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GLUTEX™ GS1 Sanitizer and GLUTEX GS2 Sanitizer

CAS Reg. No. 111-30-8

General

GLUTEX™ products are a range of specially formulated sanitizers for farm animal and poultry housing facilities and associated equipment, as well as industrial equipment and buildings. GLUTEX Sanitizers combine the powerful antimicrobial action of glutaraldehyde with other efficacy-enhancing additives.

GLUTEX GS1 Sanitizer and GLUTEX GS2 Sanitizer are fundamentally the same product, but have different concentrations of glutaraldehyde.

Key Benefits of GLUTEX GS1 and GS2

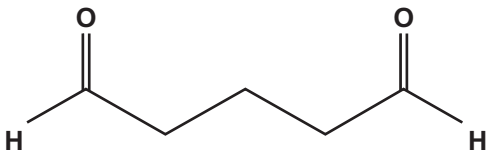
- Proven effective against harmful swine viruses such as PCV, PRRS, and hog cholera virus
- Proven to effectively sanitize against key pathogens such as *Clostridium perfingens, Escherichia coli, Salmonella lyphi, Streptococcus suis* and more. For a full list of organisms please see the EPA product label
- Internal laboratory testing resulted in lower corrosion to metals than the control of water applied in the testing on metals such as low carbon steel, galvanized steel and Galvaneel steel
- Internal testing completed in accordance to DEFRA[1] method has shown GLUTEX GS2 remains effective at temperatures as low as 39.2°F
- No formaldehyde or formaldehyde release from this formulation. Glutaraldehyde is not classified as a carcinogen
- Helps reduce contamination on a variety of surfaces such as stainless steel, aluminum, painted concrete, plastic, and glazed tile
- Product can be diluted with a wide-range of water hardness. Testing has shown ease of dilution up to 1200 ppm hardness
- Meets requirements of Ready Biodegradability based on OECD 301 series testing
- Concentrated liquid formulation makes product dilution simple and easy for farm use

[1]Department of Environment, Food and Rural Affairs; United Kingdom Government Department

Availability

NOTE: Not all GLUTEX products, applications and/or uses are registered and approved in all regions/countries/states. Please check with your local Dow Biocides representative for up-to-date information.

Structure



Physical Properties

The following are typical properties of GLUTEX™ Sanitizers; **they are not to be considered product specifications.**

GLUTEX GS1

Appearance . . . . . Transparent colorless to pale yellow
Active, % Glutaraldehyde (w/w) 12.8
pH @ 25°C: . . . . . 3.1 to 4.5
Solubility in Water, 20°C: . . . . . Miscible
Boiling Point: . . . . . 100.5°C/213°F
Freezing Point: . . . . . -3°C/27°F
Specific Gravity, @ 20/20°C: 1.033
Vapor Pressure @ 20°C: . . . . . 0.2 mm Hg based on glutaraldehyde (0.27 hPa)

GLUTEX GS2

Appearance . . . . . Transparent colorless to pale yellow
Active, % Glutaraldehyde (w/w) 20
Non-Ionic Surfactant: 2.9%
pH @ 25°C: . . . . . 3.1 to 4.5
Solubility in Water, 20°C: . . . . . Miscible
Boiling Point: . . . . . 100.5°C/213°F
Freezing Point: . . . . . -4°C/25°F
Specific Gravity, @ 20/20°C: 1.053
Vapor Pressure @ 20°C: . . . . . 0.2 mm Hg based on glutaraldehyde (0.27 hPa)

*Please refer to "EPA Virucidal Tests" table on page 3.

Antimicrobial Activity

The effectiveness of GLUTEX GS1 Sanitizer and GLUTEX GS2 Sanitizer can be seen in the AOAC Germicidal and Detergent Sanitizer Test. At the recommended use dilution, GLUTEX GS1 Sanitizer and GLUTEX GS2 Sanitizer completely reduced test microorganisms in less than five minutes, even in the presence of extremely hard water.

AOAC Germicidal and Detergent Sanitizer Test

Contact Temperature . . . . . 25°C/76°F
Hardness as $CaCO_3$ . . . . . 1200 ppm

	Microorganism Level (CFU/mL)	
Microorganism	**Initial**	**Surviving After 1 min.**
Escherichia coli ATCC 11229	$4.6x10^8$	0
Salmonella typhi ATCC 6539	$2.0x10^8$	0
Staphylococcus aureus ATCC 6538	$3.8x10^8$	0

AOAC Germicidal and Detergent Sanitizer Test

Contact Temperature . . . . . 25°C/76°F

GLUTEX GS1 Sanitizer and GLUTEX GS2 Sanitizer were also assessed by a modified EPA Sanitizer Test for Non-Food-Contact Surfaces against microorganisms that are of particular concern to animal health. GLUTEX GS1 Sanitizer and GLUTEX GS2 Sanitizer effectively reduced the target organisms within five minutes.

Modified EPA Sanitizer Test

Contact Temperature . . . . . 25°C/76°F
Hardness as $CaCO_3$ . . . . . 1200 ppm

	Microorganism Level (CFU/mL)	
Microorganism	**Initial**	**Surviving After 5 min.**
Escherichia coli ATCC 8739	2.3×10^5	0
Salmonella pullorum ATCC 10398	4.7×10^6	0
Salmonella typhi ATCC 6539	3.0×10^5	0
Pseudomonas aeruginosa ATCC 15442	3.5×10^6	0
Staphylococcus aureus ATCC 6538	2.7×10^6	0
Klebsiella pneumoniae ATCC 4352	3.2×10^6	0
Clostridium perfingens ATCC 13124*	5.3×10^3	0
Enterobacter aerogenes ATCC 13048*	6.1×10^4	0
Haemophilus parasuis ATCC 19417*	4.6×10^4	0
Mycoplasma gallisepticum ATCC 15302*	5.1×10^4	0
Mycoplasma synoviae ATCC 25204*	1.7×10^5	0
Pasturella multocida ATCC 8747*	2.0×10^5	0
Salmonella enteritidis ATCC 13076*	5.9×10^5	66
Streptococcus suis ATCC 43765*	9.1 x 104	0

*Wood surface, test solution contains 5% serum albumin

The efficacy of GLUTEX™ GS1 Sanitizer and GLUTEX GS2 Sanitizer against a number of viruses was determined in hard water according to US EPA guidelines for disinfectants intended for use on dry, inanimate surfaces. (US EPA Pesticide assessment guidelines, subdivision G: Product Performance, 1982, Section 91-30, pp. 72-76.) GLUTEX Sanitizers significantly reduced the titer of each virus after 5 or 10 minutes of contact.

EPA Virucidal Tests

Contact Temperature . . . . . 25°C/76°F
Hardness as $CaCO_3$ . . . . . 1200-1400 ppm

Note: Tests were run with active glutaraldehyde.

	$-\log_{10}TCID_{50}$/0.05 mL			
Virus	**Control Titer**	**Reduction in Titer***	**Contact Time, min.**	**GA, Conc. (ppm)**
Avian Influenza Virus (H5N1)	5.5	≥ 3.5	5	500
Avian Influenza Virus (H6N2)	>6.0†	≥ 5.5	5	1000
Avian Laryngotracheitis	5.5‡	≥ 4.1	5	1000
Avian Reovirus	5.6	≥ 4.1	10	500
Avian Rotavirus	6.6	≥ 4.1	10	500
Canine Parvovirus	5.0	≥ 3.5	10	500
Hog Cholera Virus (also known as classical swine fever)	6.5**	≥ 6.5	5	1000
Human Corona Virus (the viral type associated with SARS)	5.8	≥ 4.3	5	500
Infectious Bronchitis Virus	5.2	≥ 4.7	10	500
Infectious Bursal Disease Virus	>6.0†	≥ 3.5	5	1000
Marek's Disease Virus	5.2‡	≥ 4.5	5	1000
Newcastle Disease Virus (NDV)	>6.0†	≥ 5.5	5	1000
Porcine Circo Virus (PCV)	6.0	≥ 4.5	15	2500
Porcine Reproductive & Respiratory Syndrome Virus (PRRS)	6.0**	≥ 6.0	5	1000
Pseudorabies Virus	5.2	≥ 4.7	10	500
Transmissible Gastroenteritis Virus	5.2	≥ 4.7	10	500

*No virus remaining and >3-log reduction in titer in 10 min is required to pass the test.
†Titer is $-\log_{10}TCID_{50}$/0.2 mL.
‡Titer is $-\log_{10}TCID_{50}$/mL.
**Titer is $-\log_{10}TCID_{50}$/0.1 mL.

Compatibility

GLUTEX™ Sanitizers are suitable for use on many surfaces. At the recommended use-dilution, they are compatible with all common materials of construction that can tolerate exposure to water. The following materials were subjected to 25 spray/dry cycles at 25°C/76°F without rinsing. No detectable changes, relative to duplicate materials sprayed with water, occurred.

- Aluminum
- Brass
- Chrome-Plated Steel
- Copper
- Stainless Steel
- Glass
- Glazed Ceramic Tile
- Latex Rubber
- Polyethylene

Effectiveness on Materials of Construction

GLUTEX Sanitizers retain efficacy when used on most common materials of construction. When tested according to the EPA Sanitizer Test for Inanimate, Non-Food-Contact Surfaces, GLUTEX products effectively destroyed microorganisms on aluminum, stainless steel, polyethylene, galvanized steel, glazed ceramic tile and in the recommended use-dilution.

Applications

GLUTEX products effectively sanitize hard surfaces when applied to pre-cleaned surfaces. They can be easily diluted with available water without concern for water hardness. Fogging, atomizing, mopping, or spraying are all effective application techniques. GLUTEX Sanitizers have demonstrated effectiveness in controlling microorganisms in farm animal and poultry housing facilities, and on industrial equipment and in buildings.

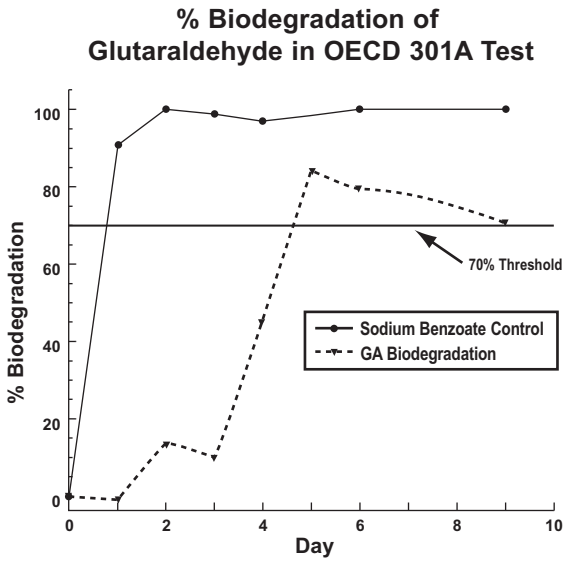
GLUTEX™ is ideal for sanitizing hatchers and setters, as well as egg rooms, tray washers, animal processing areas, barns and farrowing areas, farm equipment, transportation vehicles, and general farm housing areas.

Glutaraldehyde and the Environment

Many studies have been performed on glutaraldehyde to determine its potential to biodegrade in the environment.

The OECD 301 series of biodegradation protocols are designed to determine the biodegradation potential of substances under stringent conditions. In one such biodegradation test, glutaraldehyde met and exceeded the OECD ready biodegradability classification criteria and was found to be readily biodegradable.

% Biodegradation of Glutaraldehyde in OECD 301A Test



GLUTEX GS1 Sanitizer and GLUTEX GS2 Sanitizer are readily biodegradable according to the OECD 301A test.

Safe Handling, Storage, and Disposal

When applying GLUTEX, it is important to wear the appropriate protective equipment. This equipment includes proper gloves, chemical goggles, coveralls, and when necessary, respiratory equipment. When applying glutaraldehyde sanitizers by fogging, spraying, or atomizing, it is necessary to wear an organic vapor cartridge respirator with a particulate pre-filter (type AP2 in Europe). Do not spray or aerosolize the undiluted form of the product. Full pesonal protective equipment (including skin covering and full-face SCBA respirator) is required for dilutions or mixtures of the product used in a spray application. **Please refer to the product label for specific precautions and use directions.** Further information and precautions regarding the handling, storage, and disposal of GLUTEX products can be obtained by consulting the latest Dow Safety Data Sheet and the *Glutaraldehyde Safe Handling and Storage Guide*, form number 253-01338, available from your Dow representative or the Dow Customer Information Group. See the back page of this piece of literature for addresses and phone numbers.

For spills, chemical deactivation of glutaraldehyde is recommended using the following guidelines:

With Sodium Bisulfite:
An effective chemical method that can be used to deactivate concentrations of glutaraldehyde (up to 5%) is by addition of sodium bisulfite (SBS). In order to assure rapid, complete deactivation, it is recommended that 2-3 parts (by weight) of SBS be added per

part of active glutaraldehyde. Addition of 2-3 parts SBS will rapidly reduce the concentration of glutaraldehyde in solution to less than 2 ppm active within five minutes at room temperature. The remaining solution can then be disposed of by appropriate means. Concentrations higher than 5% should be absorbed on the appropriate absorbant material, collected, and incinerated.

Product Safety

When considering the use of any Dow product in a particular application, you should review the latest Safety Data Sheet (SDS) and ensure that the use you intend can be accomplished safely. For SDS and other product safety information, contact the Dow Customer Information Group. Before handling any other products mentioned in the text, you should obtain available product safety information and take necessary steps to ensure safety of use.

No chemical should be used as or in a food, drug, medical device, or cosmetic, or in a product or process in which it may contact a food, drug, medical device, or cosmetic until the user has determined the suitability and legality of the use. Since government regulations and use conditions are subject to change, it is the user's responsibility to determine that this information is appropriate and suitable under current, applicable laws and regulations.

The Dow Chemical Company requests that the customer read, understand, and comply with the information contained in this publication and the current Safety Data Sheet(s). The customer should furnish the information in this publication to its employees, contractors, and customers, or any other users of the product(s), and request that they do the same.

Product Stewardship

GLUTEX™ is the new name for UCARSAN™ products; UCARSAN 4128 [GLUTEX GS1] and 420 [GLUTEX GS2], used in animal housing biosecurity. Product specifications have not changed. We will continue to supply UCARSAN as we register the GLUTEX brand name in individual countries. Ask your Dow representative for information on product availability in your region.

Dow Biocides encourages its customers to review their applications of Dow Biocides products from the standpoint of human health and environmental quality. To help ensure that Dow Biocides products are not used in ways for which they are not intended or tested, Dow Biocides personnel are willing to assist customers in dealing with ecological and product safety considerations. Contact your representative if you need any assistance or information. When considering the use of any Dow product in a particular application, review the latest Safety Data Sheet and country-specific product label to ensure the intended use is within the scope of approved uses and can be accomplished safely. Before handling any of the products mentioned in the text, obtain available product safety information and take necessary steps to ensure safety of use.

For further information visit our website: www.dowbiocides.com or call:

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†except Indonesia and Vietnam

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