


	Product Description	Mechanism of Action	Germicidal Efficacy	Contact Time	Gaps in Activity Spectrum	Health and Safety Profile	Environmental Profile	Cleaning Efficacy	Material Compatibility *
Accelerated Hydrogen Peroxide	<p>Synergistic and patented blend of Hydrogen Peroxide and Anionic Surfactants. <i>All ingredients appear on the EPA GRAS (Generally Regarded As Safe) listing and/or the EPA Preferred Inerts Listing.</i></p> 	<p>The accelerated activity of AHP is the outcome of a unique synergy between Hydrogen Peroxide and a number of other ingredients including surfactants and sequestering agents. This synergy greatly increases the kinetics of the action against pathogenic organisms and reduces the time required to render the solution cidal.</p> <p>Even though the exact mechanism of action for AHP is unknown it is believed that AHP acts by:</p> <ol style="list-style-type: none"> <li>1. Disrupting the cellular membrane permeability, inhibiting the enzymatic activities, and denaturing cellular proteins.</li> <li>2. The reaction of the superoxide ion with H2O2 forms hydroxyl radical. The Hydroxyl radical, being highly reactive attacks membrane lipids, DNA and other essential cell components.</li> <li>3. Sequestration of bivalent cations resulting in subsequent disruption of cellular structure and functions.</li> <li>4. Alteration of the proton motive force responsible for species transport across the cellular membrane.</li> </ol> <p>It is believed that oxidizing actives will not allow for resistance development when targeting organisms.</p>	<p><b>Gram Positive and Gram Negative Vegetative Bacteria (0.5 % "I<sub>w</sub> ):</b>  <i>Pseudomonas aureginosa</i>  <b>ATCC 15442</b>  <i>Staphylococcus aureus</i> <b>ATCC 6538</b>  <i>Salmonella choleraesius</i> <b>ATCC 10708</b>  <i>Staphylococcus aureus</i> <b>MSRA</b>  <i>Enterococcus faecalis</i> <b>VRE</b>  <b>ATCC 51575</b>  <i>Escherichia coli</i>  <i>Acinetobacter baumannii</i></p> <p><b>Viruses -Enveloped and Non-Enveloped (0.5 % "I<sub>w</sub> ) :</b>  <i>Polio Virus Sabin Strain Type I</i>  <b>ATCCVR 192</b>  <i>Human immunodeficiency Virus Type I</i>  <i>Human Rhinovirus Type 14</i>  <i>Human Rotavirus</i>  <i>Feline Calicivirus(Noravirus surrogate or Norwalk-Like Viruses)</i></p> <p><b>Fungi:</b></p> <ul style="list-style-type: none"> <li>• AHP (7 % "I<sub>w</sub> ) <b>ATCC 9533</b></li> <li>• AHP-TB (0.5 % "I<sub>w</sub> ): <b>ATCC 9533</b></li> </ul> <p><i>Trichophyton mentagrophytes</i></p> <p><b>Mycobacteria:</b></p> <ul style="list-style-type: none"> <li>• AHP (7 % "I<sub>w</sub> ) <b>ATCC 15755</b></li> <li>• AHP-TB (0.5 % "I<sub>w</sub> ): <b>ATCC 15755</b></li> </ul> <p><i>Mycobacterium terrae</i></p> <p><b>Spores (7 % "I<sub>w</sub> ):</b>  <i>Bacillus subtilis</i> <b>ATCC 19659</b>  <i>Clostridium sporogenes</i> <b>ATCC 7955</b></p> <p><b>Reference: Centre for Research on Environmental Microbiology, CREM, University of Ottawa.</b></p>	<p><b>Sanitizer 99.999% 5-log ( 30 seconds)</b>  Broad-Spectrum approval, Bacteria including MRSA, VRE</p> <p><b>Disinfection: (5 minutes)</b>  <b>Broad Spectrum Bactericidal Approval 99.9999% 6-log<sub>10</sub> Reduction:</b></p> <p><b>General Virucide Claim (5 minutes)</b>  <b>99.99% 4-log<sub>10</sub> Reduction</b>  (based on proven effectiveness against Polio Virus Sabine Strain as selected surrogate by Health Canada):</p> <p><b>Fungicidal (5 Minutes)</b>  <b>99.999% 5-log<sub>10</sub> Reduction:</b></p> <p><b>High Level Disinfection:</b></p> <p><b>Mycobactericidal:</b>  <b>99.9999% 6-log<sub>10</sub> Red.on Instruments</b>  <b>99.99% 4-log<sub>10</sub> Red. on Surfaces</b>  AHP: 20 minutes  AHP-TB: 5 min</p> <p><b>Sterilization:</b></p> <p><b>Sporicidal</b>  <b>99.9999% 6-log<sub>10</sub> Reduction</b>  Instruments: <b>6 hours</b>  Surfaces: <b>30 minutes</b></p> <p><i>Note:</i>  <i>This contact times have been established by microbial testing as required by the Disinfectant Drug Guidelines - 1999 Edition, Health Canada</i></p>	None	<p><b>0.5% AHP</b></p> <p>Non Irritant to Skin according to OECD 404* (Nucro-Technics Inc, 1999)</p> <p>Non Irritant to Eyes according to OECD 405* (Nucro-Technics Inc, 1999)</p> <p>Acute Oral Toxicology, OECD 420, indicated LD<sub>50</sub> &gt; 2.0g/Kg</p> <p>VOC –Free ( free from Volatile Organic Compounds), studies on file Ortech Inc., below detection limits.</p> <p>No-Fragrance, No-Dyes</p> <p><b>0.5% AHP – TB</b>  Slightly irritating to skin according to OECD 404* (Nucro-Technics Inc, 2002)</p> <p>Practically non-irritating to eyes according to OECD 405* (Nucro-Technics Inc, 2002)</p> <p>Acute Oral Toxicology, OECD 420, indicated LD<sub>50</sub> &gt;2.0g/Kg (Nucro-Technics Inc, 2002)</p> <p>*at in use dilutions</p>	<p><b>0.5% AHP</b></p> <p>Biodegradable according to the OECD 302 B (Inherent Biodegradability Test)</p> <p>Not manufactured using APE (Alkyl Phenyl Ethoxylates) or NPE (Nonylphenol Ethoxylates) which have been worldwide classified as "Endocrine Disrupting Chemicals".  <i>Canadian Environmental Protection Act (CEPA) - Priority Substance List PLS2</i></p> <p>Low Toxicity Profile to Aquatic Species: Rainbow Trout  Toxicity 96h LC<sub>50</sub> = 1.77 ml/l  Daphnia Magna  Toxicity 48h EC<sub>50</sub> = 0.37ml/l</p>	<p><b>0.5% AHP</b></p> <p>Excellent:  86.5% Cleaning Efficiency according to the Canadian General Standards Board, Standard CAN/CGSB 2.11- Method 20.3</p>	<p>Avoid prolonged exposure to Copper, Brass, Aluminum, Lead, Chromium, Nickel and other soft metals</p>
	<p>Structurally QUATS are represented by four alkyl groups linked to a Nitrogen atom.</p> <p>QUATS are confusingly classified by generations:</p> <p>1<sup>st</sup> Generation: <b>Benzalkonium Chlorides</b> (Alkyl dimethyl benzyl ammonium chloride)</p> <p>2<sup>nd</sup> Generation: <b>Substituted Benzalkonium Chlorides</b> (One of the aromatic ring hydrogen substituted with chlorine or other chemical groups)</p> <p>3<sup>rd</sup> Generation: <b>"Dual Quats"</b> (Mixture of two specific quats)</p> <p>4<sup>th</sup> Generation: <b>"Twin or Dual Chain Quats"</b> (di-Alkyl-di-methyl ammonium chloride)</p> <p>5<sup>th</sup> Generation: Mixture of 2<sup>nd</sup> Generation quats with 4<sup>th</sup> Generation quats</p>	<p>Although the mechanism of action of quaternary ammonium compounds is not completely known, it is currently believed that this class of chemicals reduce the surface tension at interfaces which corresponds to a denaturation of the proteins of the microbial cell.</p>	<p>Gram Positive Bacteria</p> <p>Fungi</p> <p>Enveloped viruses (lipophilic viruses)</p> <p><b>Reference:</b>  <i>Disinfection, Sterilization and Preservation - Seymour S. Block</i></p>	<p>Minimum 10 minutes</p> <p>No Broad-Spectrum claim</p> <p>Limited efficacy with enveloped viruses, no efficacy against non-enveloped Viruses</p> <p><i>Note:</i>  <i>Most of the Quaternary Ammonium Compounds fall into the Health Canada Category IV Monograph and are not required to be tested for microbial efficacy.</i></p>	<p>Not effective against:  Gram Negative Bacteria  Mycobacteria  Spores  Non-Enveloped Viruses  Biofilm</p> <p>Requires higher in-use concentration (&gt; 800 ppm) for efficacy against HIV (<i>Disinfectant Drugs Guidelines, 1999</i>)</p> <p>Microbial Efficacy reduced by:  Soil contamination  Hard water (1<sup>st</sup> and 2<sup>nd</sup> Generation)  Anionic residue (soaps)  Proteinaceous Material</p> <p>Repeated uses increase residue build-up on surfaces, which:</p> <ul style="list-style-type: none"> <li>• Is found to be growing media for Gram Negative bacteria</li> <li>• Increase resistance to susceptibility to antimicrobials inside health settings</li> </ul>	<p>Non irritant to skin</p> <p>Non Irritant to Eyes</p> <p>1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> generation of quats have a moderate to slight Acute Oral Toxicology (Fatty Nitrogen Derived Cationics Category, U.S. Environmental Protection Agency, December 2001)</p>	<p>Quats formulations may contain NPEs or APEs</p> <p>Quats with short chain may mimic physiologic actions: Curar-like, muscarinic-nicotini, ganglia-blocking and neuromuscular blockade</p> <p>2<sup>nd</sup> Generation of Quats may contain traces of Aromatic Chloride which are considered carcinogenic chemicals</p> <p>Non-Biodegradable</p>	<p>Poor</p>	<p>Generally compatible with all materials. They leave residuals that cause discoloration of mops, clothes etc.</p>

\*Always check material compatibility with manufacturer before using.