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## EFFICACY DATA for Product Central 103/203 SC-NDC-256 HBV Disinfectant 256 (EPA Reg. No. 1839-214)

### DISINFECTION DATA:

**Test Method:** AOAC Use Dilution

**Test Conditions:** ½ oz/gal dilution, 5% organic soil load, 400 ppm hard water, room temperature, stainless steel carrier substrates

**Results:**

<u>Test Organism</u>	<u>Sample</u>	<u>No. of Carriers</u>		<u>Contact Time</u>
		<u>Exposed</u>	<u>Positive</u>	
<i>Enterobacter aerogenes</i> (ATCC 13048)	A	10	0	10 minutes
	B	10	0	
<i>Enterococcus faecium</i> (ATCC 6569)	A	10	0	5 minutes
	B	10	0	
<i>Escherichia coli</i> (ATCC 8739)	A	10	0	5 minutes
	B	10	0	
<i>Escherichia coli</i> O157:H7 (ATCC 43895)	A	20	0	5 minutes
	B	10	0	
<i>Klebsiella pneumoniae</i> (ATCC 13883)	A	10	0	5 minutes
	B	10	0	
<i>Listeria monocytogenes</i> (ATCC 984)	A	10	0	5 minutes
	B	10	0	
<i>Proteus mirabilis</i> (clinical isolate)	A	10	0	5 minutes
	B	10	0	
<i>Proteus vulgaris</i> (ATCC 33420)	A	10	0	5 minutes
	B	10	0	
<i>Pseudomonas aeruginosa</i> (ATCC 15442)	A	60	0	10 minutes
	B	60	0	
	C	60	0	
	D	20	0	
	E	10	0	
<i>Salmonella (choleraesuis) enterica</i> (ATCC 10708)	A	60	0	10 minutes
	B	60	0	
	C	60	0	
	D	10	0	
	E	10	0	
<i>Salmonella (enteritidis) enterica</i> (ATCC 13076)	A	10	0	5 minutes
	B	10	0	
<i>Salmonella (pullorum) enterica</i> (ATCC 9120)	A	10	0	5 minutes
	B	10	0	
<i>Salmonella (typhi) enterica</i> (ATCC 6539)	A	10	0	5 minutes
	B	10	0	
<i>Salmonella (typhimurium) enterica</i> (ATCC 14028)	A	10	0	5 minutes
	B	10	0	
<i>Serratia marcescens</i> (Industry Isolate)	A	10	0	5 minutes
	B	10	0	

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**DISINFECTION DATA (continued):**

<u>Test Organism</u>	<u>Sample</u>	<u>No. of Carriers</u>		<u>Contact Time</u>
		<u>Exposed</u>	<u>Positive</u>	
<i>Shigella flexneri</i> (ATCC 12022)	A	10	0	5 minutes
	B	10	0	
<i>Shigella sonnei</i> (ATCC 9290)	A	10	0	5 minutes
	B	10	0	
<i>Staphylococcus aureus</i> (ATCC 6538)	A	60	0	10 minutes
	B	60	0	
	C	60	0	
	D	10	0	
	E	10	0	
<i>Staphylococcus epidermidis</i> (ATCC 14990)	A	10	0	5 minutes
	B	10	0	
<i>Streptococcus pyogenes</i> (ATCC 19615)	A	10	0	5 minutes
	B	10	0	
<i>Yersinia enterocolitica</i> (ATCC 23715)	A	10	0	5 minutes
	B	10	0	
<b>ANTIBIOTIC RESISTANT BACTERIA:</b>				
Antibiotic resistant <i>Enterococcus faecium</i> (clinical isolate) [Antibiotic Resistance to Ciprofloxacin, Penicillin, Vancomycin]	A	10	0	5 minutes
	B	10	0	
Antibiotic resistant <i>Escherichia coli</i> (clinical isolate) [Antibiotic Resistance to Methicillin]	A	10	0	5 minutes
	B	10	0	
Antibiotic resistant <i>Klebsiella pneumoniae</i> (clinical isolate) [Antibiotic Resistance to Methicillin]	A	10	0	5 minutes
	B	10	0	
Antibiotic resistant <i>Staphylococcus epidermidis</i> (clinical isolate) [Antibiotic Resistance to Amoxicillin/CA, Ampicillin/Sulbatam, Cefazolin, Ciprofloxacin, Clindamycin, Erythromycin, Gen- tamicin, Levofloxacin, Oxacillin, Penicillin, Rifampin, Trimeth- sulfa]	A	10	0	5 minutes
	B	10	0	
Extended Spectrum Beta-Lactamase (ESBL) <i>Escherichia coli</i> (ATCC BAA-196) [Antibiotic Resistance to Ceftazidime, Penicillin]	A	10	0	5 minutes
	B	10	0	
Methicillin resistant <i>Staphylococcus aureus</i> (MRSA) (ATCC 33591)	A	10	0	5 minutes
	B	10	0	
Multi-Drug Resistant (MDR) <i>Acinetobacter baumannii</i> (ATCC 19606) [Antibiotic Resistance to Amoxicillin/Clavulanic acid, Ampicil- lin/Sublactam, Aztreonam, Benzylpenicillin, Cefepime, Cefo- taxime, Cefoxitin, Ceftazadime, Ceftriaxone, Cefuroxime, Chloramphenicol, Clindamycin, Daptomycin, Erythromycin, Linezolid, Oxacillin, Penicillin, Quinupristin/Dalfopristin, Spectinomycin, Tetracycline, Tigecycline, Trimethoprim/sul- famethoxazole, Vancomycin ]	A	10	0	5 minutes
	B	10	0	
Oxacillin resistant <i>Streptococcus pneumoniae</i> (ATCC 35088)	A	10	0	5 minutes
	B	10	0	
Vancomycin Resistant <i>Enterococcus faecium</i> (VRE) (clinical isolate) [Antibiotic Resistance to Ciprofloxacin, Penicillin, Vancomycin]	A	10	0	5 minutes
	B	10	0	

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**DISINFECTION DATA (continued):**

<u>Test Organism</u>	<u>Sample</u>	<u>No. of Carriers</u>		<u>Contact Time</u>
		<u>Exposed</u>	<u>Positive</u>	
Vancomycin Intermediate Resistant <i>Staphylococcus aureus</i> (VISA) (ATCC 700699) [Antibiotic Resistance to Amikacin, Amoxicillin/clavulanic acid, Ampicillin, Aztreonam, Benzylpenicillin, Cefepime, Cefotaxime, Cefoxitin, Ceftazadime, Ceftriaxone, Cefuroxime, Ciprofloxacin, Clindamycin, Erythromycin, Gentamicin, Imipenem, Levofloxacin, Meropenem, Minocycline, Oxacillin, Penicillin, Piperacillin/Tazobactam, Rifampicin, Spectinomycin, Tetracycline, Ticarcillin/clavulanic acid, Vancomycin]	A	10	0	5 minutes
	B	10	0	

**Conclusion:** Under the conditions of these investigations, SC-NDC-256 demonstrated **disinfectant** activity against *Enterobacter aerogenes*, *Enterococcus faecium*, *Escherichia coli*, *Escherichia coli* O157:H7, *Klebsiella pneumoniae*, *Listeria monocytogenes*, *Proteus mirabilis*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Salmonella (choleraesuis) enterica*, *Salmonella (enteritidis) enterica*, *Salmonella (pullorum) enterica*, *Salmonella (typhi) enterica*, *Salmonella (typhimurium) enterica*, *Serratia marcescens*, *Shigella flexneri*, *Shigella sonnei*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus pyogenes* and *Yersinia enterocolitica*, according to criteria established by the U.S. Environmental Protection Agency for registration and labeling of a disinfectant product as a bactericide.

SC-NDC-256 also demonstrated **disinfectant** activity against the following antibiotic resistant bacteria: Antibiotic resistant *Enterococcus faecium*, Antibiotic resistant *Escherichia coli*, Antibiotic resistant *Klebsiella pneumoniae*, Antibiotic resistant *Staphylococcus epidermidis*, Extended Spectrum Beta-Lactamase (ESBL) *Escherichia coli*, Methicillin Resistant *Staphylococcus aureus* (MRSA), Multi-Drug Resistant (MDR) *Acinetobacter baumannii*, Oxacillin resistant *Streptococcus pneumoniae*, Vancomycin Resistant *Enterococcus faecium* (VRE) and Vancomycin Intermediate Resistant *Staphylococcus aureus* (VISA).

**VIRUCIDAL DATA:**

**Test Methods:**

\* U.S. E.P.A. Pesticide Assessment Guidelines, Subdivision G: Product Performance, Section 91-2 (f), and Section 91-30, (d), (e), November 1982.

† Protocols for Testing the Efficacy of Disinfectants against Hepatitis B Virus (HBV) (EPA, Federal Register, Vol. 65, No. 166, 8/25/2000, p. 51828).

‡ Protocol for Testing Disinfectants against Hepatitis C Virus using Bovine Viral Diarrhea Virus as approved by the U.S. EPA on August 15, 2002.

**Test Conditions:** ½ oz/gal dilution, 5% organic soil load, 400 ppm hard water, room temperature, sterile glass petri dishes

**Results:**

<u>Test Organism</u>	<u>Sample</u>	<u>Titer Reduction</u>	<u>Contact Time</u>
*Avian Influenza Virus (H9N2)	A	≥3.42 log <sub>10</sub>	5 minutes
	B	≥3.42 log <sub>10</sub>	
	C	≥3.42 log <sub>10</sub>	
‡Bovine Viral Diarrhea Virus (BVDV) (ATCC 534)	A	≥4.25 log <sub>10</sub>	5 minutes
	B	≥4.25 log <sub>10</sub>	
	C	≥4.25 log <sub>10</sub>	
†Hepatitis B Virus (HBV) (Duck Hepatitis B Virus-DHBV)	A	4.5 log <sub>10</sub>	3 minutes
	B	4.5 log <sub>10</sub>	
‡Hepatitis C Virus (HCV) (Bovine Viral Diarrhea Virus - BVDV)	A	≥4.25 log <sub>10</sub>	5 minutes
	B	≥4.25 log <sub>10</sub>	
	C	≥4.25 log <sub>10</sub>	

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**VIRUCIDAL DATA (continued):**

**Results:**

<u>Test Organism</u>	<u>Sample</u>	<u>Titer Reduction</u>	<u>Contact Time</u>
*Herpes Simplex Virus Type 1 (ATCC VR-733)	A	≥4.75 log <sub>10</sub>	5 minutes
	B	≥4.75 log <sub>10</sub>	
*Herpes Simplex Virus Type 2 (ATCC VR-734)	A	≥4.25 log <sub>10</sub>	5 minutes
	B	≥4.25 log <sub>10</sub>	
*Human Immunodeficiency Virus Type 1, (associated with AIDS)	A	≥4.75 log <sub>10</sub>	30 seconds
	B	≥4.75 log <sub>10</sub>	
*Influenza Virus Type A <sub>2</sub> (ATCC VR-544)	A	≥5.0 log <sub>10</sub>	5 minutes
	B	≥5.0 log <sub>10</sub>	
*Pandemic 2009 H1N1 Influenza A Virus	(Refer to NOTE below.)		
*Pseudorabies (ATCC VR-135)	A	≥5.75 log <sub>10</sub>	5 minutes
	B	≥5.75 log <sub>10</sub>	
*Respiratory Syncytial Virus (RSV) (ATCC VR-26)	A	≥4.25 log <sub>10</sub>	5 minutes
	B	≥4.25 log <sub>10</sub>	
*Rotavirus (ATCC VR-899)	A	≥4.85 log <sub>10</sub>	5 minutes
	B	≥4.85 log <sub>10</sub>	
	C	≥4.85 log <sub>10</sub>	
*SARS Associated Coronavirus	A	≥3.25 log <sub>10</sub>	5 minutes
	B	≥3.25 log <sub>10</sub>	
	C	≥3.25 log <sub>10</sub>	
*Vaccinia, (ATCC VR-119)	A	≥6.0 log <sub>10</sub>	5 minutes
	B	≥6.0 log <sub>10</sub>	

**Conclusion:** Under the conditions of this investigation, SC-NDC-256 demonstrated **virucidal** activity against Avian Influenza Virus (H9N2), Bovine Viral Diarrhea Virus (BVDV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Herpes Simplex Virus Type 1, Herpes Simplex Virus Type 2, Human Immunodeficiency Virus (HIV-1), Influenza Virus Type A<sub>2</sub>, Pandemic 2009 H1N1 Influenza A Virus, Pseudorabies, Respiratory Syncytial Virus (RSV), Rotavirus, SARS Associated Coronavirus and Vaccinia according to criteria established by the U.S. Environmental Protection Agency for registration and labeling of a disinfectant product as a virucide.

**NOTE:** Per the EPA guidance document dated October 21, 2009, disinfectant products that bear label claims against human, avian, or swine influenza A virus, and have submitted and received approval of efficacy data to support these label claims, may include a label claim against the Pandemic 2009 H1N1 Influenza A Virus.

**FUNGICIDAL DATA:**

**Test Method:** AOAC Use Dilution (Fungicidal Modification)

**Test Conditions:** ½ oz/gal dilution, 5% organic soil load, 400 ppm hard water, room temperature, stainless steel carriers

**Results:**

<u>Test Organism</u>	<u>Sample</u>	<u>No. of Carriers</u>		<u>Contact Time</u>
		<u>Exposed</u>	<u>Positive</u>	
<i>Trichophyton mentagrophytes</i> (ATCC 9533)	A	10	0	10 minutes
	B	10	0	
<i>Candida albicans</i> (ATCC 10231)	A	10	0	5 minutes
	B	10	0	

**Conclusions:** Under the conditions of this investigation, SC-NDC-256 demonstrated **fungicidal** activity against *Trichophyton mentagrophytes* at 10 minutes contact time and *Candida albicans* at 5 minutes contact time according to criteria established by the U.S. Environmental Protection Agency for registration and labeling of a disinfectant product as a fungicide.



**MILDEWCIDAL:**

**Test Method:** AOAC Use Dilution (Mildewcidal Modification)  
**Test Organism:** *Aspergillus niger* (ATCC 6275)  
**Test Conditions:** ½ oz/gal dilution, 5% organic soil load, 400 ppm hard water,  
 10 minute contact time, room temperature, ceramic tile carriers

**Results:**

Sample	No. of Carriers	
	Exposed	Positive
A	10	0
B	10	0

**Conclusion:** Under the conditions of this investigation, SC-NDC-256 demonstrated **mildewcidal** activity against *Aspergillus niger* according to criteria established by the U.S. Environmental Protection Agency for registration and labeling of a disinfectant product as a fungistat.

**NON-FOOD CONTACT SANITIZATION DATA:**

**Test Method:** Sanitizer Test for Inanimate Non-Food Contact Surfaces (EPA DIS/TSS-10, 07 Jan 82)  
**Test Conditions:** ½ oz/gal dilution, 5% organic soil load, 15 second contact time, room temperature

**Results:**

Test Organism	Sample	% Kill
<i>Enterobacter aerogenes</i> (ATCC 13048)	A	≥99.9
	B	≥99.9
<i>Escherichia coli</i> O157:H7 (ATCC 35150)	A	≥99.9
	B	≥99.9
<i>Klebsiella pneumoniae</i> (ATCC 4352)	A	≥99.9
	B	≥99.9
	C	≥99.9
Methicillin resistant <i>Staphylococcus aureus</i> (MRSA) (ATCC 33592)	A	≥99.9
	B	≥99.9
<i>Pseudomonas aeruginosa</i> (ATCC 15442)	A	≥99.9
	B	≥99.9
<i>Salmonella (typhi) enterica</i> (ATCC 6539)	A	≥99.9
	B	≥99.9
<i>Staphylococcus aureus</i> (ATCC 6538)	A	≥99.9
	B	≥99.9
	C	≥99.9
<i>Streptococcus pyogenes</i> (ATCC 19615)	A	≥99.9
	B	≥99.9
Vancomycin resistant <i>Enterococcus faecium</i> (VRE) (ATCC 51559)	A	≥99.9
	B	≥99.9

**Conclusion:** Under the conditions of these investigations, SC-NDC-256 demonstrated **non-food contact sanitizing activity** against *Enterobacter aerogenes*, *Escherichia coli* O157:H7, *Klebsiella pneumoniae*, Methicillin resistant *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Salmonella (typhi) enterica*, *Staphylococcus aureus*, *Streptococcus pyogenes* and Vancomycin resistant *Enterococcus faecium* (VRE) according to criteria established by the U.S. Environmental Protection Agency for registration and labeling of a disinfectant product as a sanitizer.