HEARTLAND ENERGY GROUP LTD.
626 VALLEY RIDGE CT
GRAIN VALLEY, MO 64029
PHONE: 816-867-2054
FAX: 816-867-2055

XTREME

Treatment Compound

Antimicrobial Multi-Surface Cleaner

1. Effectively kills odor causing bacteria on food contact surfaces.
2. Effectively kills odor-causing bacteria on non-food contact surfaces.
3. Kills bacteria that cause spoilage, deterioration or fouling materials on a variety of surfaces, textiles and paper products.
4. Kills bacteria that cause fouling in cooling towers.
5. Kills odor causing bacteria.
6. Effectively controls the growth of algae.
7. Neutralizes and removes odors.
8. Removes mold stains from surfaces such as patios, decks and most other structures.
9. Kills and controls microorganisms infectious only to animals.

HMIS RATINGS

HEALTH	0	4-EXTREME 3-SERIOUS 2-MODERATE 1-SLIGHT 0-MINIMAL
FLAMMABILITY	0	
REACTIVITY	0	
PERSONAL PROTECTION EQUIPMENT	A	SAFETY GLASSES

EPA EXEMPTED PRODUCT

This product is exempt from EPA registration under minimal risks pesticides exemption FIFRA section 25(b).

Use only as Directed

KEEP OUT OF REACH OF CHILDREN

CAUTION

STORAGE AND DISPOSAL

Storage: Store in a cool dry area out of reach of children.

Disposal: Non-refillable container. Do not reuse or refill this container. Offer for recycling, if available.

ACTIVE INGREDIENTS

Citric Acid…….. 0.55%
Lemongrass Oil…….. 0.15%
OTHER INGREDIENTS……..99.3%
Water, Soapbark (Quillaja Saponin), Stearic Acid

TOTAL……100%

This product is exempt from EPA registration under minimal risks pesticides exemption FIFRA section 25(b).

SEE BACK PANEL FOR HANDLING AND USE INSTRUCTIONS

Net Contents: ☐ 1 Gallon ☐ 5 Gallons ☐ 55 Gallons ☐ 275 Gallons ☐ Other ☐ Bulk

24 HOUR EMERGENCY NUMBER: CHEMTREC 800-424-9300

rev. 4/23/20

Heartland Energy Group LTD.
Grain Valley, MO
Melbourne, FL
Perkins, OK
San Antonio, TX
Weston, WV
1-877-797-2811

SAFETY DATA SHEET

SECTION I. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product: Xtreme-Treatment Compound
General Description: Antimicrobial
Revision Date: 8/1/2019
REACH Registration: The component in this product has been Registered according to Article 2 REACH Regulation (EC) No. 1907/2008

HMIS Rating	
Health	0
Fire	0
Reactivity	0
Personal Protection	A

Rating Scale
4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

For General Information call: 1-877-797-2811

For Chemical Emergency ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at 1-800-424-9300

SECTION II. HAZARD IDENTIFICATION

GHS Classification of the substance or mixture

Acute Toxicity-Oral: Category 4
Skin Corrosion/Irritation: Category 3
Serious Eye Damage/Eye Irritation: Category 2B

GHS Label Elements

Signal Word: **Warning**
Symbols: **Not Applicable**

Hazard Statements: **May be harmful if swallowed**
Causes mild skin irritation
Causes eye irritation

Hazards not otherwise classified (HNOC) or not covered by GHS-Not Applicable

Other Information: May cause mild skin irritation if not rinsed off with soap and water
May cause eye irritation if not rinsed out with copious amounts of water

SECTION III. COMPOSITION/INFORMATION ON INGREDIENTS

CAS#	Chemical Formula
N/A	Proprietary/Trade Secret Claimed

Substances
The identity of this material is a trade secret (29 CFR 1910.1200(i)) and is available to any attending physician, paramedical personnel and/or spill response personnel in the case of an emergency. Proprietary ingredient is non-toxic.
There are no additional ingredients present which, within the current knowledge of the manufacturer and in the concentrations applicable, classified as hazardous to the health or environment thus do not require reporting in this section.

Mixtures
Not applicable

SECTION IV. FIRST-AID MEASURES

EMERGENCY OVERVIEW

Potential Health Effects
Inhalation: May cause respiratory tract irritation. Low hazard for usual industrial handling.
Eye: May cause eye irritation.
Skin: May cause skin irritation.

Ingestion: If ingested can cause loose stools.
Chronic: No information found.

FIRST AID MEASURES

INHALATION: Remove to fresh air, if symptoms persist, seek medical attention.

EYES: Flush with water for at least 15 minutes while holding eyelids open. Call a physician if irritation persists. If worn, remove contacts after first 5 minutes.

SKIN: Remove contaminated clothing. Wash exposed area with soap and water for at least 15 minutes. Launder clothes before reuse. Call a physician if rash or other symptoms develop.

INGESTION: If ingested, may cause loose stools. Drink plenty (2-3 glasses) of water and immediately consult a physician. Do not induce vomiting.

SECTION V. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media
Product does not support combustion, use extinguishing agent for type of surrounding fire.

Special hazards arising from the substance or mixture
No data available

Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary

Further information
No data available

SECTION VI. ACCIDENTAL RELEASE MEASURES

Personal precautions Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods for containment: Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up: Before attempting clean up, refer to hazard data given above. Small spills may be absorbed with non-reactive absorbent and placed in suitable, covered, labeled containers. Prevent large spills from entering sewers or waterways. Never return spills in original containers for re-use. Product can be neutralized with water in accordance to local, state and federal regulations. Always sample spill and calculate via titration the proper amount of neutralizing material to be used to properly neutralize.

SECTION VII. HANDLING AND STORAGE

General Handling and Storage Precautions: As with all chemical products and material, take care as to where and how you store them.

Shelf Life: No known limit. Recommended: Use within 1 year.

Special Sensitivity: None

Storage and other Precautions: For increased shelf life keep in a closed container away from incompatible materials.

SECTION VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection: Not normally required.

Ventilation: Normal ventilation is generally adequate.

Protective Equipment: As with any chemical, care should be taken as not to get anything in the eyes. Safety glasses or goggles are suggested for use.

SECTION IX. PHYSICAL AND CHEMICAL PROPERTIES

Properties Evaluated @ Ambient Temperature		**Initial Freeze Point:**	28°F (-2°C)
Appearance:	Clear to colorless liquid	**Initial Boiling Point:**	212ºF (100ºC)
Odor:	Mild detergent odor	**Flash Point:**	N/A
Specific Gravity:	1.00 ± 0.04	**Solubility:**	Complete/100%

Other data: These physical properties are typical values for this product and not specifications. No other data available.

SECTION X. STABILITY AND REACTIVITY

Reactivity
This material is considered to be non-reactive under normal conditions of use.

Chemical stability
Stable under recommended storage conditions

Possibility of hazardous reactions
No data available

Conditions to avoid
No data available

Incompatible materials
Strong oxidizing agents

Hazardous decomposition products
Other decomposition products -no data available
In the event of fire, see section 5

SECTION XI. TOXICOLOGICAL INFORMATION

LD50:
Oral, rat: LD50 = 2578 mg/kg;
Carcinogenicity:
Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies: N/A

SECTION XII. ECOLOGICAL INFORMATION

Ecological Studies:

Please call the non-emergency telephone number if this information is required.

SECTION XIII. DISPOSAL CONSIDERATIONS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

SECTION XIV. TRANSPORT INFORMATION

This material is not regulated for transport. **Marine Pollutant:** This product is not a marine pollutant.

The proper shipping name and/or hazard class for this product may vary according to packaging, properties and mode of transportation. Customer is urged to consult 49 CFR 100-177, IMDG, IATA, EC, United Nations TDG and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods. Typical proper shipping names for this product are:

US Department of Transportation (DOT): Non-Regulated as a Hazardous Material
Canadian TDG (Transportation of Dangerous Goods): Not Regulated as a Hazardous Material
IMO (Water Transportation): Not Regulated as a Hazardous Material
IATA (Air Transportation): Not Regulated as a Hazardous Material
Rail: Not Evaluated

SECTION XV. REGULATORY INFORMATION

US FEDERAL
TSCA
All components of this product are listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

This chemical is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

European Economic Community

Classification per Directive 67/548/EEC or 1999/45/EC

Not Classified
Risk Phrases: None allocated
Safety Phrases: S2-Keep out of reach of children
S24/25 Avoid contact with skin and eyes

WGK, Germany (Water danger/protection): No data available

Canada - DSL/NDSL

This product is listed on Canada's DSL List.

Canada - WHMIS

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

SECTION XVI. OTHER INFORMATION

The information accumulated herein is believed to be accurate based on the information provided, although no guarantee or warranty, either expressed or implied is made as to the accuracy or completeness of this information, whether originating with this company or not. Recipients are advised to confirm in advance of need that the information is correct, applicable and suitable to their circumstances. The conditions or methods of handling, storage, use and disposal of the product and container are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim
liability for loss, damage or expense arising out of or in any way connected with the handling, storage or use of this information or product. If the product is used as a component in another product, this information may not be applicable.

End of Safety Data Sheet

Xtreme

Technical Data Sheet

Xtreme-Treatment Compound—Antimicrobial Multi-Surface Cleaner

In efforts to protect yourself and those around you, Heartland Energy Group, Ltd is offering their safe, non-toxic, EPA FIFRA Exempt, antimicrobial multi-surface cleaner. Xtreme Treatment Compound is an antimicrobial multi-surface cleaning solution for fighting and killing germs, bacteria, and viruses that can be spread throughout the air or on surfaces. Xtreme Treatment Compound can be used in many different applications. From your home to your business, even inside your car. The material will not harm or discolor upholstery or dashboards like commonly sold disinfectants. In fact, Xtreme Treatment Compound can be used as a laundry additive to control odors for unpleasant sporting related loads. Xtreme's ingredients are considered GRAS by the FDA. "GRAS" is an acronym for the phrase Generally Recognized AS Safe under sections 201(s) and 409 of the US Federal Food, Drug, and Cosmetic Act. More importantly, Xtreme is so safe its' ingredients are US EPA Exempt from registration under the minimal risk pesticide FIFRA section 25(b). Products powered by Xtreme have been tested on various viruses and bacteria. Xtreme has undergone extensive testing over the past 14 years. To review the Xtreme test results please visit our website @ https://xtremetestresults.com.

FEATURES AND BENEFITS:

- This product is exempt from EPA registration under the minimal risks pesticides exemption FIFRA section 25(b)
- Xtreme Treatment Compound is formulated with all natural ingredients
- Xtreme Treatment Compound's ingredients are considered GRAS by the US FDA
- Effectively replaces glutaraldehyde's, formaldehydes and quats
- Has been shown to inactivate viruses and bacteria in a laboratory environment
- Immediately active in the treatment of recycled water, frac tanks, impoundments and lagoons
- Significantly reduces BOD, COD, and TSS levels
- Complete degradation resulting in the elimination of odors
- Effectively kills odor causing bacteria on food contact surfaces
- Effectively kills odor causing bacteria on non-food contact surfaces
- Kills bacteria that cause spoilage, deterioration, or fouling materials on a variety of surfaces, textiles and paper products
- Kills odor causing bacteria
- Effectively controls the growth of algae
- Neutralizes and removes odors
- Removes mold stains from surfaces such as patios, decks and most other structures
- Kills and controls micro-organisms infectious only to animals

TYPICAL PHYSICAL PROPERTIES:

Appearance and Color	Clear to colorless liquid
Initial Freeze Point	32°F (0°C)
Odor	Mild detergent odor
Solubility in Water	100%
Melting Point	N/A
Flashpoint	N/A
Specific Gravity	.98 ± .04

DIRECTIONS FOR USE:

Consult a Heartland Energy Group, Ltd. representative for application recommendations.

Xtreme Treatment Compound is a highly concentrated material. The standard suggested dilution rate is 2 ounces per gallon of water. Xtreme can be sprayed, fogged or wiped on contaminated surfaces.

STORAGE AND HANDLING:

Rinse empty container with water and discard as per federal, state and local guidelines.

PACKAGING:

Xtreme-Treatment Compound is packaged in 5 gallon to 275 gallon containers. Bulk quantities are available upon request.

Recommendations given in this data sheet are based on tests believed to be reliable. However, the use of the information is beyond the control of Heartland Energy Group, Ltd. and no guarantee, expressed or implied is made to the results obtained if not used in accordance with directions or established safe practice. The buyer must assume all responsibility, including injury or damage from the misuse of the product as such, or in combination with other materials. This bulletin is not to be taken as a license to operate under or recommendation to infringe any patent.

Heartland Energy Group, Ltd.
www.heartlandenergygroup.net
Phone: 1.877.797.2811
Fax: 1.816.867.2055

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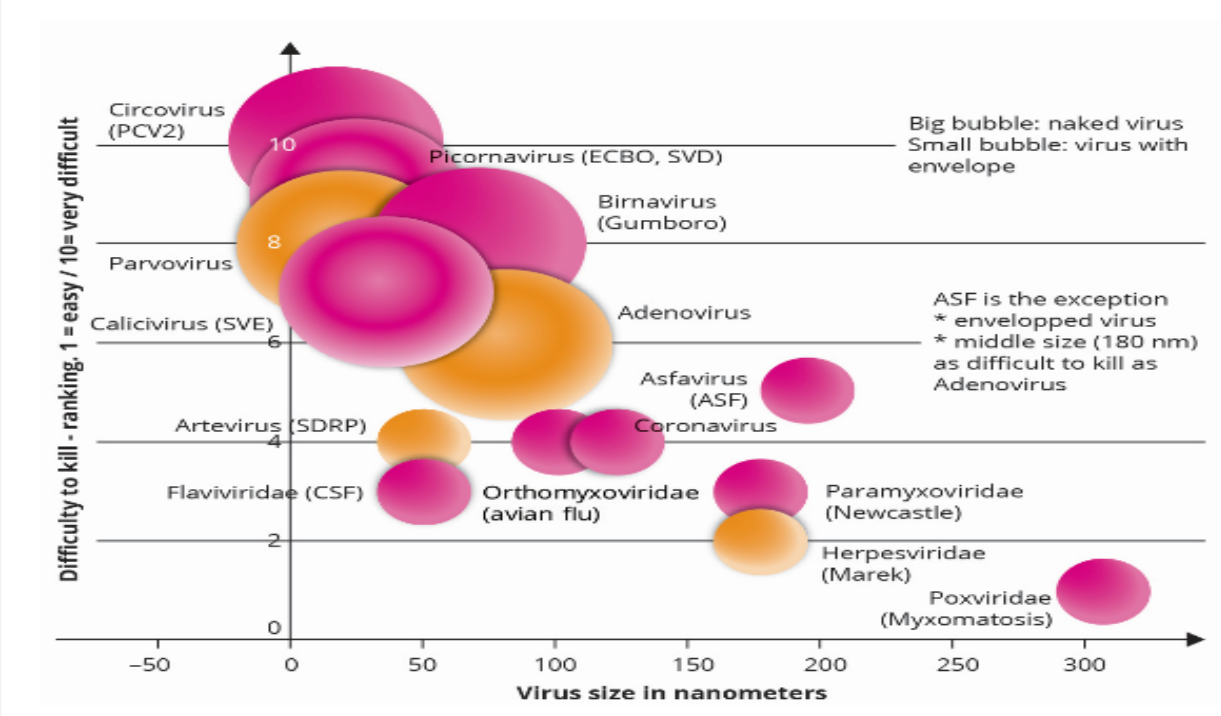
Attached is a graphic from a testing laboratory in Ames, IA called VRI that has performed numerous tests using the Xtreme technology regarding the difficulty to inactivate viruses. This lab has also evaluated the existing test data on the Xtreme technology. As noted, the large and small enveloped and non-enveloped viruses are inactivated with the Xtreme technology through simple interpretation of existing test data. Due to the existing test results, Xtreme would be considered effective against Covid. In summary, Xtreme inactivates viruses that are much tougher to neutralize than viruses that are in the Coronavirus family. For example, Parvovirus and Circovirus are much more difficult to kill than Coronavirus on the scale below. Our data obviously supports this statement.



In addition to these statements from VRI, the manufacturers of Xtreme Treatment Compound, with the assistance of the Federal EPA have begun the process of registration at the state level. Although the product is considered Exempt through the FIFRA program within the EPA, this registration was suggested by the Federal EPA to further strengthen the position of this technology in the marketplace. By the middle to the end of July of 2020, Xtreme Treatment Compound will be registered in 47 applicable states. The first state registration was issued in Florida last year. In conclusion, the manufacturers of Xtreme Technology are continuing to perform additional tests at labs from all over the world. In the coming months, we anticipate more lab results from Israel, Greece and a large study at UCLA. The statements in this letter are true and accurate and will serve as additional supporting documentation to support our claims in the marketplace.

Steve Rowley

Heartland Energy Group, Ltd

Xtreme Virucidal Data 06/03/2008
EMS LLC

Testing is performed per EPA Guideance DIS/TSS-7
3 lots and 4-Log reduction for Canada

Test Organisms	Dried Virus Control	Sample	Result	Log Reduction
Avian Infectious Bronchitis virus Beaudette IB42	6.42 Log_{10}	A	<=0.5 Log_{10}	>=5.92 Log_{10}
		B	<=0.5 Log_{10}	>=5.92 Log_{10}
	6.5 Log_{10}	C	<=0.5 Log_{10}	>=6.0 Log_{10}
Avian Influenza A (H3N2) virus (Avian Reassortant) (ATCC VR-2072)	4.75 Log_{10}	A	<=0.5 Log_{10}	>=4.25 Log_{10}
		B	<=0.5 Log_{10}	>=4.25 Log_{10}
		C	<=0.5 Log_{10}	>=4.25 Log_{10}
Avian Influenza A (H5N1) virus	6.75 Log_{10}	A	<=0.5 Log_{10}	>=6.25 Log_{10}
		B	<=0.5 Log_{10}	>=6.25 Log_{10}
Canine Coronavirus ATCC VR-809	4.5 Log_{10}	A	<=0.5 Log_{10}	>=4.0 Log_{10}
		B	<=0.5 Log_{10}	>=4.0 Log_{10}
	4.75 Log_{10}	C	<=0.5 Log_{10}	>=4.25 Log_{10}
Canine Distemper virus	6.25 Log_{10}	A	<=0.5 Log_{10}	>=05.75 Log_{10}
		B	<=0.5 Log_{10}	>=5.75 Log_{10}
	6.75 Log_{10}	C	<=0.5 Log_{10}	>=6.25 Log_{10}
Feline Picornavirus	4.5 Log_{10}	A	<=0.5 Log_{10}	>=4.0 Log_{10}
		B	<=0.5 Log_{10}	>=4.0 Log_{10}
	5.75 Log_{10}	C	<=0.5 Log_{10}	>=5.25 Log_{10}
Hepatitis B Virus	5.06 Log_{10}	A	<=0.27 Log_{10}	>=4.79 Log_{10}
	5.20 Log_{10}	B	<=0.41Log_{10}	>=4.79 Log_{10}
	5.06 Log_{10}	Confirmatory B	<=0.27 Log_{10}	>=4.79 Log_{10}
Hepatitis C Virus	6.21 Log_{10}	A	<=0.24 Log_{10}	>=5.97 Log_{10}
	6.21 Log_{10}	B	<=0.42 Log_{10}	>=5.79 Log_{10}
	6.06 Log_{10}	Confirmatory B	<=0.13 Log_{10}	>=5.93 Log_{10}
Herpes Simplex Virus Type 1	5.5 Log_{10}	A	<=0.5 Log_{10}	>=5.0 Log_{10}
		B	<=0.5 Log_{10}	>=5.0 Log_{10}
	6.0 Log_{10}	C	<=0.5 Log_{10}	>=5.5 Log_{10}

Xtreme raw material Base was evaluated in the presence of 5% serum and 400 ppm hard water with 10 minute contact time and found to be effective against the above noted viruses on hard, nonporous environmental surfaces.

Xtreme Virucidal Data 06/03/2008

Testing is performed per EPA Guideance DIS/TSS-7
3 lots and 4-Log reduction for Canada

Herpes Simplex Virus Type 2	6.0 Log_{10}	A	<=0.5 Log_{10}	>=5.5 Log_{10}
		B	<=0.5 Log_{10}	>=5.5 Log_{10}
	5.75 Log_{10}	C	<=0.5 Log_{10}	>=5.25 Log_{10}
Human Coronavirus	4.5 Log_{10}	A	<=0.5 Log_{10}	>=4.0 Log_{10}
		B	<=0.5 Log_{10}	>=4.0 Log_{10}
	4.5 Log_{10}	C	<=0.5 Log_{10}	>=4.0 Log_{10}
Human Immunodeficiency Virus type 1 (HIV 1)	5.75 Log_{10}	A	<=1.5 Log_{10}	>=4.25 Log_{10}
		B	<=1.5 Log_{10}	>=4.25 Log_{10}
		C	<=1.5 Log_{10}	>=4.25 Log_{10}
Infectious Bovine Rhinotracheitis virus	4.5 Log_{10}	A	<=0.0 Log_{10}	>=4.0 Log_{10}
		B	<=0.0 Log_{10}	>=4.0 Log_{10}
	4.75 Log_{10}	C	<=0.0 Log_{10}	>=4.25 Log_{10}
Influenza A virus	6.5 Log_{10}	A	<=0.0 Log_{10}	>=6.0 Log_{10}
		B	<=0.0 Log_{10}	>=6.0 Log_{10}
	6.0 Log_{10}	C	<=0.0 Log_{10}	>=5.5 Log_{10}
Pseudorabies virus	6.25 Log10	A	<=0.5 Log_{10}	>=5.75 Log_{10}
		B	<=0.5 Log_{10}	>=5.75 Log_{10}
	5.5 Log10	C	<=0.5 Log_{10}	>=5.0 Log_{10}
Respiratory Syncytial virus ATCC VR-26	4.5 Log10	A	<=0.5 Log_{10}	>=4.0 Log_{10}
		B	<=0.5 Log_{10}	>=4.0 Log_{10}
	5.0 Log10	C	<=0.5 Log_{10}	>=4.5 Log_{10}
Transmissible Gastroenteritis virus	4.75 Log10	A	<=0.5 Log_{10}	>=4.35 Log_{10}
		B	<=0.5 Log_{10}	>=4.25 Log_{10}
	6.25 Log10	C	<=05 Log_{10}	>=5.75 Log_{10}
Vaccinia virus	6.75 Log10	A	<=0.5 Log_{10}	>=6.25 Log_{10}
		B	<=0.5 Log_{10}	>=6.25 Log_{10}
	6.5 Log10	C	<=0.5 Log_{10}	>=6.0 Log_{10}

Xtreme raw material Base was evaluated in the presence of 5% serum and 400 ppm hard water with 10 minute contact time and found to be effective against the above noted viruses on hard, nonporous environmental surfaces.

Xtreme Virucidal Data 06/03/2008

Testing is performed per EPA Guideance DIS/TSS-7
3 lots and 4-Log reduction for Canada

Test Organisms	Dried Virus Control	Sample	Result	Log Reduction
Canine Parvovirus Type 2b	7.5 Log10	A	<=3.5 Log_{10}	>=4.0 Log_{10}
		B	<=3.5 Log_{10}	>=4.0 Log_{10}

Xtreme raw material Base was evaluated in the presence of 5% serum and 400 ppm hard water with 10 minute contact time and found to be effective against the above noted viruses on hard, nonporous environmental surfaces.

TEST DATA FOR XTREME

EFFICACY TEST DATA

Xtreme as a Disinfecting Detergent

(EPA Manufacturing Facility Reg. No. 82859)

VIRUCIDAL DATA

Testing Methods

* U.S. E.P.A. Pesticide Assessment Guidelines, Subdivision G: Product Performance, 1982, Section 91-30, pp. 72-76.
† Virucide Assay (EPA, Federal Register 10, No. 123, 6/25/75, p. 26836)
. 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: 2 oz. Per gallon of water dilution, 10 minute contact time, tested in the presence of serum glass petri dish substrates

Results

Test Organism
Sample
Titer Reduction
†Adenovirus Type 2 A B 3.0 $\log_{10}$ >3.0 $\log_{10}$
*Avian Influenza A Virus (H3N2) (Avian Ressortant) (ATCC VR-2072) A B >3.5 $\log_{10}$ >3.5 $\log_{10}$
*Avian Influenza Virus, Type A (Turkey/WIS/66) (H9N2) A B >4.5 $\log_{10}$ >4.5 $\log_{10}$
‡Bovine Viral Diarrhea Virus (BVDV) A B 6.1 $\log_{10}$ 3.8 $\log_{10}$
*Feline Calicivirus (FCV) A B 5.79 $\log_{10}$ >6.06 $\log_{10}$
.Hepatitis B Virus (HBV) (Duck Hepatitis B Virus-DHBV) A B 4.5 $\log_{10}$ 4.5 $\log_{10}$
‡Hepatitis C Virus (HCV) (Bovine Viral Diarrhea Virus-BVDV) A B 6.1 $\log_{10}$ 3.8 $\log_{10}$
†Herpes Simplex Type 1 (Sabin) A B >4.0 $\log_{10}$ >3.7 $\log_{10}$
*Human Coronavirus (ATCC VR-740, strain 229E) A B >3.0 $\log_{10}$ >3.0 $\log_{10}$
*Human Immunodeficiency Virus, HTLV-III$_{RF}$, strain of HIV-1
(associated with AIDS)
A B >3.0 $\log_{10}$ >3.0 $\log_{10}$
†Influenza A_2 (Japan 305/57) A B >6.5 $\log_{10}$ >6.0 $\log_{10}$
*Norovirus (Norwalk Virus) (FCV) A B 5.79 $\log_{10}$ >6.06 $\log_{10}$
*SARS Associated Coronavirus (ZeptoMetrix) A B 4.03 $\log_{10}$ 4.03 $\log_{10}$
†Vaccinia (Wyeth) A B >3.5 $\log_{10}$ >3.5 $\log_{10}$

Conclusion

Under the conditions of this investigation, Xtreme Detergent/Disinfectant was **virucidal** for Adenovirus Type 2, Avian Influenza A Virus (H3N2), Avian Influenza Virus Type A (H9N2), Bovine Viral Diarrhea Virus
(BVDV), Feline Calicivirus (FCV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Herpes Simplex Type 1 (Sabin),
Human Coronavirus, Human Immunodeficiency Virus (HIV-1), Influenza A_2 (Japan 305/57), Norovirus (Norwalk
Virus), SARS Associated Coronavirus and Vaccinia (Wyeth) according to criteria established by the U.S. Environmental Protection Agency for registration and labeling of a disinfectant product as a virucide.

MILDEW FUNGISTATIC DATA

Testing Method

Hard Surface Mildew Fungistatic Test (Unofficial Protocol, 10/27/76)
Test Organism: *Aspergillus niger* (ATCC 6275)
Test Conditions: tile substrates

Results

Sample Dilution No. of Exposed Tiles No. of Tiles Showing Growth
Xtreme Detergent/Disinfectant oz/gal 10 0
Control - 10 10

Conclusion

Under the conditions of this investigation, Xtreme Detergent/Disinfectant was **fungistatic** for *Aspergillus niger* according to criteria established by the U. S. Environmental Protection Agency for registration and labeling of a disinfectant product as a fungistat.

FUNGICIDAL DATA

Test Method

AOAC Fungicidal Test

Test Organism: *Trichophyton mentagrophytes* (ATCC 9533)

Test Conditions: 2 oz/gal dilution
5% organic soil load
20°C exposure temperature

Results

Exposure Time
(min.) vs. Growth
Sample 5 10 15
A
B
+
+
0
0
0
0

Conclusion

Under the conditions of this investigation, Xtreme Detergent/Disinfectant was **fungicidal** for *Trichophyton mentagrophytes* according to criteria established by the U. S. Environmental Protection Agency for registration and labeling of a disinfectant product as a fungicide.

DISINFECTION DATA

Test Method

AOAC Use Dilution

Test Conditions: 5% organic soil load, 10 minute contact time, stainless steel carrier substrates, 20°C exposure temperature, 2 oz/gal dilution

Results

No. of Carriers
Test Organism Sample Exposed Positive
Staphylococcus aureus (ATCC 6538) A
B
C
60
60
60
0
0
0
Salmonella choleraesuis (ATCC 10708) A
B
C
60
60
60
0
0
0

Pseudomonas aeruginosa (ATCC 15442) A
B
C
60
60
60
0
0
0
Brevibacterium ammoniagenes (ATCC 6871) A
B
10
10
0
0
Enterobacter aerogenes (ATCC 13048) A
B
10
10
0
0
Escherichia coli (ATCC 11229) A
B
10
10
0
0
Klebsiella pneumoniae (ATCC 4352) A
B
10
10
0
0
Listeria monocytogenes (ATCC 984) A
B
10
10
0
0
Methicillin resistant *Staphylococcus aureus* (MRSA) (ATCC 33593) A
B
10
10
0
0
Salmonella schottmuelleri (ATCC 8759) A
B
10
10
0
0

Shigella dysenteriae (ATCC 12180) A
B
10
10
0
0
Streptococcus faecalis (ATCC 10541) A
B
10
10
0
0
Streptococcus pyogenes (Clinical-Flesh Eating Strain, BIRD M3) A
B
10
10
0
0
Streptococcus salivarius (ATCC 9222) A
B
10
10
0
0
Vancomycin intermediate resistant *Staphylococcus aureus* (VIRSA) A
B
10
10
0
0

Conclusion

Under the conditions of these investigations, Xtreme Detergent/Disinfectant demonstrated **disinfectant** activity against *Staphylococcus aureus*, *Salmonella choleraesuis*, *Pseudomonas aeruginosa, Brevibacterium ammoniagenes, Enterobacter aerogenes, Escherichia coli, Klebsiella pneumoniae, Listeria monocytogenes,* Methicillin resistant *Staphylococcus aureus* (MRSA), *Salmonella schottmuelleri, Shigella dysenteriae, Streptococcus faecalis*, *Streptococcus pyogenes* (Clinical – Flesh Eating Strain, BIRD M3), *Streptococcus salivarius* and Vancomycin intermediate resistant *Staphylococcus aureus* (VIRSA) according to criteria established by the U. S. Environmental Protection Agency for registration and labeling of a disinfectant product as a bactericide.

SANITIZATION DATA

Test Method

AOAC Germicidal and Detergent Sanitizing Action of Disinfectants

Test Conditions: 200 ppm active quaternary
2 oz/3.5 gal dilution

Results

TOTAL BACTERIAL COUNTS/
% KILL vs. EXPOSURE TIME
Synthetic
Hard Water

Test Organism	Sample (ppm)	30 seconds TBC *	30 seconds % Kill†	60 seconds TBC *	60 seconds % Kill†
Staphylococcus aureus (ATCC 6538)	A	250	99.999	1120	65
	B	250	99.999	1065	70
	C	250	99.999	1275	185
Escherichia coli (ATCC 11229)	A	300	99.999	990	65
	B	300	99.999	1215	80
	C	300	99.999	1460	190

* TBC = Total Bacterial Count, cfu/ml
† % Kill calculated based on initial inoculum control count of 75-125 x 10_6 cfu/ml.

Conclusion

Under the conditions of these investigations, Xtreme Detergent/Disinfectant demonstrated **sanitizing** activity against *Staphylococcus aureus* and *Escherichia coli* according to criteria established by the U. S. Environmental Protection Agency for registration and labeling of a disinfectant product as a sanitizer.

DERMAL SKIN TEST DATA

DERMAL IRRITATION TESTING DATA

Summary of Dermal Irritation Testing on Xtreme 01/10/07

The Method used in Protocol Design was the Modified Draize method as described in OECD Guidelines for the Testing of Chemicals, Sec. 404, Paris 1981 (revised: 1992)

In each animal, the sum of the skin values for erythema at 1, 24, 48 and 72 hours for exposed areas was added to the similar sum of the values for oedema formation. The primary irritation index for each animal was the sum of the two summary values divided by 3 (i.e. the average of the three readings). The primary irritation score and its standard deviation are the mean value and standard deviation of the primary irritation indices of the three animals.

A 0.5 mL portion of the test article Xtreme was topically applied to the intact skin of a group of three rabbits by patch application. The test article stayed in contact with the skin for a 4 hour period.

The test sites were evaluated at 1, 24, 48, and 72 hours following the exposure period. The test article Xtreme showed no erythema or oedema on all animals at one hour after the exposure period. At 24 hours after the exposure period, no erythema was observed on all animals. At 72 hours after the exposure period, no erythema was observed on all animals.

NOTE: Xtreme was applied at pure, undiluted strength.

Classification of Primary Irritation Scores:

0 - 0.9	Non-Irritant
1.0 - 1.9	Very Mild Irritant
2.0 - 3.9	Mild Irritant
4.0 - 5.9	Moderate Irritant
6.0 - 8.0	Severe Irritant

Based on these results, the test article was classified as follows:

Primary Irritation Score 0.3 ± 0.1

Classification: Non- Irritant

Based on the above findings, the test article is **not classified** according to the Transportation of Dangerous Goods Act.

Based on the above findings, the test article Xtreme is classified as **NON- IRRITANT** according to OSHA, US D.O.T. and the Canadian Transportation of Dangerous Goods Act testing protocols thus requires no PPE's as per 29CFR.

DERMAL EYE TEST DATA

Summary of Eye Irritation Testing/CFR 1500.42 on
Xtreme 11/17/07
Herein referred to as Xtreme

The Method used in Protocol Design was the Draize method as described in OECD Guidelines for the Testing of Chemicals, Sec. 405, OPPTS 798.4500 Primary Eye Irritation, OPP 81-4 Acute Eye Irritation-Rabbit, and EPA report 540/09-82, 1982.

Six albino rabbits shall be used in accordance with CFR 1500.42. In each animal, the test material shall be placed into one eye of each rabbit. The eyelids shall then gently be held together for one second and then the rabbit shall be released. The grade of ocular reaction is recorded at 1, 24, 48 and 72 hours. The sum of the grade of ocular reaction shall then be added. The primary irritation index for each animal was the sum of the two summary values divided by 6 (i.e. the average of the three readings). The primary irritation score and its standard deviation are the mean value and standard deviation of the primary irritation indices of the three animals.

A 0.1 mL portion of the test article Xtreme was topically applied to the intact eyes of a group of six rabbits by placing the test material with a sterile dropper into the conjunctival sac of one eye of each rabbit by gently pulling the lower lid away from the eyeball.

The test sites were evaluated at 1, 24, 48, and 72 hours following the exposure period. The test article Xtreme showed no ocular reaction on all rabbits at 24 hrs hours after the exposure period. At 1 hour after exposure, no ulcerations or opacity were observed. However, slight redness was apparent in 1 of the 6 rabbits. At 24 hours after the exposure, no ulcerations or opacity were observed. The 1 rabbit that showed slight redness had essentially recovered 100% at this testing interval. At 48 hours after the exposure, no ulcerations or opacity were observed. At 72 hours after the exposures, no ulcerations or opacity were observed.

NOTE: Xtreme was applied at pure, undiluted strength.

Classification of Primary Irritation Scores:

0-7.0	Non-Irritant
7.1-5.0	Practically Non-Irritating
15.1-25.0	Slightly Irritating
25.1-50.0	Moderately Irritating
50.1-110.0	Severely Irritating/Corrosive

Based on these results, the test article Xtreme was classified as follows:

Primary Irritation Score 0.8 ± 0.1
Classification Non- Irritant

Based on the above findings, the test article Xtreme is not classified according to the US D.O.T. and the Canadian Transportation of Dangerous Goods Act.

References:

(1) Buehler, E.V. and Newmann, E.A. A comparison of Eye Irritation in Monkeys and Rabbits. *Toxicology and Applied Pharmacology 6:701-710 (1964)*

(2) Draize, J.H. et al. Methods for the study of irritation and toxicity of substances applied topically to the skin and mucous membranes. *Journal of Pharmacology and Experimental Therapeutics. 83-377-390 (1944)*

Xtreme Technology Stabilized Non Spore Microbes

Xtreme patented technology utilizes the ability to stabilize live vegetative microbes in a liquid form providing Xtreme unique benefits vs. traditional spore based systems, thereby allowing our clients the opportunity to market the next generation of microbial based products.

In addition to Xtreme's safety with concern to the end users accidental skin and eye contact and Xtreme's superior efficacy test results, Xtreme also out performs competing formulas in the following environments:

Xtreme will easily and effectively degrade the following but not limited to:
Petroleum hydrocarbons
Fats
Oils
Greases
Stubborn organic compounds
Human and Animal feces

Unique benefits:
No germination time requires, goes to work immediately (conventional spore technology requires germination time of 12-24 hrs)

More complete degradation (metabolism) resulting is a faster elimination and reduction or odors

Completely degrades hydrocarbons to Carbon dioxide and water

Consistent Lipase production under most all field conditions

Significantly reduces BOD, COG, and FOG

Excellent performance in a varying rage of pH and temperature

Most stable in the industry, no reduction of cfu's for 12 months+ in both concentrated form and at dilutions up to 10:1

Performs equally under aerobic and anoxic conditions

Salmonella free, Nonpathogenic

Xtreme

Bacterial Persistence

The study below tested how long a surface cleaned or treated with Xtreme would remain hygienic.

Summary points include:

1. Xtreme was still working after **4 days.**
2. During and until completion of the 4-day test, Xtreme eradicated **99.9%** of a variety of strains including Staphylococcus, E-Coli, Listeria and Salmonella among others.

Scroll down to view the complete study*.

*Milouda Labs, Israel

Note: Xtreme Treatment Compound is labeled as Purgo in various markets

מעבדות מילודע & מיגל
MILOUDA & MIGAL LABORATORIES
MERIEUX NutriSciences

28/6/2020

To– ECOTIV CLEAN

From – Milouda laboratories – Ronit Ben Avraham

Microbiological Test –

Chemical disinfectants and antiseptics - Quantitative carrier test For the evaluation of bactericidal and fungicidal activity for instruments used in the medical and food areas

Laboratory Number: 20055117

Sample description: Xtreme – DISINFECTION SUSPENSION
Date sample received: 1/6/2020
Date Tested: 3/6/2020

1. **Standard:**
The test was conducted based on Israeli Standard 1944, BS EN 14561 "Evaluation of bactericidal activity" and AAMI TIR 12 (2010).

Test Purpose:
This test was conducted in order to define the antimicrobial effectiveness of the disinfectant preparation (Xtreme).

Inoculation:

1.1 Stainless steel surfaces (4/4cm) were sterilized by steam.

1.2 The surfaces were inoculated with the following bacteria (four surfaces for each microorganism) –

Staphylococcus aureus	ATCC 6538
Pseodomonas aeruginosa	ATCC 9027
Escherichia coli	ATCC 8739
Aspergillus niger	ATCC 16404
Enterococcus faecalis	ATCC 51299
Lactobacillus plantrarum	ATCC 14917
Salmonella typhimurium	ATCC 14028
Enterobacter aerogenes	ATCC 13048

Remarks:
1. The laboratory operates under organized working procedures which correlate to the international standard ISO/IEC 17025 in those disciplines where accreditation has been granted.
2. The microbiological tests are within the recognition framework of the Ministry of Health as published in the registrations.
3. The results are related only to the tested sample.
4. This document may be referred to in its entirety, and no part may be quoted or copied to other documents.
5. Sampling was provided by and is the sole responsibility of the customer.
6. The Israel Laboratory Accreditation Authority is not responsible for the test results.
7. The valid results are those of the most updated report.

Gafta ISRAC Israel Laboratory Accreditation Authority ISO/IEC 17025 No. 078 מס
אזור תעשיה מילואות דרום | **מען למכתבים**: ת.ד. 1264, אזור תעשיה קרית ביאליק, מיקוד 2711102
I. Z. Milouot southern I Mailing address: PO Box.1264 I.Z. Kiryat Bialik, ZIP 2711102
info.il@mxns.com | Fax 04-8852900 פקס | Tel * 8563 טל'

Saccharomyces cerevisiae ATCC 51299
Listeria monocytogenes ATCC 19115
Bacillus atrophaeus spores ATCC 9372

The bacterial suspensions were diluted using soil (ATS - containing Proteins Healthmark (MI, US)) to give a final concentration of bacteria Of 10^5-10^6 per/surface (about 100 µl from each suspension was added To the soil according to cell turbidity).

1.3 One surface was not inoculated – negative control.

1.4 The surfaces were left to dry in biohazard hood for 30 minutes.

1.5 The surfaces were sprayed with the disinfection suspension and left in the biohazard for **4 days** and then tested.

2. Test Procedure:

2.1 Two surfaces before disinfection and cleaning for each microorganism were placed aseptically into sterile cups. 100 ml were added to each sample (Neutralizing solution lot 904) and vortexed for 1 minute and then the diluted sample was plated according to the pour plate technique using warm TSA (lot 949) or SDA (lot 16598) or APT (lot 16584).

2.2 The plates were incubated for 72 hours at 30-35^{0}C or 120 hours at 20-25 ^{0}C for yeasts and moulds. After incubation of the test plates, the Microorganisms were counted on each plate.

2.3 The remaining surfaces (two for each microorganism) were subjected to disinfection according to manufacturer's instructions (Spraying the surfaces with the tested sample). Two surfaces after disinfection were put into cups and 0.1 ml of Neutralizing solution was spread on each surface. The surfaces were then diluted with 10 ml (BPS+1% Tween 80 lot 16358) and vortexed for 1 minute.

2.4 Then the eluent was plated in the pour plate technique using TSA or SDA or APT. One surface was touched using rodac plates by (TSA +Lec +Polys 80)

2.5 The plates were incubated as defined in 2.1 and then the microbial count was determined per surface.

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3. Results:

Bacteria/Yeast/Mould	Before disinfection CFU/surface	After disinfection 30 seconds CFU/surface
P. aeruginosa ATCC 9027	1800 2600	<10 <1
S.aureus ATCC 6358	102,000 122,000	<10 <1
E.coli ATCC 8739	5600 2800	<10 <1
Aspergillus niger ATCC 16404	46,000 38,000	160 120
Enterococcus faecalis ATCC 51299	13,200 12,800	8600 9400
Lactobacillus plantrarum ATCC 14917	8200 6400	<10 <1
Salmonella typhimurium ATCC 14028	1,860,000 1,920,000	520 440
Enterobacter aerogenes ATCC 13048	13.200 10,400	2400 2200
Saccharomyces cerevisiae ATCC 51299	3400 2600	<10 <1
Listeria monocytogenes ATCC 19115	3600 3200	<10 <1
Candida albicans ATCC 10231	3400 2800	<10 <1
NC	<10	

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4. Conclusion:

According to the test results, the disinfection using **Xtreme** in the presence of organic soil was able to reduce at least 3-5 magnitudes (99.9%) for *P.aeruginosa, L.plantarum, L.monocytogenes* , *S.aureus, S.typhimurium, C.*albicans, *S.cerevisiae* and *E.coli*.
A.niger, E.fecalis and *E.aerogenes* were reduced by two magnitudes.

**********End of Test Results**********

Authorized Signature: _____

Mirit Ben Avraham PhD
Professional Manager
Microbial Labratory

Preformed by:_____

Remarks:

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