

Net Weight:

AMICAL[®] WP

ANTIMICROBIAL AGENT

NO
ACCEPTED
AUG 12 1987
Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended for the pesticide
registered under 275-40
EPA Reg. No. 275-40

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS
(AND DOMESTIC ANIMALS)

CAUTION

May be harmful if absorbed through skin. Avoid contact with skin. In case of contact flush skin with plenty of water. Wash thoroughly after use.

May cause eye irritation. In case of contact immediately flush eyes with plenty of water. Seek medical attention if irritation persists.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not contaminate any body of water by cleaning of equipment or disposal of wastes.

DIRECTIONS FOR USE

It is a violation of Federal (U.S.A.) law to use this product in a manner inconsistent with its labeling.

See Technical Bulletin 73-1-86 for details and directions for use.

EPA Reg. No. 275-40

EPA Est. No. 275-1L-1

ACTIVE INGREDIENT:

Diiodomethyl-p-tolyl Sulfone 48.52 *48.45*

INERT INGREDIENT:

Related Compounds & Carriers 51.52

100.02

Provides activity against bacteria, fungi and algae in latex paints, adhesives and leather processing systems.

CAUTION
Keep Out of Reach
of Children

STATEMENT OF PRACTICAL TREATMENT

IF ON SKIN, wash thoroughly with water.

IF IN EYES, flush with plenty of water and seek medical attention if irritation persists.



ABBOTT

Chemical and Agricultural Products Division

Abbott Laboratories
North Chicago, Illinois 60064

STORAGE AND DISPOSAL

STORAGE: Do not contaminate water, food or feed by storage or disposal. Store in a dry area. Keep container closed when not in use.

PESTICIDE DISPOSAL: Wastes resulting from use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities. If drum is contaminated and cannot be reused, dispose of in the same manner.

NOTICE TO USER

Seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. User assumes all risks of use, storage and handling not in strict accordance with accompanying directions.

Lot No. _____

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48301-12
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**TECHNICAL
INFORMATION**

AMICAL WETTABLE POWDER

(EPA REG. NO. 275-40)

PRESERVATIVE

73-1-86

PHYSICAL AND MICROBIOLOGICAL
PROPERTIES OF AMICAL WETTABLE POWDER

Organic chemical Antimicrobial Agent

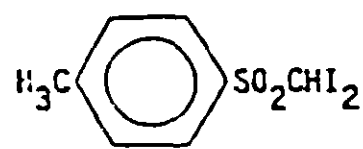
Amical WP is a wettable powder formulation of Amical (diiodomethyl-p-tolyl sulfone). As such, Amical WP provides the same mildew and algacidal protection on polymeric systems as Amical 48 and Amical 50 with superior dispersing characteristics when used in an aqueous system. Amical WP contains 48.5% active ingredient by weight and efficacy testing indicates enhanced mildewcidal protection when compared to Amical 48 and water is used as the carrier.

Physical Properties

Amical Wettable Powder is one of a series of Amical formulations offered exclusively by Abbott Laboratories. Chemically, Amical Wettable Powder is diiodomethyl-p-tolylsulfone. Its structural formula and physical properties are summarized in Table 1.

Amical Wettable Powder is stable through a pH range of 4.0 to 10.5. In a laboratory evaluation, Amical Wettable Powder was heated in water buffered to pH 9.2 at 50°C for 8 days. No adverse effects were noted. Thus, the high pH values of materials such as acrylic paints present no stability problems.

Table 1/Physical Properties of Amical WP

Appearance	Fine Tan Powder	
Melting Point*	147-150°C	
pH (aqueous slurry)	9.0	
Assay*	Min 48.5%	
Minimum water solubility at 25°C*		

*Active Ingredient

Microbiological Properties

Amical Wettable Powder provides a broad spectrum of antimicrobial activity. Amical Wettable Powder is especially effective against major mildew-causing organisms. Minimum inhibitory concentrations (MIC) of Amical against a series of organisms, including those of concern in in-can spoilage and coatings defacement, are presented in Table 2.

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Table 2/Minimum Inhibitory Concentration (MIC)

Organism	Amical (diiodomethyl-p-tolylsulfone) (PPM)
<u>Bacteria</u>	
<u>Staphylococcus aureus</u>	6.2
<u>Pseudomonas aeruginosa</u>	1000
<u>Proteus vulgaris</u>	1000
<u>Proteus mirabilis</u>	1000
<u>Escherichia coli</u>	1000
<u>Salmonella typhimurium</u>	100
<u>Streptococcus faecalis</u>	50
<u>Enterobacter aerogenes</u>	1000
<u>Bacillus subtilis</u>	10
<u>Fungi</u>	
<u>Chaetomium globosum</u>	0.2
<u>Myrothecium verrucaria</u>	0.8
<u>Aspergillus versicolor</u>	0.8
<u>Penicillium citrinum</u>	0.8
<u>Fusarium oxysporum</u>	6.2
<u>Alternaria species</u>	0.4
<u>Rhizopus nigricans</u>	100.0
<u>Aspergillus oryzae</u>	1.6
<u>Aspergillus niger</u>	0.4
<u>Aureobasidium pullulans (Pullularia pullulans)</u>	0.8

SAFETY AND HANDLING

Normal Bulk Chemical Handling Precautions Are Adequate

Amical Wettable Powder is a very fine powder. Though it is not irritating to the skin, Amical Wettable Powder can cause slight, temporary irritation of the eyes, see First Aid.

Table 3/Amical Toxicological Properties

Oral LD ₅₀	
Mice	>10,000 mg/kg
Rats	9400 mg/kg
Dermal Irritation; rabbits, normal and abraded skin	None
Eye Irritation, Draize Test (1)	Slight
96 Hr. LC ₅₀ (2)	
Rainbow Trout	0.13 ppm
Bluegills	0.75 ppm

(1) See First Aid suggestions below. (2) Amical Wettable Powder is toxic to fish. Care should be taken not to contaminate any body of water with Amical Wettable Powder by cleaning equipment or disposing of wastes.

FIRST AID

If Amical Wettable Powder gets on the skin, wash area immediately with soap and water. If Amical Wettable Powder gets in the eye, flush immediately with copious amounts of water and call a physician. In case Amical Wettable Powder is ingested, induce vomiting at once and call a physician.

AMICAL PROTECTS LATEX PAINTS AGAINST MILDEW BETTER THAN ANY MERCURIALS TESTED

Outdoor exposure studies, including a two-year exposure study in southern Florida, indicate that Amical is superior to standard mercurials for mildew inhibition. Specific test results are available upon request.

Amical® Mildew Protection Is Comparable Or Superior To That Of Competitive Organic Chemical Mildewcides

Outdoor exposure studies in severe mildew climates demonstrate equal or superior effectiveness for Amical at use levels as low as two pounds per 100 gallons of paint. Amical was compared to competitive mildewcides at the same or lower cost/use levels.

Compare Amical WP With Standard Mercurials

To provide an indication of the effectiveness of Amical mildewcides, an extensive exposure testing program was instituted in southern Florida in June, 1969, and continued for twenty-four months.

Amical definitely afforded superior mildew resistance to latex paint film under the conditions tested as compared to competitive mildewcides.

Amical WP Is Effective With Or Without Zinc Oxide

Amical Wettable Powder does not require zinc oxide to be effective. However, Amical Wettable Powder is compatible with zinc oxide. Data show that if you use zinc oxide, lower levels of Amical Wettable Powder will be effective.

Amical WP Does Not Adversely Effect Paint Film Or Package Stability

Exposure tests show effects on chalking, color retention, cracking or flaking to be equal to those of standard mercurials, and in some cases Amical Wettable Powder has less of an effect. Laboratory tests show no changes in pH or viscosity, and no flocculation or foreign odors after 18 months storage in the can.

RECOMMENDATIONS**Amical WP As A Mildewcide in Latex Paints**

Use levels are dependent upon the type and formulation of the latex paint system to be protected, and upon the expected severity of field conditions. Thus, thorough laboratory tests and field exposures are recommended to determine the optimum Amical Wettable Powder use level for a particular formulation. Suggested use levels for several common latex paint systems are presented in Table 4. Field data show that when zinc

Table 4/Mildewcide Use Levels In Latex Paints & Coatings

	Amical® WP Use Levels (Pounds Per 100 Gallons Paint)					
	<u>Straight</u>		<u>20% Alkyd</u>		<u>Vinyl</u>	
	<u>Acrylic</u>		<u>Modified Acrylic</u>		<u>Acrylic</u>	
	No ZnO	50 Lbs. ZnO	No ZnO	50 Lbs. ZnO	No ZnO	50 Lbs. ZnO
Severe Humidity	4-7	3-6	4-7	3-6	4-7	3-6

Where to Add Amical WP To Your Paint System

Amical Wettable Powder is a fine powder and can be dispersed easily in the pigment grind dispersion. The following is a suggested procedure:

Add the water, Amical WP, glycols, wetting agents and pigments to the mixing tank. Avoid heat build-up and prolonged mixing.

AMICAL® PROTECTS PIGMENT DISPERSIONS

Many of the water based pigment dispersions utilized in the manufacture of coatings are susceptible to the same fungal contaminants as the coatings themselves. Amical WP is effective at preventing fungal attack, particularly in the metal oxide pigments, when used in a concentration ranging from 0.05 to 0.15% (w/w active ingredient). Incorporation of the Amical WP should be in the stage of pigment dispersion formation which will achieve the most even distribution.

AMICAL ALGACIDAL ACTIVITY

The presence of algae on exterior coated surfaces, ie. latex paints and roof coatings, has become more evident in recent years. Growth conditions include heavy exposure to light and moisture, and the presence of a few mineral salts. Under these favorable conditions growth of algae can become as severe a problem as growth of fungi in warm, moist climates.

Heavy growth of terrestrial algae was observed on sections of several panels on exposure in southern Florida as part of a comparative evaluation on nonmercurial mildewcides.

Modified acrylic house paints containing Amical on field exposure in southern Florida did not support the growth of terrestrial algae. Heavy growth of terrestrial algae was present on paints containing a competitive mildewcide also included in this exposure series.

In laboratory testing, Amical prevented the growth of the Chlorococcum-like alga isolated from the growth of the exposure panels at a concentration of less than 100 ppm. Data for Amical indicated the MIC is 80 ppm, using an inoculum concentration of 1.0×10^4 cells per ml. Specific test methodology and results are available upon request.

RECOMMENDATIONSAmical WP Is Effective As An Algicide At Recommended Mildewcide Use Levels

Use levels are dependent upon the type and formulation of the latex system, ie. paint, roof coating to be protected, and upon the expected severity of field conditions. Suggested use levels for several common

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NOTE:

~~General~~ Amical Wettable Powder has been reported to cause transient yellow color in certain latex paint systems. The problem is more common at higher use levels, in oil modified paints and in systems without zinc oxide. Usually the yellow color disappears in one to three days on exposure to daylight. The color has no effect on mildewcide activity or general paint stability.

If color is found to be a problem, Amical 50 is recommended. Amical 50 contains the same active ingredient as Amical Wettable Powder. However, Amical 50 also contains an effective color suppressant. Please write for Amical 50 technical literature.

ANTIFUNGAL PROTECTION OF LATEX CAULKS AND ADHESIVES

Preservatives and antifungal agents are incorporated into adhesives and sealants to 1) preserve the appearance of the applied product, 2) prevent in-can or package odor or spoilage caused by bacterial or fungal organisms, 3) prevent the loss of adhesive properties and 4) control deterioration.

Fungal organisms present in the environment can both deface and deteriorate water based commercial caulks, sealants and adhesives. These include such typical fungi as Aspergillus niger, Atreobasidium pullulans and Penicillium species. Because the active ingredient is essentially insoluble in water, Amical mildewcides do not tend to leach out of the system, providing broad spectrum, long lasting protection.

Amical Wettable powder provides superior protection on a competitive cost/use comparison with organomercurials or other nonmercurial mildewcides. Effective rates range from 0.03% (w/w) active ingredient. Amical WP is therefore recommended for use in adhesives and sealants where mildew growth on the applied product may be a problem. Typical applications for Amical WP include products for the lumber, construction, home improvement, textile and automotive industries. Amical WP is especially effective in gypsum wall board joint compounds, ceramic tile adhesives, adhesives for wall coverings, adhesive emulsions, and acrylic, polyvinyl acrylic and silicone based interior and exterior sealants.

Table 5/Suggested Use Levels

<u>APPLICATION</u>	<u>Suggested Use Level</u> <u>(% by wt. active ingredient)</u>
Ceramic tile Adhesives	0.05 to 0.15
Wall Board Joint Compounds (Ready Mix)	0.15 to 0.30
Vinyl Wallpaper Pastes	0.03 to 0.12
Mastics	0.10 to 0.15
<u>Latex Caulks</u>	<u>0.10 to 0.30</u>

These use levels apply to the percent active ingredient. Ranges are wide; since exact levels must be optimized by performing a ladder series of microbiological tests, ie. American National Standards Institute (ANSI) test for mold inhibition No. A136.1 - 1967, or an appropriate modification. Results should be compared to concurrent evaluation of your present mildewcides and a control sample containing no mildewcide.

Addition of Amical WP

Amical WP should be added at a point in the production cycle where sufficient mixing assures good suspension of the material as the other ingredients are added. Amical WP should not be added near the end of the production process where the viscosity may be too high to allow adequate mixing.

FUNGICIDAL ACTIVITY IN CHROME-TANNED AND VEGETABLE-TANNED CATTLE HIDES

Amical is an established antifungal agent for use in protecting chrome or vegetable tanned leather, from mold and mildew during in-tannery wet processing and for protecting wet-blue during long storage and long transportation times, as encountered in the exportation of wet-blue.

The low toxicity of Amical provides for ease of handling of the Amical product and the treated leather. In addition, Amical has a minimal effect on effluent quality. Amical waste disposal information is available on request.

The laboratory test organisms include:

<u>Aspergillus repens</u>	QM 7708	<u>Penicillium oxalicum</u>	QM 7633
<u>Aspergillus terreus</u>	QM 7709	<u>Myrothecium verrucaria</u>	QM 7636
<u>Penicillium veruculosum</u>	QM 7713	<u>Aspergillus flavus</u>	QM 7637
<u>Rhizopus arrhizus</u>	QM 7627	<u>Gliocladium species</u>	QM 7638
<u>Penicillium diversum</u>	QM 7628	<u>Penicillium spinolusum</u>	QM 7643
<u>Aspergillus niger</u>	QM 7629		

Specific test methodology and results are available upon request.

Amical WP use levels range between three to nine ounces per 1,000 pounds white weight, equating to 0.019% to 0.056% fungicide. Exact levels are a function of the type of hide tanning process.

How and When To Add Amical WP

Table 6 and 7 give recommended levels of Amical WP for different types of hides and processing depending upon whether protection is desired for in-tannery processing or for long hold, i.e., export. In all cases, addition of material is identical.

Add the material dry, through the drum door, preferably by sprinkling across the width of the drum. This should be done just prior to chrome addition, or together with formate, if formate is added dry prior to chrome. In the case of Retan/Color/Fatliquor, add Amical WP prior to the prime fatliquor feed.

Table 6/Amical WP Use Level Recommendations For The Antifungal Protection Of Chrome-Tanned Hides

<u>Hide Type</u>	<u>Amical WP Use Levels</u> (Weight-Percent Amical WP)	
	<u>Normal Protection</u>	<u>Long Hold or Export Protection</u>
Cattle ¹	0.019 - 0.028	0.028 - 0.056
Sheep ²	0.075 - 0.11	0.11 - 0.17
Goat and Small Skins ³	See Below	See Below

¹ Weight-percent based on white weight of hides.

² Weight-percent based on drained pickle weight.

³ Use levels should be calculated on the dry basis of the skin weight, assuming limed weight to be 20% dry basis and pickled weight to be 33% dry basis. Amical WP should be added as in examples shown for cattle and sheep.

Table 7/Amical WP Use Level Recommendations During Retan/Color/Fatliquor Protection Of Chrome-Tanned Hides

<u>Hide Type</u>	<u>Amical WP Use Levels</u> (Weight-Percent on Wet Blue Weight)
	All

NOTE:

The values listed above are based upon chrome tanned leather utilizing glucose reduced chrome.

SAMPLES

For more information or samples for evaluation, write or phone:
Amical, Abbott Laboratories, Chemical division, D-902, North Chicago,
IL 60064; (800) 323-9065.

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