Disinfectants are registered by the Environmental Protection Agency (EPA) as “antimicrobial pesticides” and are defined as substances used to control harmful microorganisms on inanimate objects and surfaces. Data on a product’s chemistry, efficacy, toxicity to humans, animals and plants, and other parameters must be tested and submitted to the EPA prior to the marketing of the chemical.

Product labels contain important details to assist with infection control efforts. Additionally, it is a violation of federal law to use a product in a manner inconsistent with its labeling. Therefore, strict attention must be given to the proper use of a product with regard to its application, effectiveness, and associated hazards (human, animal, and environment).

EPA Registration Number (EPA Reg. No.).

All disinfectants (“antimicrobial pesticides”) sold in the U.S. must be registered with the EPA. The registration number shows the product has been reviewed by the EPA and the product can be used with minimal risk, if the label directions are followed properly. The number is not an endorsement or guarantee of product effectiveness.

EPA Establishment Number (EPA Est. No.).

This number identifies the particular facility where the final phase of production of the disinfectant product occurred.

Label Claims.

Disinfectants may have a range of uses, such as cleaner, deodorizer, sanitizer, disinfectant, fungicide, virucide or ‘for hospital, institutional and industrial use’. Label claims must be supported by efficacy testing. Three test microorganisms are used, Staphylococcus aureus for Gram-positive, Salmonella cholerasuis for Gram-negative, and Pseudomonas aeruginosa for medical-hospital use designations.

- **Limited efficacy** is a claim of disinfection or germicidal activity against one specific microorganism group, either Gram-positive (S. aureus) or Gram-negative (S. cholerasuis). The label must specify the group against which the product is effective.
- **General-purpose or broad-spectrum** is a claim of effectiveness against Gram-positive and Gram-negative bacteria. This claim must be supported by efficacy testing against Staphylococcus aureus and Salmonella cholerasuis.
- A **hospital or medical environment** claim must be supported by efficacy testing against S. aureus and S. cholerasuis and also the nosocomial bacterial pathogen, Pseudomonas aeruginosa.

Claims against pathogenic fungi or other microorganisms are permitted on the label following standardized testing procedures, but are not required.

Effectiveness of Product Under Certain Conditions.

Testing for the EPA requires simulating the product’s effectiveness under field conditions. This is typically conducted under “hard” water up to 400 ppm hardness (CaCO₃) in the presence of 5% serum contamination. If the product is tested under additional conditions, it may be listed on the label.
Active Ingredients.
The individual active ingredients contained in the product are listed here as percentages and lists the chemicals responsible for the control of the microorganisms. (This example is a quaternary ammonium compound [QAC]). Percentages should not be directly compared between products, as the dilution ratios for use may be different.

Inert Ingredients.
Inert ingredients are often lumped into one statement and include items such as soaps or detergents, dyes or coloring agents, perfumes, and water.

Precautionary Statement.
This describes the potential hazards to people or animals and actions to take to reduce those hazards (i.e., wearing gloves or goggles). Specific “signal words” are used to define and indicate the degree of hazard. Descriptors used (from least harmful to most harmful) are: “Caution”, “Warning”, “Danger” and “Danger-Poison”.

First Aid.
This lists the actions to take in the event of accidental swallowing, inhalation or contact with the product. A “Notes to physicians” area may be listed with specific medical information needed by medical professionals.

Additional Precautionary Statements.
The product label will also list additional safety and precautionary information.

- **Environmental hazards** tell if the product is potentially hazardous to fish, wildlife, plants or if it may adversely affect wetlands or water resources. It also provides ways to avoid environmental damage.
- **Physical or chemical hazards** address issues such as corrosiveness or flammability.
- **Storage and disposal** tells you how to best store the product and how to dispose of unused product and its container.
- The **warranty statement** is intended to limit a company’s liability or to act as a disclaimer or warranty for the product.

Manufacturer’s name/address
The name, address and sometimes phone number of the manufacturer or distributor of the product is listed.

Directions for Use.
This section tells you what the product controls, as well as where, how and when to use it. Some products may have multiple uses (i.e., cleaning versus disinfection) and require different dilutions and contact times for such actions. The best application method to use with the product (i.e., spray directly or wipe on surfaces) will also be listed. Some manufacturers provide a toll-free number to obtain additional information about their products.
**Fungicidal Control.**

For this sample product, high concentrations (2 ounces per gallon) are fungicidal while lower concentrations may only be fungistatic.

**Virucidal Activity.**

This may only specify a class, such as enveloped viruses, but may or may not be efficacious against non-enveloped viruses. Most disinfectants are effective against enveloped viruses.

**Sanitizer.**

At this concentration the product only cleans and reduces the number of bacteria present but is not germicidal.

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**DIRECTIONS FOR USE**

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Product X is a proven “one-step” disinfectant – cleaner – sanitizer – fungicide – mildewstat – virucide which is effective in water up to 400 ppm hardness in the presence of 5% serum contamination. Apply Product X to walls, floors and other hard (inanimate) non-porous surfaces such as tables, chairs, countertops, sinks, tile, porcelain, and bed frames with a cloth, mop or mechanical spray device so as to thoroughly wet surfaces. For heavily soiled areas, a preliminary cleaning is required. Prepare a fresh solution daily or when use solution becomes visibly dirty.

**Disinfection** – To disinfect hard, non-porous surfaces, in hospitals, add 2 oz. per gallon of water. Treated surfaces must remain wet for 10 minutes. At 1 ¼ oz. per gallon of water, Product X will disinfect hard non-porous surfaces in school, industry and non-medical institutions.

**2 oz. gallon use-level.** The activity of Product X has been evaluated in the presence of 5% serum and 400 ppm hard water by the AOAC use dilution test and found to be effective against a broad spectrum of gram negative and gram positive organisms as represented by:

- *Pseudomonas aeruginosa*
- *Staphylococcus aureus*
- *Salmonella choleraesuis*
- *Escherichia coli*
- *Streptococcus pyogenes*
- *Klebsiella pneumoniae*
- *Pseudomonas aeruginosa*  
*Enterobacter aerogenes*
*Staphylococcus aureus*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Pseudomonas aeruginosa*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
*Serratia marcescens*  
*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
*Escherichia coli*  
*Streptococcus pyogenes*  
*Klebsiella pneumoniae*  
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*Serratia marcescens*  
*Enterobacter aerogenes*  
*Salmonella choleraesuis*  
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*Serratia marcescens*  
*Serratia marcescens*  

**Fungicidal Control** – Product X is an effective fungicide against *Trichophyton mentagrophytes* (the athlete’s foot fungus) when used on surfaces in areas such as locker rooms, dressing rooms, shower and bath areas, exercise facilities, etc., at 2 oz./galлон. Mold and Mildew Control. At 1 ¼ oz./galлон, Product X will effectively inhibit the growth of mold and mildew and the odors caused by them when applied to hard, non-porous surfaces (as indicated in general instructions above). Allow to dry on surface and repeat when mildew growth returns.

**Virucidal Performance.** At 1 ¼ oz./galлон use-level, Product X was evaluated and found to be effective in the presence of 5% serum and 400 ppm hard water against the following viruses: Influenza A/Brazil, Herpes Simplex and Vaccinia on inanimate environmental surfaces.

**Sanitizing-Non-Food Contact Surfaces** (such as floors, walls, tables, etc.). At 1 oz. per 2% gallon use-level, Product X is an effective sanitizer against *Staphylococcus aureus* and *Klebsiella pneumoniae* on hard porous and non-porous environmental surfaces. Treated surfaces must remain wet for 60 seconds.
References.

