clinell®

Peracetic Acid Wipes

Proven protection against high risk and hard-to-kill organisms

Disrupts every layer of microbial defence

Dry surface biofilms

Why are some outbreaks so difficult to resolve?

Dry surface biofilms may be the answer.[1]

Biofilms offer an invisible layer of protection to a mixed community of microorganisms. Where biofilms have formed, traditional disinfections don't work[2].

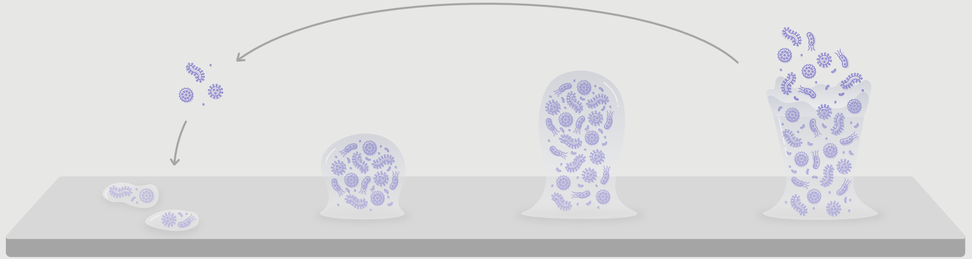
Traditional disinfectants can kill free-floating bacteria and viruses but can't penetrate the biofilm matrix. Despite diligent disinfection, where dry surface biofilms have formed, pathogens are able to recover quickly and continue the outbreak. 95% of terminally cleaned equipment can harbour dry surface biofilms[3].

1 Vickery et al. *J Hosp Infect.* Jan 2012;80(1):52-55.
2 Ledwoch & Maillard. *Materials (Basel).* Dec 21 2018;12(1).
3 Ledwoch et al. *J Hosp Infect.* Nov 2018;100(3):e47-e56.
4 Ledwoch et al. *Lett Appl Microbiol.* Apr 2019;68(4):329-336.
5 Siani et al. *Am J Infect Control.* Apr 2011;39(3):212-218.

1 Biofilms provide protection to communities of microorganisms.

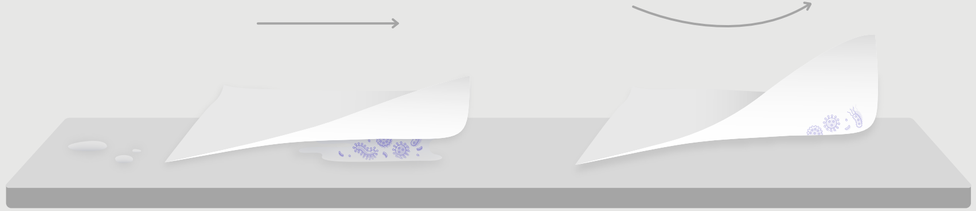
2 Traditional disinfectants kill free-floating pathogens but can't penetrate the biofilm matrix. Micro-organisms within the biofilm survive.

3 The biofilm recovers and seeds pathogens back into the environment. The outbreak persists.



Powerful oxidative action of Clinell Peracetic Acid Wipes

- Kill >100,000x more viable organisms than chlorine-dioxide against dry biofilms[2,4]
- Prevent transference to other surfaces[2,5]



Clinell Peracetic Acid Wipes use a patented formulation to breakdown the biofilm matrix itself and kill the microorganisms sheltering inside[2]

Clinell Peracetic Acid Wipes

Ultimate disinfection.

Clinell Peracetic Acid Wipes use patented technology to offer unbeatable protection against persistent outbreaks, high-risk organisms and dry surface biofilms

As microbial resistance increases, infection prevention becomes even more important. Continuing threats, such as multi-drug resistant Gram-negatives, and emerging organisms like *Candida auris* put patients at risk and can be incredibly difficult to remove.

For over 15 years, GAMA Healthcare has been developing and manufacturing infection prevention solutions to healthcare facilities across the globe. We drive scientific innovation in microbiology, formulation chemistry and product design.

Clinell Peracetic Acid Wipes are a high-performance disinfectant, more effective than chlorine against hard-to-kill organisms, spores and biofilms. They perfectly complement an everyday disinfectant such as Clinell Universal Wipes.

Fully bactericidal, fungicidal and sporicidal

- More effective than chlorine[6]
- Eradicates dry surface biofilms
- Effective from 10 seconds
- No pre-cleaning required[7]
- Gentle on surfaces

6 Doan et al. *J Hosp Infect.* Oct 2012;82(2):114-121.
7 Humphreys et al. *J Infect Prev.* 2013;14(4):126-131.

Microorganisms

Because of their non-specific, oxidative action, Clinell Peracetic Acid Wipes overcome traditional methods of microbial resistance.

Depending on their structure, different types of microorganisms exhibit varying tolerance to disinfectants. Many traditional disinfectants act by disrupting viral envelopes or bacterial cell walls. These disinfectants can be very effective against easier-to-kill organisms such as enveloped viruses or Gram-positive bacteria. Unfortunately, that makes them ineffective against harder-to-kill organism types such as small, non-enveloped viruses and bacterial spores.

8 McDonnell & Russell. *Clin Microbiol Rev.* Jan 1999;12(1):147-179.

Unbeatable efficacy

Clinell Peracetic Acid Wipes are effective against otherwise hard-to-kill organisms

HIGH

MID

LOW

TOLERANCE TO DISINFECTANTS	ORGANISM EXAMPLE	TEST
Biofilms	Dry surface biofilm	Modified ASTM E2967-15[2]
Bacterial spores	*Bacillus subtilis* *Clostridioides difficile*	EN17126 EN17126
Mycobacteria	*Mycobacterium avium* *Mycobacterium terrae*	EN14348 EN14348
Small, non-enveloped viruses	*Canine parvovirus* *Poliovirus*	EN14675 EN14476
Fungal spores	*Aspergillus brasiliensis*	EN13624
Gram-negative bacteria	*Acinetobacter baumannii* *Escherichia coli (E. coli)* *Klebsiella pneumoniae* (ESBL) *Pseudomonas aeruginosa*	EN13727 EN13727 EN13727 EN16615 EN13727
Yeast	*Candida auris* *Candida albicans*	EN13624 EN13624
Large, non-enveloped viruses	*Adenovirus* *Norovirus*	EN14476 EN14476
Gram-positive bacteria	*Staphylococcus aureus* *Enterococcus faecalis* *Enterococcus hirae*	EN16615 EN13727 EN16615 EN13727 EN16615 EN13727
Enveloped viruses	Vaccina virus	EN14476

Typical tolerance of microorganism types to disinfectants, adapted from McDonnell and Russell[8]

Clinical evidence

Proven protection from hard-to-kill organisms

Clinell Peracetic Acid Wipes are proven to offer better protection against hard-to-kill and difficult-to-remove organisms than chlorine disinfectants[6,9]

Over 4 million people in Europe acquire an HCAI every year[10]

In the USA, 1 in every 31 hospital patients, and 1 in 43 nursing home patients, has an HCAI.[11]

In the UK, HCAIs cost the NHS £2.7 billion per year[12]

Reduced bioburden: double-crossover study

Siani et al. American Journal of Infection Control. 2018;46(10).

Greater environmental bioburden – the more viable microorganisms in our environment – the greater the risk of healthcare-associated infections spreading[13].

In this double-crossover study[9], the authors compared wards using Clinell Peracetic Acid Wipes (then known as 'Clinell Sporicidal Wipes') to wards using hypochlorite solution in a 1,000-bed teaching hospital. They took 1,566 environmental samples over 29 weeks. Part-way through the study, the wards swapped the products they were using – controlling for differing cleaning standards across wards.

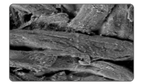
Using Clinell Peracetic Acid Wipes significantly reduced the environmental bioburden. There were significant reductions in the number of aerobic bacteria (P<0.001), anaerobic bacteria (P<0.001) and ATP measurement (P<0.001). When the wards returned to using chlorine-based disinfectants, the number of sites testing positive for multi-drug resistant organisms began to rise again.

Unbeaten efficacy against bacterial spores

Siani et al. American Journal of Infection Control. 2011;39(3). Doan et al. Journal of Hospital Infection. 2012;82(2).

Bacterial spores are one of the most difficult types of microorganisms to kill. They are incredibly resistant to heat, drying and chemical disinfection. *C. difficile* is one of the most clinically relevant spore-forming species. Both studies assessed multiple disinfectants against *C. difficile* spores.

In both studies, Clinell Peracetic Acid Wipes were the top-performing wipe[5,6]. Clinell Peracetic Acid Wipes killed a higher percentage of spores than any other wipe[5], they removed *C. difficile* spores from more sample sites than any other wipe[6] and they were the only wipe not to transfer *C. difficile* spores from one surface to another[5].



C. difficile spores trapped in the fibres of a Clinell Peracetic Acid Wipe. The patented construction prevents transference to other surfaces. Adapted from Siani et al[5]

Clinically proven protection for patients

Carter & Barry. Nursing Times. 2011;107(36).

Clinell Peracetic Acid Wipes aren't just proven effective in a lab, they're shown to reduce the risk of *C. difficile* infection by 72%[14]. By introducing Clinell Peracetic Acid Wipes into a London teaching hospital, and replacing chlorine-based disinfection methods, the authors found a dramatic reduction in their infection rates,calculated to save them £660,000 per year.

5 Siani et al. *Am J Infect Control.* Apr 2011;39(3):212-218.
6 Doan et al. *J Hosp Infect.* Oct 2012;82(2):114-121.
7 Humphreys et al. *J Infect Prev.* 2013;14(4):126-131.
9 Siani et al. *Am J Infect Control.* Oct 2018;46(10):1180-1187.
10 Suetens et al. *Euro Surveill.* Nov 2018;23(46).
11 Centers for Disease Control. Healthcare Associated Infections: Data Portal. https://www.cdc.gov/hai/data/portal/index.html. Accessed 02 July 2021, 2021.
12 Guest et al. *BMJ Open.* Jan 22 2020;10(1):e033367.
13 Otter et al. *Infect Control Hosp Epidemiol.* Jul 2011;32(7):687-699.
14 Carter & Barry. *Nurs Times.* Sep 13-19 2011;107(36):22-25.

Using Clinell Peracetic Acid Wipes significantly reduced the environmental bioburden[9]

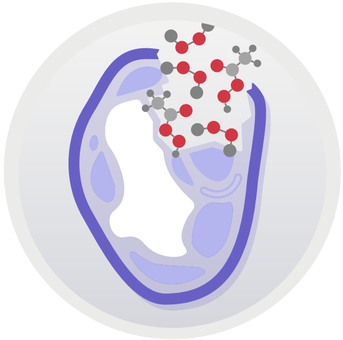
Intracellular/ Intraviral

Disrupts every layer of microbial defence.

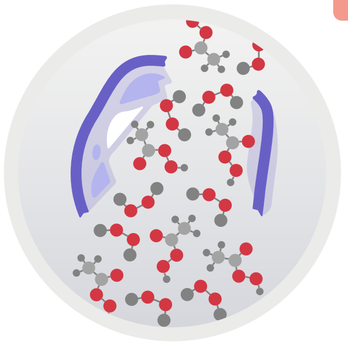
The combination of peracetic acid and hydrogen peroxide helps break through spore coats, cell membranes and viral capsids. Once there, they act on the machinery the microorganisms need to function.

Clinell Peracetic Acid Wipes have a non-specific, oxidative action. They release peracetic acid and hydrogen peroxide synergistically to wipe out even hard-to-kill organisms.

Clinell Peracetic Acid Wipes work at a cellular level



PAA and H_2O_2 disrupt the cell membrane or viral capsid



Once inside, they destroy microbial structure and genetic material

Patented technology

Unique dual-layer construction.

Clinell Peracetic Acid Wipes pack over 15 years of infection prevention expertise into a patented dual-layer wipe. The pre-active substances are laid between the layers. Once the wipe is exposed to water, it triggers a reaction in the wipe, generating a unique blend of oxidative disinfectants that tackle high-risk and hard to kill organisms.

Cleans and disinfects

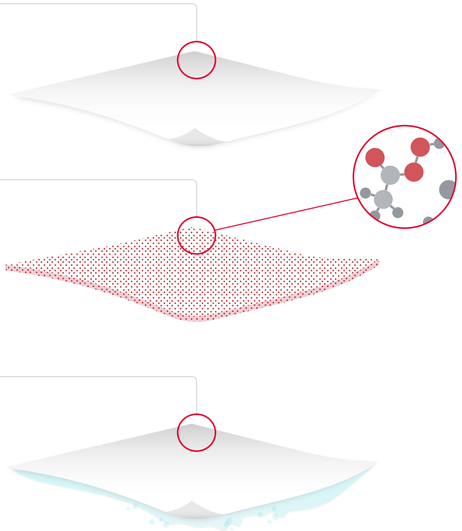
Our unique dual-layer construction traps microorganisms, whilst added detergents make sure Clinell Peracetic Acid Wipes are just as effective in dirty conditions.

Gentle on surfaces

By combining the action of peracetic acid and hydrogen peroxide, we're able to achieve unbeatable disinfectant efficacy at near neutral pH. That means, unlike other peracetic acid-based products, Clinell Peracetic Acid Wipes are kind to surfaces.

5x the surface coverage

Thanks to our unique construction, every wipe goes further. In fact, each single Clinell Peracetic Acid Wipe delivers surface coverage equivalent to 5 standard disinfectant wipes. Helping reduce wasted wipes, time and money.



Complete protection

The advantages of wipes.

Surface hygiene is a cornerstone of infection prevention. We need to make sure the products we use are proven in the real world.

Clinell Peracetic Acid Wipes are designed by infection prevention specialists — a collaboration between formulation chemists, microbiologists and clinicians. They offer important real-world advantages.

Improving practice

Traditional, chlorine solutions are often subject to low compliance and user error. Chlorine is inactivated by organic matter. That means surfaces must be pre-cleaned before they can be disinfected with chlorine. In the real world, this extra step results in poor compliance and low disinfectant efficacy.

Repeated real-world studies show that replacing chlorine solutions with Clinell Universal and Clinell Peracetic Acid Wipes results in cleaner surfaces[15], fewer pathogens in our environment[6,9] and reduced spread of healthcare-associated pathogens[14,16].

Gentle on surfaces

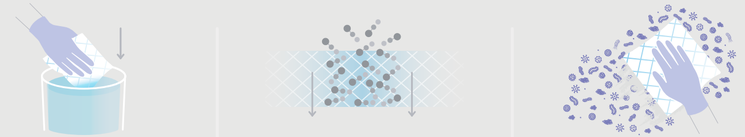
Thanks to their unique formulation, Clinell Peracetic Acid Wipes are tough on microorganisms but gentle on surfaces. We work with medical device manufacturers to produce robust compatibility data, testing to make sure Clinell Peracetic Acid Wipes don't cause environmental stress cracking, colour damage or residue build up. Meaning you don't have to compromise between patient safety and the longevity of your equipment.

6 Doan et al. *J Hosp Infect.* Oct 2012;82(2):114-121.
9 Siani et al. *Am J Infect Control.* Oct 2018;46(10):1180-1187.
14 Carter & Barry. *Nurs Times.* Sep 13-19 2011;107(36):22-25.
15 Martin et al. *Open Forum Infect Dis.* 2018;5(S1):S346.
16 Garvey et al. *Antimicrob Resist Infect Control.* 2018;7:155.
17 Bloss et al. *J Hosp Infect.* May 2010;75(1):56-61.

Effective dose every time

Dry wipe and solution

Some wipe materials can trap the active ingredients of a disinfectant[17].



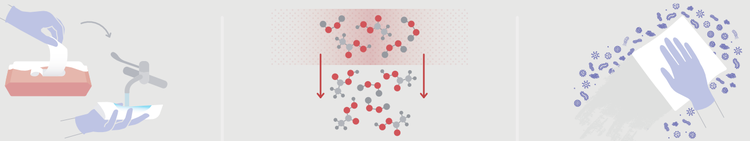
1 Dry wipe and disinfectant solution.

2 Active ingredients are trapped in the dry wipe.

3 Ineffective against microorganisms.

Clinell Peracetic Acid Wipe

Clinell Peracetic Acid Wipes are formulated and tested to make sure the wipe material delivers an effective dose every time.



1 Clinell Peracetic Acid Wipes are activated by water.

2 Wipe material and disinfectants formulated to deliver an active dose.

3 Effective against hard-to-kill microorganisms.

Product comparison

Infection, prevention, innovation.

The Clinell product range is the gold-standard in environmental hygiene. Together they offer a complete solution for everyday decontamination, terminal cleaning and outbreak response.

Clinell products help healthcare organisations achieve real results. Introducing Clinell Universal Wipes resulted in a 55% reduction in MRSA acquisition[16], Clinell Peracetic Acid Wipes produced a 72% reduction in *C. difficile* infections[14] and Clinell Violet provides protection from MDROs 5x faster than other UV devices[18].

14. Carter & Barry. *Nurs Times*. Sep 13-19 2011;107(36):22-25.
16. Garvey et al. *Antimicrob Resist Infect Control*. 2018;7:155.
18. Rutala et al. *Infect Control Hosp Epidemiol*. Aug 2014;35(8):1070-1072.

Key features	 **Clinell Universal Wipes**	 **Clinell Peracetic Acid Wipes**	 **Clinell Violet UV-C Room Sanitiser**
	Everyday cleaning and disinfection	**High-level cleaning and disinfection**	**Powerful UV-C room disinfection**
	Trusted by 9 out of 10 NHS hospitals. Effective against the most common causes of healthcare-associated infections	The most powerful wipe in the world. Using patented technology to eradicate hard-to-kill organisms and dry surface biofilms	5x faster than competing UV devices[18]. Clinell Violet adds an extra layer of protection to terminal cleaning without increasing turnaround time
Ideal for daily disinfection	✓		
Ideal for outbreaks, high risk and hard-to-kill organisms		✓	✓
Powerful cleaning action	✓	✓	
Effective in dirty conditions	✓	✓	✓
Clinically proven to reduce Multi-Drug Resistant organisms	✓	✓	✓
Kills 99.999% of bacteria	✓	✓	✓
Kills 99.99% of viruses	✓	✓	✓
Kills 99.99% of fungi		✓	
Kills 99.99% of yeast	✓	✓	✓
Kills 99.99% of bacterial spores		✓	✓
Effective against dry surface biofilms		✓	

Brought to you by GAMA Healthcare

Unbeatable support.

Clinell products are developed and manufactured by GAMA Healthcare. Founded in 2004 by two NHS doctors, GAMA Healthcare is at the forefront of infection prevention technology, driving scientific innovation in surface disinfection, skin hygiene and patient isolation products

Product offering

Complete protection

Practice makes perfect. That's why we provide market-leading clinical training, digital tools and award-winning aftersales support. Our team of specialist IPC Nurse Trainers and Clinical Educators provide on-wards, bespoke training to NHS Trusts and healthcare organisations. They've been shown to significantly improve staff capability (P<0.0001) and significantly reduce the time taken to clean (P<0.0001)[19]. Switching to Clinell Universal Wipes (complete with support from our IPC Nurse Trainers) helped a UK teaching hospital reduce their rate of MRSA acquisition by 55%[16].

gama healthcare

Order info

Peracetic Acid Wipes
25 wipes per pack

Product code: CS25
NHS code: VJT113

Wipes Dispenser
Single unit

Product code: CS25D

Complete protection

Universal Wipes
200 wipes per pack

Product code: CW200
NHS code: VJT118

Violet UVC Machine
1 machine unit

Product code: CUV360

To find out more, speak to your GAMA Healthcare Area Manager or visit www.gamahealthcare.com

100% of staff felt training would improve their practice.

A total of **182** training days.

Trained over **32,000** staff.

96% of staff agree training would make a difference to what they do in the future.

98% of staff we surveyed said: "Training will make things safer for patients"

References

1 Vickery K, Deva A, Jacombs A, Allan J, Valente P, Gosbell IB. Presence of biofilm containing viable multiresistant organisms despite terminal cleaning on clinical surfaces in an intensive care unit. *J Hosp Infect.* Jan 2012;80(1):52-55.
2 Ledwoch K, Maillard JY. Candida auris Dry Surface Biofilm (DSB) for Disinfectant Efficacy Testing. *Materials (Basel).* Dec 21 2018;12(1).
3 Ledwoch K, Dancer SJ, Otter JA, et al. Beware biofilm! Dry biofilms containing bacterial pathogens on multiple healthcare surfaces; a multi-centre study. *J Hosp Infect.* Nov 2018;100(3):e47-e56.
4 Ledwoch K, Said J, Norville P, Maillard JY. Artificial dry surface biofilm models for testing the efficacy of cleaning and disinfection. *Lett Appl Microbiol.* Apr 2019;68(4):329-336.
5 Siani H, Cooper C, Maillard JY. Efficacy of "sporicidal" wipes against Clostridium difficile. *Am J Infect Control.* Apr 2011;39(3):212-218.
6 Doan L, Forrest H, Fakis A, Craig J, Claxton L, Khare M. Clinical and cost effectiveness of eight disinfection methods for terminal disinfection of hospital isolation rooms contaminated with Clostridium difficile 027. *J Hosp Infect.* Oct 2012;82(2):114-121.
7 Humphreys PN, Finan P, Rout S, et al. A systematic evaluation of a peracetic-acid-based high performance disinfectant. *Journal of Infection Prevention.* 2013;14(4):126-131.
8 McDonnell G, Russell AD. Antiseptics and disinfectants: activity, action, and resistance. *Clin Microbiol Rev.* Jan 1999;12(1):147-179.
9 Siani H, Wesgate R, Maillard JY. Impact of antimicrobial wipes compared with hypochlorite solution on environmental surface contamination in a health care setting: A double-crossover study. *Am J Infect Control.* Oct 2018;46(10):1180-1187.
10 Suetens C, Latour K, Karki T, et al. Prevalence of healthcare-associated infections, estimated incidence and composite antimicrobial resistance index in acute care hospitals and long-term care facilities: results from two European point prevalence surveys, 2016 to 2017. *Euro Surveill.* Nov 2018;23(46).
11 Centers for Disease Control. Healthcare Associated Infections: Data Portal. https://www.cdc.gov/hai/data/portal/index.html. Accessed 02 July 2021, 2021.
12 Guest JF, Keating T, Gould D, Wigglesworth N. Modelling the annual NHS costs and outcomes attributable to healthcare-associated infections in England. *BMJ Open.* Jan 22 2020;10(1):e033367.
13 Otter JA, Yezli S, French GL. The role played by contaminated surfaces in the transmission of nosocomial pathogens. *Infect Control Hosp Epidemiol.* Jul 2011;32(7):687-699.
14 Carter Y, Barry D. Tackling C difficile with environmental cleaning. *Nurs Times.* Sep 13-19 2011;107(36):22-25.
15 Martin ET, Dadon M, Lazarovitch T, et al. Cleaning High Touch Surfaces of Patients' Rooms: Make It Easier, and It Simply Gets Cleaner. *Open Forum Infect Dis.* 2018;5(Suppl 1):S346.
16 Garvey MI, Wilkinson MAC, Bradley CW, Holden KL, Holden E. Wiping out MRSA: effect of introducing a universal disinfection wipe in a large UK teaching hospital. *Antimicrob Resist Infect Control.* 2018;7:155.
17 Bloss R, Meyer S, Kampf G. Adsorption of active ingredients of surface disinfectants depends on the type of fabric used for surface treatment. *J Hosp Infect.* May 2010;75(1):56-61.
18 Rutala WA, Gergen MF, Tande BM, Weber DJ. Room decontamination using an ultraviolet-C device with short ultraviolet exposure time. *Infect Control Hosp Epidemiol.* Aug 2014;35(8):1070-1072.
19 Shepherd E, Leitch A, Curran E, Infection Prevention and Control Team NHS Lanarkshire. A quality improvement project to standardise decontamination procedures in a single NHS board in Scotland. *J Infect Prev.* Nov 2020;21(6):241-246.

GAMA Healthcare Ltd.,
The Maylands Building, Maylands Avenue,
Hemel Hempstead, HP2 7TG, UK.

T: +44 (0)20 7993 0030
E: info@gamahealthcare.com
www.gamahealthcare.com

JBN210495