Lysol® BRAND I.C.™ Foaming Disinfectant Cleaner

TECHNICAL REPORT

DESCRIPTION - LYSOL? BRAND I.C.? FOAMING DISINFECTANT CLEANER is a convenient, ready-to-use, multipurpose, disinfectant cleaner for hard nonporous, environmental surfaces.

ACTIVE INGREDIENT:	Octyl decyl dimethyl ammonium chloride	0.050%
	Dioctyl dimethyl ammonium chloride	0.025%
	Didecyl dimethyl ammonium chloride	0.025%
INERT INGREDIENTS: *		99.900%

* Includes detergents, and other grease cutting agents.

EPA REG. NO. 777-71-675
EPA EST NO. 777-NJ-2

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.

FOR CLEANING AND DISINFECTING:

FOR CLEANING: Shake well before using. Point button to mark on rim. Hold can 6 to 8 inches from surface to be cleaned. Press button and cover area lightly with white foam. After a few seconds, wipe off with clean cloth or sponge. For stubborn stains or heavily soiled areas, allow foam to remain longer on surface before wiping.

FOR DISINFECTING HARD NONPOROUS SURFACES: If surfaces are visibly dirty, follow cleaning directions first; then spray on surface until thoroughly covered with foam. Leave for 10 minutes. Wipe with damp cloth or sponge.

SUGGESTED AREAS OF APPLICATION FOR LYSOL? BRAND I.C.? FOAMING DISINFECTANT CLEANER:
Cleans, shines and disinfects nonporous surfaces and fixtures in the dental office, physician office, laboratory and other health care facilities.

Use on surfaces such as fiberglass, synthetic marble, tile, plastic and vinyl. For other surfaces spot test in an inconspicuous area before use.

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: Germicidal spray products method as described by Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC).

The AOAC Germicidal Spray Test determines disinfectant activity for germicidal sprays. *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*. Additional organisms that may be clinically significant can also be tested as an option.

One inch by one inch glass cover slides are inoculated with 0.01 ml of a bacterial broth culture. The contaminated carriers are then dried for approximately 30 minutes at 37ºC. This now represents a nonporous, hard, inanimate surface contaminated with a dried film of bacteria. The contaminated carriers are then sprayed with the disinfectant and held for a 10-minute contact time at 20ºC. After treatment, the carriers are placed in 10 ml subculture broth media containing appropriate neutralizers. The subculture tubes are incubated 48-54 hours at 37ºC. The tubes are examined for growth as determined by turbidity of the media. An effective disinfectant for hospital use kills all the bacteria on 59 or 60 out of 60 carriers tested *against S. aureus, S. choleraesuis* and *P. aeruginosa*. For additional organisms, all the bacteria on 10 out of 10 carriers tested must be killed.

Test Conditions: LYSOL® Brand I.C.™ Foaming Disinfectant Cleaner. Test culture with 5% blood serum. Contact time 10 minutes at room temperature.

Test Results:

Test Organism	Number of Carriers	
	Exposed	Showing Growth
Staphylococcus aureus ATCC 6538	180	0
Salmonella choleraesuis ATCC 10708	180	0
Pseudomonas aeruginosa ATCC 15442	180	0
Enterococcus (Streptococcus) faecalis ATCC	10	0

VIRUCIDAL ACTIVITY

Test Method: Virucidal activity-test method as described in the EPA Guidelines for Registering Pesticides, Federal Register 40 (123) 26836, 6/25/75.

In order to claim and register activity as a virucidal disinfectant, the appropriate test procedures must be performed. Since there are no "prototype" viruses, every claim of activity against a specific type of virus must be substantiated with testing against that virus.

All tests for hard surface disinfectant virucidal efficacy must be performed on a virus that has been dried onto the surface of a carrier (e.g. petri plate). Since no specific method is currently recommended for testing this efficacy, data that is submitted must meet certain criteria:

1. No virus-specific cytopathic effect can be detected in the lowest non-cytotoxic dilution or any of the virus/disinfectant dilutions tested.

2. The reduction in virus titer for each of the two batches of the test substance must be =3 logs of inactivation.

3. The virus titer recovered from the carrier must exceed 10^4.

As a result, any test of virucidal efficacy must contain three basic components. The first component is the virus control, which quantitates the amount of virus present before treatment with the disinfectant. This is done by re-suspending dried virus with a standard solution, e.g. tissue culture medium, and assaying in a susceptible host. The second component is the virus/disinfectant treatment, which looks at how much virus is surviving after treatment with the disinfectant. This is done by treating the dried virus with the disinfectant, waiting the allotted contact time, and assaying for the presence of residual virus in the susceptible host. The final component is the toxicity control, which looks at the deleterious effect of the disinfectant on the host without any virus present. This is done by drying a solution that is identical in composition to the virus suspension, but lacks the virus. This dried suspension is then treated in a manner identical to the virus/disinfectant, and then assayed in the host to assess the extent of the deleterious effects due specifically to the disinfectant.

Test Conditions: LYSOL® Brand I.C.? Foaming Disinfectant Cleaner with the soil load incorporated in the test as specified below for each virus.

Test Results:

TEST VIRUS	HOST	UNTREATED VIRUS TITER (CONTROL)	TREATED VIRUS TITER	%INACTIVATION BATCH #1	%INACTIVATION BATCH #2
HIV-1 (AIDS Virus)	MT2	$10^{-5.5}$	$<10^{-1.5}$	>99.9	>99.9
Herpes Simplex Virus Type 1	VERO	$10^{-2.5}$	$10^{-2.5}$	>99.99	>99.99
Herpes Simplex Virus Type 2	VERO	$10^{-2.5}$	$10^{-2.5}$	>99.99	>99.99
Influenza A_2 (Japan 305/57)	MDCK	$10^{-6.67}$	$>10^{-3.5}$	>99.9	>99.9
Poliovirus Type 1	VERO	$10^{-7.0}$	$>10^{-2.5}$	>99.9	>99.9
Rhinovirus Type 39	MRC-5	$10^{-5.5}$	$>10^{-2.5}$	>99.9	>99.9
Rotavirus	MA-104	$10^{-5.5}$	$>10^{-2.5}$	>99.9	>99.9

All viruses treated with LYSOL® Brand I.C.? Foaming 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.

FUNGICIDAL ACTIVITY

Test Method: Germicidal spray products method as described by the Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC).

The Germicidal Spray Test determines disinfectant activity for germicidal sprays. *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.

One inch by one inch glass cover slides are inoculated with 0.01 ml of a yeast broth culture or mold spore suspension. The contaminated carriers are then dried for approximately 30 minutes at 37ºC. This now represents a nonporous, hard inanimate surface contaminated with a dried film of pathogenic fungi. The contaminated carriers are then sprayed with the disinfectant and held for a 10-minute contact time at 20ºC. After treatment, the carriers are 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 kills all the organisms on 10 out of 10 carriers tested.

Test Conditions: LYSOL® Brand I.C.? Foaming Disinfectant Cleaner. Test culture with 5% blood serum. Contact time as specified.

Test Results:

Test Organism	Number of Carriers	
	Exposed	Showing Growth
Aspergillus niger ATCC 6275	20	0
Trichophyton mentagrophytes ATCC 9533	20	0

FUNGISTATIC ACTIVITY

Procedure: Hard Surface Mildew Fungistatic Test – as described in the Federal Register, "Environmental Protection Agency Guidelines for Registering Pesticides", June 25, 1975, Vol. 40 No. 123, P. 26851.

Test Conditions: LYSOL® Brand I.C.? Foaming Disinfectant Cleaner. Test culture with 5% blood serum. Contact time as specified.

Test Results:

Untreated Control Tiles		Aspergillus niger ATCC 6275 Tiles treated with LYSOL® Brand I.C.? Foaming Disinfectant Cleaner		
Tile	7 Days	Tile	7 Days	30 Days
1	++++	1	0	0
2	++++	2	0	0
3	++++	3	0	0
4	++++	4	0	0
5	++++	5	0	0
6	++++	6	0	0
7	++++	7	0	0
8	++++	8	0	0
9	++++	9	0	0
10	++++	10	0	0

0 – No Growth
++++ - Excessive Growth

PHYSICAL DATA

CHARACTERISTIC	PHYSICAL PROPERTY / TEST RESULT
Appearance	White foam
Odor	Fresh
pH, Concentrate @ 25ºC	12.4
Density/Specific Gravity @ 25ºC	1.007
Flash Point	>200ºF (Tag Closed Cup)
Detergent Type	Nonionic
Phosphates, % as P	None
Shelf Life	+2 years
Stability (Freeze/Thaw)	Pass 3 Cycles

HMIS HAZARD RATING

Health	1	Slight
Flammability	1	Slight
Reactivity	0	Minimal

HMIS – Hazardous Material Identification System

NFPA HAZARD RATING

Health	1	Slight
Fire	Level 1	Aerosol*
Reactivity	0	Negligible

NFPA – National Fire Protection Association

*This is a Level 1 aerosol. This rating applies to the product concentrate and not the finished, sealed aerosol product.

PRECAUTIONARY STATEMENTS: HAZARDS TO HUMANS AND DOMESTIC ANIMALS:

CAUTION: KEEP OUT OF REACH OF CHILDREN

CAUTION: May cause eye irritation. Avoid contact with eyes or skin.

FIRST AID: In case of eye contact, IMMEDIATELY flush eyes thoroughly with water, remove any contact lenses, and continue to flush eyes with plenty of water for at least 15 minutes. Consult a physician if irritation persists.

STORAGE / DISPOSAL: Store in original container in areas inaccessible to small children. Do not reuse empty container. Replace cap and discard in trash. Do not incinerate or puncture.

MORE INFORMATION:

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

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

VISIT US AT: www.reckittprofessional.com

Aerosol can is made from an average of 25% recycled steel (10% post consumer).
Contains no CFCs or other ozone depleting substances.

DISTRIBUTED BY:

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

PACKAGING DESCRIPTION LYSOL® Brand I.C.™ Foaming Disinfectant Cleaner		
ORDER NO.	**SIZE**	**CASE CUBE**
36241-95524	24 oz. Aerosol Can, 12 per case	0.66

N-651-0801