human Immunodeficiency type 1 (HIV)	8
 <u>APPENDICES</u>		
APPENDIX I	TEST METHODS	9-10
APPENDIX II	GLOSSARY OF MICROBIOLOGICAL AND CHEMICAL TERMS	11-14

ZIRCON

MICROBIOLOGICAL PROFILE

INTRODUCTION

ZIRCON is a quick acting and highly effective, alcohol based, skin disinfectant and sanitiser.

ZIRCON is bactericidal and virucidal, it evaporates from hands leaving no odour or residue.

ZIRCON is suitable for areas where food is handled prepared and served.

ZIRCON is ideal for use in between patient contact in non-surgical medical care establishments to prevent the risk of cross infection.

The Infection Control Nurses Association (ICNA) recommends the use of an alcohol-based waterless handrub for the following:

Before and after patient contact

After removing gloves

Before and after meals and breaks

After contact with items or surfaces that are likely to be contaminated

Following personal hygiene measures

ZIRCON is suitable for areas where soap and water are not readily available.

PLEASE REFER TO PRODUCT LABEL FOR HOW TO USE AND FOR ALL RECOMMENDED USE DILUTION RATES

ZIRCON

MICROBIOLOGICAL PROFILE

1 BACTERICIDAL ACTIVITY UNDER CLEAN CONDITIONS

TEST METHOD: BSEN 1276 TEST TEMPERATURE 20°C, CONTACT TIME 5 MINUTES			
BACTERIA	DISEASE	BACTERICIDAL DILUTION	TEST REFERENCE
<i>Enterococcus hirae</i>	Urinary tract infections	UNDILUTED	1
<i>Escherichia coli</i>	Food poisoning, urinary tract infections	UNDILUTED	1
<i>Pseudomonas aeruginosa</i>	Opportunistic pathogen, wound, burn infections	UNDILUTED	1
<i>Staphylococcus aureus</i>	Skin, bone and wound infections	UNDILUTED	1

ZIRCON

MICROBIOLOGICAL PROFILE

1 BACTERICIDAL ACTIVITY USING SHORT CONTACT TIMES

TEST METHOD: BSEN 1276 TEST TEMPERATURE 20°C, CONTACT TIME 30 SECONDS			
BACTERIA	DISEASE	BACTERICIDAL DILUTION	TEST REFERENCE
<i>Enterococcus hirae</i>	Urinary tract infections	UNDILUTED	1
<i>Escherichia coli</i>	Food poisoning, urinary tract infections	UNDILUTED	1
Methicillin Resistant <i>Staphylococcus aureus</i>	Skin, bone and wound infections, pneumonia. Resistant to treatment with the antibiotic Methicillin	UNDILUTED	1
<i>Pseudomonas aeruginosa</i>	Opportunistic pathogen, wound, burn infections	UNDILUTED	1
<i>Staphylococcus aureus</i>	Skin, bone and wound infections	UNDILUTED	1

ZIRCON

MICROBIOLOGICAL PROFILE

1 BACTERICIDAL ACTIVITY USING SHORT CONTACT TIMES

TEST METHOD: prEN 12054 TEST TEMPERATURE 20°C, CONTACT TIME 1 MINUTE			
BACTERIA	DISEASE	BACTERICIDAL DILUTION	TEST REFERENCE
<i>Enterococcus hirae</i>	Urinary tract infections	UNDILUTED	2
<i>Escherichia coli</i>	Food poisoning, urinary tract infections	UNDILUTED	2
<i>Pseudomonas aeruginosa</i>	Opportunistic pathogen, wound, burn infections	UNDILUTED	2
<i>Staphylococcus aureus</i>	Skin, bone and wound infections	UNDILUTED	2

ZIRCON

MICROBIOLOGICAL PROFILE

1 BACTERICIDAL ACTIVITY USING SHORT CONTACT TIMES

TEST METHOD: prEN 12054 TEST TEMPERATURE 20°C, CONTACT TIME 15 SECONDS			
BACTERIA	DISEASE	BACTERICIDAL DILUTION	TEST REFERENCE
<i>Enterococcus hirae</i>	Urinary tract infections	UNDILUTED	2
<i>Escherichia coli</i>	Food poisoning, urinary tract infections	UNDILUTED	2
<i>Escherichia coli</i> "0157"	Food poisoning which can result in enteritis and haemolytic uraemic syndrome (characterised by renal failure)	UNDILUTED	2
Methicillin Resistant <i>Staphylococcus aureus</i>	Skin, bone and wound infections, pneumonia. Resistant to treatment with the antibiotic Methicillin	UNDILUTED	2
<i>Pseudomonas aeruginosa</i>	Opportunistic pathogen, wound, burn infections	UNDILUTED	2
<i>Salmonella typhimurium</i>	Food poisoning (linked with cattle) resulting in gastro-enteritis	UNDILUTED	2
<i>Shigella sonnei</i>	Dysentery	UNDILUTED	2
<i>Staphylococcus aureus</i>	Skin, bone and wound infections	UNDILUTED	2
<i>Streptococcus pyogenes</i>	Wound infections	UNDILUTED	2

ZIRCON

MICROBIOLOGICAL PROFILE

1 BACTERICIDAL ACTIVITY USING SHORT CONTACT TIMES

ROOM TEMPERATURE, CONTACT TIME 30 SECONDS			
BACTERIA	DISEASE	BACTERICIDAL DILUTION	TEST REFERENCE
<i>Leptospira interrogans</i>	Leptospirosis	UNDILUTED	3

ZIRCON

MICROBIOLOGICAL PROFILE

2 VIRUCIDAL ACTIVITY

ROOM TEMPERATURE, CONTACT TIME 30 SECONDS			
VIRUS	DISEASE	VIRUCIDAL DILUTION	TEST REFERENCE
Hepatitis B (HBV)	Hepatitis B	UNDILUTED	4a
Human Immunodeficiency type 1 (HIV)	AIDS	UNDILUTED	4b

ZIRCON

MICROBIOLOGICAL PROFILE

APPENDIX I

TEST METHOD REFERENCES

Laboratory tests for bactericidal and fungicidal activity, have been performed by the UKAS accredited Microbiology Laboratory (Testing Number 1108) of Evans Vanodine International Plc.

1 European Standard: BSEN 1276:1997

Chemical disinfectants and antiseptics - Quantitative suspension test for the evaluation of bactericidal activity of chemical disinfectants and antiseptics used in food, industrial, domestic, and institutional areas

Designed to test bactericidal products specifically for use in the Food and Catering Industry. It is carried out under “dirty” (representative of surfaces which are known to or may contain, organic and/or inorganic materials) and “clean” (representative of surfaces which have received a satisfactory cleaning programme and/or are known to contain minimal levels of organic and/or inorganic materials) conditions.

Additional contact times were used as well as the obligatory test conditions.

2 Proposed European Standard: prEN 12054:1997

Chemical disinfectants and antiseptics - Products for hygienic and surgical handrub and handwash - Bactericidal activity - Test method and requirements

Additional contact times were used as well as the obligatory test conditions.

3 Activity against *Leptospira interrogans*

Test carried out at an independent testing laboratory

Test parameters: 30 seconds contact time, room temperature, distilled water.

ZIRCON

MICROBIOLOGICAL PROFILE

APPENDIX I

TEST METHOD REFERENCES

VIRUCIDAL ACTIVITY

All virus tests were carried out by expert virology laboratories, test reports available on request.

4a Hepatitis B (HBV)

An indirect method of measuring the activity against Hepatitis B was used as this virus cannot be propagated in tissue culture. The test method relies on the destruction of the surface antigen of HBV. The method is recommended by the German Association for the Control of Viral Diseases and usually makes greater demands on the concentration or contact time of the disinfectant than methods such as the demonstration of destruction of HBV DNA polymerase. The test was carried out at room temperature with a 30 seconds contact time. No surface antigen remained detectable at the end of the contact time.

4b Human Immunodeficiency Virus Type 1 (HIV)

The test method uses an assay for measuring the concentration of a virus specific molecule in an infected blood sample following exposure of the sample to the disinfectant. The loss of detectable virus specific molecules is used as a marker of virus 'killing'. The assay is likely to underestimate the effectiveness of the disinfectant against HCV because the molecule detected is relatively resistant to chemical degradation, it is however, essential for infectivity and so its disappearance following treatment is a good indication of virus inactivation.

ZIRCON

MICROBIOLOGICAL PROFILE

APPENDIX II

GLOSSARY OF MICROBIOLOGICAL AND CHEMICAL TERMS

Agar	A derivative of marine sea-weed, used as a solidifying agent in <i>media</i> .
Acid	A substance with a pH less than 7.
Aerobic	Grows in oxygen atmosphere.
Alkali	Substance with a pH greater than 7.
Algicide	A chemical agent which, under defined conditions, is capable of killing algae including their <i>spores</i> .
Amphoteric	A class of surfactant, having both <i>anionic</i> and <i>cationic</i> properties.
Anaerobic	Grows in oxygen free atmosphere.
Anionic	A surfactant in which the surface active agent has a negative charge.
Antimicrobial	A substance capable of killing <i>micro-organisms</i> .
Antisepsis	The destruction or inhibition of <i>micro-organisms</i> on living tissues having the effect of limiting or preventing the harmful results of infection. It is not a synonym for <i>disinfection</i> .
Antiseptic	A chemical agent used in <i>antisepsis</i> .
Bacillus	A rod shaped bacteria.
Bactericide	A chemical agent which, under defined conditions, is capable of killing bacteria but not necessarily bacterial <i>spores</i> .
Bacteriostasis	A state of bacterial population in which, multiplication is inhibited.
Bacteriostat	A chemical agent which under defined conditions induces <i>bacteriostasis</i>
Biocide	A generalised term for a chemical agent capable of killing or inactivating <i>micro-organisms</i> . It embraces the more specific terms <i>algicide</i> , <i>bactericide</i> , <i>fungicide</i> , <i>sporicide</i> and <i>virucide</i> (see also <i>germicide</i>). Note. Pesticides are not considered to be <i>biocides</i> .
Black fluids	Coal-tar fractions solubilised with soaps.
Cationic	A surfactant in which the surface active agent has a positive charge
Chemical Sterilizing Agent	A chemical agent which, under defined conditions, leads to <i>sterilization</i> .
Chlorhexidine	A bisphenol compound used as <i>antiseptic</i> and <i>disinfectant</i> .

ZIRCON

MICROBIOLOGICAL PROFILE

APPENDIX II

GLOSSARY OF MICROBIOLOGICAL AND CHEMICAL TERMS

Chlorine	A member of the Halogen group of elements. Frequently, but usually, incorrectly used to define the active species in, e.g. solutions of sodium hypochlorite.
Coccus	A spherical bacterium.
Disease	Any change from a general state of good health.
Disinfectant	A chemical agent which under defined conditions is capable of <i>disinfection</i> .
Disinfection	The destruction of <i>micro-organisms</i> , but not usually bacterial <i>spores</i> : it does not necessarily kill all <i>micro-organisms</i> , but reduces them to a level acceptable for a defined purpose, for example, a level which is harmful neither to health nor to the quality of perishable goods.
DNA	Deoxyribonucleic acid.
Formaldehyde	A colourless gas with a characteristic pungent odour. Used as a disinfectant in <i>fumigation</i> .
Fumigation	Exposure of enclosed spaces to action of gaseous or vapour-phase disinfectants or sterilants.
Fungicide	A chemical agent which under defined conditions is capable of killing fungi including their <i>spores</i> .
Fungus	A group of diverse unicellular and multicellular microorganisms (pl. fungi)
Fungistasis	A state of fungal population the development of which is inhibited.
Fungistat	A chemical agent which under defined conditions induces <i>Fungistasis</i> .
Genus	See <i>Species</i> .
Germ	A vague term which should be avoided. A <i>micro-organism</i> which can be harmful.
Germicide	A vague term which should be avoided. An agent under defined conditions, which is capable of killing <i>germs</i> .
Glutaraldehyde	A broad spectrum biocide used as an active ingredient in formulated disinfectants.
Gram Stain	Stain technique used to classify bacteria into two groups: Gram negative or Gram positive.
Halogens	A group of chemicals consisting of e.g. Fluorine, <i>Chlorine</i> , <i>Iodine</i> and Bromine.

ZIRCON

MICROBIOLOGICAL PROFILE

APPENDIX II

GLOSSARY OF MICROBIOLOGICAL AND CHEMICAL TERMS

Hydrogen Peroxide	A bleaching/oxidising agent used as a disinfectant.
Hypochlorite	Usually sodium hypochlorite, solutions of hypochlorite are oxidising disinfectants producing the biocidally active hypochlorite anion and hypochlorous acid.
Iodine	A <i>Halogen</i> similar to <i>chlorine</i> but more stable and less reactive.
Iodophor	<i>Iodine</i> in solution of surfactant with stabiliser.
Media	A nutrient rich solid or liquid (agar or broth) used to grow <i>micro-organisms</i> .
Microbe	An alternative expression for <i>micro-organism</i> .
Micro-organism	A microscopic entity capable of replication. It includes bacteria, viruses and the microscopic forms of algae, fungi and <i>protozoa</i> .
Motile	Describes organisms which can move independently.
Mould	Any fungus that forms visible <i>mycelia</i> growth.
Mycelium	A visible mass of tangled filaments of fungal growth.
Nucleic Acids	An organic compound composed of nucleotides <i>DNA</i> and <i>RNA</i>
Oocyst	An oval body in the reproduction cycle of certain <i>protozoa</i> .
Pathogen	An organism that causes <i>disease</i> animals, plants or <i>micro-organisms</i> .
Peracetic acid	Acid produced by combination of acetic acid and <i>hydrogen peroxide</i> .
Phenol	Chemical derived from coal tar. Used as a <i>disinfectant</i> .
Preservation	Maintaining numbers of <i>micro-organisms</i> at low levels i.e. low enough to make food safe to eat or to prevent spoilage.
Protozoa	Unicellular <i>micro-organisms</i> . Classified in the Animal Kingdom.
Quaternary Ammonium	
Compound	A <i>cationic surfactant</i> with strong bactericidal but weak detergent properties.
RNA	Ribonucleic acid involved in protein synthesis.
Sanitization	A term used mainly in the food and catering industry. A process of both cleaning/disinfecting utensils, equipment and surfaces.
Sanitizer	A chemical agent used for <i>sanitization</i> .

ZIRCON

MICROBIOLOGICAL PROFILE

APPENDIX II

GLOSSARY OF MICROBIOLOGICAL AND CHEMICAL TERMS

Somatic	Refers to the “body” or main part of a cell. Does not include reproductive structures such as <i>spores</i> .
Species	Fundamental rank of the classification system. (Two or more species grouped together are classed as a <i>genus</i>).
Spirochete	A twisted bacterial rod with a flexible cell wall containing axial filaments for <i>motility</i> .
Spore	A highly resistant structure formed from <i>somatic</i> cells in several genera of bacteria. e.g. <i>Bacillus</i> . Also a reproductive structure formed by fungi.
Sporicide	A chemical agent which, under defined conditions, is capable of killing bacterial <i>spores</i> .
Sterile	Free from all living <i>micro-organisms</i> .
Sterilization	A process which renders an item <i>sterile</i> .
Sterilizing agent	An agent or combination of agents which under defined conditions leads to <i>sterilization</i> .
Surfactant	A surface active agent.
Toxin	A poisonous substance produced by a <i>species of micro-organism</i> .
Vibrio	A form of <i>bacteria</i> occurring as a curved rod.
Virucide	A chemical agent which, under defined conditions, is capable of killing or inactivating <i>viruses</i>
Virus	A non-cellular entity consisting of protein and <i>nucleic acid</i> . Can only replicate after entry into specific types of living cell.
White fluids	Prepared by emulsifying tar fractions.
Zoonosis	Any <i>disease</i> which can be transmitted from animal to man and vice-versa