



Oleonix Disinfectant Cleaner incorporating Lonza Biocide

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An Introduction to **Oleonix Disinfectant Cleaner**

A General Information

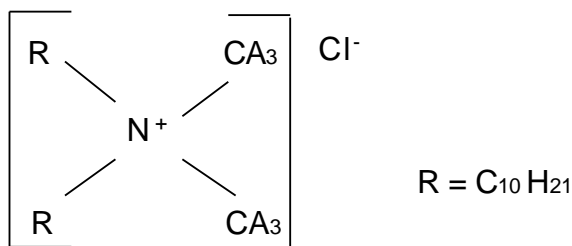
A1 Oleonix Disinfectant Cleaner - A multi purpose cleaner and disinfectant incorporating a broad spectrum sterilising solution active against both gram positive and gram negative bacteria, fungicide and mildewcide.

The active ingredient is manufactured by Lonza and is active against envelope viruses (e.g. hepatitis B, HIV) and has a tolerance for anionic contaminants and hard water. It maintains efficacy in presence of heavy organic soiling such as blood and protein with worldwide acceptance based on registrations approval and official lists.

The Lonza biocide will kill and continue to kill for up to 72 hours organisms such as *Aspergillus Niger*, Hepatitis B and Influenza virus, as well as more common organisms such as *E. coli*, *Staphylococcus*, *Streptococcus* and *Salmonella*. The most resistant strains of fungi such as *Trycophyton interdigitalae* are completely and rapidly destroyed. Even the spore covering of the most difficult spore formers such as *Bacillus subtilis*, is penetrated within 10 minutes of exposure to Lonza solutions.

A2 Active Agent

The active agent in the Lonza biocide is N, N-Didecyl Dimethyl Ammonium Chloride



CAS No.	7173-51-5
EINECS No.	230-525-2
UN No.	2920

A3 Areas of Use

Disinfectant and disinfectant cleaner for hospitals,
food industry, industrial kitchen applications,
animal husbandry including hatcheries, poultry and pig
premises
Laundry disinfectant
Fungicide
Wood treatment
Water treatment
Slimicide
Hand Sanitiser
Algaecide e.g. shower areas, walls, swimming pools etc

Oleonix Disinfectant Cleaner including Lonza biocide

- Is a one-step disinfectant cleaner that is effective against a broad spectrum of bacteria, is virucidal (including HIV-1 and HBV), fungicidal, and inhibits the growth of mould and mildew and their odours when used as directed.
- Is an effective one-step sanitiser-cleaner for use on food contact surfaces.
- Will deodorise surfaces in restrooms and toilet areas, behind and under sinks and counters, rubbish bins and rubbish storage areas, and other places where bacterial growth and cause mal odours.
- 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 and exercise facilities.
- Contains no (phosphates or) phosphorous (compounds)
- Is a no-rinse neutral pH disinfectant cleaner that disinfects, cleans and deodorises in one labour saving step.
- Can be used with a mop and bucket, trigger sprayers, sponge or by soaking.
- Provides effective cleaning strength that will not dull most floor finishes, and does not require a rinse prior to recoat.
- Improves labour results by effectively controlling odours.
- Cleans, shines, deodorises and disinfects hard non porous household surfaces. Inhibits the growth of mould and mildew, leaving bathrooms & kitchens clean and smelling fresh.
- Kills household germs; effective against Pseudomonas, Staphylococcus aureus and Streptococcus faecalis, Influenza and Trichophyton mentagrophytes.
- Is a neutral pH multi-surface cleaner, deodoriser and disinfectant. Use on windows, mirrors and other glass surfaces.

A4 General Sanitisation

Used as a general sanitizer in kitchens, sick rooms and general traffic areas this product is particularly effective where longevity is required. Use as a spray between major clean-ups to reduce cross infection. Particularly useful in kitchens and restaurants where there is a high risk of cross-contamination Oleonix Disinfectant Cleaner is also used in toilets, locker rooms, laundries and refuse disposal areas and for food preparation surfaces.

A5 Floor Cleaning

Oleonix Disinfectant Cleaner is one of the first products of its type and gives outstanding protection and cleaning properties on the most difficult to clean slip resistant flooring. This product has residual active protection for up to 72 hours.

A6 Biodegradability

Oleonix Disinfectant Cleaner formulations are totally biodegradable. The surfactants contained in the formulations comply with the biodegradability criteria as laid down in regulation (EC) No. 648/2004 on detergents. The active ingredient is biodegradable according to OECD confirmatory test.

A7 Shelf Life

Oleonix Disinfectant Cleaner formulations can be stored in their sealed original packaging for a two year period.

B Cidal effectiveness of Oleonix formulations based on LB2270/80 biocide

Please note that this list is not exhaustive

B1 BACTERIA

Bacillus cereus
Bacillus stearothermophilus
Bacillus subtilis
Brevibacterium animonagenes
Brucella abortus
Chlamydia psittaci
Corynebacterium diphtheriae
Desulfovibrio desulfuricans
Enterobacter aerogenes
Enterobacter clocae
Enterococcus faecium
Escherichia coli
Escherichia coli (EHEC)
Escherichia hirae
Klebsiella pneumoniae
Klebsiella pneumoniae (MRKP)
Lactobacillus casei
Legionella pneumophila
Leuconostoc mesenteroides
Listeria monocytogenes
Micrococcus lysodeiteticus
Mycobacterium smegmatis
Mycobacterium terrae
Mycobacterium tuberculosis
Nocardia asteroides
Penicillium sp
Proteus mirabilis
Proteus vulgaris
Pseudomonas aeruginosa
Pseudomonas fluorescens
Salmonella abortus equi
Salmonella choleraesuis
Salmonella dublin
Salmonella enteritidis
Salmonella infantis
Salmonella manhattan
Salmonella newport
Salmonella panama
Salmonella paratyphi
Salmonella schottmuelleri
Salmonella typhi
Sarcina thyphimurium
Serratia marcescens
Shigella dysenteriae
Shigella flexneri
Shigella sonnei
Staphylococcus aureus
Staphylococcus aureus (MRSA)
Staphylococcus epidermidis
Streptococcus agalactiae
Streptococcus faecalis (MRSF)
Streptococcus pneumoniae
Streptococcus pyogenes
Vibrio cholerae
Yersinia enterocolitica

B2 FUNGI/YEASTS

Absidia corymbifera
Aspergillus niger
Aspergillus versicolor
Candida albicans
Cladosporium cladosporioides
Microsporum gypseum
Penicillium glaucum
Penicillium verucosum
Saccharomyces cerevisiae
Trichophyton mentagrophytes

B3 ALGAE

Chlorella pyrenoidosa
Chlorella vulgaris
Phormidium faveolarum
Phormidium inundatum (black mould)
Phormidium uncinatum
Scenedesmus obliquus

B4 VIRUSES

Adenovirus
Canine parvovirus
ECBO virus
Feline calicivirus (Norwalk virus surrogate)
Grippal virus
Hepatitis B
Herpes simplex
HIV-1 (AIDS)
Influenza
Newcastle disease
Orthomyxovirus
Poliovirus
Rhabdovirus
Rotavirus
Rubella
Tuberculosis
Vaccinia

C A selection of microbiological test results for LB2270/2280

C.1. Bacteria

C.1.1. USA

C.1.1.1.

Biotech Control Laboratories Inc. Waterford, N.Y.

Report 2670

August 25, 1970

Test Method: API-38 test

Test organisms

Pseudomonas fluorescens

Bacillus cereus

Desulfovibrio desulfuricans

Effective concentration

2.0 ppm

2.0 ppm

7.5 ppm

C.1.1.2.

Biotech Control Laboratories Inc. Waterford, N.Y.

Report L-2872

May 4, 1972

Test method: Germicidal and Detergent

Sanitizers Method (in presence of hard water)

Test organisms

Staphylococcus aureus ATCC 6538

Escherichia coli ATCC 11229

Germ reduction

99.9999%

99.9992%

C.1.1.3.

Biotech Control Laboratories Inc. Waterford, N.Y.

Report BCI-0670 (1970)

Test method: Use dilution test

Test organisms

Staphylococcus aureus ATCC 6538

Salmonella cholerasuis ATCC 10708

Pseudomonas aeruginosa ATCC 15442

Effective concentration

300 ppm

300 ppm

500 ppm

C.1.1.4.

Biotech Control Laboratories Inc. Waterford, N.Y.

Report BCI-0670 (1970)

Test method: Use dilution test

Test organisms

Staphylococcus aureus ATCC 6538

Salmonella cholerasuis ATCC 10708

Phenol Coefficient

1000

1000

C.1.1.5.

Biotech Control Laboratories Inc. Waterford, N.Y.
Report: I-6172
September 13, 1972
Test method: Agar plate AATCC 90-1965T
Results: LONZA BARDAC 22-70 at 200 ppm OWF at a dilution 1:5 of cloth to water demonstrates residual bacteriostatic activity versus:
Test organisms
Staphylococcus aureus ATCC 6538
Klebsiella pneumoniae ATCC 4532

C.1.1.6.

Biotech Control Laboratories Inc. Waterford, N.Y.
Report L-6172a
September 6, 1972
Test method: Agar plate AATCC 90-1965T (Overlay technique)
LONZA BARDAC 22-70 at 200 ppm OWF at a dilution 1:5 of cloth to water demonstrates residual bacteriostatic activity versus:
Test organisms
Staphylococcus aureus ATCC 6538
Klebsiella pneumoniae ATCC 4532

C.1.1.7.

Biotech Control Laboratories Inc. Waterford, N.Y.
Report L-9672
November 27, 1972
Test method: AATCC 100-1965T
Efficacy at 300 ppm OWF (= on weight of dry fabric)
Test organisms
Staphylococcus aureus ATCC 6538
Klebsiella pneumoniae ATCC 4532

Killing rate
99.9%
99.9%

C.1.1.8.

Biotech Control Laboratories Inc. Waterford, N.Y.
Report L-9772
December 6, 1972
Test method: Modified Petrocci & Clarke method for laundry activities, J.A.O.A.C.
Efficacy at 660 ppm OWF (= on weight of dry fabric)
Test organisms
Staphylococcus aureus ATCC 6538
Klebsiella pneumoniae ATCC 4532

Killing rate
99,98%
99,92%

C.1.1.9.

Biotech Control Laboratories Inc. Waterford, N.Y.

Report L-16074

December 3, 1974

Product: LONZA BARDAC 22-70

Test method: Minimum inhibitory concentration test (static)

Test organisms

Leuconostoc mesenteroides ATCC 10830a:

Effective concentration
0.75 ppm

Test method: Killing dilution test (cidal)

Test organisms

Leuconostoc mesenteroides ATCC 10830a:

Effective concentration
1-2 ppm

C.1.1.10.

Biotech Control Laboratories Inc. Waterford, N.Y.

Report L-2773

April 10, 1973

Test method: Agar plate AATCC 90-1965 T

Product: LONZA BARDAC 22-70

Test organisms

Klebsiella pneumoniae ATCC 4352

Effective concentration

Moderate activity

Complete inhibition

100 ppm
175 ppm

C.1.1.11.

LONZA Inc. Fair Lawn/Report Technical Services Laboratories

February 9, 1979

Test method: As described in the report

Product: LONZA BARDAC 22-70

Test organisms

Legionella pneumophila

Effective concentration

32 ppm

16 ppm

Contact time
15 min
2 hrs

C.1.1.12.

Southern Research institute, Birmingham AL, USA

Report 7898-4-93-1

July 8, 1993

Test method: AOAC Use-Dilution Test

Efficacy of quaternaries in presence of Vibrio cholerae

Effective concentration

420 ppm

Contact time
10 min

C.1.2. Germany

C.1.2.1.

Institute of Hygiene, Mainz

Prof. Dr. J. Borneff

January 12, 1977

Report and investigation to assess the influence of standardised hard water

Test method: DGHM

Product: LONZA BARDAC 22-70

Hard water has no influence on the microbiological efficacy.

C.1.2.2.

Technical University, Munich, Prof. Mändl

December 8, 1977

Report and certificate on the suitability for use in breweries.

Product: LONZA BARDAC 22-70

Effective concentration

0.05 – 0.1%

0.1%

Application area
Normal disinfection
Disinfection with short
contact time

C.1.2.3.

Prof. Dr. med R. Schubert, Frankfurt/M

May 20, 1988

Report and certificate on biocidal activity.

Test method: DGHM, qualitative suspension test

Product: LONZA BARDAC 22-70

Test organisms

Listeria monocytogenes Typ 4

Listeria monocytogenes Typ 4

Effective
concentration/ contact
time 0.05% / 5 min
0.01% / 1 hr

C.1.2.4.

Prof. Dr. med. J. Borneff, Mainz

June 21, 1980

Report and certificate on comparative activity of LONZA BARDAC 22-70 and other

Dialkyl-Quats and Benzalkonium compounds:

Test method: DGHM quantitative suspension and surface test

Test organisms:

Staphylococcus aureus

Pseudomonas aeruginosa

Candida albicans

Result: In both tests Dialkyl-Quats and in particular LONZA BARDAC 22-70 achieved the best results.

C.1.2.5.

Prof. Dr. med. R. Schubert, Frankfurt/M
October 7, 1985
Report and certificate on fungicidal activity (to prevent athlete's foot).
Test method: DGHM surface test (ceramic tiles)
Product: LONZA BARDAC 22-70
Test organisms
Microsporon gypseum
Trichopyton mentagrophtes ATCC 9533

Effective concentration
0.25% / 1hr
0.25% / 1hr

C.1.2.6.

Prof. Dr. med. R. Schubert, Frankfurt/M
December 1, 1989
Report and certificate on fungicidal activity on untreated wood.
Test method: DGHM surface test.
Product: LONZA BARDAC 22-70
Test organisms:
Candida albicans ATCC 10231
Trichophyton mentagrophytes ATCC 9533

Effective concentration
/contact time
0.5% / 1hr
0.25% / 4hrs
0.5% / 1hr
0.25% / 4hrs

C.1.2.7.

Prof. Dr. med. R. Schubert, Frankfurt/M
January 28, 1989
Report and certificate on biocidal activity.
Test method: Standard DGHM VIIth list.
Test organisms
Staphylococcus aureus ATCC 6538
Escherichia coli ATCC 11229

Pseudomonas aeruginosa ATCC 15442
Proteus mirabilis ATCC 14153
Candida albicans ATCC 10231

Effective concentration
/contact time 0.25% /
4hrs 0.5% / 1hr 0.25% /
4hrs 0.5% / 1hr 0.25% /
4hrs 0.5% / 1hr 0.25% /
4hrs 0.5% / 1hr

C.1.2.8.

Prof. Dr. med. R. Schubert, Frankfurt/M
November 3, 1997
Report and certificate on biocidal activity in presence of multiresistant germs Test method:
DGHM quantitative suspension test Test organisms
Staphylococcus aureus MR 1159 [et.al.](#)

Effective concentration
/contact time
0.005% / 5min

C.1.3. Switzerland

C.1.3.1.

Eidgenössische Forschungsanstalt für
Milchwirtschaft (Federal Research Institute for
the Milk Industry, Liebefeld, Bern. April 27,
1977

Disinfection of cleaned equipment, vessels
and bottles in milk processing plants.

Product: LONZA BARDAC 22-70

Effective concentration 0.1%

C.1.4. France

C.1.4.1.

Laboratoire National de la Santé, Montpellier
(National Laboratory of Health)

October 24, 1977

Bactericidal activity

Test method: AFNOR NF T 72-151

Product: LONZA BARDAC 22-70

Test organisms

Pseudomonas aeruginosa IPP A 22

Escherichia coli ATCC 10536

Staphylococcus aureus ATCC 9144

Streptococcus faecalis ATCC 10541

Mycobacterium smegmatis IPP 7326

Effective concentration

0.025%

0.006%

0.025%

0.0125%

0.025%

C.1.4.2.

Université de Paris-Sud, Châtenay-Malabry
(University of Paris-South)

Prof. German

December 1, 1977

Bactericidal, fungicidal and virucidal activity

Test method: AFNOR NF-T 72-150

Product: LONZA BARDAC 22-70

Test organisms (Bateria)

Pseudomonas aeruginosa IPP 22

Escherichia coli IPP 54.127

Staphylococcus aureus ATCC 9144

Streptococcus faecalis ATCC 10541

Mycobacterium smegmatis IPP 7326

Effective concentration

0.01%

0.01%

0.01%

0.01%

0.01%

C.1.4.3.

Laboratoire Central de l'alimentation F-Charenton
(Central Food Lab)

b.de Nazella, Report 60125 on bactericidal activity

June 7, 1977

Test method: AFNOR N FT 72-150

Product: LONZA BARDAC 22-70

Test organisms

Pseudomonas fluorescens

Escherichia coli IPP 54.127

Staphylococcus aureus IPP 53154

Streptococcus faecalis IPP 5855

Mycobacterium smegmatis IPP 7326

Effective concentration

0.05%

0.05%

0.05%

0.05%

0.05%

C.1.4.4.

LABOREC, F-Levallois-Perret

June 18, 1982

Report on bactericidal activity

Product: LONZA BARDAC 22-70

Test organisms

Pseudomonas aeruginosa CNCM A 22

Escherichia coli CNCM 54127

Staphylococcus aureus CNCM 53154

Streptococcus faecalis CNCM 5855

Mycobacterium smegmatis CNCM 7326

Test method

AFNOR FT 72-150

AFNOR FT 72-151

AFNOR FT 72-171

Effective concentration

0.025%

0.0125%

1.2%

C.1.4.5.

Université de Nancy F-Nancy

Hubert Vannesson, Thesis in odontological sciences, 1984

Tolerance of LONZA BARDAC 22-70 in presence of anionics, hard water and organic matter. Result:

In presence of 300 ppm Na-Laurylsulfate, *Staphylococcus aureus* killed by 400 ppm LONZA BARDAC 22-70 (conventional quaternaries do not pass this test).

In presence of 1500 ppm CaCO₃ *Escherichia coli* is reduced within 30 seconds from 10⁶ to 10¹ by 200 ppm LONZA BARDAC 22-70. In contact with organic matter LONZA BARDAC 22-70 shows three times higher activity than conventional quaternaries.

The bactericidal efficacy is maintained even in presence of 5-10% of proteins (blood serum).

C.1.4.6.

Institut de Recherche Microbiologique, F-Mitry-Mory

Dr. A. Chantefort, February 6, 1990

Report on bactericidal activity

Product: LONZA BARDAC 22-70

Test method AFNOR N FT 72-190 (spectre 5)

Test organisms

Pseudomonas aeruginosa CIP A 22

Escherichia coli CIP 54127

Staphylococcus aureus CIP 53154

Enterococcus faecium CIP 5855

Mycobacterium smegmatis CIP 7326

	Effective concentration
	/contact time 1.0%
	60min
	1.0% 60min
	1.0% 15min
	1.0% 15min
	1.0% 60min

C.1.4.7.

Laboratoire d'Hygiène de la Ville de Paris F-75013 Paris

September 27, 1991

Report on bactericidal activity

Test method AFNOR N FT 72-171 (hard water

30° French hardness)

Product: LONZA BARDAC 22-70

Test organisms

Pseudomonas aeruginosa CIP A 22

Effective concentration

0.05%

C.1.5. Italy

C.1.5.1.

Università di Milano, Prof. Antonio Fesce

January 20, 1978

Bacteriostatic activity

Test method: Suspension test

Product: LONZA BARDAC 22-70

Test organisms

Escherichia coli ATCC 10536

Salmonella paratyphi A

Proteus vulgaris ATCC 881

Shigella sonnei ATCC 9290

Klebsiella pneumoniae ATCC 10031

Streptococcus faecalis ATCC 10541

Streptococcus pneumoniae Sclavo III

Streptococcus pyogenes A

Staphylococcus aureus I.S.M

Sarcina lutea ATCC 9341

Corynebacterium diphtheriae ATCC 8032

Brucella abortus ATCC 9153

Lactobacillus casei ATCC 7469

Bacillus subtilis ATCC 6633

Pseudomonas aeruginosa ATCC 10145

Candida albicans ATCC 10231

Nocardia asteroides CBS

Aspergillus niger ISM

Penicillium sp.

Trichophyton mentragrophytes ATCC 8757

Bactericidal activity:

Test method G.E Davis

Product: LONZA BARDAC 22-70

Test organisms

Staphylococcus aureus I.S.M

Escherichia coli ATCC 10536

Streptococcus faecalis

Corynebacterium diphtheriae ATCC 8032

Pseudomonas aeruginosa ATCC 10145

Effective concentration

25 ppm

50 ppm

20 ppm

10 ppm

20 ppm

2.5 ppm

2.5 ppm

2.5 ppm

2.5 ppm

0.625 ppm

2.5 ppm

0.625 ppm

0.625 ppm

0.03125 ppm

20 ppm

12.5 ppm

3.125 ppm

1000 ppm

12.5 ppm

3.125 ppm

effective concentration

/contact times

5 ppm 1 min

25 ppm 1 min

10 ppm 1 min

5 ppm 1 min

100 ppm 1 min

C.1.5.2.

Università Cattolica del Sacro Cuore, 1-29100

Piacenza

Prof. Vittorio Bottazzi

October 25, 1978

Report on bactericidal activity

Product: LONZA BARDAC 22-70

Test conditions:

Temperature 45°C and 20°C

pH 6.5 and 5.0

Organic matter 0, 0.5 and 2.0%

Test organisms

Escherichia coli ATCC 9637

Bacillus strearothermophilus NIDR C 953

Micrococcus lysodeiticus IMPC

Streptococcus faecium

Pseudomonas fluorescens IMPC

Effective concentration	/contact time
0.05%	1 min
0.05%	1 min
0.05%	1 min
0.05%	1 min
0.05%	1 min

C.1.5.3.

Bio Lab, Centro di analisi e ricerche biologiche,
I-Milano

Dr. A. Salvi, Dr. L. Magi

September 24, 1986

Report on bactericidal activity

Test method AFNOR N FT 72-151

Product: LONZA BARDAC 22-70

Test organisms

Pseudomonas aeruginosa CNCM A 22

Escherichia coli ATCC 10536

Staphylococcus aureus ATCC 9 144

Streptococcus faecalis ATCC 10 541

Mycobacterium smegmatis CNCM 7 326

Effective concentration
750 ppm
750 ppm
750 ppm
750 ppm
750 ppm

C.1.6. Belgium

C.1.6.1.

Laboratorium Voor Hygiene, Katholieke

Universiteit, (Laboratory for Hygiene, Catholic

University) B-Leuven

Prof. Dr. H. van de Voorde and Dr. G. Reybrouck,

Report on microbicidal activity

November 28, 1975

Method: Kelsey-Sykes Test

Product: LONZA BARDAC 22-70

Test organisms

Staphylococcus aureus NCTC 4163

Pseudomonas aeruginosa NCTC 6749

Escherichia coli NCTC 8196

Effect concentration
0.05%
0.05%
0.05%

C.1.7. Netherlands

C.1.7.1.

Laboratorium Voor Hygiene, Katholieke
Universiteit, (Laboratory for Hygiene, Catholic
University) B-Leuven
Prof. Dr. H. van de Voorde and Dr. G. Reybrouck
December 10, 1975

Report on microbiocidal activity according to the
standard required by the Dutch commission for
Phytopharmacy

Product: LONZA BARDAC 22-70

Test method: 5-5-5

Test organisms

Staphylococcus aureus ATCC 6538

Pseudomonas aeruginosa ATCC 15442

Effective concentration
0.05%
0.05%

C.1.8. United Kingdom

C.1.8.1.

Disinfection Reference Laboratory

November 28, 1977

Microbiocidal activity under clean and dirty test
conditions.

Test method: Kelsey-Sykes Capacity Test

Product: LONZA BARDAC 22-70

Test conditions: CLEAN

Test organisms

Pseudomonas aeruginosa NCTC 6749

Test conditions: DIRTY

Test organisms

Pseudomonas aeruginosa NCTC 6749

Effective concentration
0.05%

Effective concentration
0.07%

C.1.8.2.

Laboratory of the Government Chemist, GB-
London

January 31, 1979

Microbiocidal activity of different quarternaries
under clean and dirty test conditions.

Test method: Kelsey-Sykes Capacity Test

Results expressed on LONZA BARDAC 22-70

Test conditions: CLEAN

Test organisms

Pseudomonas aeruginosa NCTC 6749

Test conditions: DIRTY

Test organisms

Pseudomonas aeruginosa NCTC 6749

Effective concentration
0.075%

Effective concentration
0.07%

C.1.8.3.

Analytical Consulting and Research Chemists,
Microbiologists.

May 30, 1987

Dilution Test

Test method: BS 6471

LONZA BARDAC 22-70

Effective concentration
96 ppm

C.1.8.4.

Healthcare Science Ltd., Hitchin, Herts.
February 24, 1997
Efficacy test against E.coli 0157
Test method: BS 6471:1984 in presence of 5% horse serum
Product: LONZA BARDAC 22-70
Result
Log 4 reduction after 10 min.

Effective concentration
175 ppm

C.1.9. Austria

C.1.9.1.

Prof. Dr. med. J. R. Möse, Graz
March 17, 1986
Report and certificate on biocidal activity
Method: Standard DGHM VIIth list.
Product: LONZA BARDAC 22-70
Test organisms
Staphylococcus aureus ATCC 6538
Escherichia coli ATCC 11229
Pseudomonas aeruginosa ATCC 15442
Proteus mirabilis ATCC 14153
Candida albicans ATCC 10231

Effective concentration
/contact time
0.25% / 4hrs 0.5% / 1hr
0.25% / 4hrs 0.5% / 1hr
0.25% / 4hrs 0.5% / 1hr
0.25% / 4hrs 0.5% / 1hr
0.25% / 4hrs 0.5% / 1hr

C.2. Fungi

C.2.1.

Biotech Control Laboratories Inc. USA-Waterford N.Y.
Report BCI-0771
April 27, 1971
Test method: Fabric Mildew Fungistatic Test
Method
Test organisms:
Aspergillus niger ATCC 6275
Penicillium glaucum (USDA)
Results:
No growth after 4 weeks on fabric test pieces treated with 660 ppm LONZA BARDAC 22-70

C.2.2.

Biotech Control Laboratories Inc. USA-Waterford N.Y.
Report: L-5572
December 15, 1972
Test method: USDA Hard Surface Mildew Fungistatic Test Method (Ceramic Tiles)
Test organisms:
Aspergillus niger ATCC 6275

Effective concentration
LONZA BARDAC 22-70
1000 ppm

C.2.3.

Biotech Control Laboratories Inc. USA-Waterford N.Y.

Report: L-5872

October 2, 1972

Test method: A.O.A.C. Fungicidal Method

Test organisms:

Trychophyton mentagrophytes (T.interdigitale)

NTH 640, ATCC 9533

Product: LONZA BARDAC 22-70

Contact time

5 min

10 min

15 min

Effective concentration

182 ppm

166 ppm

143 ppm

C.2.4.

Université de Paris-Sud, Châtenay-Malabry

(University of Paris-South)

Prof. German

December 1, 1977

Report on bactericidal, fungicidal and virucidal activity

Test method: AFNOR NF-T 72-150

Product: LONZA BARDAC 22-70

Test organisms (Fungi)

Mycobacterium smegmatis IPP 7326

Candida albicans

Effective concentration

0.01%

0.005%

C.2.5.

Hygiene Institut der Johannes Gutenberg

Universität, D 6500 Mainz

Prof. Dr. med. J. Borneff, Mainz

August 15, 1979

Report and certificate on the activity on untreated wood contaminated with fungi

Method: DGHM

Product: LONZA BARDAC 22-70

Test organisms

Candida albicans ATCC 10231

Trichophyton mentagrophytes

Microsporium gypseum

Effective

concentration /contact

time 1.0% 1 hr

0.5% 2 hrs

C.2.6

Hygiene Institut der Stadt Dortmund,
D-4600 Dortmund
Prof. Dr. med. T. Lammers
January 22, 1980
Report and certificate of activity on
untreated wood contaminated with fungi.
Method: DGHM
Product: LONZA BARDAC 22-70
Test organisms:
Candida albicans ATCC 10231
Trichophyton mentagrophytes
Microsporum gypseum

Effective
concentration /contact
time 1.0% 1 hr
0.5% 4 hrs

C.2.7.

Université de Montpellier, Thesis François Canal
June 5, 1985
Report on Fungicidal activity
Test method: AFNOR N FT 72-200
Product: LONZA BARDAC 22-70
Test organisms
Aspergillus versicolor CNCM 1187-79
Cladosporium cladosporioides CNCM 1185-79
Penicillium verrucosum CNCM 1186-79
Candida albicans CNCM 1180-79 (ATCC 2091)

Effective concentration
187.5 ppm
375.0 ppm
375.0 ppm
187.5 ppm

C.2.8.

IRM Institut de Recherche Microbiologique,
F-77290 Mitry-Mory
Dr. A. Chantefort
January 23, 1990
Report on fungicidal activity
Test method: AFNOR N FT 72-200 (Carrier glass)
Test organisms
Cladosporium cladosporioides IP 1232 80
Penicillium verrucosum var. cyclopium IP 1231 80
Candida albicans IP 1180 79

Effective concentration
/contact time
1% 15 min
1% 15 min
1% 60 min

C.3. Algae

C.3.1.

Biotech Control Laboratories Inc USA-Waterford N.Y.
Report BCI-0870
April 20, 1970
Report for algaecidal and algaestatic activities
Test method: Fitzgerald Method
Product: LONZA BARDAC 22-70
Test organisms
Chlorella pyrenoidosa No. 2005
Phormidium inundatum No. 1093 (Black Algae)

Chlorella pyrenoidosa No. 2005
Phormidium inundatum No. 1093 (Black Algae)

Algaestatic concentration
1.0 ppm
1.0 ppm
Algaecidal concentration
2.0 ppm
2.0 ppm

C.3.2.

ETH Swiss Federal Institute of Technology (ETH),
Institut for Special Botony)

C. Gessler, G. Defago, H. Kern

Publication 1976 Special Edition Nr. 741

from Gas-Wasser-Abwasser

Report for algaestatic activity of Quaternaries

Test method: In vitro – as described in the report

Product: LONZA BARDAC 22-70

Test organisms

Chloella vulgaris Beyerinck

Scenedesmus obliquus Kützing

Phormidium faveolarum

Phormidium uncinatum

	Concentration	
	Algaecidal	Algaestatic
	1.0 ppm	0.5 ppm
	1.0 ppm	0.5 ppm
	1.0 ppm	0.5 ppm
	1.0 ppm	0.5 ppm

C.4. Viruses

C.4.1.

Université de Paris-Sud, Châtenay-Malabry
(University of Paris-South)

Prof. German

December 1, 1977

Report on bactericidal, fungicidal and virucidal
activity

Test method: AFNOR NF-T 72-150

Product: LONZA BARDAC 22-70

Test organisms (Virus)

Virus maladie de Newcastle

Virus vaccinal

Virus grippal PR8

	Effective concentration
	0.05%
	0.05%
	0.05%

C.4.2.

Tierärztliche Hochschule Hannover, Institut für
Virologie (Veterinary University) D-3000 Hannover

Prof. Dr. B. Liess

November 18, 1977

Report on virucidal activity

Test method: as described in the report

Product: LONZA BARDAC 22-70

Test organisms

Virus IBR/JPV Colorado

	Effective concentration
	/contact time
	1.0% 15 min

C.4.3.

Università di Milano Istituto di Microbiologia e Immunologia (University of Milan, Institute of Microbiology and Immunology) 1-21000 Milano
G. Poli, W. Ponti, R. Micheletti, C. Cantoni
January 30, 1978

Report on virucidal activity of Quaternary Amonium Compounds

Test method: as described in report (Titer reduction)

Results of LONZA BARDAC 22-70

Test organisms

Vaccinia virus (Poxvirus)

Influenza virus (orthomyxovirus)

Adenovirus

Rhabdovirus

Herpesvirus

	Effective concentration /contact time
Vaccinia virus (Poxvirus)	0.07% / 1 min
Influenza virus (orthomyxovirus)	0.07% / 1 min
Adenovirus	0.07% / 1 min
Rhabdovirus	0.07% / 5 min
Herpesvirus	0.07% / 5 min

C.4.4.

Università di Milano Istituto di Microbiologia e Immunologia (University of Milan, Institute of Microbiology and Immunology) 1-21000 Milano
Prof. A. Fesce
January 20, 1978

Report on virucidal activity

Test method: as described in the report

Product: LONZA BARDAC 22-70

Test organisms

Poxvirus WR119-ATCC

Herpes virus 1-HF-VR260 ATCC

Orthomyxovirus AWSN

Adenovirus Type 2

Rhabdovirus VSV-1145/67

	Effective concentration /contact time
Poxvirus WR119-ATCC	5 min
Herpes virus 1-HF-VR260 ATCC	5 min
Orthomyxovirus AWSN	5 min
Adenovirus Type 2	5 min
Rhabdovirus VSV-1145/67	5 min

C.4.5.

Ludwig Maximilian Universität München, Max von Pettenkofer Institut für Hygiene und Medizinische Mikrobiologie D-8000 Munich
Prof. Dr. med. G. Frösner
July 12, 1986

Report on virucidal activity

Test method: as described in the report

Product: LONZA BARDAC 22-70

Test organisms

Hepatitis-B-virus

	Effective concentration /contact time
Hepatitis-B-virus	0.5% / 30 min 0.25% / 2 hrs

D Tests according to European norms and other

Antimicrobial efficacy

D.1 Bactericidal/Fungicidal performance

D.1.1 Tested according to DGHM

Surface disinfection

Mechanical disinfection of non porous hard surfaces in hospital and general practice: Test strains; *P. aeruginosa*, *S. aureus*, *E. hirae* and *C. albicans*

Results: low organic load increased organic load
 2.0% 15 and 30 minutes 2.0% 15, 30 and 60 minutes
 1.0% 60 minutes 1.0% 240 minutes
 0.5% 240 minutes

Certificates: Prof. Dr R Schubert, Frankfurt (M), 29 Dec 2002
 Prof. Dr H-P. Werner, Schwerin, 04 Oct 2002

Salmonellacidal efficacy

Test method: DGHM qualitative suspension test (without organic load)

Test organism: *Salmonella typhimurium*

Results: 0.25%/5 minutes
 0.05%/15, 30 60 minutes

Certificate: Prof. Dr H-P. Werner. Schwerin, 31 Jan 2003

Tuberculocidal efficacy

Test method: DGHM, surface disinfection (low organic load)

Test organism: *Mycobacterium terrae*

Results: 5.0% 30 minutes
 3.0% 60 minutes
 2.0% 240 minutes

Certificate: Prof. Dr R. Schubert. Frankfurt (M), 8 April 2005

D.1.2 Tested according to DVG

Food sector

Disinfectants For handling / processing area regarding animal based food.

Test strains' *P. aeruginosa*, *S. aureus*, *E faecium* *P. mirabilis* and *C.*

albicans Sector A: 10% Bovine serum as protein load

Sector A / B	°C	Use Concentration in volume percent (V-%) for 30 and 60 minutes (')							
		Low organic load				Increased organic load			
		Bacteria		Fungi		Bacteria		Fungi	
		30'	60'	30'	60'	30'	60'	30'	60'
A	5	6a'	6b'	7a'	7b'	8a'	8b'	9a'	9b'
A	20°C	0.2%	0.2%	0.1%	0.1%	1.5%	1.5%	1.0%	0.2%

Certificate: Prof. Dr. R. Bohm, Stuttgart, 8 August 2005

D.1.3 Tested according to European Norms

EN 1040

Bactericidal result. Test strains *P. aeruginosa* and *S. aureus*

Result: 0.1 % 5 min.

Certificate: Lonza Basel, Laboratory OPC-E, 19 February 2004

EN 1276

Bactericidal results in presence of organic load (Albumin)

Test strains: *P. aeruginosa*, *S. aureus*, *E. coli* and *E. hirae*

Results: 0.5% 0.3 g/l Albumin 5 min.
 1.5% 3.0 g/l Albumin 5 min.

Certificate: Dr R Brill, Hamburg, 12 Nov 2001

EN 13697 [Surface test]

Bactericidal result in presence of organic load (Albumin)
Test strains: P. aeruginosa, S aureus, E coli and E. hirae
Result 2.0% 3.0 g/l Albumin 5 min

Fungicidal result in presence of organic load (Albumin)
Test strains: A. niger and C albicans

Result 4.0% 3.0 g/l Albumin 15 min

Certificates: Lonza Basel, Laboratory OPC-E, 19 October 2004

EN 1650

Fungicidal results in presence of organic load (Albumin)

Test strains: A. niger and C. Albicans

Results: 0.5% 0.3 g/l Albumin 15 min.
1.0% 3.0 g/l Albumin 15 min.

Certificate: Dr. H. Brill, Hamburg, 14 Nov 2001

EN 1275

Fungicidal result, Test strains: A. niger and C. albicans

Result: 2.0% 15 min.

Certificate: Lonza Basel, Laboratory OPC-E, 22 July 2005

D.1.4 Tested according other procedures

Tuberculocidal test

Test method: Qualitative suspension test

Test organism: Mycobacterium terrae ATCC 15755

Result 1:27 diluted in deionized water 5 min.

Certificate. MICROBIOTEST Inc., Sterling, Virginia, USA, Study 163-230, 11 April 2002

D.2 Virucidal performance

D.2.1 Tested according to BGA (now RKI) and DVV

Polio virus

Results according BGA (now RKI) and DVV

With soil load 5.0% 15 min.
4.0% 60min

Certificate: Dr. J. Steinmann, Bremen. 15 Feb 2002

ECB0 virus

Results according BGA (now RKI) and DVV

With soil load 5.0% 30 min.
3.0% 60 min.

Certificate Dr J Steinmann. Bremen. 21 Aug 2002

Adeno virus

Result according BGA (now RK1) and DVV

With soil load 4.0% 30 min.

Certificate Dr J. Steinmann, Bremen, 24 May 2005

Noro (Norwalk) virus

Feline calici virus (FCV) was used as surrogate Result according BGA (now RK1) and DVV

With soil load 4.0% 30 min.

Certificate: Dr. J. Steinmann. Bremen, 25 May 2005

Rota virus

Result according BGA (now RK1) and DVV Without soil load 3.0% 15 min. Certificate: Dr.

J. Steinmann, Bremen, 8 June 2005

Vaccinia virus

Result according BGA (now RK1) and DVV With soil load 2.0% 5 min. Certificate: Dr. J. Steinmann, Bremen, 30 July 2005

D.2.2 Tested according to DVG

Animal husbandry

Enveloped viruses (column 7b, 20°C, limited virucidal performance)
Test virus: Newcastle disease. Vaccinia virus
Result: 3% 120 minutes
Certificate: Prof Dr. E. F. Kaleta. Frankfurt (M), 30 October 2003

D.2.3 Tested according to EN 14476

Polio virus

Results according EN 14476:2005
Clean conditions 4.0% 30 min.
Dirty conditions 6.0% 120 min.
Certificate, Dr. J Steinmann, MikroLab Bremen, 24 December 2005

Adeno virus

Result according EN 14476:2005
Clean conditions 2.0% 60 min.
4.0 % 30 min.
Dirty condition 2.0% 60 min.
4.0% 30 min.
Certificate: Dr. J. Steinmann, MikroLab Bremen, 20 December 2005

Summary (Polio- and Adeno virus) of Dr. J. Steinmann, MikroLab Bremen

The following concentrations and exposure times are necessary for inactivation of the two test viruses (Polio- and Adeno virus):

4.0% 30 minutes (clean)
6.0% 120 minutes (dirty)

In order to achieve a four \log_{10} reduction (inactivation >99.99%) in a quantitative suspension test according to the EN 14476 under clean and dirty conditions.

After evaluation with Polio virus and Adeno virus the surface disinfectant Lonza can be declared as having "virucidal" properties according to EN 14476:2005.

Therefore, after successful experiments with the above mentioned non-enveloped viruses the surface disinfectant Lonza is also effective against enveloped Viruses including HBC, HCV and HIV.

Avian influenza virus (H3N8/H5N1) Result according EN 14476:2005 Influenza virus

A/duck/Ukraine/1/63 (H3N8) was incorporated as surrogate of Avian influenza virus (H5N1) due to bio safety reasons.

Clean conditions	0.5%	10 min
	1.0%	5 min
Dirty conditions	0.5%	30 min
	1.0%	10 min

Certificate: Dr. J. Steinmann. MikroLab Bremen, 13 February 2006

5.2.4 Tested according other procedures

Canine parvovirus (type-2)

With soil load	1:35 diluted in deionized water	10 min.
	1:35 diluted in 400 ppm AOAC hard water	10 min.

Certificate: MICROBIOTEST Inc., Sterling, Virginia, USA, Study 163-238, 03. Jan 2003