

# Technical Bulletin

## Cidal

### Quarternary Sanitiser

#### Product Description:

CIDAL (brand of Benzalkonium Chloride which meets B.P.\* and U.S.P.\*\* requirements) is a refined antiseptic and sanitiser for use in all food and beverage processing plants. The formulation, odourless and non toxic in use dilution, has broad spectrum of applications for the purpose of chemical disinfection and odour control where odours occur as a result of bacterial decomposition.

CIDAL is a 10% active quaternary ammonium compound. Quaternaries vary considerably in their germicidal effectiveness. The particular quaternary utilised in the CIDAL formulation has been selected because of its short chain length. It has been established that for highest disinfectant efficiency the optimum chain length is actually between 12 and 14 carbon atoms and the replacement of a methyl by a benzyl group and has a short chain length. CIDAL contains no such corrosive elements as phenol, iodine, mercury or other metals and is therefore free from the disadvantages of such compounds.

Quaternary ammonium compounds (Q.A.C.'s or Quats) have two primary actions on bacterial cells. Certain of the cell constituents migrate into the disinfectant solution. The antiseptic loses some of their activity in the presence of organic matter. However, the recommended use dilutions for CIDAL adequately cover the resultant depreciation in activity.

Phenol Co Efficients were conducted in order to assist in establishing the disinfectant efficiency of CIDAL against the following representative pathogenic organisms:

TEST ORGANISM	GRAM STAIN	PHENOL CO EFFICIENT
Salmonella typhi	Gram-negative	50 (R.W.)
Staphylococcus aureus	Gram-negative	80
Escherichia coli	Gram-negative	62
Pseudomonas aeruginosa	Gram-negative	38

Further tests were conducted by Modified Phenol Co Efficient Method showing the dilution rate at which CIDAL is efficacious against a representative group of pathogens in the presence of water and in the presence of various organic contaminants:

#### Bacterial Activity of Cidal

N.B. It should be noted that CIDAL, together with all quaternaries, is ineffective against Mycobacterium tuberculosis and bacterial spores.

TEST ORGANISM	DILUTION OF CIDAL BACTERICIDAL IN 10 MINS. AT 20°C IN WATER		PHENOL CO EFFICIENT
	Pharmacide IC	Phenol	
Salmonella typhi	1 : 4,500	1 : 90	50
Staphylococcus aureus	1 : 4,800	1 : 60	80
Escherichia coli	1 : 4,300	1 : 70	62
Pseudomonas aeruginosa	1 : 1,500	1 : 40	38
Streptococcus faecalis	1 : 1,000	1 : 50	20
Shingella sonnei	1 : 3,000	1 : 80	37
Salmonella pullorum	1 : 1,800	1 : 90	20
Salmonella paratyphi	1 : 1,000	1 : 80	12
Brucella abortus	1 : 4,000	1 : 100	40

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## Application:

Influence of Organic Contaminants

Table 2

ORGANISM	CONTAMINANT OR DILUTENT	DILUTION OF CIDAL BACTERICIDAL IN 10 MINS. AT 20°C
Salmonella typhi	Distilled water control	1 : 4,500
	1% hen manure	1 : 2,000
Staphylococcus aureus	Distilled water control	1 : 4,800
	1% skimmed milk	1 : 2,400
	1% cow manure	1 : 2,800
Salmonella pullorum	Distilled water control	1 : 1,800
	1% hen manure	1 : 700

### General surface disinfection of refrigerators, food racks and bins, food machinery

Apply freely over surface or soak articles in bath of CIDAL diluted 1 : 500.

### Sanitising milk cans and dairy equipment

1. Clean in usual manner.
2. If soap is used, rinse thoroughly.
3. Flush with CIDAL OR circulate diluted CIDAL OR immerse articles in bath of CIDAL.

Dilution rate is 1 : 600 for all operations.

### Sanitising food and drink processing equipment

1. Clean and rinse.
2. Apply to surface manually, or circulate through equipment and pipes or immerse equipment in bath.
3. If equipment is of such a nature that large quantities of CIDAL solution will be retained (eg. in circulating systems) flush with fresh water, otherwise air dry.
4. Dilutions:  
Metal, Glass, Plastics etc. 1: 400  
Porous Surfaces 1: 200

### Meat Processing industry. Mould control on shrouds used for covering carcasses. Prevents mould growth on the shrouds and consequent contamination of carcasses

1. Clean and rinse. (If soap used 2 or 3 rinses should be adopted).
2. Add CIDAL diluted 1 part in 1000 to final rinse.

### Mould and mildew control on walls, floors etc.

Swab or spray with CIDAL diluted 1 : 400.

### Laundry Hygiene Rinse - ANTIBACTERIAL ACTION

The broad-spectrum activity of CIDAL over Gram negative bacteria, dermatophytes, basidiomycetous and anamorphic yeasts, that are major causes of cosmopolitan infections. The effective dilutions of CIDAL, in order to cause 95-100% growth inhibition of micro-organisms at concentrations of the order of log 3 range between 10mL of Cidal per 10 Litres of water (0.1%) to 2mL of Cidal to 10 Litres of water (0.02%). The 0.1% dilution is recommended for woollen items. The optimum temperatures for hand and machine-washing ranged between 30°C - 60°C.

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The range of mean growth inhibition on each fabric washing temperature and product dilution was 91-95% (corresponding to a growth reduction factor of 1.91-1.95). Dermaphytes were inhibited by 100% (growth reduction factor 2). Ordinary household detergents, without the supplementary use of CIDAL resulted in 2 - 5% mean growth inhibition of the microorganism load on each tested fabric at each washing effort and temperature.

Dermatophytes (fungi that colonize the hair, nails, and other outer layer of the epidermis), these fungal infections are informally known as tinea or ringworms were successfully inhibited using CIDAL at temperatures ranging between 14°C and 30°C.

50mL of CIDAL diluted in 70 Litres of water (70ppm or 0.1% dilution) would be reasonably expected to cover the following micro organisms.-5-

## Bacteria

Aeromonas punctata  
Leuconostoc messenteroides  
Listeria monocytogenes  
Bacillus mycoides  
Propionibacterium acnes  
Proteus mirabilis  
Bacillus subtilis  
Staphylococcus aureus

## Yeasts

Candida albicans  
Candida krusei  
Torula rubra  
Rhodotorula mucilaginosa  
Saccharomyces bailli

## Mould Fungi

Mucor raemosus  
Penicilium glaucum  
Trichophyton mentagrophytes

### Quaternary Sanitiser Deodoriser : Deodorising food processing plants, coops, hatcheries, animal pens, killing floors and boning rooms in abattoirs, vegetable, fruit and fish canneries

1. Hose down walls, equipment, floors, etc. brushing if necessary to remove soil.
2. Swab or spray with CIDAL diluted 1 : 500.

### Algae control in recirculated final rinse water used in frozen vegetable processing plants

Dose final rinse water with CIDAL to a concentration of 1 : 20,000. Maintain concentration within limits of 1 : 20,000 to 1 : 40,000 by CC CIDAL test method which is available on demand.

### Algae control in swimming pools.- noticed by Yellow mustard colour

Dose 5L of CIDAL into average Swimming pool (50000L) to give a concentration of 10ppm of Benzylalkonium Chloride active. This will control algae which will eliminate the Yellow – mustard colour.

Purpose	Dilution of Cidal
Denuded Skin, Mucous Membranes	1 in 200 to 1 in 750
Vaginal Irrigation	1 in 400
Bladder and Urethral Irrigation	1 in 2,000 to 1 in 4,000
Fungus Infection	1 in 100
Wet Dressings, Packs or Irrigations	1 in 500
Mouthwash	1 in 300
Eye, Ear, Nose and Throat	1 in 750
Disinfection of Instruments, Gloves, etc (30 min. immersion after thorough cleansing)	1 in 100

(recommended for emergency use only or when instruments and utensils cannot be subjected to heat)

Disinfection of utensils, operating tables, wards, floors. 1 in 500 Sterile Storage of Instruments 1 in 200\*\*

\*\* (Include 1/2% sodium nitrite as corrosion inhibitor and change to solution weekly) The following are suggested use dilutions for general use:

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General Surface Disinfection of Hospital Wards  
Operating Room, Refrigerators, Food Racks, Bins  
Shower Rooms, FootBaths, and Laundry Linen

Apply freely over surfaces  
or Food Machinery  
Soak articles in bath of CIDAL  
Undiluted 1 in 400.

Quaternary Sanitiser – Warewashing  
Sanitising Dishes, Glassware etc.

1. Clean in usual manner
2. Rinse
3. Dip articles in CIDAL undiluted 1 in 600
4. Allow to air dry. Do Not wipe or rinse.

#### Compatibilities:

CIDAL is compatible with:	
Acridavine	Alcohol
Ephedrine hydrochloride	Cocaine
Streptomycin	Penicillin
Sulphacetamide	Phenylephrine hydrochloride
Sodium Carbonate	Procaine HCl
Tenamycin	Sulphadiazine
Natural rubber	Urethane
	Sodium Nitrate

CIDAL is incompatible with:	
Argyrol	Sulphathiazole and its sodium salt
Boric Acid 5%	Zinc Sulphate
Peroxide	Iodine
Potassium Iodide	Pilocarpine Nitrite 3%+

CIDAL is incompatible with soap and most synthetic detergents. CIDAL is compatible with a large range of substances with which it is likely to come in contact, but because of its large cation, there are a few substances with which it forms insoluble materials. These are generally materials with bulky anions, notably certain phosphates, chromates and anionic wetting agents, including soaps. Where a surface has been washed with soap, it should be thoroughly rinse with water, or alcohol, before applying dilute solutions of CIDAL.

Extensive studies have been made on the toxicology of CIDAL which show a wide margin between biocidal effective concentrations and those likely to be toxic or irritating.

#### Food Safety Statement/Fitness For Purpose:

- 1) An FFP - Fit For Purpose Statement is available for this product when used in an export meat facility.

When used in accordance with the directions described in this product technical bulletin, this product complies with these recognised food safety parameters.

**SHELF LIFE:** As a quality assured manufacturer, Castle Chemicals has a stringent Quality assurance programme. As part of this regime, the label on this product shows a batch number and date of manufacture. This product has a shelf life of 24 months from the label printed date of manufacture. This information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Castle Chemicals assumes no responsibility for personal injury or property damage to vendees, users or third parties caused by the material. Such vendees or users assume all risks associated with the use of material.