NON-ACID DISINFECTANT CLEANER

Disinfectant, Cleaner, Mildewstat, Fungicide, Virucide*, Deodorizer

SUMMARY OF ANTIMICROBIAL ACTIVITY

Description:

DBK is a hospital disinfectant cleaner that is effective against a broad spectrum of bacteria, viruses or fungi and will inhibit the growth of mold and mildew and their odors. It uses quaternary ammonium chlorides as its disinfectant base that has been proven highly effective in the presence of organic soils.

Approved for use against SARS-CoV-2, the virus that causes COVID-19 (on U.S. EPA List N).

Regulatory Summary

EPA Registration No.	10324-85
Sub-Registrant No.	15567
USDA Authorization	None
California Status	None
Canadian PCP#	None
Canadian Din#	None

Physical Properties

pH of Concentrate	7- 9
Specific Gravity @ 25°C	1.000
Pounds per gallon @ 25°C	8.36

Flash Point (PMCC)	>200 °F
% Quat (mol. wt.360.5)	0.086-0.0946
% Volatile	98+

CREATIVE CHEMICALS

Manufactured By:
Creative Chemicals, Inc.,
88 Winter St.,
Holyoke, MA 01040

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Hospital Disinfection:

DBK is bactericidal according to the AOAC Use Dilution Test method on hard inanimate surfaces modified in the presence of 5% organic serum (850 ppm active). Treated surfaces must remain wet for 10 minutes.

(Testing is performed per the AOAC UDT/GST method (DIS/TSS-1). Sixty carriers are required on 3 separate lots, one of which must be >60 days old against Pseudomonas aeruginosa, Salmonella enterica and Staphylococcus aureus. Killing of 59 out of 60 carriers is required (total carriers = 540).)

Organism	Carrier Population	Sample	# Carriers	# Positive
Pseudomonas aeruginosa ATCC #15442	2.3 X 10 ^{6} CFU/Carrier	A (60 Days Old)	60	0/60
	1.7 X 10 ^{6} CFU/Carrier	B	60	0/60
	1.3 X 10 ^{6} CFU/Carrier	C	60	1/60
Salmonella enterica ATCC #10708	1.1 X 10 ^{5} CFU/Carrier	A (60 Days Old)	60	0/60
	1.5 X 10 ^{6} CFU/Carrier	B	60	0/60
	2.1 X 10 ^{6} CFU/Carrier	C	60	0/60
Staphylococcus aureus ATCC #6538	1.5 X 10 ^{6} CFU/Carrier	A (60 Days Old)	60	0/60
	1.4 X 10 ^{6} CFU/Carrier	B	60	0/60
	4.7 X 10 ^{5} CFU/Carrier	C	60	0/60

Supplemental Organisms

(Testing is performed per the AOAC UDT/GST method. Ten carriers are required on 2 separate lots against each supplemental organism. Killing of 10 out of 10 carriers is required (total carriers = 20).)

Organism	Carrier Population	Sample	# Carriers	# Positive
Burkholderia cepacia ATCC 25416	3.5 X 10 ^{6} CFU/Carrier	A	10	0/10
		B	10	0/10
Campylobacter jejuni ATCC 29428	2.9 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Corynebacterium ammoniagenes ATCC 6871	1.8 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Enterobacter aerogenes ATCC 13048	4.1 X 10 ^{6} CFU/Carrier	A	10	0/10
		B	10	0/10
Enterobacter cloacae Clinical Isolate	3.9 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Enterobacteriaciae with extended beta-lactamase resistance ATCC BAA-72	6.6 X 10 ^{4} CFU/Carrier	A	10	0/10
	1.25 X 10 ^{6} CFU/Carrier	B	10	0/10
Enterococcus faecalis ATCC 19433	9.4 X 10 ^{4} CFU/Carrier	A	10	0/10
		B	10	0/10
Enterococcus faecium Vancomycin Resistant (VRE)	4.5 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Escherichia coli ATCC 11229	3.2 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Escherichia coli Antibiotic Resistant Clinical Isolate	3.9 X 10 ^{5} CFU/Carrier	A	20	0/20
		B	20	0/20
Escherichia coli 0157:H7 ATCC 35150	1.1 X 10 ^{4} CFU/Carrier	A	20	0/20
		B	20	0/20
Klebsiella pneumoniae ATCC 4352	9.9 X 10 ^{4} CFU/Carrier	A	10	0/10
		B	10	0/10
Klebsiella pneumoniae Antibiotic Resistant Clinical Isolate	2.7 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Legionella pneumophila ATCC 33153	8.2 X 10 ^{7} CFU/Carrier	A	10	0/10
		B	10	010
Listeria monocytogenes ATCC 984	1.85 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10

Proteus mirabilis Clinical Isolate	1.9 X 10 ^{6} CFU/Carrier	A	20	0/20
		B	20	0/20
Proteus vulgaris ATCC 33420	4.55 X 10 ^{4} CFU/Carrier	A	20	0/20
		B	20	0/20
Pseudomonas aeruginosa Clinical Isolate	1.2 X 10 ^{6} CFU/Carrier	A	10	0/10
		B	10	0/10
Salmonella typhi ATCC 6539	5.1 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Serratia marcescens ATCC 43861	1.5 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Shigella dysenteriae ATCC 9361	5.45 X 10 ^{4} CFU/Carrier	A	10	0/10
		B	10	0/10
Shigella flexneri ATCC 12022	4.85 X 10 ^{4} CFU/Carrier	A	20	0/20
		B	20	0/20
Shigella sonnei ATCC 9290	2.75 X 10 ^{4} CFU/Carrier	A	20	0/20
		B	20	0/20
Staphylococcus aureus (Methicillin Resistant) *(MRSA)* ATCC 33591	1.45 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Community Associates Methicillin Resistant *Staphylococcus aureus* (CA-MRSA) (NRS) (Genotype USA400)	2.77 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Staphylococcus epidermidis Antibiotic Resistant Clinical Isolate	4.2 X 10 ^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Streptococcus pyogenes ATCC 19615	3.35 X 10 ^{6} CFU/Carrier	A	10	0/10
		B	10	0/10
Vibrio cholera ATCC 11623	9.3 X 10 ^{6} CFU/Carrier	A	10	0/10
		B	10	0/10

Virucidal Performance:

DBK was evaluated in the presence of 5% serum (850 ppm quat active), with a 10 minute contact time and found to be effective against the following viruses on hard nonporous environmental surfaces.

Organism	Dried Virus Control;	Sample	Result	Log Reduction
Avian Influenza A (H5N1) Virus	4.5 Log $_{10}$	A	≤0.5 Log $_{10}$	≥4.0 Log $_{10}$
		B	≤0.5 Log $_{10}$	≥4.0 Log $_{10}$
Avian influenza /Turkey/Wisconsin ATCC VR-798	6.0 Log $_{10}$	A	≤1.5 Log $_{10}$	≥4.5 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥4.5 Log $_{10}$
Canine Coronavirus ATCC VR-809	4.75 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.25 Log $_{10}$
		B	≤0.5 Log $_{10}$	≥4.25 Log $_{10}$
Canine Distemper	5.0 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
Hantavirus	5.0 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
Hepatitis B Virus	5.5 Log $_{10}$	A	≤1.5 Log $_{10}$	≥4.0 Log $_{10}$
	5.5 Log $_{10}$	B	≤1.5 Log $_{10}$	≥4.5 Log $_{10}$
	4.5 Log $_{10}$	Confirmatory A	≤1.5 Log $_{10}$	≥3.0 Log $_{10}$
Hepatitis C Virus ATCC CCL-22	6.84 Log $_{10}$	A	≤1.51 Log $_{10}$	≥5.33 Log $_{10}$
	6.84 Log $_{10}$	B	≤1.51 Log $_{10}$	≥5.33 Log $_{10}$
	7.14 Log $_{10}$	Confirmatory B	≤1.7 Log $_{10}$	≥5.44 Log $_{10}$
Herpes Simplex Type 1 ATCC VR-260	5.0 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
Herpes Simplex Type 2 ATCC VR-734	5.0 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
Human Coronavirus ATCC VR-740	4.75 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.25 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.25 Log $_{10}$
Human Immunodeficiency Virus type 1 (HIV 1) HTLV-III $_{RF}$	6.5 Log $_{10}$	A	≤2.5 Log $_{10}$	≥4.0 Log $_{10}$
		B	≤2.5 Log $_{10}$	≥4.0 Log $_{10}$
Influenza A (H1N1) virus ATCC VR-1469	4.5 Log $_{10}$	A	≤0.5 Log $_{10}$	≥4.0 Log $_{10}$
		B	≤0.5 Log $_{10}$	≥4.0 Log $_{10}$

Influenza A/Brazil Virus	4.8 Log $_{10}$	A	≤0.5 Log $_{10}$	≥4.3 Log $_{10}$
		B	≤0.5 Log $_{10}$	≥4.3 Log $_{10}$
Infectious Bovine Rhinotracheitis virus (IBR) ATCC VR-188	5.0 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.5 Log $_{10}$
Newcastle disease virus ATCC VR-109	6.3 Log $_{10}$	A	≤1.5 Log $_{10}$	≥4.8 Log $_{10}$
	5.8 Log $_{10}$	B	≤1.5 Log $_{10}$	≥4.3 Log $_{10}$
Porcine Respiratory & Reproductive (PRRSV) Strain NVSL	5.5 Log $_{10}$	A	≤1.5 Log $_{10}$	≥4.0 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥4.0 Log $_{10}$
Porcine Rotavirus ATCC VR-893	4.5 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.0 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.0 Log $_{10}$
Pseudorabies virus ATCC VR-135	4.5 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.0 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.0 Log $_{10}$
Respiratory syncytial virus ATCC VR-26, Strain Long	4.5 Log $_{10}$	A	≤1.5 Log $_{10}$	≥3.0 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥3.0 Log $_{10}$
Transmissible Gastroenteritis (TGE) ATCC VR-742	5.7 Log $_{10}$	A	≤2.5 Log $_{10}$	≥3.2 Log $_{10}$
		B	≤2.5 Log $_{10}$	≥3.2 Log $_{10}$
Vaccinia virus	5.5 Log $_{10}$	A	≤1.5 Log $_{10}$	≥4.0 Log $_{10}$
		B	≤1.5 Log $_{10}$	≥4.0 Log $_{10}$

Non-Food Contact Surface Sanitizer:

DBK is effective on hard porous non-food contact surfaces. Treated surfaces must remain wet for 5 minutes. Then wipe with sponge, mop or cloth or allow to air dry. Food contact surfaces must be rinsed.

Testing is performed per EPA Guidance (DIS/TSS-10). Three lots are required, one of which must be > 60 days old. Testing is performed against Staphylococcus aureus and Klebsiella pneumoniae containing 5% organic load. Enterobacter aerogenes may be substituted for Klebsiella pneumoniae. The results must show a reduction of at least 99.9% (3 Log10) in the number of each test microorganism over the parallel control count within 5 minutes.

Organism	Carrier Population	Sample	60 Second Kill cfu/Carrier	3 Minute Kill cfu/Carrier
Klebsiella pneumoniae ATCC 4352	5.46 Log $_{10}$	A (60 Days Old)	3.69 Log $_{10}$	4.55 Log $_{10}$
		B	2.64 Log $_{10}$	4.55 Log $_{10}$
		C	4.46 Log $_{10}$	4.55 Log $_{10}$
Staphylococcus aureus ATCC #6538	5.18 Log $_{10}$	A (60 Days Old)	3.84 Log $_{10}$	5.26 Log $_{10}$
		B	5.2 Log $_{10}$	5.26 Log $_{10}$
		C	5.2 Log $_{10}$	5.26 Log $_{10}$

Mold and Mildew Control:

Use DBK to control the growth of mold and mildew and their odors on hard, non-porous surfaces. Thoroughly wet all treated surfaces completely. Let air-dry. Repeat application weekly or when growth or odor reappears.

Organism	Tile Number	Untreated After 7 Days	Sample A After 7 Days	Sample B After 7 Days
Aspergillus niger ATCC #6275	1	Growth 100%	No Growth 0%	No Growth 0%
	2	Growth 100%	No Growth 0%	No Growth 0%
	3	Growth 80%	No Growth 0%	No Growth 0%
	4	Growth 80%	No Growth 0%	No Growth 0%
	5	Growth 100%	No Growth 0%	No Growth 0%
	6	Growth 80%	No Growth 0%	No Growth 0%
	7	Growth 80%	No Growth 0%	No Growth 0%
	8	Growth 80%	No Growth 0%	No Growth 0%
	9	Growth 80%	No Growth 0%	No Growth 0%
	10	Growth 80%	No Growth 0%	No Growth 0%

Fungicidal Performance:

DBK was evaluated at 2 ounces per gallon in the presence of 5% serum and 400 ppm hard water with a 10 minute contact time and found to be effective against the following fungi on hard nonporous environmental surfaces.

(Testing is performed per the AOAC fungicidal method (DIS/TSS-6). Two separate lots are tested against Trichophyton mentagrophytes in a suspension test. Killing of all fungal spores in 10 minutes is required.)

Organism	Carrier Population	Sample	# Carriers	# Positive
Candida albicans ATCC #10231	4.2 X 10^{5} CFU/Carrier	A	10	0/10
		B	10	0/10
Dactylium dendroides ATCC 6676	2.18 X 10^{4} CFU/Carrier	A	10	0/10
		B	10	0/10
Trichophyton mentagrophytes ATCC #9533	6.6 X 10^{6} CFU/Carrier	A	10	0/10
		B	10	0/10

The following data is for informational purposes only. This data was submitted to the EPA, but it was not accepted due to the human health issues that the agency has with the following pathogens. Even though this product was effective as shown the EPA will not allow these organisms to be added to the label.

Organism	Carrier Population	Sample	# Carriers	# Positive
Penicillium variable ATCC #32333	1.22 X 10^{6} CFU/Carrier	A	10	0/10
		B	10	0/10
Stachbotrys chartarum ATCC #66239	9.2 X 10^{4} CFU/Carrier	A	10	0/10
		B	10	0/10

Pathogenic Microorganism	Description
Pseudomonas aeruginosa	Gram negative bacteria identified as a major cause of hospital acquired (nosocomial) infections. Causes wound infections (especially burn), meningitis, pneumonia and eye infections. Required for Hospital Disinfectants.
Staphylococcus aureus	Gram positive bacteria identified as a major cause of hospital acquired (nosocomial) infections. Colonizes food and secretes enterotoxins which cause food poisoning after ingestion. Causes wound infections, septicemia, endocarditis, meningitis, osteomylitis and pneumonia. Required for Hospital Disinfectants.
Aspergillus niger	Black mold, found in shower and dressing rooms. Environmental contaminant may also cause "Aspergillosis."
Enterobacter aerogenes	Gram negative bacteria spread by anal/oral route of infection. Associated with bacteremia, respiratory, wound and urinary tract infections.
Escherichia coli	Gram negative bacteria spread by anal/oral route of infection, resulting in diarrhea outbreaks. Associated with urinary tract infections and bacteremia.
Listeria monocytogenes	Gram positive (rod shape) bacteria. Considered a potent food pathogen. Found in raw meat and poultry. Infections can result in meningitis or sepsis.
Klebsiella pneumoniae	Gram negative bacteria asso ciated with severe pneumonia, bacteremia and urinary tract infections.
Salmonella enterica	Gram negative (rod shape) bacteria associated with acute gastroenteritis and diarrhea.
Salmonella schottmuelleri	Gram negative (rod shape) bacteria associated with acute gastroenteritis and diarrhea.
Salmonella typhi	Gram negative (rod shape) bacteria associated with acute gastroenteritis and diarrhea, the causative agent for typhoid fever.
Shigella dysenteriae	Gram negative bacteria directly spread by anal/oral route of infection; indirectly (including food, hands, flies) spread by contaminated food and inanimate objects resulting in bacillary dysentery.
Enterococcus faecalis	Gram positive (Enterococci) bacteria causing hemolysis, urinary tract infections and endocarditis.
Trichophyton mentagrophytes	Athlete's foot fungus. Found in shower and dressing rooms. Also the causative agent of Ring Worm, a fungi that is transmitted through non-socomal contact (e.g. activity mats, wrestling mats, etc)
Canine Distemper	Lipophilic (enveloped) RNA virus. Highly contagious among dogs causes fever, gastrointestinal and respiratory symptoms.
Feline Leukemia Virus	Non-enveloped RNA virus. One of the causative agents of lyphosarcoma in cats.
Herpes Simplex Type 1	Lipophilic (enveloped) DNA virus may result in oral mucocutaneous lesions. Associated with most orofacial herpes and HSV encephalitis.
HIV-1 (AIDS Virus)	Lipophilic (enveloped) RNA retrovirus. Human Immunodeficiency Virus. Known to be the etiologic agent of Acquired Immunodeficiency Syndrome (AIDS).
Influenza A/Japan	Lipophilic (enveloped) RNA virus. Causative agent in viral flu. Causes flu epidemics in nearly 2 of every 3 years.
Hepatitis B virus (HBV)	Lipophilic (enveloped) DNA vi rus of the hepadnavirus family. Causitive agent of Hepatitis B (serum hepatitis),
Hepatitis C virus (HCV)	Major cause of acute hepatitis and chronic liver disease, including cirrhosis and liver cancer. It is an enveloped RNA virus in the flavivirdae family.
Human Corona Virus	Single stranded RNA containing virus causing respiratory infection in humans. From order Nidovirales and Family Coronaviridae.

Rabies	A member of the Rhabdoviridae family or RNA viruses. These bullet shaped viruses are enveloped by a lipid bilayer. The causative agent for "rabies", an encephalitis that causes neuronal degeneration-- almost always fatal.
Respiratory Syncytial Virus	A paramyxovirus type virus, lipophilic (enveloped). A causative agent of pneumonia and bronchiolitis in small children and infants. Highly contagious, transmitted by person-to-person contact.
Vaccinia	Lipophilic (enveloped) DNA poxvirus; causes poxvirus infections.