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Systems Integration Group, Inc.



UCARSAN

Sanitizers

UCARSAN[®] 4128 and 420

Introduction

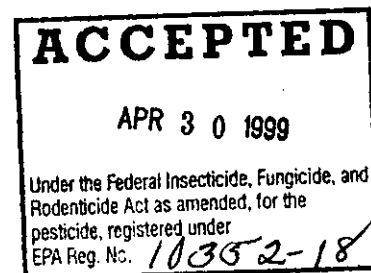
UCARSAN[®] Sanitizers are specially formulated for farm animal and poultry housing facilities and equipment, as well as industrial equipment and buildings. UCARSAN[®] Sanitizers combine the powerful antimicrobial action of glutaraldehyde with an effective synthetic detergent. The products differ only in concentration as supplied. When diluted according to label directions, they both provide identical end-use solutions containing 0.1% glutaraldehyde.

Special Features and Benefits

At their recommended use-dilutions of 0.1% (1000 ppm) glutaraldehyde, UCARSAN[®] Sanitizers have many important advantages including:

- Effective against a broad spectrum of microorganisms, including viruses* pathogenic to animals.
- Fast acting.
- No tacky buildup on treated surfaces, eliminating the need for time-consuming and costly removal and cleanup.
- Do not contain or release formaldehyde.
- Effective performance on a wide variety of construction materials.
- Not affected by hard water.
- Noncorrosive to metals that can tolerate exposure to water, thus avoiding etching, pitting, or scale formation.
- Properly diluted solutions pose no detrimental effects to waste treatment systems.

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



Product Performance

UCARSAN® Sanitizers are suitable for use on a wide variety of surfaces. In actual field use, they reduce contamination on commonly used materials of construction, including stainless steel, aluminum, painted and unpainted concrete, plastic, and wood. Furthermore, they are no more damaging to these materials than is water. Even after repeated applications, there was no detectable buildup or tacky residue remaining after the treated surfaces had dried.

There have been no adverse effects reported in the hatch rate, growout rate, or general health appearance of fowl that were hatched and processed in UCARSAN Sanitizer-treated areas.

Antimicrobial Activity

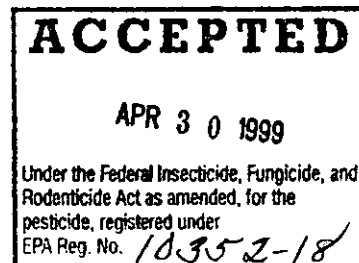
The effectiveness of UCARSAN® Sanitizers can be seen in the AOAC Germicidal and Detergent Sanitizer Test. At the recommended use dilution, UCARSAN® Sanitizers completely destroyed test microorganisms in less than one minute, even in the presence of extremely hard water.

AOAC Germicidal and Detergent Sanitizer Test

Contact Temperature = 25°C
Hardness as CaCO₃ = 1200 ppm

	Microorganism Level (cfu/mL)	
	Initial	Surviving After 1 min.
<i>Escherichia coli</i> ATCC 11229	4.6 x 10 ⁸	0
<i>Salmonella typhi</i> ATCC 6539	2.0 x 10 ⁸	0
<i>Staphylococcus aureus</i> ATCC 6538	3.8 x 10 ⁸	0

UCARSAN® Sanitizers were also tested by a modified EPA Sanitizer Test for non-food-contact surfaces against microorganisms that are particularly troublesome in animal health. UCARSAN® Sanitizers effectively destroyed the target organisms within 5 minutes.



Modified EPA Sanitizer Test

Contact Temperature = 25°C

Hardness as CaCO₃ = 1200 ppm

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

* Wood surface, test solution contains 5% serum albumin

The efficacy of UCARSAN[®] Sanitizers against a number of important 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.) UCARSAN[®] Sanitizers significantly reduced the titer of each virus after 5 or 10 minutes of contact.

EPA Virucidal Tests

Contact Temperature = 25°C

Hardness as CaCO₃ = 1200-1400 ppm

Virus	-log ₁₀ TCID ₅₀ /0.05 mL			
	Control Titer	Reduction in Titer*	Contact Time, min.	GA, Conc. (ppm)
New Castle Disease Virus	> 6.0 [†]	≥ 5.5	5	1000
Avian Reovirus	5.6	≥ 4.1	10	500
Avian Rotovirus	6.6	≥ 4.1	10	500
Canine Parvovirus	6.0	≥ 3.5	10	500
Infectious Bronchitis Virus	6.2	≥ 5.7	10	500
Pseudorabies Virus	5.2	≥ 4.7	10	500
Transmissible Gastroenteritis Virus	5.2	≥ 4.7	10	500
Infectious Bursal Disease Virus	> 6.0 [†]	≥ 3.5	5	1000
Avian Influenza Virus	> 6.0 [†]	≥ 5.5	5	1000
Avian Laryngotracheitis	5.5 [‡]	≥ 4.1	5	1000
Marek's Disease Virus	5.2 [‡]	≥ 4.5	5	1000
Porcine Reproductive & Respiratory Syndrome Virus (PRRS)	6.0 ^{**}	≥ 6.0	5	1000
Hog Cholera Virus	6.5 ^{**}	≥ 6.5	5	1000

* No virus remaining and >3-log reduction in titer in 10 min is required to pass the test.

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† Titer is $-\log_{10} \text{TCID}_{50}/0.2 \text{ mL}$.
 ‡ Titer is $-\log_{10} \text{TCID}_{50}/\text{mL}$.
 ** Titer is $-\log_{10} \text{TCID}_{50}/0.1 \text{ mL}$.

Compatibility

UCARSAN[®] 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, without rinsing, with no detectable changes relative to duplicate materials sprayed with water.

- Aluminum
- Brass
- Chrome-Plated Steel
- Copper
- Stainless Steel
- Glass
- Glazed Ceramic Tile
- Unglazed Ceramic Tile
- Linoleum Floor Tile
- Latex Rubber
- Polyethylene
- Unpainted Wood

Effectiveness on Materials of Construction

UCARSAN[®] Sanitizers are effective on most commonly used materials of construction. When tested according to the EPA Sanitizer Test for Inanimate, Non-Food-Contact Surfaces, UCARSAN[®] Sanitizers effectively destroyed microorganisms on aluminum, stainless steel, polyethylene, galvanized steel, glazed ceramic tile, unglazed ceramic tile, unpainted wood, and cement at the recommended use-dilution.

EPA Sanitizer Test for Inanimate, Non-Food-Contact Surfaces

Contact Temperature = 25°C
 Hardness as CAC03 = 1200 ppm
 Contains 5% serum albumin

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Test Surface	<i>Staphylococcus aureus</i> ATCC 6358 Microorganism Level (cfu/mL)		<i>Klebsiella pneumoniae</i> ATCC 4352 Microorganism Level (cfu/mL)	
	Initial	Surviving After 5 min.	Initial	Surviving After 5 min.
Aluminum	1.2×10^6	0	1.8×10^6	0
Stainless Steel	1.6×10^6	0	2.1×10^6	0
Polyethylene	2.1×10^6	0	6.0×10^5	0
Galvanized Steel	3.7×10^4	6	5.4×10^4	0
Glazed Ceramic Tile	1.3×10^6	0	1.5×10^6	0
Unglazed Ceramic Tile	3.4×10^5	5	7.3×10^4	9
Unpainted Wood	7.1×10^4	19	6.9×10^4	10
Cement	6.3×10^4	1	5.4×10^4	10

Applications

UCARSAN® Sanitizers effectively sanitize over a broad range of use-conditions. They can be easily diluted with available water without concern for reducing performance because of interactions with water hardness. Fogging, atomizing, or spraying are all effective application techniques. UCARSAN® Sanitizers have demonstrated effectiveness in controlling microorganisms in the following critical areas:

Farm Animal and Poultry Housing Facilities

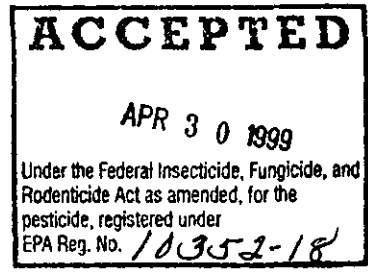
UCARSAN® Sanitizers are ideal for sanitizing hatchers and setters, as well as egg rooms, tray washers, animal processing areas, barns and farrowing areas, farm equipment, and general farm housing areas. UCARSAN® 420 is a concentrated solution for use by large volume users, while with UCARSAN® 4128 a convenient 1 ounce-to-1 gallon dilution is all that is required to obtain the correct usage concentration.

Industrial Equipment and Buildings

UCARSAN® Sanitizer 420 is also available for sanitizing industrial equipment and buildings, including clean rooms, mixing and product packaging equipment, transfer lines, and storage tanks.

Summary

At a use concentration of 0.1% glutaraldehyde, UCARSAN® Sanitizers can be used effectively to control many important pathogenic microorganisms, including viruses. For sanitizing farm animal and poultry housing facilities and equipment, as well as industrial equipment and buildings, UCARSAN® Sanitizers are effective on a variety of surfaces within 5 minutes of application. (Please refer to the product label for specific use directions.)



Safe Handling, Storage, and Disposal

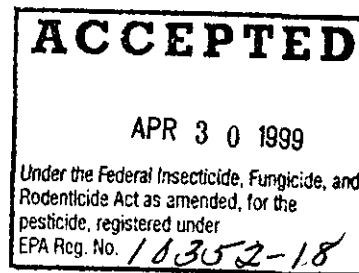
When applying UCARSAN[®] Sanitizers, it is important to wear the appropriate protective equipment. This equipment includes proper gloves, splash-proof monogoggles or both safety glasses with side shields and a wrap-around full-face shield, coveralls, and when necessary, respiratory equipment. When applying glutaraldehyde sanitizers by fogging, spraying, or atomizing, it is necessary to wear an organic vapor cartridge respirator. **Please refer to the product label for specific precautions and use directions.** Further information and precautions regarding the handling, storage, and disposal of UCARSAN Sanitizers can be obtained by consulting the latest Union Carbide Material Safety Data Sheet and the *Glutaraldehyde Safe Handling and Storage Guide*, publication number UC-1255, available from your Union Carbide representative. See the back page for addresses and phone numbers.

Product Safety

When considering the use of any Union Carbide products in a particular application, you should review our latest Material Safety Data Sheets and ensure that the use you intend can be accomplished safely. For Material Safety Data Sheets and other product safety information, contact the Union Carbide Sales Office nearest you. 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.

Union Carbide requests that the customer read, understand, and comply with the information contained in this publication and the current Material 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.



Emergency Service

Union Carbide maintains a 24-hour emergency service for its products. The Chemical Manufacturers Association (CHEMTREC), Transport Canada (CANUTEC), and the National Chemical Emergency Center also maintain 24-hour emergency service:

Location	Union Carbide Products	All Chemical Products
Mainland United States and Puerto Rico	Phone Union Carbide HELP: (800) UCC-HELP (toll-free), i.e., (800) 822-4357	Phone CHEMTREC: (800) 424-9300 (toll-free)
Alaska and Hawaii	Phone Mainland United States: (304) 744-3487 (collect)	Phone CHEMTREC: (800) 424-9300 (toll-free)
Canada	Phone Union Carbide: (514) 640-6400 (collect)	Phone CANUTEC: (613) 996-6666 (collect)
Continental Europe, Ireland, Middle East, North and Central Africa	Phone BIG (Geel-Belgium): (32)(0) 14 58-45-45	Phone CHEMTREC (United States): (703) 527-3887 (collect)
United Kingdom	Phone National Chemical Emergency Center (Culham-UK): (44)(0) 1865-407-333	Phone CHEMTREC (United States): (703) 527-3887 (collect)
Latin America, Asia/Pacific, South Africa, and any other location worldwide	Phone United States: (304) 744-3487 (collect)	Phone CHEMTREC (United States): (703) 527-3887 (collect)

At sea, radio U.S. Coast Guard, who can directly contact Union Carbide HELP. . . (800) 822-4357 (toll-free) or CHEMTREC. . . (800) 424-9300 (toll-free).

DO NOT WAIT. Phone if in doubt. You will be referred to a specialist for advice.

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