TECHNICAL BULLETIN

PURELL® Hand Sanitising Gel VF481™

DIRECTIONS AND METHOD OF USE:
For a Hygienic hand rub: Use 3 mL of product in the palm of your hands, and rub until it fully evaporates (circa 30 seconds), without forgetting fingernails, thumbs, between fingers, and wrists.
For Surgical hand disinfection: Wash hands, forearms and elbows. Brush fingernails for 1 minute (30 seconds per hand). Rinse. Dry hands completely. 1st stage of surgical disinfection: rub 3 mL portions of product onto your hands, both sides of the wrists, forearms and the whole of the elbows and keep them wet with as much product as necessary for 30 seconds. 2nd stage: Repeat rubbing into forearms (excluding elbows) paying particular attention to edges of fingernails and between the fingers. Continue rubbing for at least 30 seconds until dry. Surgical disinfection is achieved after a 60 second total application.

Physical Properties

Active Ingredient: Alcohol 70% v/v
Appearance: Blue to green
Fragrance: Fragrance Free
Form: Gel
pH: 3.8 – 5.2

Ingredients

INCI Name*	Ingredient Class
Alcohol	Antimicrobial Agent
Aqua	Carrier
Isopropyl Alcohol	Solvent, Denaturant
Diisopropyl Sebacate	Emollient, Skin Moisturizer
Polyquaternium-37	Thickener, Stabilizer, and Conditioning Agent
PEG/PPG-20/6 Dimethicone	Surfactant, Emulsifying Agent
Copper Gluconate	Moisturizer
Pentaerythrityl Tetra-di-t-butyl Hydroxyhydrocinnamate	Antioxidant

*International Nomenclature Cosmetic Ingredient

Document #: 9900-501

PURELL is a trademark of Johnson & Johnson and is used under license

Irritancy Data and Allergy Test Results

21 Day Cumulative Irritancy Assay with Delayed Challenge

Objective:	**Evaluation of skin irritation potential in humans.**
Description of Test:	**Patches were applied to the same sites every day (except Sundays) for three (3) consecutive weeks for a total of 18 applications. Patch test sites were evaluated and recorded daily. Scores recorded on Monday visits were "carried back" and used for Sunday scores resulting in the collection of 21 days of irritation data.**
Independent Laboratory:	**RCTS, INC. Irving, Texas USA**
Date:	**June 14, 2007**
Results:	**Average Score = 0.07 (scale 0 – 4); No sensitization occurred.**
Conclusions:	**Mild in use. Product showed no evidence of inducing contact sensitization in healthy, human subjects.**

Human Repeated Insult Patch Test

Objective:	**Determination of the dermal irritation and sensitization potential of the product.**
Description of Test:	**Human repeated insult patch test.**
Independent Laboratory:	**Clinical Research Laboratories, Inc., Piscataway, New Jersey USA**
Date:	**May 3, 2007**
Results:	**No visible skin reactions were observed during the induction or challenge phases of the study.**
Conclusions:	**Test product demonstrated no potential for eliciting either dermal irritation or sensitization.**

Document #: 9900-501

Exaggerated Hand Wash

Objective:	To determine the skin performance of a hand hygiene product when used with high frequency
Description of Test:	To replicate the damaged skin of health care workers, subjects underwent a 7 day wash out period where Ivory® bar soap was applied for 9 consecutive washes per day and used exclusively for hand washing throughout the wash out period. During the test period, instant hand sanitizer was applied 25 times a day for 4 consecutive days to emulate the high frequency use conditions of a healthcare setting. Each day, baseline and post-wash corneometer (skin hydration) measurements, transepidermal water loss (skin barrier integrity) measurements, clinical grading of erythema, clinical grading of dryness, and subject self-assessment of dryness, redness, tightness, and overall skin condition were captured.
Independent Laboratory:	RCTS, INC. Irving, Texas USA
Date:	July 2, 2007
Results:	Corneometer and transepidermal water loss results indicate that 100 applications of PURELL® VF481™ maintained skin hydration and the skin barrier integrity. Expert evaluations revealed no significant differences in erythema or dryness. Subject self-assessment of dryness showed significant decreases in dryness after 50 and 100 washes. No differences were seen in subject self-assessment of skin redness or tightness. Although there were no significant differences, subject self-assessment of overall skin condition was highly suggestive of an improvement after 50 and 100 washes.
Conclusions:	These results indicate that repeated use of PURELL® VF481™ helps maintain skin condition and skin barrier integrity. In addition, this formulation is mild enough for high frequency use.

Document #: 9900-501

Efficacy Data – European Standards

European Standard EN 14476:2005 Test

Objective:	**To evaluate the virus-inactivating properties of the test product against adenovirus type 5.**
Description of Test:	**European standard EN 14476:2005: Virucidal Quantitative Suspension Test for Chemical Disinfectants and Antiseptics used in Human Medicine (phase 2, step 1)**
Independent Laboratory:	**MikroLab GmbH, Bremen, Germany**
Date:	**June 29, 2007**
Conclusions:	**According to EN 14476:2005, the test product demonstrated effectiveness undiluted against adenovirus type 5 after a contact time of 60 seconds. Therefore, the test product can be declared as virucidal against adenovirus type 5.**

European Standard EN 14476:2005 Test

Objective:	**To evaluate the virus-inactivating properties of the test product against poliovirus type 1.**
Description of Test:	**European standard EN 14476:2005: Virucidal Quantitative Suspension Test for Chemical Disinfectants and Antiseptics used in Human Medicine (phase 2, step 1)**
Independent Laboratory:	**MikroLab GmbH, Bremen, Germany**
Date:	**June 29, 2007**

Conclusions:	**According to EN 14476:2005, the test product demonstrated effectiveness undiluted against poliovirus type 1 after a contact time of 90 seconds. Therefore, the test product can be declared as virucidal against poliovirus type 1.**

European Standard prEN 13727 (April 2006) Test

Objective:	**To determine basic bactericidal activity of test product.**
Description of Test:	**European Norm prEN 13727 DRAFT FOR REVISION (April 2006): Quantitative suspension test for the evaluation of bactericidal activity in the medical area (phase 2, step 1).**
Independent Laboratory:	**HygCen Centrum für Hygiene und medizinische Produktsicherheit GmbH, Schwerin, Germany**
Date:	**August 8, 2007**
Conclusions:	**According to prEN 13727 DRAFT FOR REVISION (April 2006), the test product possesses a bactericidal activity under clean conditions (0.03% albumine) in 15 seconds at 20°C for the referenced strains *Staphylococcus aureus* ATCC 6538, *Enterococcus hirae* ATCC 10541, *Escherichia coli* NCTC 10538 and *Pseudomonas aeruginosa* ATCC 15442 when diluted at 80% and 75% (v/v) in distilled water.**

European Standard DIN EN 1040 (March 2006) Test

Objective:	**To determine basic bactericidal activity of test product.**
Description of Test:	**European Norm DIN EN 1040 (March 2006): Quantitative suspension test for the evaluation of basic bactericidal activity of chemical disinfectants and antiseptics (phase 1).**

Independent Laboratory:	**HygCen Centrum für Hygiene und medizinische Produktsicherheit GmbH, Schwerin, Germany**
Date:	**May 8, 2007**
Conclusions:	**According to DIN EN 1040 (March 2006), the test product possesses a bactericidal activity at 20°C in 30 seconds for the referenced strains *Staphylococcus aureus* ATCC 6538 and *Pseudomonas aeruginosa* ATCC 15442 when diluted at 90% and 50% in distilled water.**

European Standard DIN EN 1275 (March 2006) Test

Objective:	**To determine yeasticidal activity of test product.**
Description of Test:	**European Norm DIN EN 1275 (March 2006): Quantitative suspension test for the evaluation of basic fungicidal or basic yeasticidal activity of chemical disinfectants and antiseptics (phase 1).**
Independent Laboratory:	**HygCen Centrum für Hygiene und medizinische Produktsicherheit GmbH, Schwerin, Germany**
Date:	**May 8, 2007**
Conclusions:	**According to DIN EN 1275 (March 2006) the test product possesses a yeasticidal activity at 20°C in 30 and 60 seconds for the referenced strain *Candida albicans* ATCC 10231 when diluted at 90% (v/v) in distilled water.**

European Standard DIN EN 1275 (March 2006) Test

Objective:	**To determine fungicidal activity of test product.**
Description of Test:	**European Norm DIN EN 1275 (March 2006): Quantitative suspension test for the evaluation of basic fungicidal or**

	basic yeasticidal activity of chemical disinfectants and antiseptics (phase 1).
Independent Laboratory:	**HygCen Centrum für Hygiene und medizinische Produktsicherheit GmbH, Schwerin, Germany**
Date:	**July 31, 2007**
Conclusions:	**According to DIN EN 1275 (March 2006) the test product possesses a fungicidal activity at 20°C in 60 seconds for the referenced strain *Aspergillus niger* ATCC 16404 when diluted at 90% (v/v) in distilled water.**

European Standard DIN EN 14348 (April 2005) Test

Objective:	**To determine mycobactericidal activity of test product.**
Description of Test:	**European Norm DIN EN 14348 (April 2005): Quantitative suspension test for the evaluation of mycobactericidal activity of chemical disinfectants in the medical area including instrument disinfectants (phase2, step 1).**
Independent Laboratory:	**HygCen Centrum für Hygiene und medizinische Produktsicherheit GmbH, Schwerin, Germany**
Date:	**May 31, 2007**
Conclusions:	**According to DIN EN 14348 (April 2005), the test product possesses a mycobactericidal activity for the referenced test strains *Mycobacterium terrae* ATCC 15755 and *Mycobacterium avium* ATCC 15769 at 20°C after a contact time of 30 seconds when diluted at 80% (v/v) and after a contact time of 60 seconds when diluted at 75% (v/v) in distilled water.**

European Standard EN 1500 Test

Objective:	**To evaluate the antimicrobial efficacy of the test product when compared to the reference product, based on the European Standard for testing of a hygienic handrub, EN 1500, *Chemical Disinfectants and Antiseptics- Hygienic Handrub-Test Method and Requirements.***
Description of Test:	**European Norm EN 1500, *Chemical Disinfectants and Antiseptics- Hygienic Handrub-Test Method and Requirements*.**
Independent Laboratory:	**BioScience Laboratories, Inc., Bozeman, Montana USA**
Date:	**June 19, 2007**
Conclusions:	**Reductions in the marker organism, *Escherichia coli* (NCTC# 10538), produced by the test product were not significantly less than those produced by the reference product. Therefore, the test product conforms to the requirements of EN 1500, *Chemical Disinfectants and Antiseptics- Hygienic Handrub-Test Method and Requirements.***

European Standard DIN EN 12791 (October 2005) Test

Objective:	**To determine if the test product is suitable for surgical hand disinfection.**
Description of Test:	**European Norm DIN EN 12791 (October 2005): Test for the evaluation of surgical hand disinfection (phase2, step 2).**
Independent Laboratory:	**HygCen Centrum für Hygiene und medizinische Produktsicherhelt GmbH, Schwerin, Germany**
Date:	**May 24, 2007**
Conclusions:	**According to DIN EN 12791 (October 2005), the test product is suitable for surgical hand disinfection in the following application: Rub 3mL-portions of product onto the hands and keep them wet for 60 seconds.**

Efficacy Data –
Virucidal Suspension Efficacy Test

Virucidal Suspension Efficacy Test SARS associated coronavirus

Objective:	**The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill SARS (Severe Acute Respiratory Syndrome) associated coronavirus (SARS CoV), CDC strain 200300592, in suspension.**
Description of Test:	**The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."**
Independent Laboratory:	**MICROBIOTEST, Inc., Sterling, Virginia USA**
Date:	**May 31, 2007**
Conclusions:	**The test product inactivated SARS CoV by ≥ 5.87 logs when exposed to the test agent for 15 seconds and ≥ 5.87 logs when exposed to the test agent for 30 seconds at 34°C.**

Virucidal Suspension Efficacy Test Rotavirus

Objective:	**The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Rotavirus, ATCC VR-899, in suspension.**
Description of Test:	**The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."**
Independent Laboratory:	**MICROBIOTEST, Inc., Sterling, Virginia USA**
Date:	**June 5, 2007**
Conclusions:	**The test product inactivated Rotavirus by ≥ 4.20 logs when exposed to the test agent for 15 seconds and ≥ 6.64 logs when exposed to the test agent for 30 seconds at 34°C.**

Virucidal Suspension Efficacy Test Human Immunodeficiency Virus Type 1

Objective:	**The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Human Immunodeficiency Virus Type 1, Zeptometrix, in suspension.**
Description of Test:	**The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."**
Independent Laboratory:	**MICROBIOTEST, Inc., Sterling, Virginia USA**
Date:	**May 31, 2007**
Conclusions:	**The test product inactivated Human Immunodeficiency Virus Type 1 by ≥ 5.84 logs when exposed to the test agent for 15 seconds at 33°C and ≥ 5.84 logs when exposed to the test agent for 30 seconds at 33°C.**

Virucidal Suspension Efficacy Test Herpes Simplex Virus Type 1

Objective:	**The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Herpes Simplex Virus Type 1 (HSV 1), ATCC VR-260, in suspension.**
Description of Test:	**The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."**
Independent Laboratory:	**MICROBIOTEST, Inc., Sterling, Virginia USA**
Date:	**May 31, 2007**
Conclusions:	**The test product inactivated Herpes Simplex Virus Type 1 by ≥ 4.13 logs when exposed to the test agent for 15 seconds and ≥ 4.13 logs when exposed to the test agent for 30 seconds at 33-34°C.**

Virucidal Suspension Efficacy Test Respiratory Syncytial Virus

Objective:	**The study is designed to measure virucidal effectiveness**

	of a test agent. It determines the potential of the test agent to kill Respiratory Syncytial Virus, ATCC VR-26, in suspension.
Description of Test:	The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."
Independent Laboratory:	MICROBIOTEST, Inc., Sterling, Virginia USA
Date:	May 31, 2007
Conclusions:	The test product inactivated Respiratory Syncytial Virus by ≥ 6.17 logs when exposed to the test agent for 15 seconds at 34°C and ≥ 6.17 logs when exposed to the test agent for 30 seconds at 34°C.

Virucidal Suspension Efficacy Test Vaccinia Virus

Objective:	The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Vaccinia Virus, ATCC VR-1536, in suspension.
Description of Test:	The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."
Independent Laboratory:	MICROBIOTEST, Inc., Sterling, Virginia USA
Date:	June 7, 2007
Conclusions:	The test product inactivated Vaccinia Virus by ≥ 3.13 logs when exposed to the test agent for 15 seconds and ≥ 3.13 logs when exposed to the test agent for 30 seconds at 34°C.

Virucidal Suspension Efficacy Test Human Influenza A Virus

Objective:	The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Human Influenza A/ Hong Kong/8/68, SPAFAS, in suspension.
Description of Test:	The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated

	E 1052-96 “Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension.”
Independent Laboratory:	MICROBIOTEST, Inc., Sterling, Virginia USA
Date:	June 15, 2007
Conclusions:	The test product inactivated Human Influenza A virus by ≥ 5.92 logs when exposed to the test agent for 15 seconds and ≥ 5.92 logs when exposed to the test agent for 30 seconds at 34°C.

Virucidal Suspension Efficacy Test Human Influenza B Virus

Objective:	The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Human Influenza B/Lee/40, SPAFAS, in suspension.
Description of Test:	The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 “Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension.”
Independent Laboratory:	MICROBIOTEST, Inc., Sterling, Virginia USA
Date:	June 15, 2007
Conclusions:	The test product inactivated Human Influenza B virus by ≥ 6.67 logs when exposed to the test agent for 15 seconds and ≥ 6.67 logs when exposed to the test agent for 30 seconds at 34°C.

Virucidal Suspension Efficacy Test Bovine Viral Diarrhea Virus (Surrogate for Hepatitis C Virus)

Objective:	The study is designed to measure virucidal effectiveness

	of a test agent. It determines the potential of the test agent to kill Bovine viral diarrhea virus, American BioResearch Laboratories, in suspension.
Description of Test:	The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."
Independent Laboratory:	MICROBIOTEST, Inc., Sterling, Virginia USA
Date:	June 15, 2007
Conclusions:	The test product inactivated Bovine viral diarrhea virus by ≥ 3.67 logs when exposed to the test agent for 15 seconds and ≥ 3.67 logs when exposed to the test agent for 30 seconds at 34°C.

Virucidal Suspension Efficacy Test Hepatitis A Virus

Objective:	The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Hepatitis A virus, ATCC VR 1402, in suspension.
Description of Test:	The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."
Independent Laboratory:	MICROBIOTEST, Inc., Sterling, Virginia USA
Date:	June 28, 2007
Conclusions:	The test product inactivated Hepatitis A virus by ≥ 2.50 logs when exposed to the test agent for 15 seconds and ≥ 3.00 logs when exposed to the test agent for 30 seconds at 34°C.

Virucidal Suspension Efficacy Test Simian Virus 40

Objective:	**The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Simian virus 40 (strain Pa-57), ATCC VR-239, in suspension.**
Description of Test:	**The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."**
Independent Laboratory:	**MICROBIOTEST, Inc., Sterling, Virginia USA**
Date:	**July 27, 2007**
Conclusions:	**The test product inactivated Simian virus 40 by ≥ 3.43 logs when exposed to the test agent for 15 seconds and ≥ 3.43 logs when exposed to the test agent for 30 seconds at 35°C.**

Virucidal Suspension Efficacy Test Duck Hepatitis B Virus (Surrogate for Human Hepatitis B virus)

Objective:	**The study is designed to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Duck Hepatitis B virus (DHBV), HepadnaVirus Testing, in suspension.**
Description of Test:	**The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 "Standard Test Method for Efficacy of Antimicrobial Agents against Viruses in Suspension."**
Independent Laboratory:	**MICROBIOTEST, Inc., Sterling, Virginia USA**
Date:	**September 27, 2007**
Conclusions:	**The test product inactivated Duck Hepatitis B virus by ≥ 1.67 logs when exposed to the test agent for 15 seconds and ≥ 1.67 logs when exposed to the test agent for 30 seconds at 33°C.**

In-Vitro Virucidal Efficacy

Virucidal Suspension Efficacy Test Avian Influenza A, H5N1 Strain

Objective: To determine the virucidal efficacy of the product against Avian Influenza A NIBRG-14 [H5N1] virus.

Description of Test: The product was exposed to Avian Influenza A NIBRG-14 [H5N1] for period of 15 seconds followed by MDCK cell infection and incubation to examine the virucidal efficacy of the product against Avian Influenza A NIBRG-14 [H5N1]. Cytotoxicity was determined to establish the detection limit of the assay and the Hemagglutination Assay (HA) was used to determine the presence of virus.

Independent Laboratory: Retroscreen Virology, London, UK

Date: September 11, 2007

Conclusions: The product at test concentrations 90% (v/v) and 72% (v/v) completely inactivated Avian Influenza A NIBRG-14 [H5N1], reducing the viral titer by ≥99.982% in 15 seconds.

Virucidal Suspension Efficacy Test Murine Norovirus

Objective: This study is designated to measure virucidal effectiveness of a test agent. It determines the potential of the test agent to kill Murine Norovirus 1 (MNV-1).

Description of Test: The test follows the principle outlined in the American Society for Test Materials (ASTM) test method designated E 1052-96 “Standard Test Method for Efficacy of Antimicrobial Agents Against Viruses in Suspensions”

Independent Laboratory: Dr. Lee Ann Jaykus, Department of Food Science, North Carolina State University, Raleigh, North Carolina USA

Date: December 21, 2007

Results:

Product	Murine Norovirus Log_{10} Reduction	
	30 seconds	60 seconds
PURELL® Hand Sanitising Gel VF481™	≥3.56	≥3.56

Conclusions: PURELL Hand Sanitising Gel VF481 completely

inactivated Murine Norovirus 1 (≥3.56 logs) after exposure times of 30 and 60 seconds.

Virucidal Fingerpad Efficacy Test Human Norovirus

Objective: To determine the virucidal efficacy of the product against the Norwalk strain of human Norovirus when tested on the Fingerpads of adult volunteers.

Description of Test: The test follows a modified American Society of Testing and Materials E 1838-02 method "Standard Test Method for Determining the Virus-Eliminating Effectiveness of Liquid Hygienic Handwash and Handrub Agents Using the Fingerpads of Adult Volunteers."

Independent Laboratory: Dr. Christine Moe, Ph.D., Rollins School of Public Health, Atlanta, Georgia, USA

Date: July 16, 2008

Results:

Product	Norwalk Virus Log_{10} Reduction	
	15 seconds	30 seconds
PURELL® Hand Sanitising Gel VF481™	3.67	2.98

Conclusions: PURELL Hand Sanitising Gel VF481 is an effective hand sanitiser against Norwalk virus with an observed mean log reduction of 2.98 after a 30 sec contact time and 3.7 after a 15 sec contact time.

Efficacy Data – *In Vitro*

Timed – Exposure Kill Evaluation

Objective: Evaluate the antimicrobial effectiveness of the product *in vitro.*

Description of Test: Fifteen (15) and thirty (30) second time-kill evaluations were performed utilizing fifty six (56) challenge bacterial strains. The challenge inoculum was introduced to the test product at time zero; a portion of the sample was removed and placed in neutralizing media at the appropriate time (15 and/ or 30 seconds). Standard plate counting

techniques were used to enumerate viable challenge microorganisms.

Independent Laboratory: BioScience Laboratories, Inc., Bozeman, Montana USA

Date: May 17, 2007; September 26, 2007; February 29, 2008

Results:

Challenge Microbe	ATCC No. or NRS No.	Exposure (seconds)	Percent Reduction
Acinetobacter baumannii	19606	15	≥99.9999%
Aspergillus flavus	9643	30	≥99.8914%
Bacillus megaterium (vegetative cells)	14581	15	≥99.9945%
Bacteroides fragilis	29762	15	≥99.9991%
Burkholderia cepacia	25416	15	≥99.9998%
Campylobacter jejuni	29428	15	≥99.9999%
Candida tropicalis	13803	30	≥99.9999%
Citrobacter freundii	8090	15	≥99.9999%
Clostridium difficile (vegetative cells)	9689	15	≥99.9994%
Clostridium perfringens (vegetative cells)	13124	15	≥99.9710%
Corynebacterium diphtheriae	11913	15	≥99.9986%
Enterobacter aerogenes	13048	15	≥99.9999%
Enterococcus faecalis	29212	15	≥99.9998%
Enterococcus faecium (MDR, VRE)	51559	15	≥99.9999%
Enterococcus faecium (MDR, VRE)	51559	15	≥99.9997%
Escherichia coli	11229	15	≥99.9998%
Escherichia coli	25922	15	≥99.9998%
Escherichia coli (serotype O157:H7)	43888	15	≥99.9998%
Escherichia coli (serotype O157:H7)	35150	15	≥99.9997%
Epidermophyton floccosum	52063	15	≥99.8571%
Haemophilus influenzae, MDR	33930	15	≥99.9999%
Klebsiella pneumoniae ozaenae	11296	15	≥99.9998%
Klebsiella pneumoniae pneumoniae	13883	15	≥99.9999%
Lactobacillus plantarum	14917	15	≥99.9999%

Listeria monocytogenes	7644	15	**≥99.9999%**
Listeria monocytogenes	15313	15	**≥99.9999%**
Micrococcus luteus	7468	30	**≥99.9998%**
Penicillium citrinum	9849	30	**≥99.9925%**
Proteus hauseri	13315	15	**≥99.9999%**
Proteus mirabilis	7002	15	**≥99.9999%**
Pseudomonas aeruginosa	27853	15	**≥99.9998%**
***Salmonella enterica enterica* serovar Choleraesuis**	10708	15	**≥99.9999%**
***Salmonella enterica enterica* serovar Choleraesuis**	10708	15	**≥99.9999%**
***Salmonella enterica enterica* serovar Enteritidis**	13076	15	**≥99.9999%**
***Salmonella enterica enterica* serovar Typhimurium**	14028	15	**≥99.9999%**
Serratia marcescens	14756	15	**≥99.9999%**
Shigella dysenteriae	13313	15	**≥99.9996%**
Shigella sonnei	11060	15	**≥99.9999%**
Staphylococcus aureus aureus	29213	15	**≥99.9999%**
Staphylococcus aureus aureus	6538	15	**≥99.9999%**
***Staphylococcus aureus aureus*, (MRSA)**	33591	15	**≥99.9999%**
Staphylococcus aureus*, MRSA	BSLI # 051707MRSa1	15	**≥99.9999%**
Healthcare-Acquired *Staphylococcus aureus* MRSA* Strain USA100	NRS382	15	**≥99.9999%**
Healthcare-Acquired *Staphylococcus aureus* MRSA* Strain USA200	NRS383	15	**≥99.9999%**
Community-Acquired *Staphylococcus aureus* MRSA* Strain USA300	NRS384	15	**≥99.9999%**
Community-Acquired *Staphylococcus aureus* MRSA* Strain USA400	NRS123	15	**≥99.9999%**
Healthcare-Acquired *Staphylococcus aureus* MRSA* Strain USA500	NRS385	15	**≥99.9999%**
Community-Acquired *Staphylococcus aureus* MRSA* Strain USA1000	NRS483	15	**≥99.9999%**

Community-Acquired *Staphylococcus aureus* MRSA• Strain USA1100	NRS484	15	**≥99.9999%**
Staphylococcus epidermidis	12228	15	**≥99.9998%**
Staphylococcus haemolyticus	43253	15	**≥99.9999%**
Staphylococcus hominis hominis	27845	15	**≥99.9995%**
Staphylococcus saprophyticus	49453	15	**≥99.9999%**
Streptococcus pneumoniae	33400	15	**≥99.9986%**
Streptococcus pyogenes	19615	15	**≥99.9999%**
Trichophyton mentagrophytes	9533	15	**≥99.9966%**
Vibrio cholerae	11558	15	**≥99.9998%**

• = Clinical Isolate
MRSA = Methicillian-Resistant *Staphylococcus aureus*

Glove Compatibility

Test Method	**ASTM D5151-99** **Glove samples were immersed in product for a period of 2 hours and then examined for leaks. The control samples were not exposed to product.**
Testing Lab	**Smithers Scientific Services, Inc, Akron, Ohio USA**
Date	**May 14, 2007**
Purpose of Study	**Determine the effect of product on Medical Exam Gloves including powder-free/ latex free nitrile, powder-free latex and powder-free PVC medical exam gloves.**
Sample Size:	**100 control gloves and 100 gloves were tested with the test product on each of three glove types. Tested were 100 each of powder-free/ latex free nitrile, powder-free latex and powder-free PVC medical exam gloves.**
Results:	**In the test set, there was one leak detected on 2 powder free PVC gloves. There were no leaks in any of the other test or control gloves.**
Conclusion:	**The test product does not impact the integrity of powder-free/ latex free nitrile, powder-free latex and powder-free PVC latex medical exam gloves.**