

Microbial Control

Technical Data Sheet

DOWICIDE 1E Antimicrobial

Regional Product Availability

This product is only available in the U.S.

General

DOWICIDE* 1E Antimicrobial is readily soluble in most organic solvents and oils, and is only slightly soluble in water. DOWICIDE 1E Antimicrobial can be formulated with the aid of anionic emulsifiers. However, it is usually incompatible with most other types of surfactants and emulsifiers.

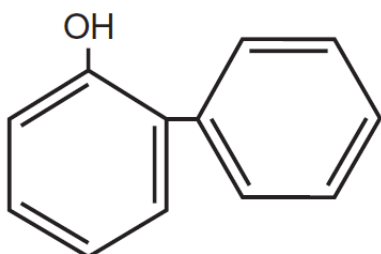
DOWICIDE 1E Antimicrobial is DuPont's brand of o-phenylphenol.

This product is uniquely effective against a wide variety of organisms, including *Pseudomonas spp.*, *Mycobacterium spp.* and many types of molds and fungi.

Manufacturers of metalworking fluids incorporate DOWICIDE 1E Antimicrobial into soluble oil and semisynthetic concentrates to control spoilage of the diluted concentrate. The utility here stems from a favorable balance of oil and water solubility characteristics.

DOWICIDE 1E Antimicrobial is also utilized in preserving ceramic glazes, adhesives, and leather articles.

Structure



Sales Specifications

Description: White to light buff to pink free-flowing flakes and powder

Active ingredient, o-phenylphenol99%

Inert ingredients..... 1%

Physical Properties

The following are typical properties of DOWICIDE 1E Antimicrobial; **they are not to be considered product specifications.**

| | | |
|----------------------------------|--------------------|--------|
| Formula | $C_6H_4(C_6H_5)OH$ | |
| Molecular weight | 170.2 | |
| Freezing Point, °C | 57 | |
| Boiling Point, °C | 286 | |
| Flash Point, C.O.C. | 124°C/255° F | |
| Fire Point, C.O.C. | 149°C/300° F | |
| Specific Gravity, 25/25°C | 1.2 | |
| Bulk Density, lb/ft ³ | 35-41 | |
| Vapor Pressure, mm Hg | 20°C | 0.0017 |
| | 50°C | 0.0326 |
| | 100°C | 1.13 |
| | 140°C | 7 |

Solubility, approx g/100g solvent at 25°C

| | |
|----------------------------|-----------|
| DOWANOL* PM glycol ether . | 420 |
| Methanol . | 870 |
| Ethanol (95%, F2B) | 580 |
| Ethylene glycol | 140 |
| Isopropanol | 460 |
| CARBOWAX PEG400 | 180 |
| Polyglycol P400 | 180 |
| Polyglycol P1200 | 140 |
| Propylene glycol | 280 |
| Water | 25°C 0.08 |
| | 60°C 0.16 |

Packages

DOWICIDE 1E Antimicrobial is sold in multi-wall bags having a net weight of 25 kg (55.12 lb).

Antifungal and Antibacterial Efficacies

| Test Organism | % for Inhibition |
|--|------------------|
| FUNGI | |
| <i>Rhizopus nigricans</i> | 0.015 - 0.02 |
| <i>Rhizoctonia solani</i> | 0.001 - 0.002 |
| <i>Chaetomium globosum</i> (ATCC #6205) | 0.0025 - 0.005 |
| <i>Hormiscus gelatinosum</i> | 0.005 - 0.01 |
| <i>Aspergillus niger</i> | 0.025 - 0.05 |
| <i>Polyporus tulipiferae</i> (F.P.L. No. 517, ATCC #11245) | 0.005 - 0.01 |
| <i>Aspergillus flavus</i> (ATCC #9643) | 0.005 - 0.01 |
| <i>Lenzites trabea</i> (ATCC #11539) | 0.0025 - 0.005 |
| <i>Ceratostomella pilifera</i> | 0.005 - 0.01 |
| <i>Trichophyton interdigitale</i> | 0.002 - 0.0035 |
| <i>Trichophyton rosaceum</i> | 0.0035 - 0.005 |

| Test Organism | % for Inhibition |
|--|------------------|
| BACTERIA | |
| <i>Staphylococcus aureus</i> (ATCC #6538) | 0.01 - 0.015 |
| <i>Bacillus subtilis</i> (ATCC #8473) | 0.01 - 0.015 |
| <i>Enterobacter aerogenes</i> (ATCC #13048) | 0.01 - 0.015 |
| <i>Klebsiella pneumoniae</i> (ATCC #8308) | 0.01 - 0.015 |
| <i>Pseudomonas aeruginosa</i> (ATCC #10145) | 0.02 - 0.025 |
| <i>Pseudomonas aeruginosa</i> (ATCC #15442) | 0.045 - 0.05 |
| <i>Proteus vulgaris</i> (ATCC #881) | 0.005 - 0.01 |
| <i>Escherichia coli</i> (ATCC #11229) | 0.01 - 0.015 |
| <i>Salmonella choleraesuis</i> (ATCC #10708) | 0.01 - 0.015 |

Applications

| Industry | Reason for Addition | Suggested Concentration | | Application Method |
|---------------------|--|--|---|--|
| Glues and Adhesives | To protect from deterioration during manufacture, storage and service life | Glues: Bone/plant Leather, Skin & Fish Gelatin based Starch based liquid Starch based solid Albumin containing Adhesives: cellulose/dextrin Polymer dispersion based Casein containing | 0.1 - 0.15% 0.15 - 0.4% 0.15 - 0.3% 0.1 - 0.25% 0.15 - 1.0% 0.2 - 0.4% 0.1 - 0.3% 0.1 - 0.3% 0.2 - 0.4% | Add to organic portion of the ingredients, mix then add to the formulation |
| Gaskets | To preserve felt gaskets | 1% by wt. of organic solvent | | Saturate felt with solution of DOWICIDE 1E Antimicrobial in a volatile solvent such as alcohol or Stoddard solvent. |
| Concrete Admixtures | To control the growth of fungi and bacteria in concrete admixtures | 0.01 - 0.6% by weight of admixture | | Add at a suitable point during the manufacture of the admixture. Conversion to a water dilutable alkaline concentrate, using sodium hydroxide, is recommended. |
| Slurries | To control the growth of fungi and bacteria in aqueous based slurries and dispersed pigments, such as clay, calcium carbonate, kaolin and other filler suspensions | 0.05 - 0.9% by weight of slurry | | Add at a suitable pint during the manufacture, container loading/filling or shipment of the slurry. If needed, add caustic to make a water dilutable alkaline concentrate. |
| Ceramics | To prevent decomposition of ceramic glazes and clay slips | 0.05 - 0.1% by wt. of glaze or slip formulation | | Add to ingredients of formulation as they are charged into ball mill. |
| Metalworking Fluids | To prevent de-composition of fluids prepared from water-emulsifiable oil concentrates | 0.1 - 1.5% by wt. of diluted concentrate | | Add to water-emulsifiable oil concentrate during formulating. process. |
| Leather | To impart temporary mold resistance to shoe liners, hat bands, gloves, etc. | 1.5% by wt. of leather | | Apply from petroleum and vegetable oil formulation. |

Hazards Due to Toxicity and Precautions for Handling and Use

The following statements on health hazards summarize our laboratory and application data. The precautions for handling and use are general in nature. Assistance in evaluating particular plant conditions may be obtained from consulting laboratories, State Departments of Health or Department of Labor.

Toxicological Properties

DOWICIDE 1E Antimicrobial is an eye irritant. The product is capable of causing moderate to severe conjunctival redness, moderate to severe swelling, slight to moderate iritis and slight to moderate corneal injury. It is neither a primary skin irritant nor a skin sensitizer. It is not absorbed through the skin in toxic amounts. The dusts are irritating to the upper respiratory tract.

Handling Precautions for Cleaning Up Spills or When Gross Contact is Likely

Eyes - Wear goggles or face shield when handling.

Skin - Avoid skin contact. Wear protective clothing as required by circumstances to prevent skin contact.

Inhalation - Avoid breathing dusts. If dusty atmospheres are encountered, wear a NIOSH-approved dust/mist respirator. Airborne concentrations should be maintained to levels below the recommended DuPont Industrial Hygiene Guide of 1 mg/m³.

First Aid Measures

Refer to product MSDS for more information.

Eye Contact - Contaminated eyes should be washed promptly and thoroughly with flowing water for at least 30 minutes. Medical attention should be obtained.

Skin Contact - Immediately wash any size exposure with non-abrasive soap and large quantities of water for 30 minutes while removing contaminated clothing and shoes. Items that cannot be decontaminated, such as shoes, should be destroyed.

Inhalation - Anyone experiencing any noticeable ill effects from breathing the dust of this material should be removed to fresh air. Consult a physician.

Product Stewardship

When considering the use of any DuPont product in a particular application, review the latest Safety Data Sheet (SDS) and country-specific product label to ensure the intended use is within the scope of approved uses. DuPont has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with DuPont products – from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

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