

n^[origin]

HOSPITALS & PUBLIC HEALTHCARE

ANTIBACTERIAL & ANTIFUNGAL COATINGS

www.norigin-sci.com



HEALTHCARE



Continuously Active Antibacterial and Antifungal Coatings

Healthcare is a priority and **norigin's** surface technology is specifically aimed at combatting Healthcare Associated Infections (HAI), particularly those bacterial and fungal pathogens that have developed antibiotic and antifungal resistance.

This area of focus extends to protecting vulnerable people in residential care and nursing homes as well as safeguarding people in community medical facilities, local doctor surgeries and pharmacies. The impact of pathogenic spread through touch affects not only those who are receiving healthcare but also the many devoted staff we all rely upon to deliver that healthcare.

norigin's continuously active Antibacterial and Antifungal coatings have been exhaustively tested to ISO 22196:2021 'Measurement of antibacterial activity on plastics and other non-porous surfaces', and ASTM G21: 2021 'Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.'

Alongside rigorous disinfection routines, continuously active Antibacterial and Antifungal coatings serve as a complementary ally in the

plan of action designed to counter dangerous pathogens. Between regular cycles of disinfection, Antibacterial and Antifungal coatings are a continuous and ongoing factor in that battle.

Resistance to chemical damage by disinfectants is important in evaluating any coating. **norigin's** continuously active Antibacterial and Antifungal coatings have been tested against an array of healthcare disinfectants including formaldehyde and hydrogen peroxide vapour (HPV).

Similarly, durability is a vitally important consideration and all **norigin's** coatings have undergone sustained durability testing to:

- **ASTM D2486 'Abrasion resistance'**
- **ASTM D2794 'Impact Resistance'**
- **ISO 1519 'Bend Test'**
- **ISO 2819:2017 'Shot Peening Test'**

Continuously Active Antibacterial & Antifungal Coatings

Projects

Healthcare

FanLing Hospital, Hong Kong
Princes of Wales Hospital, Hong Kong
Tuen Mun Hospital, Hong Kong
Tin Shui Wai Hospital, Hong Kong
Baptist Hospital, Hong Kong
Queen Mary Hospital, Hong Kong
Pamela Youde Nethersole Eastern Hospital, Hong Kong
Tung Wah Eastern Hospital, Hong Kong
Grantham Hospital, Hong Kong
Duchess of Kent Children's Hospital, Hong Kong
Children's Hospital Centre of Excellence in Paediatrics, Hong Kong
Salamaniya Medical Centre, Bahrain
St Thomas Hospital, London

Research & Laboratory

Biozyme Laboratory, UK
Edward Jenner Institute, Oxford
Porton Down Chemical & Biological Defence Sector
Animal Care Facility University of Science and Technology
MAFF, Veterinary Laboratories
Lo Kwee-Seong Building University of Science and Technology
Centre for Comparative Medicine Research Hong Kong University
Dexter H.C. Man Building Hong Kong University
Pharmacy at LG3 Hong Kong University
Large Animal Holding Room Hong Kong University
11/F of Laboratory Block Hong Kong University
Li Ka Shing Faculty of Medicine Hong Kong University
Bioquell Hydrogen Peroxide Decontamination Centre Hong Kong University

Combating
the spread
of the most
dangerous
bacterial
& fungal
pathogens

TARGETING THE MOST DANGEROUS PATHOGENS

Bacterial Pathogens

A study released in 2020, 'Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis' reported in the Lancet looked at the data for 494 million patient records from 2019 and estimated that:

In 2019 1.27 million people died as a direct result of antibiotic-resistant bacteria and antibiotic resistance played a role in a further 4 million deaths. By 2050 10 million people will die annually from antibiotic-resistant bacterial strains with

antibiotic resistance having a role in a further 37 million deaths.

The graph (extracted from 'Global burden' data and projections) shown opposite illustrates the enormity of the challenge presented solely by antibiotic-resistant bacterial pathogens.

Analysis of the CDC's report 'Antibiotic Resistance Threats in the United States, 2019' reinforces the assertion that bacterial pathogens (particularly those presenting antibiotic resistance) are an increasing threat within the healthcare sector.

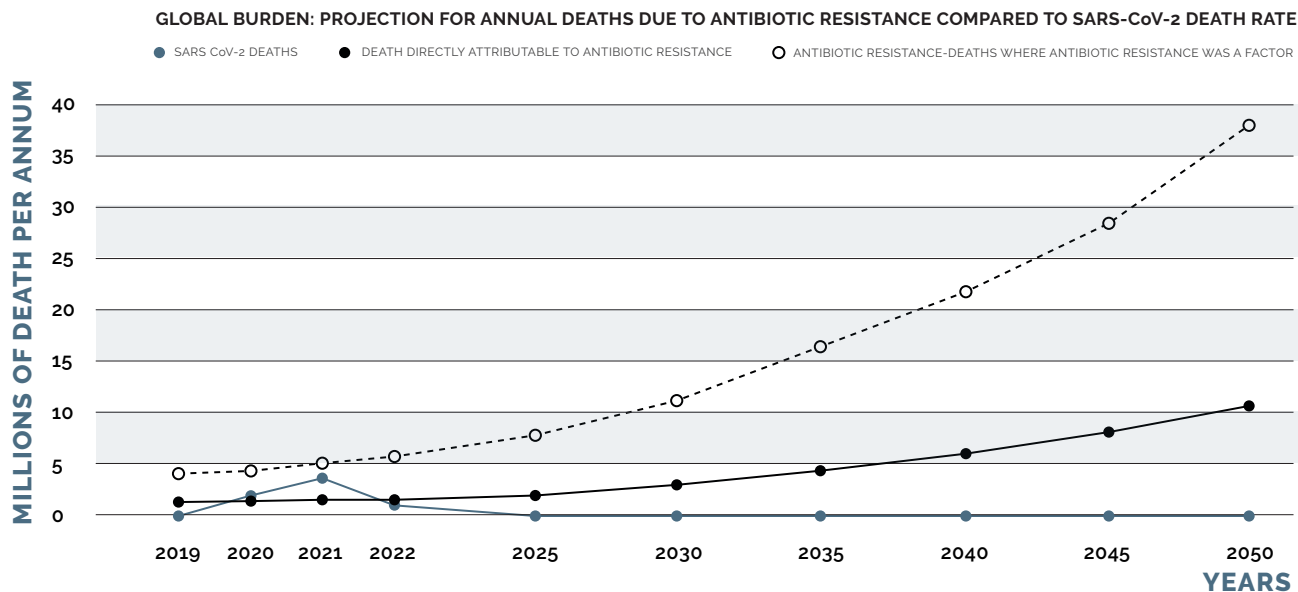
Fungal Pathogens

Annually, over 150 million severe cases of fungal infection occur worldwide, resulting in debilitating illness and approximately 1.7 million deaths per annum.

Whilst mortality rates arising from antibiotic resistant bacterial infections are well recorded there simply isn't the equivalent quantitative data for fungal pathogens.

On 22 October 2022, the World Health Organization published a paper entitled '**WHO fungal priority pathogens list to guide research, development and public health action**' which has proven helpful in pinpointing the most dangerous fungal pathogens.

In addition, there are dangerous fungal moulds found in damp conditions within our homes which, whilst rarely life threatening, can be extremely debilitating. We decided to add them to the target list because they are widespread and their impact upon health is significantly underestimated.



Targeting the most dangerous bacterial & fungal pathogens

Lack of investment and timescales in developing new antibiotics and antifungal drugs mean that alternate strategies must be adopted.

A key part in this strategy must be to target the most dangerous bacterial and fungal pathogens allied with a clear understanding of how these diseases are transmitted.

Combining data from the CDC report in the United States 2019 (Table 1) with the WHO's 'Fungal Priority Pathogens List' published in October 2022 allows the creation of the consolidated target list shown in Table 2.

Understanding how these pathogens are transmitted (often from person-to-surface-person and person-person) forms the second plank in formulating a response.

Proven Efficacy is Key

Table 2 presents an amalgamation of the most dangerous bacteria and fungi detailed in the CDC and WHO reports.

The Importance of Testing

Extensive independent, third-party laboratory testing to recognized international standards is essential to prove the efficacy of coatings designed to stop the spread of the listed most dangerous bacterial and fungal pathogens.

Table 1: CDC 'Antibiotic Resistance Threats in the United States' 2019 ' Extract

RANK	BACTERIAL PATHOGEN
1	Drug-resistant Streptococcus pneumoniae
2	Clostridioides difficile
3	Vancomycin-resistant Enterococcus (VRE)
	Methicillin-resistant Staphylococcus aureus (MRSA):
	Escherichia coli (E. coli)
	Multidrug-resistant Pseudomonas aeruginosa
	Drug-resistant Campylobacter
	Klebsiella pneumoniae
	Carbapenem- resistant Acinetobacter (CRAB)
	ESBL-producing Enterobacterales
	Drug-resistant nontyphoidal Salmonella
	Carbapenem-resistant Enterobacterales (CRE)

1 - Kills more people
 2 - Highest death rate as a % of those infected
 3 - Infects more people

Table 2: The Consolidated Target List: the most dangerous bacterial & fungal pathogens

PATHOGEN TYPE	SUB-TYPE	PATHOGEN
BACTERIA		Drug-resistant Streptococcus pneumoniae
		Clostridioides difficile
		Vancomycin-resistant Enterococcus (VRE)
		Methicillin-resistant Staphylococcus aureus MRSA
		Escherichia coli (E. coli)
		Multidrug-resistant Pseudomonas aeruginosa
		Drug-resistant Campylobacter
		Klebsiella pneumoniae
		Carbapenem-resistant Acinetobacter (CRAB)
		ESBL-producing Enterobacterales
		Drug-resistant nontyphoidal Salmonella
		Carbapenem-resistant Enterobacterales (CRE)
FUNGI	NON-SPORE FORMING	Candida albicans
		Candida auris
		Cryptococcus neoformans
		Candida glabrata
		Candida tropicalis
	Candida parapsilosis	
	SPORE FORMING	Aspergillus brasiliensis
		Penicillium chrysogenum

Added to the Table 2 list are dangerous fungal moulds found in damp conditions within our homes which, whilst rarely life threatening, are a worldwide problem and can be extremely debilitating. Their impact upon health is significantly underestimated.

STOPPING THE SPREAD

In contrast to how viruses spread, the US Centers for Disease Control and Prevention (CDC) estimates that over **80% of infectious bacterial and fungal diseases are transferred either directly through touch or use touch as a secondary method of spread.**

The Topography of a Fingerprint



Each person's fingerprint is unique. However, the channels and ridges that are a part of the topography of our fingers and hands serve as excellent carriers of bacteria and fungi.

The Network Multiplier Effect

80% of pathogens are spread through touch and the term 'spill-over effect' is sometimes used in biomedical sciences to describe one person's exposure affecting the outcome of another. Spill-over is the transfer of an infectious pathogen either:

1. Directly from one person to another or
2. Through an intermediary such as a surface where an infected person touches a locus which is then touched by a susceptible third party. This transfer can be affected through medical equipment as well ordinary surfaces such as walls, door handles and handrails.

The paper 'Network multipliers and public health' (VanderWeele et al: Int J Epidemiol. 2019 Aug; 48(4): 1032–1037) clearly states that:

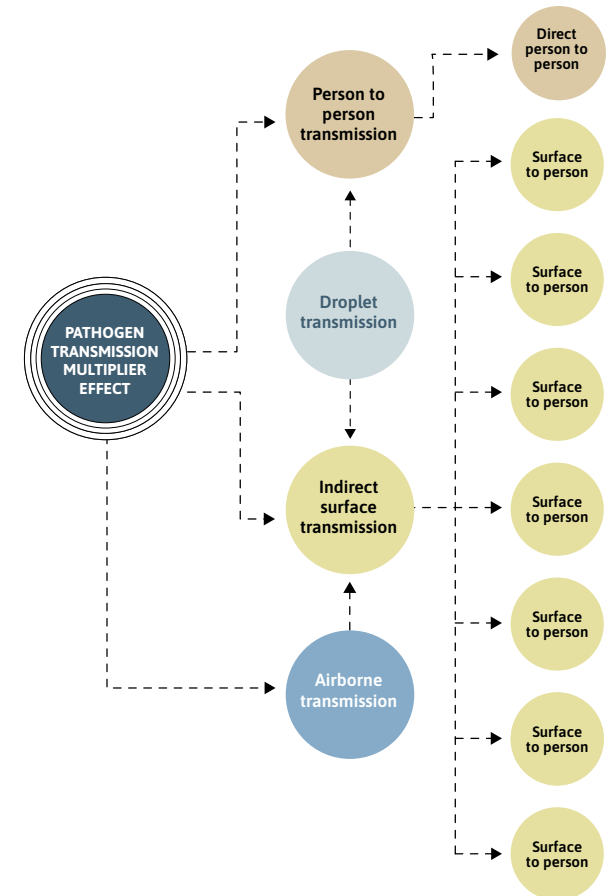
'Spill-over effects and contagion should be taken into account when assessing the public health impact of an intervention and also its cost-effectiveness.'

With direct transmission, the limiting factor in spread is the number of people with whom an infected individual comes into direct contact.

There is no such limitation when it comes to pathogenic transfer through surface transmission.

A person living in a remote outpost is likely to infect only their immediate neighbours but that same person travelling through a city can infect thousands of people whom they will never know personally nor interact.

The impact of surface-to-person transmission of pathogens cannot be overemphasised.



Independent Third-Party Laboratory Test Results

Continuously Active Antibacterial & Antifungal Coatings

STOPPING THE SPREAD

Independent Laboratory Testing & Certification

The efficacy of any antibacterial or antifungal coating can only be assessed by independent laboratory testing. Unsupported claims should be viewed with caution and **The Cynical Specifier's Guide** has been produced to equip a specifier engaged in selecting coatings and finishes with a firm grasp of not only the most threatening pathogens, but also have the knowledge to view coating manufacturer's claims with that cynical eye.

ISO 22196:2021 'Measurement of antibacterial activity on plastics and other non-porous surfaces' is the current international benchmark for testing the efficacy of continuously active antibacterial coatings.

One of its limitations is that only two bacterial pathogens are tested: gram-positive MRSA and gram-negative E. coli. The problem with this approach is that some antibacterial coating manufacturers then make the assumption that a coating that shows efficacy against MRSA and E. coli will be equally effective against the whole range of dangerous bacterial pathogens. More a leap of faith than rational science.

norigin has conducted independent ISO 22196

laboratory testing to confirm the efficacy of its coatings against all of the bacterial pathogens shown in Table 1.

ASTM G21:2021 'Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi is used to determine the resistance of continuously active antifungal coatings. This test is most appropriate for use when the fungi in question are spore-forming.

norigin has conducted independent ASTM G21 laboratory testing to confirm the efficacy of its coatings against the listed fungal pathogens shown in Table 1.

Testing Non-spore Forming Fungi

To be tested using ASTM G21, fungi needs to be spore forming so that they grow/creep over the sample surface. Candida, a yeast, will not do this, but does form countable colonies which make it more suited to ISO 22196 testing. Similarly, Cryptococcus neoformans forms distinct mucoidal colonies on agar,. As the colonies are separate, they can be counted and quantitative methods are generally better for reproducibility and accuracy therefore ISO 22196 is more appropriate.

PATHOGEN TYPE	TEST STANDARD	PATHOGEN
BACTERIA	ISO 22196	Methicillin-resistant Staphylococcus aureus (MRSA)
		Escherichia coli (E. coli)
		Vancomycin-resistant Enterococcus
		Clostridioides difficile
		Multidrug-resistant Pseudomonas aeruginosa
		Drug-resistant Streptococcus pneumoniae
		Drug-resistant Campylobacter
		Klebsiella pneumoniae
		Carbapenem-resistant Acinetobacter (CRAB)
		ESBL-producing Enterobacterales
		Drug-resistant nontyphoidal Salmonella
		Carbapenem-resistant Enterobacterales (CRE)
		FUNGI
Candida auris		
Cryptococcus neoformans		
Candida glabrata		
Candida tropicalis		
Candida parapsilosis		
Aspergillus fumigatus		
Penicillium chrysogenum		

INDEPENDENT LABORATORY TEST RESULTS

AVERT-ALL: Antibacterial & Antifungal

norigin's products have been tested by independent laboratories to show their proven efficacy against the most dangerous antibiotic-resistant and antifungal-resistant pathogens.

A synopsis of the results of this testing programme is shown in the attached Table.

These test results are shown for AVERT-ALL which is a combined Antibacterial & Antifungal Coating product.

No other coatings company in the world has demonstrated the successful elimination of dangerous bacteria and fungi on this scale.

AVERT-ALL TEST RESULTS							
TEST STANDARD	PATHOGEN TYPE	REP. TYPE	PATHOGEN	REDUCTION		TOTAL ELIMINATION*	
				24 HOURS	HOURS	MINUTES	
ISO 22196	BACTERIA		Drug-resistant Streptococcus pneumoniae	≥99.81%	24	3	
			Clostridioides difficile	≥99.44%	24	8	
			Vancomycin-resistant Enterococcus faecium (VRE)	≥99.90%	24	1	
			Methicillin-resistant Staphylococcus aureus MRSA	≥99.87%	24	2	
			Escherichia coli (E. coli)	≥99.89%	24	2	
			Multidrug-resistant Pseudomonas aeruginosa	≥99.89%	24	1	
			Drug-resistant Campylobacter jejuni	99.82%	24	17	
			Klebsiella pneumoniae	≥99.06%	24	14	
			Carbapenem-resistant Acinetobacter (CRAB)	≥99.88%	24	2	
			ESBL-producing Enterobacterales	≥99.17%	24	12	
			Drug-resistant nontyphoidal Salmonella	≥99.89%	24	1	
	Carbapenem-resistant Enterobacterales (CRE)	≥99.44%	24	8			
	FUNGI	NON - SPORE FORMING	Candida albicans	≥99.87%	24	2	
			Candida auris	99.78%	24	3	
			Cryptococcus neoformans	99.03%	24	14	
			Candida glabrata	99.20%	24	11	
			Candida tropicalis	99.74%	24	4	
			Candida parapsilosis	≥99.72%	24	4	
	ASTM G21	FUNGI	SPORE FORMING	Aspergillus brasiliensis	0	Growth Rating After 28 Days	
Penicillium chrysogenum				1			
ASTM G21 GROWTH RATING			0 = NO GROWTH				
			1 = TRACE GROWTH (≤ 10% COVERAGE)				
			2 = LIGHT GROWTH (> 10% ≤ 30% COVERAGE)				
			3 = MODERATE GROWTH (> 30% ≤ 60% COVERAGE)				
			4 = HEAVY GROWTH (>60% COVERAGE)				

*by extrapolation

INDEPENDENT LABORATORY TEST RESULTS

AVERT-AB: Antibacterial ONLY

norigin's products have been tested by independent laboratories to show their proven efficacy against the most dangerous antibiotic-resistant bacterial pathogens.

A synopsis of the results of this testing programme is shown in the attached Table.

These test results are shown for AVERT-AB which is an Antibacterial Only Coating.

No other coatings company in the world has demonstrated the successful elimination of dangerous bacteria on this scale.

AVERT-AB TEST RESULTS						
TEST STANDARD	PATHOGEN TYPE	REP. TYPE	PATHOGEN	REDUCTION	TOTAL ELIMINATION*	
				24 HOURS	HOURS	MINUTES
ISO 22196	BACTERIA		Drug-resistant Streptococcus pneumoniae	≥99.81%	24	3
			Clostridioides difficile	≥99.44%	24	8
			Vancomycin-resistant Enterococcus faecium (VRE)	≥99.90%	24	1
			Methicillin-resistant Staphylococcus aureus MRSA	≥99.87%	24	2
			Escherichia coli (E. coli)	≥99.89%	24	2
			Multidrug-resistant Pseudomonas aeruginosa	≥99.89%	24	1
			Drug-resistant Campylobacter jejuni	99.82%	24	17
			Klebsiella pneumoniae	≥99.06%	24	14
			Carbapenem-resistant Acinetobacter (CRAB)	≥99.88%	24	2
			ESBL-producing Enterobacterales	≥99.17%	24	12
			Drug-resistant nontyphoidal Salmonella	≥99.89%	24	1
Carbapenem-resistant Enterobacterales (CRE)	≥99.44%	24	8			

*by extrapolation

AVERT-AF: Antifungal ONLY

norigin's products have been tested by independent laboratories to show their proven efficacy against the most dangerous anti-fungal resistant fungal pathogens.

A synopsis of the results of this testing programme is shown in the attached Table.

These test results are shown for AVERT-AF which is an Antifungal Only Coating.

No other coatings company in the world has demonstrated the successful elimination of dangerous fungi on this scale.

AVERT-AF TEST RESULTS						
TEST STANDARD	PATHOGEN TYPE	REP. TYPE	PATHOGEN	REDUCTION	TOTAL ELIMINATION*	
				24 HOURS	HOURS	MINUTES
ISO 22196	FUNGI	NON - SPORE FORMING	Candida albicans	≥99.87%	24	2
			Candida auris	99.78%	24	3
			Cryptococcus neoformans	99.03%	24	14
			Candida glabrata	99.20%	24	11
			Candida tropicalis	99.74%	24	4
			Candida parapsilosis	≥99.72%	24	4
ASTM G21	FUNGI	SPORE FORMING	Aspergillus brasiliensis	0	Growth Rating After 28 Days	
			Penicillium chrysogenum	1		
ASTM G21 GROWTH RATING			0 = NO GROWTH			
			1 = TRACE GROWTH (≤ 10% COVERAGE)			
			2 = LIGHT GROWTH (> 10% ≤ 30% COVERAGE)			
			3 = MODERATE GROWTH (> 30% ≤ 60% COVERAGE)			
			4 = HEAVY GROWTH (>60% COVERAGE)			

*by extrapolation

INDEPENDENT LABORATORY TEST RESULTS

DETER-ALL: Antibacterial & Antifungal

norigin's products have been tested by independent laboratories to show their proven efficacy against the most dangerous antibiotic-resistant and antifungal-resistant pathogens

A synopsis of the results of this testing programme is shown in the attached Table.

These test results are shown for DETER-ALL which is a combined Antibacterial & Antifungal Coating product.

No other coatings company in the world has demonstrated the successful elimination of dangerous bacteria and fungi on this scale.

DETER-ALL TEST RESULTS							
TEST STANDARD	PATHOGEN TYPE	REP. TYPE	PATHOGEN	REDUCTION		TOTAL ELIMINATION*	
				24 HOURS	HOURS	MINUTES	
ISO 22196	BACTERIA		Drug-resistant Streptococcus pneumoniae	≥99.44%	24	8	
			Clostridioides difficile	≥99.26%	24	11	
			Vancomycin-resistant Enterococcus faecium (VRE)	≥99.90%	24	1	
			Methicillin-resistant Staphylococcus aureus MRSA	99.36%	24	9	
			Escherichia coli (E. coli)	≥99.89%	24	1	
			Multidrug-resistant Pseudomonas aeruginosa	≥99.89%	24	1	
			Drug-resistant Campylobacter jejuni	99.00%	24	14	
			Klebsiella pneumoniae	≥99.40%	24	9	
			Carbapenem-resistant Acinetobacter (CRAB)	≥99.88%	24	2	
			ESBL-producing Enterobacterales	≥99.28%	24	10	
			Drug-resistant nontyphoidal Salmonella	≥99.89%	24	1	
			Carbapenem-resistant Enterobacterales (CRE)	≥99.89%	24	1	
	FUNGI	NON - SPORE FORMING	Candida albicans	≥99.87%	24	2	
			Candida auris	99.78%	24	3	
			Cryptococcus neoformans	99.84%	24	2	
			Candida glabrata	99.85%	24	2	
			Candida tropicalis	≥99.84%	24	2	
			Candida parapsilosis	≥99.72%	24	4	

*by extrapolation

ASTM G21	FUNGI	SPORE FORMING	Aspergillus brasiliensis	0	Growth Rating After 28 Days
			Penicillium chrysogenum	0	

ASTM G21 GROWTH RATING
0 = NO GROWTH
1 = TRACE GROWTH (≤ 10% COVERAGE)
2 = LIGHT GROWTH (> 10% ≤ 30% COVERAGE)
3 = MODERATE GROWTH (> 30% ≤ 60% COVERAGE)
4 = HEAVY GROWTH (>60% COVERAGE)

INDEPENDENT LABORATORY TEST RESULTS

DETER-AB: Antibacterial ONLY

norigin's products have been tested by independent laboratories to show their proven efficacy against the most dangerous antibiotic-resistant bacterial pathogens.

A synopsis of the results of this testing programme is shown in the attached Table.

These test results are shown for DETER-AB which is an Antibacterial Only Coating.

No other coatings company in the world has demonstrated the successful elimination of dangerous bacteria on this scale.

DETER-AB TEST RESULTS						
TEST STANDARD	PATHOGEN TYPE	REP. TYPE	PATHOGEN	REDUCTION	TOTAL ELIMINATION*	
				24 HOURS	HOURS	MINUTES
ISO 22196	BACTERIA		Drug-resistant Streptococcus pneumoniae	≥99.44%	24	8
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			Vancomycin-resistant Enterococcus faecium (VRE)	≥99.90%	24	1
			Methicillin-resistant Staphylococcus aureus MRSA	99.36%	24	9
			Escherichia coli (E. coli)	≥99.89%	24	1
			Multidrug-resistant Pseudomonas aeruginosa	≥99.89%	24	1
			Drug-resistant Campylobacter jejuni	99.00%	24	14
			Klebsiella pneumoniae	≥99.40%	24	9
			Carbapenem-resistant Acinetobacter (CRAB)	≥99.88%	24	2
			ESBL-producing Enterobacterales	≥99.28%	24	10
			Drug-resistant nontyphoidal Salmonella	≥99.89%	24	1
Carbapenem-resistant Enterobacterales (CRE)	≥99.89%	24	1			

*by extrapolation

DETER-AF: Antifungal ONLY

norigin's products have been tested by independent laboratories to show their proven efficacy against the most dangerous antifungal-resistant fungal pathogens.

A synopsis of the results of this testing programme is shown in the attached Table.

These test results are shown for DETER-AF which is an Antifungal Only Coating.

No other coatings company in the world has demonstrated the successful elimination of dangerous fungi on this scale.

DETER-AF TEST RESULTS						
TEST STANDARD	PATHOGEN TYPE	REP. TYPE	PATHOGEN	REDUCTION	TOTAL ELIMINATION*	
				24 HOURS	HOURS	MINUTES
ISO 22196	FUNGI	NON - SPORE FORMING	Candida albicans	≥99.87%	24	2
			Candida auris	99.78%	24	3
			Cryptococcus neoformans	99.84%	24	2
			Candida glabrata	99.85%	24	2
			Candida tropicalis	≥99.84%	24	2
			Candida parapsilosis	≥99.72%	24	4
ASTM G21	FUNGI	SPORE FORMING	Aspergillus brasiliensis	0	Growth Rating After 28 Days	
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ASTM G21 GROWTH RATING			0 = NO GROWTH			
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*by extrapolation

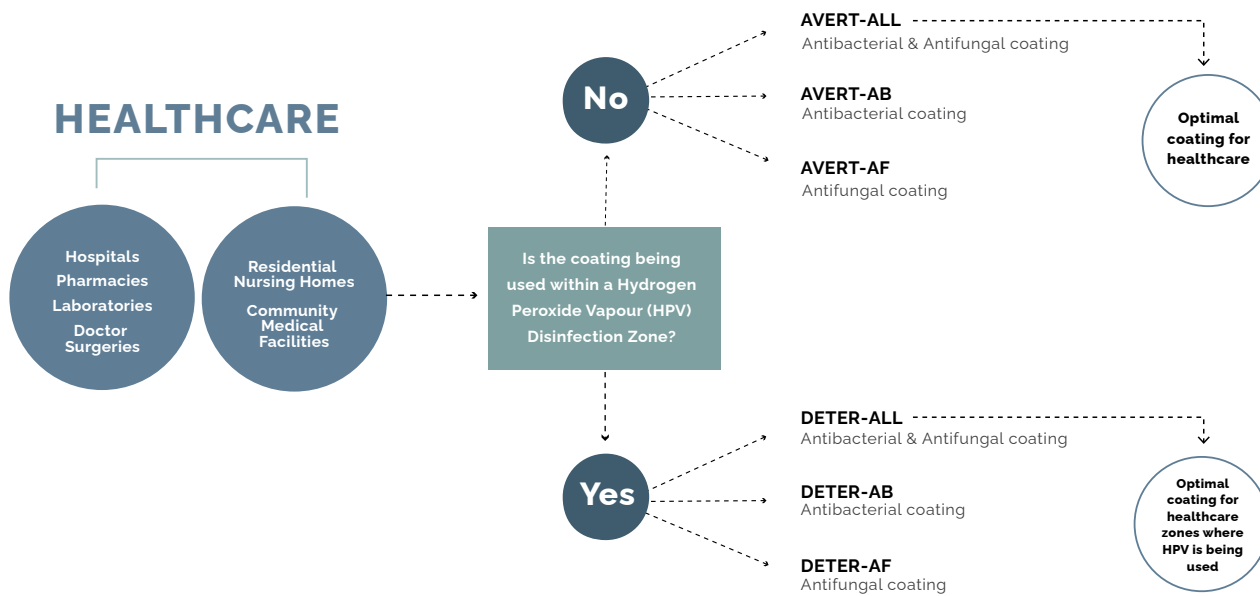
Continuously Active Antibacterial & Antifungal Coatings

THE SPECIFIER'S DECISION TREE

norigin Antibacterial and Antifungal coatings are available in three forms; respectively:

- **Coatings with proven efficacy against both bacterial and fungal pathogens**
- **Coatings with proven efficacy against bacterial pathogens only**
- **Coatings with proven efficacy against fungal pathogens only**

It is strongly recommended that healthcare facilities use coatings that have proven antibacterial and antifungal efficacy; therefore only the AVERT-ALL and DETER- ALL ranges should be considered. This is only a recommendation and the specifier may elect to use coatings which are only offer antibacterial or antifungal efficacy and not both.



Continuously Active
Antibacterial &
Antifungal Coatings in

Healthcare Zones

HOSPITALS

This guide is intended to aid the specifier in selecting the correct Antibacterial and/or Antifungal coating for representative areas within a hospital. It is strongly recommended that healthcare facilities use coatings that have proven antibacterial and antifungal efficacy; therefore only the AVERT-ALL and DETER-ALL ranges should be considered. This is only a recommendation and the specifier may elect to use coatings which only offer antibacterial or antifungal efficacy and not both.

Areas where increased levels of impact and abrasion are anticipated or where wall finishes are cracked or friable the specifier should consider having the wall reinforced with a layer of unwoven fibreglass (30gm/m², 50gm/m² or in instances with substantial damage 100gm/m²) prior to the application of the selected coating. Please contact **norigin's** Technical Department for assistance if required.

In sectors where hydrogen peroxide vapour (HPV) may be deployed as a disinfectant then DETER-ALL which is fully, independently tested and

approved as resistant to HPV should be employed. Helping the specifier to select the correct Antibacterial and/or Antifungal coating for representative areas within a hospital is vital and, along with **the Cynical Specifier's Guide**, this Product Selection Guide aims to provide adequate support in making these critical decisions.

We recognise that what are shown are simplistic zonal representations and may not correlate with actuality. Additionally, there are other zones outside the ones listed and our technical department is always pleased to help and advise. Similarly, hospitals in differing parts of the world will encounter infection problems with differing groups of pathogens. In conjunction with hospitals, our R&D department is keen to try to develop and test countermeasures to a wide array of specific bacterial and fungal pathogens that are of concern.

PRODUCT SELECTION GUIDE

Zone	Product Reference	AVERT-ALL	DETER-ALL
A	Operating theatres		✓
B	Scrub rooms		✓
C	Pre-operating area		✓
D	Post-operating recovery area		✓
E	Pathology department - clean rooms & laboratories		✓
F	X-ray area		✓
G	Intensive care & isolation wards		✓
H	Intermediate care wards		✓
I	Clean corridors		✓
J	Central sterile supply stores		✓
K	Accident & emergency zones		✓
L	Public access & circulation areas - entrance, waiting, reception, corridors	✓	
M	General wards	✓	
N	Accident & emergency entrance & waiting areas		✓
O	General corridors and access areas	✓	
P	Lifts & stairways		✓
Q	Non-sterile supplies & equipment	✓	
R	Autopsy		✓
S	Mortuary		✓
T	Hospital laundry. Clean utility / Dirty utility		✓
U	Plant rooms, Back of House & delivery zones		✓
W	Bathrooms & toilet areas	✓	
Other Areas	Consulting Rooms	✓	
	Hospital management areas	✓	
	Medical records department	✓	
	Kitchens - live steam/steam cleaning		✓
	Kitchens - indirect steam	✓	
	Canteens	✓	
	Bathrooms		✓
	General store rooms/linen store	✓	

HOSPITALS



RESIDENTIAL NURSING & CARE HOMES

Nursing and care homes house some of the most vulnerable people in an often confined environment limited by mobility. Their safety and wellbeing is paramount and the impact of pathogenic spread through touch affects not only those who are residents but also the many devoted staff we all rely upon to deliver that healthcare.

This guide is intended to aid the specifier in selecting the correct Antibacterial and/or Antifungal coating for representative areas within residential, nursing and care home environments. Helping the specifier to select the correct Antibacterial and/or Antifungal coating for representative areas within nursing and care homes is vital and this Product Selection Guide aims to provide adequate support in making these critical decisions. Please contact **norigin's** Technical Department for assistance if required.

Areas where increased levels of impact and abrasion are anticipated or where wall finishes are cracked or friable the specifier should consider having the wall reinforced with a layer of

unwoven fibreglass (30gm/m², 50gm/m² or in instances with substantial damage 100gm/m²) prior to the application of the selected coating.

We recognise that what are shown are simplistic zonal representations and may not correlate with actuality. Additionally, there are other zones outside the ones listed and our technical department is always pleased to help and advise.

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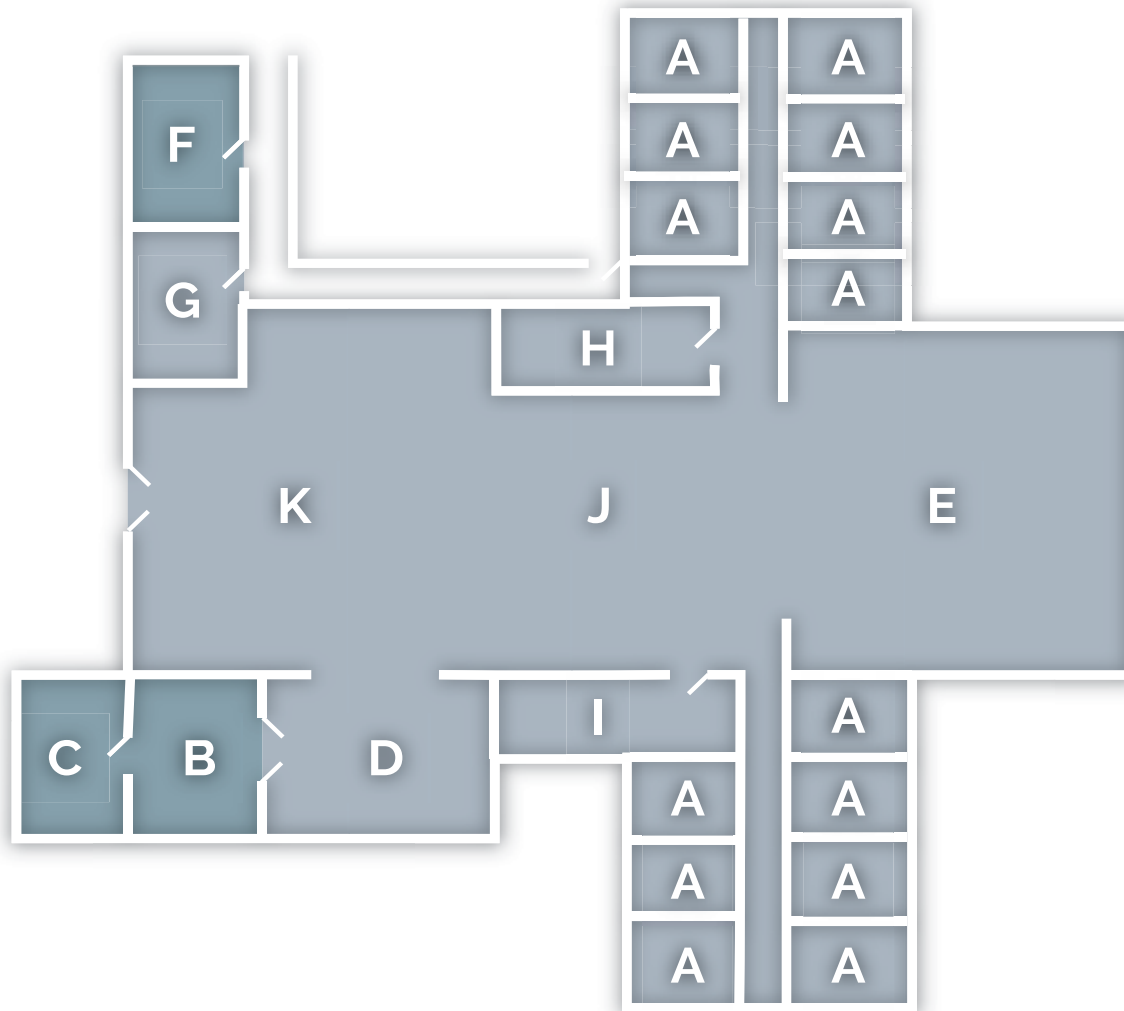
In conjunction with hospitals and the care community, our R&D department is keen to try to develop and test countermeasures to a wide array of specific bacterial and fungal infections that are of concern.

PRODUCT SELECTION GUIDE

Zone	Product Reference	AVERT-ALL	DETER-ALL
A	Resident bedrooms & bathrooms	✓	
B	Reception area		✓
C	Kitchen store		✓
D	Dining area	✓	
E	Resident lounges	✓	
F	Soiled laundry		✓
G	General laundry	✓	
H	Cleaning equipment & storage	✓	
I	Administration	✓	
J	Circulation & community areas	✓	
K	Entrance & reception areas	✓	

RESIDENTIAL NURSING & CARE HOMES

AVERT-ALL DETER-ALL



COMMUNITY MEDICAL FACILITIES

Community medical facilities are often the front line in the battle against highly infectious pathogens. They are the first port of call for people when they feel ill and they can represent a transmission point for the passage of pathogens into the general community.

Community care facilities include individual doctor's surgeries and pharmacies as well as larger health centres. These facilities are staffed by medical professionals for whom acquiring an infection is a daily hazard. The World Health Organisation estimates that up to 180,000 healthcare workers died from COVID-19 in the period between January 2020 to May 2021. This excludes medical staff who contracted pathogens exhibiting antibiotic and antifungal resistance.

Helping the specifier to select the correct Anti-bacterial and/or Antifungal for representative areas within nursing and community medical facilities is vital and this Product Selection Guide aims to provide adequate support in making these critical decisions.

Areas where increased levels of impact and abrasion are anticipated or where wall finishes are cracked or friable the specifier should consider having the wall reinforced with a layer of unwoven fibreglass (30gm/m², 50gm/m² or in instances with substantial damage 100gm/m²) prior to the application of the selected coating. Please contact **norigin's** Technical Department for assistance if required.

We recognise that what are shown are simplistic zonal representations and may not correlate with actuality. Additionally, there are other zones outside the ones listed and our technical department is always pleased to help and advise. Similarly, community medical facilities in differing parts of the world will encounter infection problems with differing groups of pathogens.

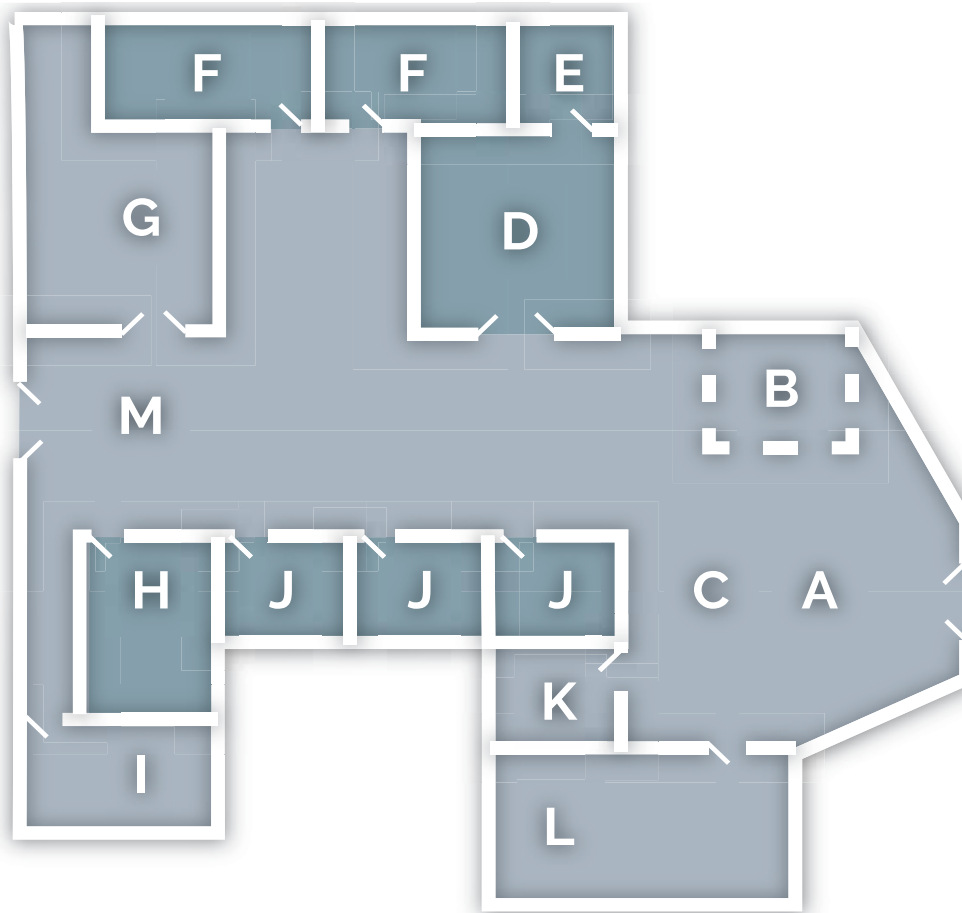
In conjunction with the medical community, our R&D department is keen to try to develop and test countermeasures to a wide array of specific bacterial and fungal infections that are of concern.

PRODUCT SELECTION GUIDE

Zone	Product Reference	AVERT-ALL	DETER-ALL
A	Resident bedrooms & bathrooms	✓	
B	Reception area		✓
C	Kitchen store		✓
D	Dining area	✓	
E	Resident lounges	✓	
F	Soiled laundry		✓
G	General laundry	✓	
H	Cleaning equipment & storage	✓	
I	Administration	✓	
J	Circulation & community areas	✓	
K	Entrance & reception areas	✓	

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Continuously Active
Antibacterial and Antifungal
Wall & Ceiling Coatings