

VANQUISH DOP ANTIMICROBIAL

AN ANTIMICROBIAL IN PLASTICIZER FOR USE IN THE PRESERVATION OF PLASTICS AND RUBBER PRODUCTS

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

WARNING

HARMFUL IF ABSORBED THROUGH THE SKIN. DO NOT GET IN EYES. CAUSES EYE IRRITATION. AVOID CONTACT WITH SKIN. DO NOT BREATHE VAPORS. USE ADEQUATE VENTILATION. IF NEEDED, USE NIOSH CERTIFIED RESPIRATOR FOR ORGANIC VAPORS, MISTS, OR FUMES. WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING, DRINKING, OR USING TOBACCO. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE REUSE.

ENVIRONMENTAL HAZARDS: THIS PRODUCT IS TOXIC TO FISH. DO NOT DISCHARGE EFFLUENT CONTAINING THIS PRODUCT INTO LAKES, STREAMS, PONDS, ESTUARIES, OCEANS OR OTHER WATERS UNLESS IN ACCORDANCE WITH THE REQUIREMENTS OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND THE PERMITTING AUTHORITY HAS BEEN NOTIFIED IN WRITING PRIOR TO DISCHARGE. DO NOT DISCHARGE EFFLUENT CONTAINING THIS PRODUCT TO SEWER SYSTEMS WITHOUT PREVIOUSLY NOTIFYING THE LOCAL SEWAGE TREATMENT PLANT AUTHORITY. FOR GUIDANCE CONTACT YOUR STATE WATER BOARD OR REGIONAL OFFICE OF THE EPA. DO NOT CONTAMINATE WATER BY CLEANING OF EQUIPMENT OR DISPOSAL OF WASTES

ACTIVE INGREDIENT:
N-BUTYL-1,2-BENZISOTHAZOLIN-3-ONE.....9.5%
INERT INGREDIENTS:.....90.5%
TOTAL INGREDIENTS:.....100.0%

KEEP OUT OF REACH OF CHILDREN.

WARNING

FIRST AID
IF IN EYES: HOLD EYE OPEN AND RINSE SLOWLY AND GENTLY WITH WATER FOR 15-20 MINUTES. REMOVE CONTACT LENSES, IF PRESENT, AFTER THE FIRST 5 MINUTES. THEN CONTINUE RINSING. CALL A POISON CONTROL CENTER OR DOCTOR FOR TREATMENT ADVICE.

IF SWALLOWED: CALL A POISON CONTROL CENTER OR DOCTOR IMMEDIATELY FOR TREATMENT ADVICE. HAVE PERSON SIP A GLASS OF WATER IF ABLE TO SWALLOW. DO NOT INDUCE VOMITING UNLESS TOLD TO BY A POISON CONTROL CENTER OR DOCTOR.

IF ON SKIN OR CLOTHING: TAKE OFF CONTAMINATED CLOTHING. RINSE SKIN IMMEDIATELY WITH PLENTY OF WATER FOR 15-20 MINUTES. CALL A POISON CONTROL CENTER OR DOCTOR FOR TREATMENT.

IF INHALED: MOVE PERSON TO FRESH AIR. IF PERSON IS NOT BREATHING, CALL 911 OR AN AMBULANCE. THEN GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH, IF POSSIBLE. CALL A POISON CONTROL CENTER OR DOCTOR FOR FURTHER TREATMENT ADVICE.

FOR ADDITIONAL INFORMATION IN CASE OF EMERGENCY CALL TOLL FREE 1-800-295-7850. HAVE THE PRODUCT CONTAINER OR LABEL WITH YOU WHEN CALLING A POISON CONTROL CENTER OR DOCTOR OR GOING TO TREATMENT.

NOTE TO PHYSICIAN
PROBABLE MUCOSAL DAMAGE MAY CONTRAINDICATE THE USE OF GASTRIC LAVAGE FOLLOWING INGESTION.

DIRECTIONS FOR USE
IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING. SEE T. I. BULLETIN FOR DIRECTIONS FOR USE.

STORAGE AND DISPOSAL: DO NOT CONTAMINATE WATER, FOOD OR FEED BY STORAGE OR DISPOSAL. OPEN DUMPING IS PROHIBITED.

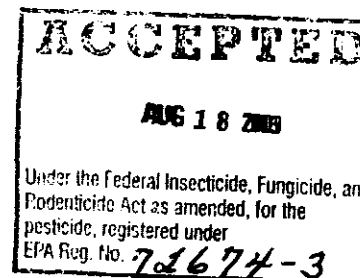
PESTICIDE STORAGE: PROTECT FROM FROST. IF FROZEN, ALLOW TO THAW AND STIR WELL BEFORE USE.

PESTICIDE DISPOSAL: PESTICIDE WASTES ARE ACUTELY HAZARDOUS. IMPROPER DISPOSAL OF EXCESS PESTICIDE SPRAY MIXTURE OR RINSE IS A VIOLATION OF FEDERAL LAW. IF THESE WASTES CANNOT BE DISPOSED OF BY USE ACCORDING TO LABEL INSTRUCTIONS, CONTACT YOUR STATE PESTICIDE OR ENVIRONMENTAL CONTROL AGENCY, OR THE HAZARDOUS WASTE REPRESENTATIVE AT THE NEAREST EPA REGIONAL OFFICE.

CONTAINER DISPOSAL: TRIPLE RINSE (OR EQUIVALENT) THEN OFFER FOR RECYCLING OR RECONDITIONING, OR PUNCTURE AND DISPOSE OF IN A SANITARY LANDFILL, OR BY OTHER PROCEDURES APPROVED BY STATE AND LOCAL AUTHORITIES.

EPA REG. NO. 72674-3
EPA EST. NO. 74637-GBR-001

CONTENTS: 400 LBS. NET MINIMUM
(APPROX. 50 U.S. GALLONS)



MANUFACTURED BY:

SEE ADDITIONAL PRECAUTIONARY
STATEMENTS ON SIDE PANEL

Avecia

Medical Emergency Information Center - 800-295-7850
Chemical Emergency Response Center - 800-424-7466

P.O. Box 15457
Wilmington
Delaware 19850-5457
USA
800-435-8679

REV. DATE: 04/28/03

LOT NUMBER:
9999999

PRODUCT CODE:
3228D

MADE IN UK

72674-3

8/18/2003

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AVECIA Biocides

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VANQUISH® DOP Antimicrobial

An Antimicrobial / Antifungal Additive

for the preservation of Plastics
Technical Information Bulletin

SUMMARY

Vanquish antimicrobials, effective for control of fungi and bacteria, are based on the active ingredient N-butyl-1,2-benzisothiazolin-3-one. Vanquish DOP Antimicrobial is used for the protection of plastic products made from such polymers as polyvinylchloride, polyurethane, silicone, polyolefins, polyester (and others). Vanquish DOP Antimicrobial is registered with the Environmental Protection Agency and has EPA registration No. 72674-3.

GENERAL

Listed below are some of the organisms, which Vanquish DOP Antimicrobial is effective against, and their minimum inhibitory concentrations (MIC). The MIC results are for the active ingredient not the Vanquish DOP formulation:

Fungi

<i>Alternaria alternata</i>	2	ppm
<i>Aureobasidium pullulans</i>	4	ppm
<i>Chaetomium globosum</i>	<0.5	ppm
<i>Cladosporium cladosporoides</i>	<0.5	ppm
<i>Cladosporium herbarum</i>	2	ppm
<i>Gliocladium virens</i>	8	ppm
<i>Paecilomyces variotti</i>	4	ppm
<i>Penicillium funiculosum</i>	1	ppm
<i>Scopulariopsis brevicaulis</i>	1	ppm

Bacteria

<i>Alcaligenes faecalis</i>	31	ppm
<i>Flavobacterium capsulatum</i>	8	ppm

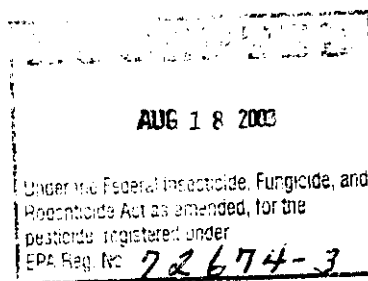
Streptomycetes

<i>Streptoverticillium waksmanii</i>	2	ppm
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Algae

<i>Chlorella vulgaris</i>	16	ppm
<i>Nostoc muscorum</i>	16	ppm
<i>Oscillatoria tenuis</i>	16	ppm
<i>Pleurococcus sp.</i>	16	ppm
<i>Trentepohlia aurea</i>	16	ppm

Vanquish DOP Antimicrobial provides effective control of a wide range of bacterial and fungal organisms thereby preventing degradation of the product. It can protect the surface of substrates and can prevent objectionable odors and aesthetic problems such as staining, or growth on or in the substrate. Vanquish DOP Antimicrobial is easy to use due to its liquid form and excellent compatibility in most systems.



TYPICAL PROPERTIES OF VANQUISH DOP ANTIMICROBIAL

<i>Composition</i>	solution in dioctyl phthalate
<i>Active agent content, %</i>	9.5
<i>Physical form</i>	Brown to yellow liquid
<i>Viscosity cps (Brookfield spindle 2 @ 20C)</i>	50
<i>Water Content, %</i>	< 1.0

DIRECTIONS FOR USE IN PLASTICS

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Many plastics are considered to be resistant to microbial attack, but there are significant exceptions that merit preventative action by the use of antimicrobial additive. Plasticized PVC, polyurethane's and silicones are particularly susceptible. The biodeterioration of products based on these types of plastics can be a serious problem for manufacturers. Failure to add the proper amount of antimicrobial additive can lead to premature product failure due to loss of mechanical strength, flexibility or adhesive strength. Also, adverse aesthetic problems such as musty odor, permanent staining or microbial surface growth can lead to customer complaints.

Vanquish DOP Antimicrobial is effective against the microbes which degrade plastic (and plastic additives) or natural rubber and can increase the useful life of plastic articles. VANQUISH DOP Antimicrobial additive is effective in most plastics compositions and can be used to preservative such plastics as PVC, polyurethane, silicone, acrylics, and others to produce articles such as;

shower curtains
coated fabric (e.g. ski wear, raincoats, tents)
floor coverings, underlay & mats
vinyl wall coverings
tarpaulins and awnings
roofing membranes
synthetic leather (e.g. sneakers and training shoe uppers)

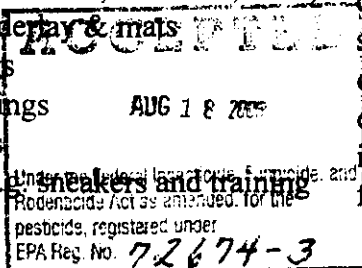
swimming pool liners, ornamental pond liners
appliance gaskets (e.g. washers, refrigerator)
shoe soles and mid-soles
sealants, caulks, weather stripping & non-food contact adhesives
pet toys and general household items (shower curtains, bath mats)
auto parts (e.g. landau tops, door seals, shock absorbers)
foam (e.g. seat cushions, gaskets, insulation)
tubing (e.g. marine hose and sleeving)
electrical & pipe wrap
furniture (e.g. outdoor, leisure, water bed liners)

Do not use this product to treat food/feed or drinking water contact items or toys.

Vanquish DOP Antimicrobial additive has been found to be an effective polymer preservative at concentrations of 0.3% to 5.0% based on the total weight of the substrate. Typical range of concentrations on which trials can be based, are:

<u>Application</u>	<u>%VANQUISH DOP Antimicrobial</u> (based on total weight of final product)
Plasticized PVC	0.3 to 5.0
Polyurethane's	0.5 to 5.0
Silicones	0.3 to 5.0
Polyesters	0.5 to 10
Acrylics	0.5 to 10
Synthetic elastomers such as butadiene-styrene styrene-isoprene and acrylonitrile-butadiene- styrene	0.3 to 10
Natural latex rubber	0.3 to 5.0

The concentration required to give protection depends on several factors. These include the susceptibility of the system to microbiological degradation, the extent to which micro-organisms can gain access, the species involved, pH, temperature, and length of time for which protection is required.



INCORPORATION OF VANQUISH Phthalate ANTIMICROBIAL INTO POLYMERS

PVC plastisols: For addition to PVC plastisols Vanquish DOP Antimicrobial liquid may be added along with the other additives. Use levels should be calculated based upon the total weight of the formulation.

Cross Linked Polyurethane: For addition to cross linked polyurethane Vanquish DOP Antimicrobial liquid should be added to the polyol at a concentration that will yield the desired use level in the final product after reaction with the isocyanate component. Vanquish DOP Antimicrobial may also be incorporated at an injection port of a reaction injection molding (RIM) machine.

Melt Processed Polymers: For addition to melt processed polymers (PVC, thermoplastic polyurethane, synthetic elastomers and thermoplastic acrylics etc.) Vanquish DOP Antimicrobial liquid may be metered into the melt to yield the desired end use concentration. For example at the injection point in an extrusion system.

PVC: Vanquish DOP Antimicrobial liquid may be added to the mixed liquid components added to a blend of PVC resin and solids, shear mixed until a dry blend is achieved and then processed through extrusion, calendering, molding or other system.

Acrylics: In addition to the above, Vanquish DOP Antimicrobial liquid can be added to the liquid monomers before polymerisation or in the case of thermoplastic acrylic the Vanquish Phthalate liquid can be added by direct injection into an extruder or other blender.

Silicone: For silicone sealants, the Vanquish DOP Antimicrobial liquid may be added to the silicone oil before processing, or to the manufacturing vessel before packing off.

Natural Rubber: Vanquish DOP Antimicrobial can be added to the latex.

The Avecia Technical Service Group can provide guidance on the proper use of Vanquish antimicrobial.

**KEEP OUT OF REACH OF CHILDREN
WARNING**

FIRST AID

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes.

Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center for doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or doctor.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

For additional information in case of emergency call toll free 1-800-286-7850. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage following ingestion.

Precautionary Statements HAZARDS TO HUMANS AND DOMESTIC ANIMALS

WARNING

Harmful if absorbed through the skin. Do not get in eyes. Causes eye irritation. Avoid contact with skin. Do not breathe vapors. Use with adequate ventilation. If needed, use NIOSH certified respirator for organic vapors,

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ACCEPTED

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Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide, registered under EPA Reg. No. 72674-3

mists, or fumes. Wash thoroughly after handling and before eating, drinking, or using tobacco. Remove and wash contaminated clothing before reuse.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollution Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA. Do not contaminate water by cleaning of equipment or disposal of wastes.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited.

Pesticide Storage

Protect from frost. If frozen, allow to thaw and stir well before use.

Pesticide Disposal

Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office.

Container Disposal

Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

SAFE HANDLING INFORMATION

Refer to the Material Safety Data Sheet

(MSDS) available from Avecia Biocides for information on the safe use, handling and disposal of this product.

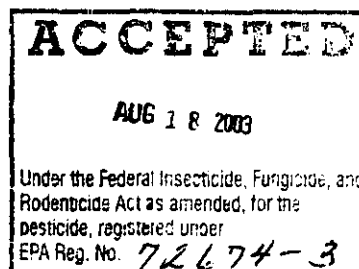
For literature, samples and order information, please contact Customer Services: (800) 435-8679, ext. 8304.

For technical information, please contact Application Research and Technical Services at (800) 456-3669, ext. 8428.

FOR YOUR PROTECTION

Avecia Inc. ("AVECIA") warrants that this product conforms to the chemical description on the label and that it is reasonably fit for the purposes stated on the label when used in accordance with AVECIA's directions under normal conditions of use. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal use conditions, or under conditions not reasonably foreseeable to AVECIA, and the buyer or user assumes the risk of any such use. AVECIA DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY. Statements herein, therefore, should not be construed as representations or warranties.

IN NO EVENT SHALL AVECIA BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, ON ANY THEORY WHATSOEVER, INCLUDING NEGLIGENCE, and AVECIA's sole liability and Buyer's and User's exclusive remedy shall be limited to the refund of the purchase price. Statements concerning the use of the products or the formulations described therein are not to be construed as recommending the infringement of any patent and no liability for infringement arising out of any such use is assumed.



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