Hypochlorous acid

Hypochlorous Acid (HOCl) has a broad biocidal effect on numerous pathogens. The following table shows an in vitro log of the kill rate for HOCl against bacteria, viruses, fungi, spores, eukaryotes and biofilms.

In vitro* log kill per minute for HOCl** **Kill rate = $\log_{10}$CFU ml^{-1} reduction per minute

Aerobic/faculative bacteria	Log kill rate
Acinetobacter spp.	10.0
Aeromonas liquefaciens	13.8
Alcaligenes faecalis	13.6
Bacillus subtilis	1.7
Bacillus cereus	2.3-5.9
Burkholderia cepacia	34.5
Citrobacter freundii	13.3
Campylobacter jejuni	44.9
Escherichia coli	1.7-16.0
Enterobacter aerogenes	10.0
Enterococcus spp.	3.5-15.4
VRE	3.5-10.0
Flavobacter spp.	14.2
Haemophilus influenzae	>10.0
Helicobacter pylori	3.50
Lactobacillus spp	4.4-5.0
Legionella pneumophila	8.0
Listeria monocytogenes	1.3-16.3
Klebsiella spp.	10.0
Micrococcus luteus	10.0
Mycobacterium spp.	3.5-5.1
Proteus spp.	10.0
Pseudomonas aeruginosa	8.0-16.0
Salmonella spp.	5.2-16.0
Serratia marcescens	10.0
Staphylococcus spp.	3.9-16.0
MRSA	13.4
MRSE	3.2
Stentotrophomonas maltophilia	2.0
Streptococcus spp.	3.8-5.0

Biofilms 24h	Log kill rate
Staphylococcus aureus	6.0
Pseudomonas aeruginosa	6.0
Candida albicans	6.0

Eukaryotes	Log kill rate
Aspergillus spp.	5.25
Candida spp.	3.5-16.0

Viruses	Log kill rate
FCV 2280	4.0
Flu A H1N1	2.0
Flu A H5N1	6.0
Flu A H9N2	6.0
Flu A H3N1	2.0
HIV 1	8.0
HSV 1	2.0
HSV 2	3.0
Norovirus	3.0
Polio 1	6.0
Rhino A1	2.0
RSV	6.0
WNV	3.0

Anaerobic bacteria	Log kill rate
Actinomyces spp.	2.9
Bifidobacterium bifidum	5.0
Bacteroides fragilis	10.0
Clostridium difficile	5.9
Eubacterium lentum	3.0
Fusobacterium nucleatum	2.9
Peptococcus niger	4.2
Peptostreptococcus anaerobius	4.1
Prevotella melaninogenica	5.8
Porphyromonas spp.	3.5
Prevotella loeschii	5.5
Propionibacterium acnes	4.6
Veillonella parvula	4.7

Bacterial Spores	Log kill rate
Bacillus anthracis	0.2
Bacillus atrophaeus	0.4-2.0
Bacillus cereus	1.32-6.98
Bacillus subtilis	1.0-15.0
Clostridium difficile	2.0
Clostridium perfringens	0.04

*Log reduction is a mathematical term used to show the relative number of live microbes eliminated from a surface by disinfecting. For example, a “5-log reduction” means lowering the number of microorganisms by 100,000-fold, that is, if a surface has 100,000 pathogenic microbes on it, a 5-log reduction would reduce the number of microorganisms to one.