



TECHNICAL REPORT

DESCRIPTION - LYSOL? BRAND I.C.? QUATERNARY DISINFECTANT CLEANER is a highly concentrated, cost-effective germicide based on a blend of quaternaries and detergents. It cleans, disinfects and deodorizes with a neutral pH in dilution.

ACTIVE INGREDIENT: Didecyl dimethyl ammonium chloride 9.22%
n-Alkyl (C₁₄ 50%, C₁₂ 40%, C₁₆ 10%) dimethyl benzyl ammonium chloride 6.14%

INERT INGREDIENTS:* 84.64%

* Includes detergents, and other grease cutting agents.

EPA REG. NO. 47371-129-675
EPA EST NO. 09019-OH-002

RECKITT
BENCKISER
— PROFESSIONAL —

DIRECTIONS FOR USE:

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

SAFETY REMINDER: Before employees use this or any other product, make sure they read and understand the product label, Material Safety Data Sheet and facility cleaning / disinfection protocol.

GENERAL USE DIRECTIONS:

For use in Healthcare, Institutional and Industrial Facilities

Recommended for use in: Hospitals, Nursing Homes, Funeral Homes, Schools, Colleges, Veterinary Clinics, Animal Life Sciences Laboratories, Grooming Establishments, Tack Shops, Pet Shops, Kennels, Breeding Establishments, Equine Farms.

Disinfects, cleans and deodorizes floors, walls, metal surfaces, glazed porcelain, plastic surfaces (such as polypropylene, polystyrene, etc.) and other hard, nonporous surfaces.

APPLICATION: Remove heavy soil deposits from surface. Then thoroughly wet surface with a solution of ½ ounce of concentrate per gallon of water. The solution can be applied with a cloth, mop, sponge, coarse spray or soaking. Let solution remain on surface for a minimum of ten (10) minutes. Rinse or allow to air dry. Rinsing of floors is not necessary unless they are to be waxed or polished. Prepare a fresh solution daily or more often if the solution becomes visibly dirty or diluted.

Correct Solution Strength 0.39% (1:256, ½ oz. per gallon)	
PRODUCT	WATER
4 cc	1 quart
½ oz.	1 gallon
1 ½ oz.	3 gallons
2 ½ oz.	5 gallons

***KILLS HIV-1 (AIDS VIRUS)** on precleaned, environmental surfaces/objects previously soiled with blood/body fluids in health care settings or other settings in which there is an expected likelihood of soiling of inanimate surfaces/objects with potential for transmission of Human Immunodeficiency Virus Type 1 (HIV-1) (associated with Aids).

SPECIAL INSTRUCTIONS FOR CLEANING AND DECONTAMINATION AGAINST HIV-1 (AIDS VIRUS) OF SURFACES/ OBJECTS SOILED WITH BLOOD/BODY FLUIDS:

PERSONAL PROTECTION: Disposable latex or vinyl gloves, gowns, face masks, or eye coverings as appropriate must be worn during all cleaning of blood/body fluids and during decontamination procedures.

CLEANING PROCEDURES: Blood/Body fluids must be thoroughly cleaned from surfaces/objects before application of disinfectant.

CONTACT TIME: HIV-1 (AIDS VIRUS) is inactivated after a contact time of 4 minutes at 25°C (room temperature). Use a 10-minute contact time for other viruses, fungi and bacteria listed.

DISPOSAL OF INFECTIOUS MATERIALS: Blood/Body fluids should be autoclaved and disposed of according to federal, state, and local regulations for infectious waste disposal.

TOILET BOWLS: Swab bowl with brush to remove heavy soil prior to cleaning or disinfecting. Clean by applying diluted solution around the bowl and under the rim. Stubborn stains may require brushing. To disinfect, first remove or expel over the inner trap the residual bowl water. Pour in three ounces of the diluted solution. Swab the bowl completely using a scrub brush or mop, making sure to get under rim. Let stand for 10 minutes or overnight, then flush.

MILDEWSTATIC INSTRUCTIONS: Will effectively control the growth of mold and mildew plus the odors caused by them when applied to hard, nonporous surfaces such as walls, floors, and table tops. Apply solution (1/2 ounce per gallon of water) with a cloth, mop, sponge or coarse spray. Make sure to wet all surfaces completely. Let air dry. Repeat application weekly or when growth reappears.

MICROBIOLOGY DATA

Mechanism of Action for Disinfectant Antimicrobial Agents

Generally, disinfectants destroy bacteria by attacking the cytoplasmic membranes or the cellular cytoplasm itself. The action of an antimicrobial agent on a bacterial cell involves first adsorption to the cell surfaces, then penetration of the outer membrane to reach these target sites.

All bacteria contain a cell wall that is unique to this group of organisms. The cell wall gives the cell its shape and rigidity. It is composed of peptidoglycan which is a polymer consisting of a disaccharide repeating unit of two different N-acetylated amino sugars, one of which is attached to a short peptide chain. Individual glycan strands are cross-linked through peptide bonds between the peptide chains. Gram-negative bacteria contain an outer cytoplasmic membrane consisting of lipopolysaccharide (LPS) molecules that surround the cell wall. The outer membrane is unique to Gram-negative bacteria. In addition, these organisms have an inner cytoplasmic membrane on the inside of the cell wall, which is in contact with the cytoplasm. It consists of phospholipids and proteins. The cytoplasmic membrane serves as the selective permeability barrier between the cytoplasm and the cell environment. It is the site at which many of the important cellular functions occur and the target site for many antimicrobial agents. Gram-positive bacteria do not have an outer membrane, only the inner membrane.

Chelating agents, such as ethylenediamine tetraacetate (EDTA), are often found in formulated disinfectants. They chelate magnesium (Mg⁺⁺) and calcium (Ca⁺⁺) ions. The LPS-LPS or LPS-protein links are stabilized by Mg in the outer membrane of Gram-negative bacteria. EDTA destabilizes the membrane by action upon Mg⁺⁺. This increases permeability of the cell wall.

Bacteria cell walls are negatively charged thereby "attracting" positively charged cations such as quaternary ammonium compounds (QAC). QACs adsorb onto the cell surface and diffuse through the cell wall. Once inside the cell, QACs bind to the cytoplasmic membrane causing disruption. This results in the release of potassium (K⁺) ions and other cytoplasmic constituents. Precipitation of the cellular materials results in the death of the organism.

GERMICIDAL ACTIVITY

Test Method: AOAC Use-dilution test method modified in the presence of 5% organic serum and 400 ppm water hardness (CaCO₃ equivalent).

Utilizing this method, clean, polished stainless steel rings/penicylinders are immersed in the test inocula (5% organic serum, and the respective test organism in a nutrient broth) for 15 minutes at room temperature. The contaminated stainless steel rings are dried at 37°C for 40 minutes. The

contaminated rings are placed in test tubes that have 10 mls of the diluted product prepared with 400 ppm AOAC synthetic hard water. After 10 minutes the rings are placed in recovery/neutralization media. After a 48-hour incubation period, each tube is examined for growth (+). If the tube shows no growth it is recorded as "0". The neutralization control is a positive control conducted to indicate that the recovery medium will neutralize carryover germicide and support growth of less than 100 bacterium/ml. The phenol resistance is a quality control measure of the resistance of the bacteria against phenol.

Test Conditions: LYSOL® Brand I.C.™ Quaternary Disinfectant Cleaner diluted 1:256. Test culture with 5% organic serum in 400 ppm hard water (CaCO₃ equivalent). Contact time 10 minutes at room temperature.

Test Results:

Test Organism	Number of Carriers	
	Exposed	Showing Growth
Salmonella choleraesuis ATCC 10708	60	0
Staphylococcus aureus ATCC 6538	60	0
Pseudomonas aeruginosa ATCC 15442	60	0
Acinetobacter calcoaceticus ATCC 23055	10	0
Bordetella bronchiseptica ATCC 31437	10	0
Chlamydia psittaci ATCC VR-854	10	0
Enterobacter aerogenes ATCC 13048	10	0
Enterobacter cloacae ATCC 23355	10	0
Enterococcus faecalis ¹ ATCC 51299	10	0
Escherichia coli ATCC 11229	10	0
Escherichia coli ² (Clinical Isolate)	10	0
Fusobacterium necrophorum ATCC 27852	10	0
Klebsiella pneumoniae ³ ATCC 13883	10	0
Listeria monocytogenes ATCC 15313	10	0
Pasteurella multocida ATCC 7707	10	0
Pseudomonas aeruginosa ⁴ (Clinical Isolate)	10	0
Proteus mirabilis ATCC 25933	10	0
Proteus vulgaris ATCC 13315	10	0
Salmonella enteritidis ATCC 13076	10	0
Salmonella typhi ATCC 6539	10	0
Salmonella typhimurium ATCC 14028	10	0
Serratia marcescens ATCC 8100	10	0
Shigella flexneri ATCC 12022	10	0
Shigella sonnei ATCC 25931	10	0
Staphylococcus aureus ⁵ ATCC 33592	10	0
Staphylococcus aureus ⁶ (Clinical Isolate)	10	0
Staphylococcus epidermidis ⁷ (Clinical Isolate)	10	0
Streptococcus faecalis ATCC 19433	10	0
Streptococcus faecalis ⁸ (Clinical Isolate)	10	0
Streptococcus pyogenes ATCC 19615	10	0

¹Resistant to Antibiotic: Vancomycin

²Resistant to Antibiotics: Ampicillin, Carbenicillin, Kanamycin, and Tetracycline

³Resistant to Antibiotics: Ampicillin, Carbenicillin, Chloramphenicol, and Tetracycline.

⁴Resistant to Antibiotics: Amikacin, Ampicillin, Carbenicillin, Cefamandole, Cefazolin, Cefoxitin, Chloramphenicol, Kanamycin, and Tetracycline.

⁵Resistant to Antibiotics: Gentamicin and Methicillin

⁶Resistant to Antibiotics: Cefazolin, Clindamycin, Erythromycin, Gentamicin, Kanamycin, Methicillin, Penicillin, Tetracycline, and Tobramycin

⁷Resistant to Antibiotics: Clindamycin, Erythromycin, Gentamicin, Kanamycin, Methicillin, Penicillin, Tetracycline, and Tobramycin

⁸Resistant to Antibiotics: Cefazolin, Chloramphenicol, Clindamycin, Erythromycin, Gentamicin, Kanamycin, Methicillin, Tetracycline, and Tobramycin

VIRUCIDAL ACTIVITY

Test Method: Virucidal qualification, modified in the presence of 5% organic serum (moderate amount) in 400 ppm hard water (CaCO₃ equivalent).

Using hard water, the mixture (virus, disinfectant, serum and hard water) is inoculated onto a hard surface in quadruplicate, allowed to dry, and then exposed to the disinfectant which has been diluted to the proper ratio and modified as stated above. Neutralization and cytotoxicity controls are performed. To achieve a virucidal claim, one must demonstrate a 3 log₁₀ reduction (titer) on two sample batches above the cytotoxicity produced by the product alone. The results show that LYSOL® Brand I.C.™ Quaternary Disinfectant Cleaner offers a wide range of virucidal effectiveness against RNA, DNA, and viruses that have protein coats (enveloped).

Test Conditions: LYSOL® Brand I.C.? Quaternary Disinfectant Cleaner diluted 1:256 in the presence of 5% organic serum (moderate amount) in 400 ppm hard water (CaCO₃ equivalent)..

Test Results:

TEST VIRUS	TITER REDUCTION (LOG ₁₀)
Adenovirus, Type 4 (ATCC VR-4)	5.5, 5.5
Infectious Bronchitis (Avian IBV)	6.0, 6.25
Herpes Simplex Virus Type 1 (HSV-1)	7.5, 7.5
Herpes Simplex Virus Type 2	6.5, 6.5
Human Immunodeficiency Virus (HIV-1), (Strain HTLV III RF) (AIDS Virus)	3.0, 3.0
Influenza Virus Type A/Hong Kong (ATCC 68-H3N2)	8.0, 8.0
Respiratory Syncytial Virus (RSV) (ATCC VR-26)	4.0, 4.0
Rubella Virus (Strain M-33)	5.0, 5.0
Transmissible Gastroenteritis Virus (TGE) (ATCC VR-763)	3.5, 3.5
Vaccinia Virus (Strain IHD)	7.0, 7.0

All viruses treated with LYSOL® Brand I.C.? Quaternary Disinfectant Cleaner were completely inactivated. Complete inactivation indicated at least three logs of virus were inactivated with no residual virus detected within limits allowed by the toxicity of the germicide.

Also virucidal against the following animal viruses at 1:256 dilution:

- ?? Canine Distemper Virus (ATCC VR-128)
- ?? Feline Leukemia Virus (ATCC VR-717, Strain FL-237)
- ?? Feline Picornavirus (ATCC VR-649)
- ?? Infectious Bovine Rhinotracheitis Virus (ATCC VR-793)
- ?? Pseudorabies Virus (ATCC VR-135)
- ?? Rabies Virus (ATCC VR-138)

FUNGICIDAL ACTIVITY

Test Method: Use dilution method as described by the Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC).

The Use-Dilution Method determines disinfectant activity for germicidal solutions. *Staphylococcus aureus* and *Salmonella choleraesuis* are tested to support broad spectrum disinfectant activity claims. Germicides that are intended for use in hospitals or other health care facilities must also be tested against *Pseudomonas aeruginosa*. This method can also be used to determine fungicidal activity against pathogenic fungi.

The Use-Dilution Method is a qualitative carrier test. Stainless steel penicylinders are soaked for 15 minutes in a yeast broth culture or mold spore suspension. Pathogenic mold spore suspensions are made from 7-10 day old agar plates or slants. The contaminated carriers are then removed and dried for approximately 30 minutes at 37°C. This now represents a nonporous, hard inanimate surface contaminated with a dried film of fungi. The contaminated carriers are exposed to 10 ml of the diluted germicide for 10 minutes at 20°C. After treatment, the carriers are removed from the disinfectant and placed in 10 ml subculture broth media containing appropriate neutralizers. The subculture tubes are incubated under appropriate conditions for the test organisms. The tubes are examined for growth as determined by turbidity of the media. An effective disinfectant for hospital use kills all the organisms on 10 out of 10 carriers tested.

Test Conditions: LYSOL® Brand I.C.? Quaternary Disinfectant Cleaner diluted at 1:256. Test culture with 5% organic serum in 400 ppm hard water (CaCO₃ equivalent). Contact time as specified.

Suspension Test Method: Effective against the following fungi according to the AOAC Fungicidal test, modified in the presence of 5% organic serum (moderate amount) and 400 ppm water hardness (CaCO₃ equivalent) at 20°C temperature.

Test Results:

Organism	Sample	Distilled Water Exposure Time Min.			Inoculum Exposure Time Min.		
		5	10	15	5	10	15
Trichophyton mentagrophytes (ATCC 9533)	A	+	0	0	+	0	0
	B	+	0	0	+	0	0
Candida albicans (ATCC 10231)	A	+	0	0	+	0	0
	B	+	0	0	+	0	0

FUNGISTATIC ACTIVITY

Test Method: Mildewstatic Performance determined by CSMA fungal/mold/mildew activity method #24. Modified in the presence of 5% organic serum (moderate amount) and 400 ppm water hardness (CaCO₃ equivalent) at 20°C temperature.

Test Conditions: LYSOL® Brand I.C.? Quaternary Disinfectant Cleaner diluted 1:256. Test culture with 5% blood serum and 400 ppm hard water. Contact time as specified.

Test Results:

Organism	Sample	Number of Treated Tiles Positive (+) for growth over total tiles (10)	Number of Untreated Tiles Positive (+) for growth over total tiles (10)
Aspergillus niger ATCC 6275	A	0 / 10	10 / 10
	B	0 / 10	10 / 10

PHYSICAL DATA

CHARACTERISTIC	PHYSICAL PROPERTY/ TEST RESULT
Appearance	Clear
pH, Concentrate @ 25°C	7.2 – 8.2
Density/Specific Gravity @ 25°C	1.000
Flash Point	None
Weight/Gallon, lbs.	8.5
Surfactant Type	Amine Oxide
Phosphates, % as P	None

OTHER INFORMATION

Conductive Floors:

Certain areas of a hospital or an industrial plant require that a safe level of conductivity be maintained on the floors. The established levels of safe conductivity are between 25,000 – 1,000,000 ohms. Electric discharges must be dissipated rapidly to avoid static discharges that might affect flammable materials, such as anesthetics. Using improper disinfectants or detergents can cause a residue formation which can impair conductivity. LYSOL® Brand I.C.™ Quaternary Disinfectant Cleaner has no effect on the resistant properties of conductive flooring as per the requirements of the National Fire Protection Association, NFPA-99-1993, Chapter 12, Section 12-4.1.3.8.

NFPA HAZARD RATING - CONCENTRATE

Health	3	High
Fire	1	Slight
Reactivity	1	Slight

HMIS HAZARD RATING - CONCENTRATE

Health	3	High
Flammability	1	Slight
Reactivity	1	Slight
Personal Protection	a	

NFPA HAZARD RATING – DILUTED 1:256

Health	0	Minimal
Fire	0	Minimal
Reactivity	0	Minimal

HMIS HAZARD RATING – DILUTED 1:256

Health	0	Negligible
Flammability	0	Negligible
Reactivity	0	Negligible
Personal Protection	a	

NFPA – National Fire Protection Association

HMIS – Hazardous Material Identification System

FIRST AID: In case of contact, IMMEDIATELY flush eyes or skin with plenty of water for at least 15 minutes. For eyes or skin, call a physician. If swallowed, call a doctor or get medical attention. Do not induce vomiting or give anything by mouth to an unconscious person. Drink promptly a large quantity of milk, egg white, gelatin solution, or if these are not available, drink large quantities of water. Avoid alcohol.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

PRECAUTIONARY STATEMENTS: HAZARDS TO HUMANS AND DOMESTIC ANIMALS.

For Concentrate:

KEEP OUT OF REACH OF CHILDREN

DANGER: CORROSIVE. Causes irreversible eye damage and skin burns. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. When handling product, protect eyes by wearing goggles or face shield and protect skin by wearing rubber gloves. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

ENVIRONMENTAL HAZARD: Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to the discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

For 1:256 Dilution:

CAUTION: KEEP OUT OF REACH OF CHILDREN

STORAGE / DISPOSAL

Keep product under locked storage, inaccessible to children. Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: PLASTIC CONTAINERS – Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill or incinerate, or if allowed by state and local authorities, burn. If burned, stay out of smoke. Do not reuse empty container. Rinse thoroughly, secure wrap in several layers of newspaper, and discard empty container in trash.

MORE INFORMATION

Satisfaction Guaranteed: Careful laboratory control assures materials of uniform quality at all times. All Reckitt Benckiser Professional products are guaranteed to give complete satisfaction, when used as directed, or they may be returned for credit.

LYSOL® Brand I.C.™ Quaternary Disinfectant Cleaner is part of a system of infection control products provided by Reckitt Benckiser Professional.

QUESTIONS ? COMMENTS ? CALL 1-800-677-9218

VISIT US AT: www.reckittprofessional.com

DISTRIBUTED BY:

RECKITT BENCKISER INC.
1655 VALLEY ROAD
WAYNE, NEW JERSEY 07474-0977

PACKAGING DESCRIPTION LYSOL® Brand I.C.™ Quaternary Disinfectant Cleaner		
ORDER NO.	SIZE	CASE CUBE
36241-74983	1 Gallon Plastic Bottle 4 per case	1.14

