

An effective solution for the control of medical antimicrobial resistant strains

Rely+On® Virkon® broad spectrum disinfectant

For use in Medical facilities, Laboratories and Public Health applications. Rely+On® Virkon® is effective against a broad spectrum of pathogenic organisms, and strains of antibiotic resistant pathogens present in medical facilities. It is suitable for the control of SARS-CoV-2, and has an excellent environmental safety profile – non persistent. For use as a hard surface, fogging and immersion disinfectant.



Independently proven highly effective against:

- Over 100 strains of viruses in 22 viral families
- Over 400 strains of bacteria
- Over 60 strains of fungi and yeast

These studies were conducted using a wide range of contact times, temperatures, and organic challenge levels.

Efficacy against resistant strains

Rely+On® Virkon® formulation is an oxidative chemistry based on potassium peroxomonosulphate active ingredient, and is highly effective against many of those adapted strains of bacteria and yeasts commonly encountered within medical facilities.

Rely+On® Virkon® is found effective against the following *antimicrobial resistant* organisms, within a series of independent laboratory assessments conducted with proven, globally accepted efficacy test methods.

Organism	Status	Strain	Dilution	Contact Time (min)
<i>Candida auris</i>	Multiresistant strain	DSM 105990	1:133	5
<i>Acinetobacter baumannii</i>	Multidrug resistant strain	BAA 1605	1:200	5
<i>Acinetobacter baumannii</i>	Carbapenem resistant strain	Patient isolate	1:200	10
<i>Enterococcus faecalis</i>	VRE_ Vancomycin resistant Enterococcus	ATCC 51299	1:200	5
<i>Escherichia coli</i>	(ESBL) Extended Spectrum Beta-Lactamase strain	NCTC 11560	1:200	5
<i>Klebsiella pneumoniae</i>	(ESBL) Extended Spectrum Beta-Lactamase strain	NCTC 13368	1:200	5
<i>Pseudomonas aeruginosa</i>	Drug resistant strain	DSM 46317	1:100	5
<i>Staphylococcus aureus</i>	MRSA-methicillin resistant Staphylococcus aureus	ATCC 33592	1:200	5

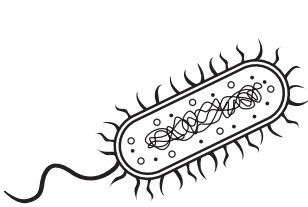
The issue of Antimicrobial Resistance found in commonly encountered pathogens in the medical field is a major threat to human health (CDC, 2023).¹

Mode of action

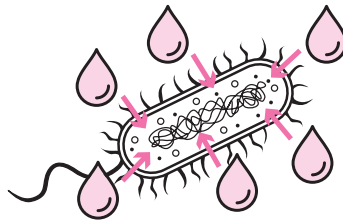
Rely+On® Virkon® oxidizes key structures and compounds, such as proteins, leading to widespread, irreversible damage and subsequent deactivation and destruction of the microorganism.

There is no evidence to suggest that bacterial disease-causing organisms can develop acquired resistance towards Rely+On® Virkon®, as opposed to some other disinfectant chemistry types.

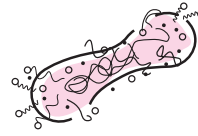
Oxidative mode of action



Organism cell



Rely+On® Virkon® penetrates the cell membrane on contact causing non-specific destruction of susceptible structures and bonds



As the reaction accelerates the cell structure begins to fragment



Complete fragmentation and death of the organism occurs

Resistance mechanisms

The oxidising action of Rely+On® Virkon® on these key microorganisms is very different to the organic based biocidal type chemistries, in regular use.

Quaternary ammonium compound (QAC) chemistries (for example), can offer a low cost disinfection option for routine daily use in many hospital and related environments. However, these products are being continually challenged by the environments where these emerging pathogens are found, often within the hospital.

Issues with Quaternary ammonium compound chemistries showing increased levels of resistance towards bacteria, following repeated use as a disinfectant are widely reported in the literature.²

Quaternary ammonium chemistries act on bacterial cells by means diffusion through the cell wall, binding to the cytoplasmic membrane. The disorganisation of membrane allows the release of key cell components, such as intracellular material and potassium ions.

However, the presence of efflux pumps (sometimes referred to as transport proteins) in gram negative bacterial cells, creates a mechanism which allows toxic substances (such as QAC and other biocides) to be removed, thus reducing their effectiveness as a disinfectant.

Routine QAC usage for the purposes of disinfection is implicated in the emergence of antibiotic resistance, and the resulting over expression of efflux pumps can lead to cross resistance with some drug substances.³

Pseudomonas aeruginosa is one example of a bacterial organism which demonstrates the ability to thrive within various environmental settings, with persistence in hospital settings and can develop into antimicrobial resistant strains.⁴



Rely+On® Virkon® may be employed as an alternate disinfection chemistry with many types of infection control programmes, in order to break the cycle of these prevalent resistant strains within medical applications.

Rely+On® Virkon® oxidizing effect on environmentally present, resistant microorganisms helps eliminate that risk within the daily working operations, and contributes to a much more sustainable level of infection control practice.

Applications

Task	Dilution Rate	Application
Hard Surface Disinfection	1:100 (10 grams of Rely+On® Virkon® to every litre of water)	Apply disinfectant solution using either a trigger spray bottle, a suitable knapsack type sprayer, cloth, sponge or floor mop. Allow to dry, before any re-use of treated areas. For disinfection of hard surfaces, apply the solution at a rate of 200ml/m ²
Equipment Disinfection (not for medical devices)	1:100 (10 grams of Rely+On® Virkon® to every litre of water)	Suitable equipment can either be submerged and washed in disinfectant solution or sprayed and then wiped clean with a cloth or sponge. Rinse disinfected equipment with clean water after 10 minutes when materials compatibility is of concern. Refer to the product Instruction for Use leaflet (IFU) for further specific information.
Wipes	1:100 or 1:400 [†]	Add solution to a suitable dry wipe system (contact LANXESS for advice on suitable wipe systems).
Fogging	5% (1:20), with 10% MPG (monopropylene glycol) in water [*]	Prepare the solution by adding 50 grams of Rely+On® Virkon® to a mixture of 900ml water and 100ml MPG. Mix thoroughly, and leave to stand for 10 minutes, before use. Add the prepared solution to the tank of a suitable thermo-electric fogger unit. Apply the solution at a rate of 20ml/m ³ . After use, always thoroughly rinse the equipment with clean water. Consult LANXESS for guidance on the use of suitable fogging equipment.

* Not for use for the disinfection of medical devices.

[†] See efficacy table EN 16615

Users should always check for compatibility with any sensitive materials before use. Do not use on any soft metals such as brass or copper. Not recommended for use on soft furnishings, textiles or carpets.



Safety and environmental profiles

Rely+On® Virkon® has fewer handling and use constraints than many other disinfectant products and is not classified as harmful or a sensitiser in both powdered form and in-use dilutions, in accordance with EU legislation on the classification and labelling of chemical preparations.

Independent studies have shown that diluted Rely+On® Virkon® should not, when used as directed, pose any threat to sewage treatment facilities.



References

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