



MICROPEL® 2100

Antimicrobial Additive for Plastics
U.S. EPA Registration Pending

Description

Micropel® 2100 is a broad spectrum liquid biocide, effective against a wide variety of fungal, algal, and bacterial organisms. It is stable against heat up to 380°F and finds use in a host of applications where temperature reaches 350-390°F. It may be used as a fungicide/bactericide in flexible PVC formulations, polymer adhesives and rubber compounds.

Application/ Use

Micropel® 2100 antimicrobial can be used in flexible polyvinyl chloride, plastisols, rubber, silicone and latex polymers. Applications include:

Vinyl film and sheeting - pool liners, pond liners, ditch liners, waterbed liners, shower curtains, protective covers, mats, insulators, barrier films.

Extruded profiles - automotive moldings, weather stripping, appliance gasketing, wire and cable jacketing, foam gaskets, floor moldings.

Plastisols - Vinyl flooring, laminating adhesives for industrial coated fabrics, adhesives for windows, grout and pipe sealants, sail cloth.

Molded goods - Vinyl floor tile, waste containers, injection molded automotive parts, shoe soles.

Coated fabrics - Wallcoverings, upholstery, pillow and mattress ticking, backlit signs, awnings, tents, tarpaulins, protective covers, aprons, barrier fabrics.

Coatings/Sealants - Industrial urethane coatings, artificial leather, sail cloth, raincoats, silicone caulks for bathroom and industrial use, carpet backing.

Foams - Pillow and mattress foam, carpet underlay, gaskets, shoe soles, PU foam.

Micropel® 2100 can be incorporated into the resin compound along with other micro ingredients such as pigments and stabilizers. Properly formulated compounds containing **Micropel® 2100** will resist fungal and bacterial deterioration after long term exposure to heat and severe weathering conditions.

Highlights

- Broad spectrum fungicidal activity
- Possesses bactericidal activity and activity against pink stain and other staining microorganisms
- Enhanced stability in both clear and pigmented PVC formulations
- Excellent for moderate temperature applications
- Liquid form for ease of incorporation and handling
- Low odor
- Non-corrosive
- Non-metallic

Antimicrobial Activity

Fungi	MIC	Fungi	MIC
<i>Alternaria alternate</i> ATCC 20084	0.12	<i>Ceratocystis pilifera</i> ATCC 15457	0.25
<i>Aspergillus flavus</i> ATCC #9643	0.06	<i>Cladosporium cladosporioides</i> ATCC #16022	0.03
<i>Aspergillus niger</i> ATCC #9642	0.11	<i>Penicillium pinophilum</i> ATCC #11797	0.15
<i>Aspergillus niger</i> ATCC #6275	0.17	<i>Penicillium sp.</i> ATCC #12667	0.14
<i>Aspergillus versicolor</i> ATCC #11730	0.10	<i>Trichoderma virens</i> ATCC #9645	0.47
<i>Aureobasidium pullulans</i> ATCC #9348	0.02		

*minimum inhibitory concentration (MIC) is an indication of which microorganisms can be controlled by a preservative and the concentration at which growth of the test organism is inhibited under laboratory conditions. MIC values are expressed in parts per million (ppm). The lower the MIC value in ppm, the greater the product's effectiveness. MIC values should only be used for relative comparisons. Practical

use concentrations are generally much higher and should be established through field tests and actual use.

Bacteria	MIC	Bacteria	MIC
<i>Bacillus subtilis</i> ATCC6051	55	<i>Enterobacter aerogenes</i> ATCC10348	45
<i>Enterococcus faecalis</i> ATCC29212	45	<i>Escherichia coli</i> ATCC11229	45
<i>Klebsiella pneumoniae</i> ATCC13883	55	<i>Klebsiella pneumoniae</i> ATCC 4352	45
<i>Proteus mirabilis</i> ATCC4675	35	<i>Pseudomonas oleovorans</i> ATCC 8062	75
<i>Pseudomonas fluorescens</i> ATCC 17579	50	<i>Serratia marcescens</i> ATCC14756	80
<i>Pseudomonas putida</i> ATCC11172	65		
<i>Staphylococcus aureus</i> ATCC6538	35		

Physical Properties

The following are typical properties of **Micropel® 2100**; they are not to be considered product specifications.

Appearance:Clear amber liquid
 % Active:12%
 Odor:Characteristic
 Specific Gravity @ 25°C:0.89 – 0.95

Function/ Activity

Suggested application levels are based on laboratory and field evaluations and are typical for the use areas indicated. Suggested use levels are reported as percentage weight/weight in the final end use product. For PVC, plastisols, polyurethane and rubber applications, **Micropel® 2100** could be added to the liquid or solid portion of the formulation. The actual level of **Micropel® 2100** required for optimum effectiveness in formulated products is determined by the individual composition and end use patterns of the final system.

	% Wt/Wt
PVC Formulations	0.75 – 4.00
Gasketing & Rubber	0.60 – 4.00
PU Formulations	0.75 – 4.00

PVC formulations

Micropel® 2100 has been shown to provide excellent fungal and pink stain control in PVC. In hot, humid areas where fungi and pink stain are a particularly severe problem the higher application levels are suggested.

Gasket Applications

Micropel® 2100 provides excellent fungal and bacterial protection in refrigeration gasketing, gasketing for outdoor applications, hoses and window tracking devices.

Formulating Considerations

Micropel® 2100 should be checked in the end use formulation for yellowing characteristics and any other adverse interactions.

Chemical Inventories

This product, or its components, are listed on, or are exempt from:

Country	Agency	Registration Number and Sections
United States	TSCA	2634-33-5
United States	TSCA	55406-53-6
United States	EPA	Pending
Europe	EINECS	220-120-9
Europe	EINECS	259-627-5
Australia	AICS	2634-33-5
Australia	AICS	55406-53-6
Korea	ECL	2634-33-5
Korea	ECL	55406-53-6
Korea	ECL Serial Number	KE-02680
Korea	ECL Serial Number	KE-21042
China	IECSC	2634-33-5
China	IECSC	55406-53-6

Labeling

EU Regulations

Xn – Harmful

Xi - Irritant

N – Dangerous for the environment

R20/22 – Harmful by inhalation and if swallowed

R41 – Risk of serious damage to eyes

R38 – Irritating to skin

R43 – May cause sensitization by skin contact

R50/53 – Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Handling, Storage, Health And Safety

Avoid contact with eyes, skin, or clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Keep container tightly closed. Use only with adequate ventilation. Store away from incompatible substances in a cool, dry, ventilated area. Store indoors at temperatures between 0-35°C (32-95°F). Do not contaminate water, food, or feed by storage or disposal.

Observe all Federal, State, and Local regulations when storing or disposing of this substance.

Emergency Overview: Micropel 2100 is a clear amber liquid with a characteristic odor. May cause severe eye irritation with possible corneal injury and moderate skin irritation. If heated or misted, inhalation may cause respiratory sensitization. May evolve iodine vapors during combustion. Toxic to fish.

Shipping And Packaging

Micropel® 2100 is packaged in:

Shipping Container	Net Weight
Pail	35 lbs / 16 kg
Drums (HDPE or lined steel drum)	400 lbs. / 182 kg.

DOT

Shipping Name Non-hazardous additive/compound
Labels Required None

DOT (Bulk only)

Shipping Name UN3082 Environmentally hazardous substance, liquid, n.o.s
(contains: 3-iodo-2-propynyl butyl carbamate, 1-2-benzisothiazolin-3-one), 9,
PG III, Marine Pollutant, ERG# 171
Labels Required Class 9, Marine Pollutant

IATA

Shipping Name UN3082 Environmentally hazardous substance, liquid, n.o.s.
(contains: 3-iodo-2-propynyl butyl carbamate, 1-2-benzisothiazolin-3-one), 9,
PG III, ERG# 9L
Labels Required Class 9

IMDG

Shipping Name UN3082 Environmentally hazardous substance, liquid, n.o.s. (contains: 3-iodo-2-propynyl butylcarbamate, 1-2-benzisothiazolin-3-one), 9,
PG III, Marine Pollutant, EMS# F-A, S-F
Labels Required Class 9, Marine Pollutant

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