



**Disinfectant - Deodorizer**  
**Mildewstat (on hard, inanimate surfaces)**  
**No Rinse Sanitizer**

## DESCRIPTION

**Savall** is a clear, colorless and odorless liquid germicide designed for use in hospitals, food processing plants, dairies, restaurants, bars, animal quarters, kennels and institutions where disinfection, sanitization and deodorization is of prime importance. When used as directed, **Savall** is formulated to disinfect pre-cleaned inanimate hard surfaces such as floors, sink tops, tables, chairs and bed frames.

**Savall** deodorizes those areas which generally are hard to keep fresh smelling, such as garbage storage areas, empty garbage bins and cans, pet areas and any other areas which are prone to odors caused by microorganisms.

## SPECIAL INFORMATION

Canadian DIN #: 02240870

### **Guarantee**

Alkyl (60% C<sub>14</sub>, 30% C<sub>16</sub>, 5% C<sub>12</sub>, 5% C<sub>18</sub>) dimethyl benzyl ammonium chlorides 5.0%

Alkyl (68% C<sub>12</sub>, 32% C<sub>14</sub>) dimethyl ethylbenzyl ammonium chlorides 5.0%

**Savall** is a Canadian Food Inspection Agency (CFIA) approved product for use in registered food processing plants. Surfaces in direct food contact must be rinsed with potable water.

**Savall** is also Kosher approved.

## DIRECTIONS

### ***Disinfection of hospitals, food processing establishments, dairies, restaurants and bars:***

Thoroughly pre-clean all surfaces with a Maxim cleaning product and rinse with water. Dilute 5.5 mL of **Savall** per litre (1:180) of water. Apply this 550 ppm solution with a mop, cloth, sponge or trigger sprayer so as to wet all surfaces thoroughly. Allow to remain wet for a period of 10 minutes, then remove all excess liquid. Prepare a fresh solution for each use.

### ***Sanitization of previously cleaned, non-porous food contact surfaces:***

Remove all gross food particles and soil from areas which are to be sanitized with a Maxim cleaning product, pre-flush, pre-soak or pre-scrape. Rinse with a potable water rinse then sanitize using a 200 ppm active quaternary solution by adding 2 mL of **Savall** to 1 litre (1:500) of water.

### ***To sanitize immobile items such as tanks, chopping blocks and counter top:***

Flood the area with 200 ppm active quaternary solution for at least 60 seconds making sure to wet all surfaces completely. Remove, drain the use solution from the surface and air dry. Prepare a fresh solution daily or more frequently as soil is apparent.

### ***To sanitize mobile items such as drinking glasses and eating utensils:***

Immerse in a 200 ppm active quaternary solution for at least 60 seconds making sure to immerse completely. Remove, drain the used solution from the surface and air dry. Prepare a fresh solution daily or more frequently as soil is apparent. When used for sanitization of previously cleaned food equipment or food contact items, limit the active quaternary to 200 ppm. **NO POTABLE WATER RINSE IS REQUIRED.** This product is an effective sanitizer when diluted in water up to 750 ppm hardness (CaCO<sub>3</sub>).



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***Deodorization of garbage storage areas, empty garbage bins and cans and pet areas:***

Thoroughly pre-clean all surfaces with an Maxim cleaning product and rinse with water. Dilute 5.5 ml of **Savall** per litre (1:180) of water. Apply this 550 ppm solution with a mop, cloth, sponge or trigger sprayer so as to wet all surfaces thoroughly. Allow to remain wet for a period of 10 minutes, then remove all excess liquid. Prepare a fresh solution for each use.

**Savall KILLS HIV-1 ON PRE-CLEANED ENVIRONMENTAL SURFACES/OBJECTS PREVIOUSLY SOILED WITH BLOOD/BODY FLUIDS**

in health care settings (Hospitals, Nursing Homes) or other settings in which there is an expected likelihood of soiling of inanimate surfaces/objects with blood or body fluids, and in which the surfaces/objects likely to be soiled with blood or body fluids can be associated with the potential transmission of Human Immunodeficiency Virus Type 1 (HIV-1).

***Special Instructions for Cleaning and Decontamination against HIV-1 on Surfaces/Objects Soiled with Blood or Body Fluids.***

*Personal Protection:* When handling items soiled with blood or body fluids, use disposable latex gloves, gowns, masks, or eye coverings.

*Cleaning Procedures:* Blood or body fluids must be thoroughly cleaned from surfaces and objects before application of this product.

*Contact Time/Dilution:* At a use dilution of 32 mL per 4 L water (800 ppm), **Savall** is effective against HIV-1 in the presence of 5% blood serum with a 10 minute contact time.

**Efficacy tests have demonstrated that this product is an effective Bactericide and Virucide in the presence of organic soil (5% blood serum).**

**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.

***Results:***

<b><u>Test Organism</u></b>	<b><u>Dilution</u></b>	<b><u>No. of Carriers</u></b>		<b><u>Positive</u></b>
		<b><u>Sample</u></b>	<b><u>Exposed</u></b>	
<i>Staphylococcus aureus</i> (ATCC 6538)	3 ounces/	A	60	0
	5 gallons	B	60	0
<i>Salmonella enterica</i> (ATCC 10708)	3 ounces/	A	60	0
	5 gallons	B	60	0
<i>Pseudomonas aeruginosa</i> (ATCC 15442)	3.5 ounces/	A	60	0
	5 gallons	B	60	0



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**DISINFECTION DATA continued:**

**Results:**

<u>Test Organism</u>	<u>Dilution</u>	<u>No. of Carriers</u>		<u>Positive</u>
		<u>Sample</u>	<u>Exposed</u>	
<i>Listeria monocytogenes</i> (ATCC 35152)	3 ounces/ 5 gallons	A	10	0
		B	10	0
<i>Yersinia enterocolitica</i> (ATCC 23715)	3 ounces/ 5 gallons	A	10	0
		B	10	0
<i>Staphylococcus aureus</i> (Vancomycin intermediate resistant) (HIP-5836)	3.5 ounces/ 5 gallons	A	10	0
		B	10	0

*Escherichia coli* (ATCC 11229) \*See Sanitization Data Section for information

*Escherichia coli* 0157:H7 (ATCC 43895) \*See Sanitization Data Section for information

**Conclusion:**

Under the conditions of these investigations, **Savall** demonstrated disinfectant activity against *Staphylococcus aureus*, *Salmonella choleraesuis*, *Listeria monocytogenes*, *Yersinia enterocolitica*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* (Vancomycin intermediate resistant)(VISA) according to the criteria established by the US Environmental Protection Agency for registration and labeling of a disinfectant product as a bactericide. The AOAC Use Dilution test method is accepted in Canada.

**SANITIZATION DATA:**

Test Method: AOAC Germicidal and Detergent Sanitizing Action of Disinfectants

Test Conditions: Synthetic hard water as 650 ppm hardness (as CaCO<sub>3</sub>)  
200 ppm active quaternary (public eating establishments and dairies) 200-400 ppm active quaternary (food processing equipment/utensils) 1-2 ounces/4 gallon dilution.



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**SANITIZATION DATA continued:**

**Results:**

<b><u>Test Organism</u></b>	<b><u>Sample</u></b>	<b><u>TOTAL BACTERIAL COUNTS/ % KILL VS. EXPOSURE TIME</u></b>					
		<b><u>TBC*</u></b>	<b><u>30 SECONDS</u></b>		<b><u>60 SECONDS</u></b>		<b><u>Inoculum Kill Control Count</u></b>
			<b><u>% Kill<sup>ⓧ</sup></u></b>	<b><u>TBC*</u></b>	<b><u>% Kill<sup>ⓧ</sup></u></b>		
<b><i>Staphylococcus aureus</i> (ATCC 6538)</b>	A	970	99.999	105	99.999	7.8 x 10 <sup>7</sup>	
	B	1285	99.999	205	99.999	9.2 x 10 <sup>7</sup>	
	C	1145	99.999	130	99.999	9.3 x 10 <sup>7</sup>	
<b><i>Escherichia coli</i> (ATCC 11229)</b>	A	1125	99.999	50	99.999	1.0 x 10 <sup>8</sup>	
	B	1075	99.999	95	99.999	9.3 x 10 <sup>7</sup>	
	C	835	99.999	75	99.999	8.1 x 10 <sup>7</sup>	
<b><i>Escherichia coli</i> 0157:H7 (ATCC 43895)</b>	A	1220	99.999	110	99.999	9.2 x 10 <sup>7</sup>	
	B	1000	99.999	125	99.999	9.2 x 10 <sup>7</sup>	
<b><i>Listeria monocytogenes</i> (ATCC 35152)</b>	A	<10	>99.999	<10	>99.999	7.8 x 10 <sup>8</sup>	
	B	<10	>99.999	<10	>99.999	7.8 x 10 <sup>8</sup>	
<b><i>Yersinia enterocolitica</i> (ATCC 23715)</b>	A	108	99.999	<10	>99.999	1.7 x 10 <sup>8</sup>	
	B	1300	99.999	263	99.999	5.9 x 10 <sup>8</sup>	
<b><i>Campylobacter jejuni</i> (ATCC 29428)</b>	A	790	99.999	410	99.999	8.6 x 10 <sup>7</sup>	
	B	780	99.999	470	99.999	8.6 x 10 <sup>7</sup>	
<b>Methicillin resistant <i>Staphylococcus aureus</i> (ATCC 33592, MRSA)</b>	A	950	99.999	<10	>99.999	1.0 x 10 <sup>8</sup>	
	B	970	99.999	<10	>99.999	1.0 x 10 <sup>8</sup>	
<b><i>Salmonella typhi</i> (ATCC 6539)</b>	A	<10	>99.999	<10	>99.999	1.4 x 10 <sup>8</sup>	
	B	<10	>99.999	<10	>99.999	1.4 x 10 <sup>8</sup>	



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**SANITIZATION DATA continued:**

<b><i>Shigella sonnei</i></b> (ATCC 11060)	<b>A</b>	<b>680</b>	<b>99.999</b>	<b>&lt;10</b>	<b>&gt;99.999</b>	<b>9.3 x 10<sup>7</sup></b>
	<b>B</b>	<b>4500</b>	<b>99.999</b>	<b>&lt;10</b>	<b>&gt;99.999</b>	<b>9.3 x 10<sup>7</sup></b>
Vancomycin resistant <i>Enterococcus faecalis</i> (ATCC 51299, VRE)	A	<10	>99.999	<10	>99.999	1.2 x 10 <sup>8</sup>
	B	<10	>99.999	<10	>99.999	1.2 x 10 <sup>8</sup>
<b><i>Vibrio cholera</i></b> (ATCC 14035)	<b>A</b>	<b>&lt;10</b>	<b>&gt;99.999</b>	<b>&lt;10</b>	<b>&gt;99.999</b>	<b>8.3 x 10<sup>7</sup></b>
	<b>B</b>	<b>&lt;10</b>	<b>&gt;99.999</b>	<b>&lt;10</b>	<b>&gt;99.999</b>	<b>8.3 x 10<sup>7</sup></b>
<i>Klebsiella pneumoniae</i> <sup>1</sup> (ATCC 4352)	A	340	>99.999	<10	>99.999	1.1 x 10 <sup>8</sup>
	B	190	>99.999	<10	>99.999	1.1 x 10 <sup>8</sup>

\*TBC = Total Bacterial Count

☒ = % Kill calculation based on Initial Inoculum control count.

**Conclusion:**

Under the conditions of these investigations, **Savall** demonstrated sanitizing activity against *Staphylococcus aureus*, *Escherichia coli*, *Escherichia coli* 0157:H7, *Klebsiella pneumoniae*<sup>1</sup>, *Listeria monocytogenes*, *Campylobacter jejuni*, *Salmonella typhi*, *Shigella sonnei*, *Vibrio cholera*, Methicillin resistant *Staphylococcus aureus*, Vancomycin resistant *Enterococcus faecalis* and *Yersinia enterocolitica* according to the criteria established by the US Environmental Protection Agency for registration and labeling of a disinfectant product as a sanitizer. The AOAC Germicidal and Detergent Sanitizing Action of Disinfectants test method is accepted in Canada.

1. Synthetic hard water as 500 ppm hardness (as CaCO<sub>3</sub>).

**VIRUCIDAL DATA:**

Test Methods:

**\*U.S. E.P.A. Pesticide Assessment Guidelines, Subdivision G: Product Performance, Section 91-30, 1982, pp. 72-76.**

**\*\*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.**

**~Virucidal Assay (EPA, Federal Register 10, No.123, 6/25/75, p.26836).**



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**VIRUCIDAL DATA continued:**

Test Conditions:            **10 minute contact time, 3.5 oz/5 US gallon dilution, glass petri dish substrates, 18.5-25°C exposure temperature, tested in the presence of serum.**

**Results:**

<b><u>Test Organism</u></b>	<b><u>Sample</u></b>		<b><u>Titer Reduction</u></b>	
<b>~Herpes Simplex Type 1 (Sabin)</b>	<b>A</b>	<b>B</b>	<b>4.0 log</b>	<b>4.0 log</b>
*Human Immunodeficiency Virus, HTLV-III <sub>RF</sub> , strain of HIV-1 (associated with AIDS)	A	B	>/= 3.5 log	>/= 3.5 log
<b>~Influenza A<sub>2</sub> (Japan 305/57)</b>	<b>A</b>	<b>B</b>	<b>7.5 log</b>	<b>7.5 l</b>
~Adenovirus Type 5	A	B	>/= 3.0 log	>/= 3.3 log
<b>~Vaccinia (Wyeth)</b>	<b>A</b>	<b>B</b>	<b>3.5 log</b>	<b>3.5 log</b>
*Avian Influenza A/Turkey/Wisconsin (ATCC VR-798)	A	B	>/= 5.5 log	>/= 5.5 log
<b>*Laryngotracheitis (LT-IVAX)</b>	<b>A</b>	<b>B</b>	<b>4.75 log</b>	<b>&gt;/=4.75 log</b>
Porcine Respiratory & Reproductive Syndrome Virus (PRRSV)	A	B	>/=5.75 log	>/=5.75 log
<b>*Newcastle Disease virus (strain H.J. Roakin, 1946)</b>	<b>A</b>	<b>B</b>	<b>&gt;/=5.5 log</b>	<b>&gt;/=5.5 log</b>

**Conclusion:**

Under the conditions of this investigation, **Savall**, was virucidal for Porcine Respiratory & Reproductive Syndrome Virus (PRRSV), Herpes Simplex Type 1 (Sabin), Human Immunodeficiency Virus (HIV-1), Influenza A<sub>2</sub> (Japan 305/57), Vaccinia (Wyeth), Adenovirus Type 5, Avian Influenza A/Turkey/Wisconsin, Laryngotracheitis Virus and Newcastle Disease virus according to criteria established by the U.S. Environmental Protection Agency for registration and labeling of a disinfectant product as a virucide.

**Savall** has demonstrated effectiveness against Vaccinia and Influenza A virus and is expected to inactivate all Influenza A viruses including 2009 (H1N1) pandemic Influenza A virus.

# MATERIAL SAFETY DATA SHEET

## SECTION 1 – PRODUCT/MANUFACTURER'S IDENTITY

Product Name: **SAVALL**

WHMIS CODE: N/A  
 Proper Shipping Name: CORROSIVE LIQUID, N.O.S.  
 (quaternary ammonium chloride)  
 Hazard Class: Class 8, PG III  
 UN Number: UN1760 (Ltd. Qty)

Product Use: *Quat disinfectant/sanitizer.*  
**Canadian DIN 02240870**

HMIS	
3	Health
1	Flammability
0	Reactivity
B	Personal

A=Goggles, B=Goggles & Gloves  
 C=Goggles, Gloves and Apron

Maxim Technologies Inc.  
 1607 Derwent Way  
 Delta, BC V3M 6K8, Canada  
 Phone: (604) 526-5655

**EMERGENCY PHONE**  
 Canada: Canutec 613-996-6666  
 U.S.A.: Chemtrec 800-424-9300

ABBREVIATION KEY: N/A=Not Applicable, N/E=Not Established, N/D=Not Determined, > =Greater Than

## SECTION 2 – HAZARDOUS INGREDIENTS INFORMATION

INGREDIENT	CAS NO.	RANGE %	PEL	TLV
<b>ALKYL DIMETHYL BENZYL AMMONIUM CHLORIDE</b>	68391-01-5	5.0	N/D	N/D
LD50 (oral rat)	N/D			
LD50 (dermal)	N/D			
LC50	N/D			
<b>Alkyl DIMETHYL ETHYLBENZYL AMMONIUM CHLORIDE</b>	68956-79-6	5.0	N/D	N/D
LD50 (oral rat)	N/D mg/kg			
LD50 (dermal Rabbit)	N/D mg/kg			
LD50	N/D			

## SECTION 3 – PHYSICAL DATA

**Color and Odor:** Clear, mild odor.      **Boiling Point:** N/D      **Vapor Pressure (mm HG):** N/D      **pH:** 7.0 – 8.0  
**Physical State:** Liquid.      **Melting Point:** N/A      **Vapor Density:** N/D      **Specific Gravity:** 0.993 @ 20°C  
**Coef. Water/Oil Dist:** Greater than 1.0      **Evaporation Rate:** N/D      **Solubility in Water:** Soluble      **Odor Threshold:** No Data

## SECTION 4 – FIRE AND EXPLOSION HAZARD DATA

**Flash Point and Method:** > 93.3°C (PMCC)      **Sensitivity to Mechanical Impact:** None.      **Extinguishing Media:** Dry chemical, foam, carbon dioxide, water fog.  
**Flammable Limits:** None known.      **Sensitivity to Static Discharge:** None.      **Auto ignition Temperature:** None known.  
**Conditions of Flammability:** None.  
**Unusual Fire and Explosion Hazards:** Vapors may form explosive mixture with air.  
**Hazardous Combustion Products:** Irritating and toxic gases or fumes may be released during a fire.  
**Special Fire Fighting:** Firefighters should wear full fire-fighting turn-out gear (full Bunker gear) including NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

## SECTION 5 – REACTIVITY DATA

**Chemical Stability:** Stable under normal storage conditions.  
**Hazardous Polymerization:** Will not Occur.  
**Incompatibility (material to avoid):** Strong oxidizing and reducing agents, acids.  
**Hazardous Decomposition Products:** Fumes of hydrogen chloride, amines, and other oxides of carbon and nitrogen.

## SECTION 6 – TOXICOLOGICAL DATA

**Exposure Limits:** See Section 2 under Hazardous Ingredient.      **Routes of Entry:** Skin, eyes, inhalation.  
**Irritancy of Product:** Corrosive to skin, eyes and respiratory system.      **Carcinogenicity:** None known.  
**Sensitization:** None known.      **Mutagenicity:** None known.  
**Name of Toxicological Synergistic Product:** None known.      **Reproductive Toxicity:** None known.  
**Teratogenicity:** None known.  
**Effects of Chronic Exposure:** Prolonged or repeated exposure may cause skin irritation or dermatitis, respiratory disorder.  
**Effects of Acute Exposure to Product:** Product exposure may irritate or burn skin and eyes. Inhaling vapors or mists may irritate mucous membranes. Prolonged inhalation exposure may cause headaches, nausea, etc. Ingestion may cause gastro-intestinal and abdominal discomfort.

## SECTION 7 – PREVENTATIVE AND CONTROL MEASURES

**Respiratory Protection:** Normally not required when foaming or spraying in ventilated areas. However, if product is misted or sprayed in tightly enclosed areas without ventilation, use a NIOSH/MSHA approved mist and organic vapor respirator.  
**Ventilation:** Good general ventilation or local exhaust ventilation for spraying and misting in confined areas.  
**Protective Gloves:** Natural or butyl rubber, nitrile or neoprene gloves.  
**Eye Protection:** Chemical goggles, safety goggles or face shield.  
**Protective Clothing and Equipment:** Long sleeve coveralls. Eye wash recommended in the immediate work area.  
**Storage and Handling Procedures:** Use good industrial hygiene. Do not get in eyes. Avoid contact with skin and clothing. Avoid breathing sprays or mists. Store in a cool, dry place away from incompatibles. Keep container closed when not in use. Do not mix with any other chemicals. Store at temperatures below 30°C (86°F) and keep from freezing.  
**Disposal Procedures for Spills or Leaks:** Wear protective equipment. Dike and contain large spills. Pump spills into an approved waste container. For small spills, soak up with a suitable absorbent such as clay, soil or commercially available absorbents, and then dispose of into an approved waste container. Keep away from sewers and out of natural waters.  
**Waste Disposal Method:** Reuse if possible, or otherwise dispose recovered material in accordance with all local, Provincial or Federal Regulations.  
**Special Shipping Information:** Store at temperatures below 30°C (86°F) and keep from freezing.

## SECTION 8 – EMERGENCY FIRST AID PROCEDURES

**First Aid:**  
 If swallowed, give plenty of clean water to drink to dilute product. Do not induce vomiting. Call a Physician. In case of contact with eyes, flush with clean water for 15 minutes. Get medical attention. For contact with skin, wash with clean water and rinse well. If irritation occurs or persists, get medical attention.

## PREPARATION DATA

PREPARED BY: Technical Service / Regulatory Division      PHONE: 604-526-5655      LAST UPDATE: Jan. 2, 2015  
 THE INFORMATION PROVIDED IN THIS MATERIAL SAFETY DATA SHEET HAS BEEN OBTAINED FROM CURRENT SOURCES AND IS BELIEVED TO BE RELIABLE