



Product Description

CITRICIDAL™ is a broad spectrum antimicrobial compound synthesized from the seeds and pulp of grapefruit.

Application

CITRICIDAL™ is an extremely potent and effective broad spectrum bactericide, fungicide, antiviral and antiparasitic compound. CITRICIDAL™ is environmentally safe with a low toxicity to man and animals.

Mode of Activity

Studies indicate that the antimicrobial activity of CITRICIDAL™ is in the cytoplasmic membrane where the uptake of amino acids is prevented and disorganization of the cytoplasmic membrane and leakage of low molecular weight cellular contents.

Biodegradability

CITRICIDAL™ is biodegradable according to the "Standard Test Methods for Determining the Anaerobic Biodegradation Potential of Organic Chemicals", ASTM Standards, Section 11, Water and Environmental Technology, Procedure E 1196-2, pp. 879-901,1993.

Uses

Agriculture: Bactericide and fungicide in both pre-harvest and post-harvest treatment - range: 50 ppm to 250 ppm*

Fish & Poultry: Disinfectant for fresh fish and poultry, preservative for processed fish and poultry - range: 100 ppm to 1000 ppm*

Animal Feed: Mold inhibitor and antiparasitic - range: 50 ppm to 250 ppm*

Food: Preservative and antioxidant - range: 10 ppm to 250 ppm*

Cosmetics: Preservative and antimicrobial - range: 1000 ppm to 10,000 ppm

Water Treatment: Disinfectant for contaminated water - range: 50 ppm to 250 ppm

Therapeutic: - range: 50 to 200 mg/dose*

Physical Properties

Chemical Description: Diphenol hydroxybenzene complex

Appearance (liquid): Liquid/heavy viscous

Color (Gardner): 2, Lemon Yellow

Odor: Mild citrus

Specific Gravity (d25 °C): 1.110

Density (lbs./gal.): 9.5

Liquid pH (d25 °C): 2.0 - 3.0

Powder pH (d25 °C): 2.0 - 3.0

Flash Point (°F): 292

Viscosity (Centistoke): 134.91

Molecular Weight: 565

Solubility: Water, alcohol and organic solvents

**International registrations only*

Citricidal Liquid Extract

| | |
|------------------------|------|
| Grapefruit Extractives | 60% |
| Glycerin-USP | 40% |
|Total | 100% |

Citricidal Powder Extract

| | |
|------------------------|------|
| Grapefruit Extractives | 50% |
| Silicon Dioxide - USP | 30% |
| Glycerin-USP | 20% |
|Total | 100% |

Citricidal Toxicology

Acute Oral Toxicity

LD 50 over 5,000 mg/kg of live weight

Chronic Toxicity (Acute oral with continuous feeding and reproduction study for 24 months)

LD 50 2,500 mg/kg of live weight (Rats and guinea pigs)

Acute Oral Toxicity (Continuous feeding study with fishmeal for 12 months)

LD 50 5,000 mg/kg of live body weight (Adult rats, 12 months) LD 50 400 mg/kg of live weight (Newborn rats)

Dermal Toxicity

Not a primary skin irritant and is non-corrosive

Carcinogenicity

12 month tests in mice show no carcinogenic effect 24 month test in rats show no carcinogenic effect

Long-Term Inhalation Study

Closed chamber exposure for 8 hours a day, 5 days a week for 90 days - No effect at 100-150 mg/m³ air

Dermal Toxicity Carcinogenicity

2 year studies with rats and mice . No carcinogenic, toxicity or systemic effects seen

Eye Irritation

Full strength - severe irritation with slight corneal iris injury. 0.5%, 1% and 2% concentrations produce irritation and moderate erythema

Human Patch Studies

1% and 2% concentrations produced no irritation or sensitization . 3% concentration produced very mild irritation by allergic humans.

Citricidal Packaging Specifications

Liquid Extract

5 Gallon Plastic Pail

11" x 14 1/2" x 16"

Net wt. 50 lbs.

Gross wt. 55 lbs.

55 Gallon Plastic Drum

23 1/2" x 36"

Net wt. 500 lbs.

Gross wt. 550 lbs.

Powder Extract

30 Gallon Fiber Drum

16" x 29"

Net wt. 110 lbs.

Gross wt. 120 lbs.

CITRICIDAL™ (as a natural extractive) is listed as GRAS (Generally Recognized as Safe) under the Code of Federal Regulations as 21 CFR 182.10. CITRICIDAL™ has been tested for safety in both human and animal, including the environment. CITRICIDAL™ is considered non-toxic and a non-irritant at dilutions up to 2%. CITRICIDAL™ is also considered non-corrosive.

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CAS No.: 90045-43-5 CTFA listing: Grapefruit Extract

- [CITRICIDAL® Minimum Inhibitory Concentration In-Vitro](#)
- [Special Features of CITRICIDAL® Grapefruit Seed Extract](#)
- [CITRICIDAL® Comparative Studies](#)
- [CITRICIDAL® Antimicrobial Activity](#)
- [CITRICIDAL® in Dairy Industry Cleaning and Disinfecting](#)
- [CITRICIDAL® Technical Specification for Formulation](#)
- [CITRICIDAL® as a Cosmetic Preservative](#)
- [CITRICIDAL® as a Disinfectant](#)
- [CITRICIDAL® - Two-fold Serial Dilution Tests](#)
- [CITRICIDAL® - Laboratory Report](#)
- [CITRICIDAL® - MSDS](#)

Note: CITRICIDAL® should be handled with care in full strength. Avoid contact with the eyes and avoid breathing vapors at full strength. Any direct contact with the skin should be thoroughly rinsed with water.

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