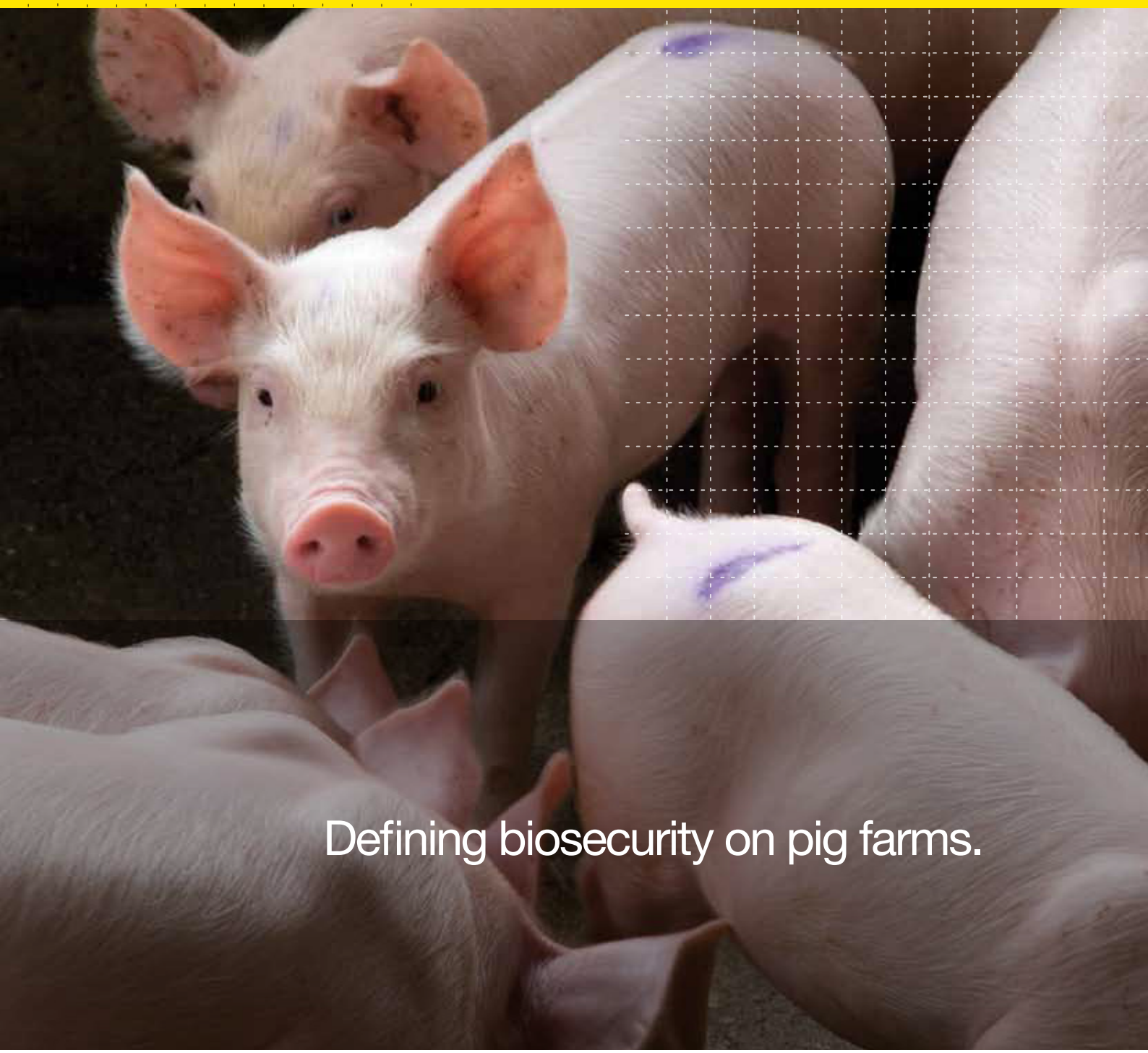
# Virkon®S



Defining biosecurity on pig farms.

NRM
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# THE BREAKTHROUGH FORMULATION THAT DEFINES ON-FARM BIOSECURITY.

**Virkon®S offers pig producers a highly convenient multi-purpose biosecurity system all in one pack for a wide range of applications:**

- Surfaces
- Equipment
- Vehicles
- Aerial disinfection
- Water delivery systems
- Proven to kill over 500 strains of viruses, bacteria and fungi
- Proven against Foot and Mouth Disease (FMD), PRRS virus, PCV2, Salmonella and Campylobacter
- Powerful, fast acting, flexible, multi-purpose biosecurity

## INDEPENDENTLY PROVEN BROAD SPECTRUM EFFICACY.

Having invested millions of pounds in performance and safety testing, Virkon®S has a significant number of studies supporting approved label claims against the OIE List A Diseases, including; Foot and Mouth Disease (FMD) and Classical Swine Fever as well as List B diseases, such as Aujesky's disease and TGE.

For Salmonella, studies confirm that Virkon®S is highly active against five prevalent strains responsible for food poisoning.

The broad spectrum efficacy of Virkon®S has been independently proven against:

- Over 100 strains of virus in 22 viral families,
- over 400 strains of bacteria,
- over 60 strains of fungi,

using a wide range of contact times, temperatures and organic challenge levels.

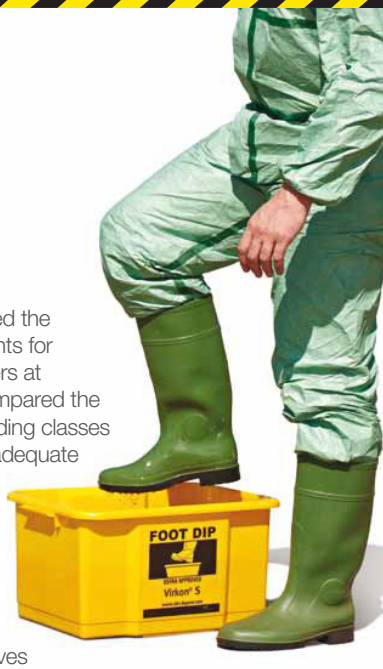
## FORMULATED BROAD SPECTRUM KILLING POWER.

Formulated to overcome the problems of limited spectrum and limited activity exhibited by other disinfectants, Virkon®S achieves deactivation and destruction of the target organism through a broad spectrum, non-selective range of oxidation reactions. Unlike other disinfectant chemistries, such as aldehydes, Virkon®S does not exert a specific toxicological effect on the target organism and is proven to kill pathogens in seconds.

## PROVEN TO KILL ON FARM AS WELL AS IN THE LAB.

Proven on-farm efficacy offers producers reassurance and the knowledge that the product they are using will be effective in real farm conditions, where low temperatures and high levels of organic challenge can present serious problems to other disinfectants. Live pig transport is an important vector of PRRS virus into farms and within pig flows. The Swine Disease Eradication Center, University of Minnesota, published important results aimed at helping producers reduce the risk of spread of highly infective PRRS virus by live animal transport1. Performed on a full size pig trailer under practical constraints to match field conditions, the researchers selected 1% Virkon®S as the study disinfectant due to its proven broad spectrum virucidal activity including against PRRS virus. Their results were excellent, producing "good inactivation of PRRS virus within the target time when cold water was used and disinfection applied by foaming". This work, coupled with the known broad spectrum of activity of Virkon®S, confirmed that this is the disinfectant of choice for transport biosecurity. These wide ranging 'real world' biosecurity challenges demonstrate the broad spectrum proven efficacy of Virkon®S against both viruses and bacteria. Virkon®S has been proven time and again to meet the toughest biosecurity challenges better than any of its competitors and provides the key to combating the effects of viruses and bacteria in livestock production.

## THE FOOTDIP GOLD STANDARD, FOR RAPID SPEED OF KILL.




Independent field trials have demonstrated the impracticality of many types of disinfectants for footdips due to slow kill rates. Researchers at Indiana's Purdue University in the US compared the performance of disinfectants from six leading classes and only the QAC disinfectant provided adequate footdip disinfection but required an impractical five-minute soak after boot cleaning. However, when Virkon®S was evaluated under similar circumstances, effective disinfection was achieved after boot cleaning in just 30 seconds.

The study confirmed that Virkon®S achieves excellent speed of kill at low temperatures and in the presence of organic challenge.

## EXCELLENT CONTROL OF FOOD POISONING PATHOGENS TO EN TEST STANDARDS.

With the stringent EU legislation on Salmonella and Campylobacter control in full force across the swine industry, Virkon®S has been re-evaluated at Wageningen University in The Netherlands to specifically address the EU legislation. The latest EN 1656 Salmonella and Campylobacter studies confirmed that Virkon®S achieved excellent dilution rates of 1:100 and 1:200 against the most prevalent Salmonella strains responsible for food poisoning; S. enteritidis, S. typhimurium, S. virchow, S. infantis and S. hadar, and Campylobacter jejuni. Additionally, similar data is now available for Staphylococcus aureus (pig MRSA).

## ENVIRONMENTAL PROFILE.

The Virkon®S oxygen-based chemistry contains simple organic salts and organic acids and the active ingredient decomposes by a variety of routes within the environment, in soil and water, breaking down to form the naturally occurring substances, potassium salts and oxygen. The major organic components are classified as readily biodegradable according to OECD and EU tests. Virkon®S is not classified as R53* and is not persistent in the environment, according to the standard European process for the classification and labelling of chemical preparations. Independent studies have shown that diluted Virkon®S should not, when used as directed, pose any threat to sewage treatment facilities.

## AERIAL MISTING IN THE PRESENCE OF ANIMALS.

Spraying a fine disinfectant mist in livestock housing can help reduce cross infection and prevent secondary infection during outbreaks of respiratory and other diseases. Virkon®S can be misted in the presence of pigs at a dilution rate of 1:200 (0.5%). It is always important to read the Virkon®S label in order to ensure regulatory compliance.

## SUPPORTING THE REDUCTION OF ANTIBIOTICS.

Governments worldwide are seeking reductions in the use of livestock antibiotics to limit the development of antibiotic resistance passing into the human population. Targeted legislation to reduce the use of prophylactic antibiotics in the food chain is now becoming a reality with the result that producers are taking steps to improve their biosecurity measures. With proven efficacy in a wide range of 'real world' biosecurity challenges against both viruses and bacteria, Virkon®S meets the toughest biosecurity challenges better than its competitors and provides the key to combating the effects of viruses and bacteria in livestock production. As a disinfectant of choice for governments worldwide, Virkon®S leads the way forward in biosecurity 'best practice' programmes.

# PROVEN BROAD SPECTRUM EFFICACY.

## VIRUCIDAL ACTIVITY DATA

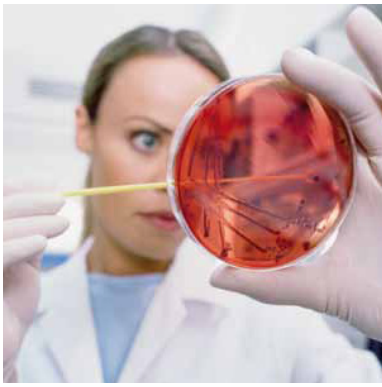
| PIG DISEASE/RELATED CONDITION | VIRUS FAMILY | DILUTION RATE |
|---|---|---|
| Porcine Reproductive Respiratory Syndrome (PRRS) | Arterivirus | 1:500 |
| African swine fever (ASF) | Asfarviridae | 1:800 |
| Post Weaning Multisystemic Wasting Syndrome (PMWS) | Circoviridae | 1:100 |
| Porcine Dermatitis and Necropathy Syndrome (PDNS) | Circoviridae | 1:100 |
| Porcine Circovirus 2 (PCV2) | Circoviridae | 1:100 |
| Transmissible Gastroenteritis (TGE) | Coronaviridae | 1:100 |
| Classical Swine Fever (CSF)/Hog Cholera | Flaviviridae | 1:150 |
| Aujesky's (pseudorabies) disease | Herpesviridae | 1:100 |
| Swine influenza (H1N1) | Orthomyxoviridae | 1:100 |
| Foot & Mouth Disease (FMD) | Picornaviridae | 1:1300 |
| Swine Vesicular Disease (SVD) | Picornaviridae | 1:200 |

## FUNGICIDAL ACTIVITY DATA

| PIG DISEASE/RELATED CONDITION | PATHOGEN | DILUTION RATE |
|---|---|---|
| Aspergillosis | Aspergillus niger | 1:100 |
| Gastro-oesophageal ulcers | Candida albicans | 1:100 |
| Dermatophytosis | Trichophyton mentagrophytes | 1:50 – 1:300 |

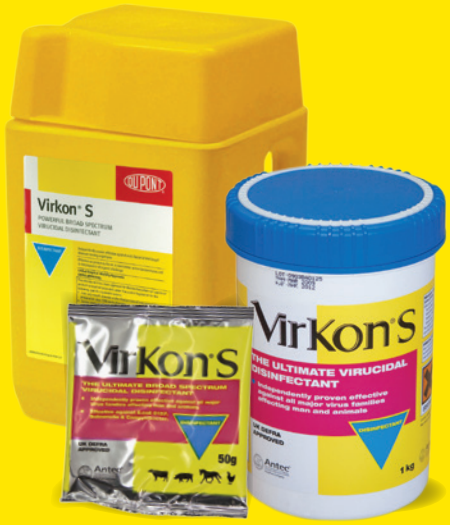
## BACTERICIDAL ACTIVITY DATA

| PIG DISEASE/RELATED CONDITION | PATHOGEN | DILUTION RATE |
|---|---|---|
| Pleuropneumonia | Actinobacillus pleuropneumoniae | 1:200 |
| Food poisoning - humans | Bacillus cereus | 1:100 |
| Atrophic Rhinitis | Bordetella bronchiseptica | 1:150 |
| Spirochaetosis | Brachyspira hyodysenteriae | 1:100 |
| Abortions | Brucella abortus | 1:100 |
| Food poisoning - humans | Campylobacter coli<br>Campylobacter jejuni<br>Campylobacter pyloridis | 1:100<br>1:100<br>1:100 |
| Necrotizing Enterocolitis | Clostridium perfringens | 1:100 |
| Dermatitis | Dermatophilus congolensis | 1:100 |
| Septicaemia | Erysipelothrix rhusiopathiae | 1:100 |
| Diarrhoea, Oedema | Escherichia coli | 1:100 |
| Food poisoning - humans | Escherichia coli O157:H7 | 1:100 |
| Septicaemia, respiratory disease | Haemophilus somnus | 1:100 |
| Abortion, foetal loss, endometritis, mastitis | Klebsiella pneumoniae | 1:200 |
| Swine proliferative enteritis | Lawsonia intracellularis | 1:100 |
| Abortion septicaemia, Encephalitis, Food poisoning - humans | Listeria monocytogenes | 1:100 |
| Polyserositis | Mycoplasma hyorhinis | 1:800 |
| Swine enteritis related infections | Pasteurella haemolytica | 1:100 |
| Pneumonia, Atrophic Rhinitis | Pasteurella multocida | 1:150 |
| Secondary infections, co-infections with PCV2 | Proteus mirabilis | 1:200 |
| Respiratory infection | Pseudomonas aeruginosa | 1:100 |
| Enterocolitis, Septicaemia, Food poisoning humans | Salmonella choleraesuis | 1:120 |
| Food poisoning - humans | Salmonella arizona<br>Salmonella enteritidis PT4<br>Salmonella hadar<br>Salmonella infantis<br>Salmonella thomasville | 1:100<br>1:100<br>1:200<br>1:200<br>1:200 |
| Enterocolitis, Septicaemia, Food poisoning humans | Salmonella typhimurium DT104 | 1:200 |
| Food poisoning - humans | Salmonella virchow | 1:200 |
| Human infections | Staphylococcus aureus (pig MRSA) | 1:100 |
| Botryomycosis | Staphylococcus aureus | 1:100 |
| Septicaemia, Meningitis, Arthritis, Bronchopneumonia | Streptococcus suis | 1:150 |



# 10 REASONS TO PUT VIRKON®S AT THE HEART OF PIG FARM BIOSECURITY.

1. Virkon®S is the 'breakthrough' formulation that has re-defined on farm biosecurity and leads the way forward in Emergency Disease Control measures
2. Approved by Governments worldwide to combat major diseases such as FMD, PRRS virus, PCV2 and more
3. The only branded disinfectant referred to in the prestigious AUSVETPLAN as, "Virkon®S is a modern disinfectant with outstanding virucidal properties
4. The 'Gold Standard' footdip disinfectant - Virkon®S kills pathogens ten times faster than the nearest competitor, even at low temperatures and in the presence of organic challenge
5. Proven to kill on the farm as well as in the laboratory - independently proven in field trials to be highly effective against the most serious threat to livestock - the viruses
6. No need to rotate Virkon®S - independently proven to reduce the potential infectivity of resistant Salmonella super-strains
7. The superior operator safety profile ensures that Virkon®S is convenient for users and can be misted in the presence of animals
8. Environmental profile - Virkon®S has been formulated to include ingredients that have been carefully selected for their ability to degrade naturally within the environment
9. Easy to transport and store - Virkon®S can be transported conveniently and rapidly by rail, sea and air with no additional spend requirements for transport or storage
10. Biosecurity in a single pack - a highly convenient multi-purpose biosecurity system all in one pack for, surfaces, equipment, vehicles, aerial disinfection and water delivery systems

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**Virkon®**

**the science to kill pathogens**