



# HYDRO CARE®

HARD SURFACE DISINFECTANT



01008559586



4 Elnasr st. ,Nacr City,Cairo



info@Medical-Home.org



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## 1. INTRODUCTION

HYDRO-CARE® has been developed over the last twenty years . It is a process that offers the possibility of a Quaternary Ammonium Compounds that merged with ADBAC ( alkyldimethylbenzylammonium chloride ) , an element that is safe for humans and the environment . The result : a long products that have emerged there from are considered by many as trail blazing alternatives to all other disinfectants

A quaternary ammonium chloride (no rinse sanitizer) is used for three compartments: sinks, food contact surfaces and precious metals ( safe and soft for silver and gold) .It is green blue in colour with bland scent.





### SOME APPLICATION AREAS FOR HYDRO-CARE®

- \* Food and catering industry.
- \* Drinking water industry.
- \* Water treatment.
- \* Agro-industry.
- \* Beverage industry (wineries, soft-drink, plants).
- \* Air-conditioning.
- \* Leisure industry.
- \* Restaurants & Bars.
- \* Medical.
- \* Fish farming.



**-Quaternary ammonium compounds :** have also been shown to have antimicrobial activity. Certain quaternary ammonium compounds especially those containing long alkyl chains, are used as antimicrobials and disinfectants. Examples are benzalkonium chloride, benzethonium idinium chloride, cetrimeronium, cetrimide, dofanium chloride, tetraethylammonium bromide, didecylmethylammonium chloride and domiphen bromide . also good against fungi, amoebas, and enveloped viruses

**-Quaternary ammonium compounds** are believed to act by disrupting the cell membrane or viral envelope.

**-Quaternary ammonium compounds** are lethal to a wide variety of organisms except endospores, Mycobacterium tuberculosis and non-enveloped viruses.

**-Quaternary ammonium compounds** are cationic detergent, as well as disinfectant, and as such can be used to **remove organic material** . They are very effective in combination with phenols.

**-Quaternary ammonium compounds** are deactivated by anionic detergents ( including common soaps). Also, they work best in soft waters. They are effective at temperatures up to 1100°C (212°F) .



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## THE ADVANTAGES OF HYDRO-CARE<sup>®</sup>

- \* Long term effectiveness.
- \* Highly effective even in low concentrations.
- \* Effective in a wide range of temperatures up to the boiling point.
- \* Gentle to the skin (not for a long time ).
- \* Biodegradable.
- \* Non-toxic.
- \* No build-up of resistance by micro - organism

HYDRO-CARE<sup>®</sup> fulfils not only all requirements which are placed on disinfectants but is also superior to all conventional products in it's ability to eliminate bacteria, viruses, mould, fungi, amoeba, spores.

HYDRO-CARE<sup>®</sup> disinfects reliably and safely around swimtals, the food and beverage industry, the conditioning of germs and sterility are a prime necessity.



BEFORE

The germ E.coli before being sprayed with the **HYDRO - CARE** ready-to-use bottle



AFTER

The germ E. coli after a two-second spray with the **HYDRO - CARE**. The cell walls are clearly compromised and the germ is dead.




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Sanitizer	Affected Microorganisms/ Resistance or Limitations <sup>20</sup>	Sanitizing/ Rinse Concentration	Toxicity	Stability	Odour	Residual Activity	Hard Water Affects	Organic Matter Affects	Corrosive (metals)
Acid anionic sanitizers <sup>22,23,24</sup>	Same as above	100 to 500 ppm typical Rinse @ > 200 ppm	Same						
Carboxylic acid (fatty acid sanitizer) <sup>22</sup>	Same as above	70 to 1,500 ppm typical No rinse necessary	Same						
Hydrogen Peroxide (H2O2) <sup>23,24,26</sup>	Bacteria, viruses, fungi Legionella, E.coli, Influenza A and B, Pseudomonas, Campylobacter, Salmonella, MRSA, VRE Spores: YES Biofilm: No Resistance: L. monocytogenes in biofilm <sup>28</sup>	Powder in 3% and 6% Rinse @ ≥ 1,100 ppm	Can cause skin irritation.	↓ w ↑ T Accel. H2O2 more stable *	-	-	√	?	√
Quaternary ammonium compounds (QUATS) <sup>22,23</sup> 	Various microorganisms. Effective against L. monocytogenes. More effective against vegetative bacteria  Spores: NO Biofilm: YES  Limitations: Limited effectiveness against most gram-negative bacteria except Salmonella and E. coli. <sup>36,39-42</sup> Cotton fibres and cellulose wipes can absorb some of the QUATS. <sup>41-43</sup>	200 to 1,000 ppm typical  Generally used at 200 ppm  Rinse @ ≥ 200 ppm	Respiratory and skin irritant	Excellent	√	√	√	√	No

continued ...



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## MICROBIOLOGICAL TEST DATA

### Bacterial test methods:

For registration with the US Environmental Protection Agency (US EPA), disinfection efficacy is tested following either the AOAC Use Dilution

Test Method or the AOAC Germicidal Spray Products Test Method. In each method, cultures of bacteria are dried onto a number of small carriers (stainless steel penicylinders in the Use-Dilution test or glass slides in the AOAC Germicidal Spray Products Test). Once dried, the carriers must contain a bacteria concentration of at least 10<sup>4</sup>. These carriers are exposed to the disinfectant for a specified contact time and then transferred to test tubes containing growth medium and a neutralizing agent to stop the action of the disinfectant. The carriers are incubated for 48 hours. The tubes are then examined for growth or no growth. To pass a 60 carrier test, three batches are tested and 59 out of 60 carriers must show no growth for each product batch. To pass a 10 carrier test, two batches are tested and all 10 carriers must show no growth.

To make general broad spectrum claims a disinfectant must show efficacy against a *Staphylococcus aureus* (Gram positive bacteria) and *Salmonella enterica* (Gram negative bacteria). To make claim for use in and hospital/medical environments a disinfectant must show efficacy against *Pseudomonas aeruginosa* (nosocomial bacteria). Other bacteria may be tested to obtain additional claims.

ORGANISM	# OF CARRIERS EXPOSED	# OF CARRIERS SHOWING GROWTH	CONTACT TIME	CARRIER POPULATION
<i>Pseudomonas aeruginosa</i> (ATCC#15442)	180	0	30 seconds	10 <sup>6</sup>
<i>Staphylococcus aureus</i> (ATCC#6538)	180	2	2 minutes	10 <sup>6</sup>
<i>Salmonella enterica</i> (ATCC#10708)	180	0	30 seconds	10 <sup>6</sup>
<i>Listeria monocytogenes</i> (ATCC#19111)	20	0	2 minutes	10 <sup>6</sup>
Vancomycin resistant <i>Enterococcus faecium</i> (VRE) (ATCC#700221)	20	0	2 minutes	10 <sup>4-5</sup>
Methicillin resistant <i>Staphylococcus aureus</i> (MRSA) (ATCC#700686)	20	0	2 minutes	10 <sup>6</sup>
Community Associated MRSA (CA-MRSA) (NRS123, USA 400)	20	0	2 minutes	10 <sup>6</sup>
Community Associated MRSA (CA-MRSA-PVL) (NRS 192)	20	0	2 minutes	10 <sup>6</sup>
<i>Escherichia coli</i> O157:H7 (ATCC#43800)	20	0	2 minutes	10 <sup>4-5</sup>
<i>Achromobacter baumannii</i> (ATCC#19606)	20	0	2 minutes	10 <sup>6</sup>
<i>Campylobacter jejuni</i> (ATCC#29428)	20	0	2 minutes	10 <sup>6</sup>
Carbapenem resistant <i>Escherichia coli</i>	20	0	2 minutes	10 <sup>6</sup>
Carbapenem resistant <i>Klebsiella pneumoniae</i>	20	0	2 minutes	10 <sup>6</sup>
Carbapenem resistant <i>Klebsiella pneumoniae</i> , NDM-1	20	0	2 minutes	10 <sup>6</sup>



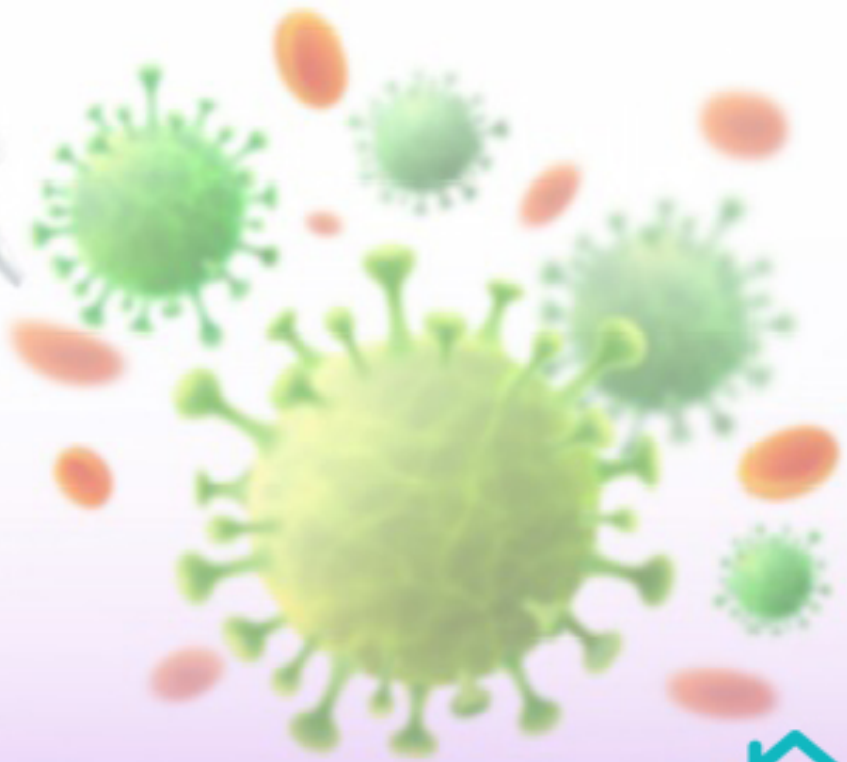
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ORGANISM	DRIED VIRUS CONTROL	LOG REDUCTION	CONTACT TIME
HIV type 1- Strain HTLV IIIIB	$10^{5.25}$	$\geq 3.75$	30 seconds
Herpes Simplex Type 1 VR-733 F(1) Strain (ATCC VR-733)	$10^8$	$\geq 5.5$	60 seconds
Rotavirus (Strain WA, Ottawa)	$10^{4.5}$	$\geq 4.0$	30 seconds
Human Coronavirus (ATCC VR-740)	$10^{4.5}$	$\geq 4.0$	30 seconds
Influenza A (H1N1) (ATCC VR-1469)	$10^{8.5}$	$\geq 6.0$	30 seconds
Swine Influenza A (H1N1) (ATCC VR-333)	$10^{8.15}$	$\geq 6.25$	30 seconds
Respiratory Syncytial Virus (ATCC VR-26)	$10^{4.75}$	$\geq 4.25$	30 seconds
Adenovirus Type 2 (ATCC VR-846)	$10^{8.0}$	$\geq 5.5$	30 seconds
Murine Norovirus (MNV-1.CW1)	$10^{8.5}$	$\geq 6.0$	60 seconds
Norovirus -as Feline Calicivirus (ATCC VR-782)	$10^{8.0}$	$\geq 5.88$	60 seconds
Avian Influenza A (ATCC VR-2072)	$10^{4.75}$	$\geq 4.25$	30 seconds
Influenza A (ATCC VR-544)	$10^{8.5}$	$\geq 6.0$	30 seconds
Rhinovirus (ATCC VR-1147)	$10^{4.5}$	$\geq 4.0$	60 seconds
Pofo Type 2 (ATCC VR-1002)	$10^{1.8}$	$\geq 3.0$	60 seconds
Hepatitis B Virus (HBV)	$10^8$	$\geq 5.79$	60 seconds
Hepatitis C Virus (HCV)	$10^{5.75}$	$\geq 4.93$	60 seconds



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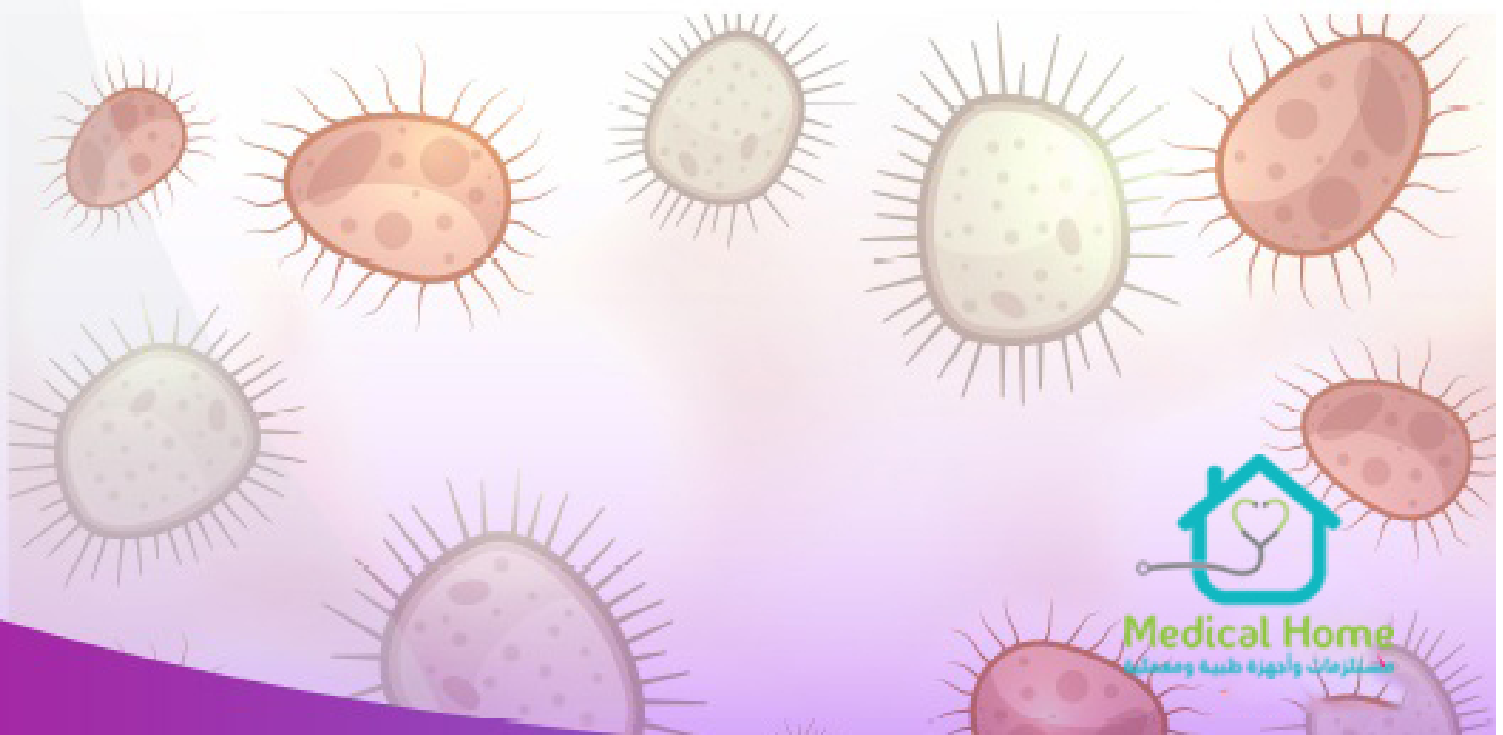


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## BACTERIA:

ORGANISM	CONTACT TIME*
<i>Pseudomonas aeruginosa</i>	30 seconds
<i>Salmonella enterica</i>	30 seconds
<i>Staphylococcus aureus</i>	2 minutes
<i>Listeria monocytogenes</i>	2 minutes
Vancomycin resistant <i>Enterococcus faecium</i> (VRE)	2 minutes
Methicillin resistant <i>Staphylococcus aureus</i> (MRSA)	2 minutes
Community Associated MRSA (CA-MRSA)	2 minutes
Community Associated MRSA (CA-MRSA-PVL)	2 minutes
<i>Escherichia coli</i> O157:H7	2 minutes
<i>Acinetobacter baumannii</i>	2 minutes
<i>Campylobacter jejuni</i>	2 minutes
Carbapenem resistant <i>Escherichia coli</i>	2 minutes
Carbapenem resistant <i>Klebsiella pneumoniae</i>	2 minutes
Carbapenem resistant <i>Klebsiella pneumoniae</i> , NDM-1	2 minutes







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## VIRUSES:

ORGANISM	CONTACT TIME*
HIV type 1	30 seconds
Rotavirus	30 seconds
Human Coronavirus	30 seconds
Avian Influenza A	30 seconds
Influenza A	30 seconds
Influenza A (H1N1)	30 seconds
Swine Influenza A (H1N1)	30 seconds
Respiratory Syncytial Virus	30 seconds
Adenovirus Type 2	30 seconds
Herpes Simplex Type 1	60 seconds
Murine Norovirus	60 seconds
Norovirus	60 seconds
Rhinovirus	60 seconds
Polio Type 2	60 seconds
Hepatitis B Virus (HBV)	60 seconds
Hepatitis C Virus (HCV)	60 seconds

## FUNGUS:

ORGANISM	CONTACT TIME*
Trichophyton mentagrophytes (Athlete's Foot Fungus)	5 minutes

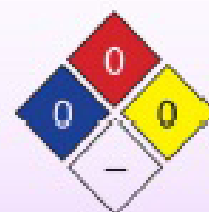
### HMIS RATING:

Hazardous Material  
Identification System

Health	0
Flammability	0
Reactivity	0

### NFPA:

National Fire Protection  
Association



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## Comparison Between Hydrogen Peroxide - Chlorine - Hydro-Care

Biocidal agent	Concentration	Virus	side effect					containing time	Reduction of viral infectivity (log10)
			Small	pets	plant	Ph	test result		
H <sub>2</sub> O <sub>2</sub> hydrogen peroxide	0.50%	HCv	not liked	effect	no effect in dilution	acidic	very hard	1 min	>4.0
chlorine	5.60%	MHV	not liked	effect	effect	neutral	not found	10 minutes	>6.0
		MHV							
		CCV							
		CCV							
Hydro-Care based on (Quaternary ammonium Compounds- Benzalkonium chloride-2-propanol and 1-Propanol-PCMX)	1:18	HCv	liked	no effect in dilution	no effect in dilution	neutral	easy with (RTT)	48 hours	>4.0
		MHV							
		CCV							
		CCV							

### Reference:

Accessible version: <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/>



## Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008

Update: May 2019

William A. Rutala, Ph.D., M.P.H.<sup>1,2</sup>, David J. Weber, M.D., M.P.H.<sup>1,2</sup>, and the Healthcare Infection Control Practices Advisory Committee (HICPAC)<sup>3</sup>

<sup>1</sup>Hospital Epidemiology  
University of North Carolina Health Care System  
Chapel Hill, NC 27514

<sup>2</sup>Division of Infectious Diseases  
University of North Carolina School of Medicine  
Chapel Hill, NC 27599-7030



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