

This table provides general information for each disinfectant chemical class.

Antimicrobial activity may vary with formulation and concentration.

Always read and follow the product label for proper preparation and application directions.

## Characteristics of Selected Disinfectants

Disinfectant Category	Alcohols	Alkalis	Aldehydes	Oxidizing Agents			Phenols	Quaternary Ammonium Compounds
				Halogens: Chlorine	Halogens: Iodine	Peroxygen Compounds		
<b>Common Active Ingredients</b>	ethanol, isopropanol	calcium hydroxide, sodium carbonate, calcium oxide	formaldehyde, glutaraldehyde, ortho-phthalaldehyde,	sodium hypochlorite (bleach), calcium hypochlorite, chlorine dioxide	povidone-iodine	hydrogen peroxide/accelerated HP, peracetic acid, potassium peroxymonosulfate	ortho-phenylphenol, orthobenzylpara-chlorophenol	benzalkonium chloride, alkyldimethyl ammonium chloride
<b>Mechanism of Action</b>	Precipitates proteins; denatures lipids	Alters pH through hydroxyl ions; fat saponification	Denatures proteins; alkylates nucleic acids	Denatures proteins	Denatures proteins	Denature proteins and lipids	Denatures proteins; disrupts cell wall	Denatures proteins; binds phospholipids of cell membrane
<b>Characteristics</b>	<ul style="list-style-type: none"> <li>Fast acting</li> <li>Rapid evaporation</li> <li>Leaves no residue</li> <li>Can swell or harden rubber and plastics</li> </ul>	<ul style="list-style-type: none"> <li>Slow acting</li> <li>Affected by pH</li> <li>Best at high temps</li> <li>Corrosive to metals</li> <li>Severe skin burns; mucous membrane irritation</li> <li>Environmental hazard</li> </ul>	<ul style="list-style-type: none"> <li>Slow acting</li> <li>Affected by pH and temperature</li> <li>Irritation of skin/mucous membrane</li> <li>Only use in well ventilated areas</li> <li>Pungent odor</li> <li>Noncorrosive</li> </ul>	<ul style="list-style-type: none"> <li>Fast acting</li> <li>Affected by pH</li> <li>Frequent application</li> <li>Inactivated by UV radiation</li> <li>Corrodes metals, rubber, fabrics,</li> <li>Mucous membrane irritation</li> </ul>	<ul style="list-style-type: none"> <li>Stable in storage</li> <li>Affected by pH</li> <li>Requires frequent application</li> <li>Corrosive</li> <li>Stains clothes and treated surfaces</li> </ul>	<ul style="list-style-type: none"> <li>Fast acting</li> <li>May damage some metals (e.g., lead, copper, brass, zinc)</li> <li>Powdered form may cause mucous membrane irritation</li> <li>Low toxicity at lower concentrations</li> <li>Environmentally friendly</li> </ul>	<ul style="list-style-type: none"> <li>Can leave residual film on surfaces</li> <li>Can damage rubber, plastic; non-corrosive</li> <li>Stable in storage</li> <li>Irritation to skin and eyes</li> </ul>	<ul style="list-style-type: none"> <li>Stable in storage</li> <li>Best at neutral or alkaline pH</li> <li>Effective at high temps</li> <li>High concentrations corrosive to metals</li> <li>Irritation to skin, eyes, and respiratory tract</li> </ul>
<b>Precautions</b>	Flammable	Very caustic	Formaldehyde has carcinogenic potential	Toxic gas released if mixed with strong acids or ammonia			May be toxic to animals, especially cats and pigs	
<b>Bactericidal</b>	+	+	+	+	+	+	+	+
<b>Virucidal</b>	± <sup>a</sup>	+	±	+	+	+	+	+ Enveloped
<b>Fungicidal</b>	+	+	+	+	+	±	+	+
<b>Tuberculocidal</b>	+	±	+	+	+	±	+	-
<b>Sporicidal</b>	-	+	+	+	±	+	-	+
<b>Factors Affecting Effectiveness</b>	Inactivated by organic matter	Variable	Inactivated by organic matter, hard water, soaps and detergents	Rapidly inactivated by organic matter	Rapidly inactivated by organic matter	Effective in presence of organic matter, hard water, soaps, and detergents	Effective in presence of organic matter, hard water, soaps, and detergents	Inactivated by organic matter, hard water, soaps and anionic detergents

+ = effective; ± = variable or limited activity; - = not effective

a - slow acting against nonenveloped viruses (e.g., norovirus)

**REFERENCES:** Fraise AP, Lambert PA et al. (eds). *Russell, Hugo & Ayliffe's Principles and Practice of Disinfection, Preservation and Sterilization*, 5th ed. 2013. Ames, IA: Wiley-Blackwell; McDonnell GE. *Antisepsis, Disinfection, and Sterilization: Types, Action, and Resistance*. 2007. ASM Press, Washington DC. Rutala WA, Weber DJ, Healthcare Infection Control Practices Advisory Committee (HICPAC). 2008. Guideline for disinfection and sterilization in healthcare facilities. Available at: [http://www.cdc.gov/hicpac/Disinfection\\_Sterilization/toc.html](http://www.cdc.gov/hicpac/Disinfection_Sterilization/toc.html); Quinn PJ, Markey FC et al. (eds). *Veterinary Microbiology and Microbial Disease*. 2nd ed. 2011. West Sussex, UK: Wiley-Blackwell, pp 851-889.



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