



NUMBER 4873

## Fungitrol™ 430S fungicide

EPA Registration No. 1529-42

EINECS No. 259-627-5 (IPBC)

### Description

Fungitrol 430S fungicide is a 30% IPBC in organic solvent that offers broad protection against degradation, discoloration, and defacement caused by mold, mildew and algae.

### Key Attributes

Fungitrol 430S fungicide is used primarily as a dry-film mildew protector for paint, coatings, stains, and more. Other applications include adhesives, metalworking fluids and printing inks. It is easily incorporated into water-based or solvent-based formulations. It can be added efficiently at the appropriate formulation stage (i.e., prior to letdown). The product exhibits good stability with ionic surfactants and emulsifiers.

Fungitrol 430S fungicide is a liquid designed for use as an additive to interior or exterior protective coatings to inhibit the growth of mildew on the film surface. It is also recommended as a wood preservative for use in above ground applications. All recommendations of use levels are in percentage by weight and refer to this product. Dosage ranges are given for the various applications to indicate the approximate levels for a particular application. Exact level of use within these ranges should be determined by field trials. **DO NOT USE IN PAINTS OR OTHER MATERIALS DESIGNED FOR APPLICATIONS ON FOOD-CONTACT SURFACES, OR ON THE INTERIOR OF BUILDINGS ENGAGED IN FOOD PROCESSING OR FOOD HANDLING. DO NOT USE IN PAINTS DESIGNED TO BE HANDLED BY CHILDREN.**

### Applications and Usage Notes

#### Adhesives

Fungitrol 430S fungicide can be used as an additive to non-medical, non-food use natural and synthetic adhesive formulations and caulks to prevent the growth of fungal organisms in the material both in the wet state and in the dry film of the finished product. Recommended use levels are between 0.09 – 0.940% wet formulation weight. This product should be added toward the end of the production cycle with good agitation to ensure a uniform distribution. For example, to inhibit the growth of mildew on a latex-based wall cover adhesive for a non-food area, add 0.75% (7.5 lbs. of Fungitrol 430S fungicide per 1000 lbs. of latex-based adhesive formulation) of this product to the latex-based formulation.

#### Aqueous Metalworking, Cutting, Cooling and Lubricating Concentrates

To inhibit the growth of fungi in an aqueous metalworking, cutting, cooling or lubricating concentrate, add an amount of this product that will give up to 3,750 ppm in the diluted fluid. The amount required in the concentrate will depend on the end use dilution. For example, if the desired level of this product in the diluted fluid is 375 ppm, and the end use dilution of the fluid is 5%, then a 0.75% concentration of this product is required in the concentrate ( $375 \text{ ppm} / 0.05 = 7,500 \text{ ppm}$  or 0.75%).



## **Aqueous Metalworking, Cutting, Cooling and Lubricating Fluids**

To inhibit the growth of fungi in an aqueous metalworking, cutting, cooling or lubricating fluid, add up to 3,750 parts per million (0.375% v/v) of this product to the diluted fluid (0.375 gallons per 100 gallons of solution or 3.75 liters per 1000 liters). This product may be added to the fluid at the time it is prepared (diluted) or to the reservoir (sump) containing the fluid after it is put into use. If it is added to the reservoir, the fluid should be circulated after addition to ensure mixing.

## **Canvas and Cordage**

Fungitrol™ 430S fungicide may be used as a mildewcide in both aqueous and solvent based process formulations, which coat canvas and cordage. Typical use levels of this product will range from 0.075 – 3.75% of the process formulations used in the processing of these canvases and cordages. This product should be added to the process formulation at the end of the production cycle with good agitation to prevent possible mechanical losses and to ensure a uniform distribution. As an example, to inhibit the growth of mildew on cotton canvas intended for a non-food area, add 3.75% (37.5 lbs. Fungitrol 430S fungicide per 1000 lbs. of process formulation) of this product to the process formulation.

## **Inks**

Fungitrol 430S fungicide may be used in aqueous-based ink solutions for protection of these solutions against attack by fungal organisms. It is recommended that this product be added at the end of the production cycle with good agitation. This product will generally impart protection when used at levels of 0.2 – 3.0% of active ingredient based on the formula weight.

## **Paints and Stains**

Fungitrol 430S fungicide used in solvent and waterborne paints and stains will inhibit the growth of mildew. Addition should be at the end of the manufacturing process and allowed to mix long enough to be adequately dispersed and should not be added to hot paint. Typical levels for protection against mildew on painted surfaces are 0.4 – 1.875% by weight on wet paint. For example, house paint with a wet density of 10 lbs. per gallon would use 4 – 18.75 lbs. of this product per 100 gallons of wet paint. Where the climate is severe and mildew growth is a major problem for painted surfaces, more would be required, as much as 3.0% by weight in the paint. For interior paint use, approximately half the exterior concentrations should be used, 0.15 – 0.9% by weight in the paint. Appropriate levels are best determined by field trials.

## **Plastics and Plastic Coatings**

Fungitrol 430S fungicide may be used to prevent surface mildew growth on plastic items such as shower curtains, cable and wire insulation and sun umbrellas. Intended plastics include polymers such as PVC. Use levels of 0.17 – 3.75% by weight of the plastic are generally adequate. This product should be dispersed in the plasticizer or color concentrate before it is incorporated into the resin to ensure a uniform distribution. Use of this product is not recommended if the processing heat is above 350 °F for prolonged periods, nor should it be used in a plastic that will be in contact with food or medical device applications.

## **Paper Coatings**

Fungitrol 430S fungicide may be used as a mildewcide in both aqueous and solvent-based coatings which are applied to paper and cardboard substrates. This product can be used to prevent mold and mildew from growing on products such as: corrugated cardboard or soap wrappers, wall covers, non-food contact packaging materials and non-food contact paper tapes. Use levels range from 0.5 – 2.85% of this product by weight. This product should be added at the end of the production cycle and with good agitation to prevent possible mechanical losses and to ensure uniform distribution. As an example, to inhibit growth of mildew on corrugated cardboard intended for a non-food packaging, add 1.9% (19 lbs. Fungitrol 430S fungicide per 1000 lbs. of coating material) of this product to the coating material formulation.

## **Textiles**

Fungitrol 430S fungicide may be used as a mildewcide applied in both aqueous and solvent-based coatings or dyes which are typical to the textile material processing. Typical end use applications of these materials can be carpet

fibers and backings, canvas and cordage, drapes, shower curtains, and more. **NOT TO BE USED IN FABRICS FOR HUMAN WEAR OR DIRECT SKIN CONTACT.** The product should be solubilized or stirred in the dye bath or polymer coating pan to minimize mechanical losses and ensure a uniform distribution of the product. Use levels in the range of 0.075 – 3.75% by weight of the total processing formulation are typically adequate to prevent fungal growth. As an example, to inhibit the growth of mildew on cotton canvas intended for a non-food area, add 1.9% (19 lbs. Fungitrol™ 430S fungicide per 1000 lbs. of dye bath) of this product the dye bath formulation.

### Wood Preservation

Fungitrol 430S fungicide may be applied from solvent solutions or aqueous dispersions to new lumber, plywood, particle board, millwork, and more, to prevent the growth of mildew, sapstain and wood rot on these substrates. This product is recommended for use on wood in above-ground use only.

Treating solutions may be prepared by diluting this product in alcohols or aromatic solvents or by dispersion in water. Levels of 0.375 – 5.65% of this product are suggested depending upon the severity of conditions for end use and the extent of time that protection is required.

For freshly sawn lumber, a concentration of 0.75% of this product is suggested as a starting level. A one-minute dip at ambient temperatures in a solution or aqueous dispersion containing 0.75% of this product should be adequate to control the development of mildew and sapstain organisms on the lumber. Because of the great variation in susceptibility of fresh sawn lumber relating to the type of wood, sawing and storage techniques, conditions of humidity, method of treatment, etc., it is usually necessary to carry out field tests to determine the most appropriate means of application and the optimum concentration of this product to be used within the range specified.

For best results, lumber should be treated within twenty-four hours after it is sawed. The lumber should be completely immersed in the treating bath, and the treating vat designed to permit easy immersion and removal and to minimize spillage. The vat may be cleaned by emptying and rinsing with a suitable solvent or by use of a detergent solution. To add additional product while treating, first prepare the proper solution or emulsion in a separate container (of wood, plastic or stainless steel construction) and add to the treating vessel.

After treatment, lumber should be stacked in a properly maintained seasoning yard with good drainage so that no water will accumulate in any area. The yard should be kept free from weeds and vegetation, which may hold moisture and promote growth of decay and stain producing fungi. All debris and lumber scraps should be removed from the area. A properly laid out yard should take advantage of prevailing winds to permit good air circulation. Main alleys should be at least 16 feet wide. Stack foundations should be sufficiently elevated to permit ready access of air to the pile and allow water to drain off quickly.

### Millwork

This product is also recommended for use on millwork, including door and window frames, exterior siding, composite board, plywood and other construction lumber when it is important to prevent growth of mildew, sapstain and wood rot organisms on these materials. Wood treated with this product does not change in appearance and may be painted when dry. For applications of this type, this product may be applied by dipping, brushing or spraying. Levels of 0.375% may be used for mildew control.

To control rot and decay, do not use less than 0.75% as a concentration. Use this product in solution in a suitable solvent. Concentrations up to 3.75% are recommended depending upon the condition of the wood, the nature of the intended exposure and the length of protection desired. When brushing, a single coat will usually suffice if the solution is applied liberally. This also pertains to spraying. **USE OF THIS PRODUCT IS NOT RECOMMENDED FOR WOOD SURFACES THAT MAY COME IN CONTACT WITH FOOD.** Surfaces which may be in continuous contact with skin should be coated with a varnish or lacquer after treatment with this product. This product may also be used as an additive to stains to be applied to such materials as exterior siding, decks, lawn furniture, and more, in order to prevent the growth of fungal organisms. It is recommended that levels between 0.75 – 3.75% of this product by weight of the final formulation be added to these materials.

## Typical Product Properties

Chemical structure	$  \begin{array}{cccccccc}  & & \text{H} & & \text{O} & & \text{H} & \text{H} & \text{H} & \text{H} \\  & &   & &    & &   &   &   &   \\  \text{I} & - & \text{C} & \equiv & \text{C} & - & \text{C} & - & \text{O} & - & \text{C} & - & \text{N} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{H} \\  & & & & & &   & & & &   & &   & &   & &   & &   & &   & &   \\  & & & & & & \text{H} & & & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H}  \end{array}  $
Chemical name	Carbamic acid, butyl-, 3-iodo-2-propynyl ester
Other names	3-Iodo-2-Propynyl Butylcarbamate
Formula	C <sub>8</sub> H <sub>12</sub> INO <sub>2</sub>
CAS No.	55406-53-6
Description	Clear, amber liquid
Specific gravity (H <sub>2</sub> O = 1), 25 °C	1.04
Percent active	30%
Odor	Characteristic
Stability	Stable in pH range of 4–10

### General Efficacy

Fungitrol™ 430S fungicide exhibits superior fungi, algae and bacteria control against a wide variety of organisms (See Table).

### Agar Inhibition Data (values for active ingredient)

Test Organism	Minimum Inhibitory Concentration (MIC), ppm
<b>Mold/Mildew/Yeast/Fungi</b>	
<i>Alternaria tenuis</i>	5.0
<i>Aspergillus glaucus</i>	4.0
<i>Aspergillus niger</i>	0.6-5.0
<i>Aspergillus oryzae</i>	4.0
<i>Aureobasidium pullulans</i>	4.0-6.0
<i>Candida albicans</i>	6.0-8.0
<i>Chaetomium globosum</i>	5.0
<i>Gliocladium sp.</i>	8.0
<i>Penicillium brevicaulis</i>	1.0
<i>Penicillium funiculosum</i>	4.0-6.0
<i>Saccharomyces cerevisiae</i>	5.0
<i>Talaromyces flavus</i>	6.0
<i>Trichoderma viride</i>	10.0
<b>Algae</b>	
<i>Chlorella pyrenoidosa</i>	8.0
<i>Oscillatoria sp.</i>	<50.0
<b>Bacteria</b>	
<i>Bacillus subtilis</i>	50.0
<i>Escherichia coli</i>	100.0
<i>Klebsiella pneumoniae</i>	50.0
<i>Pseudomonas aeruginosa</i>	250.0-1000.0

### Solubility

Fungitrol 430S fungicide exhibits excellent solubility characteristics in non-aqueous solvents, including ionic and non-ionic surfactants, emulsifiers and the commonly used alcohol and glycol derivatives. It is also moderately soluble in water.

## Packaging Information

Product	Physical Form	Pkg Type	Net Wgt	Pkg Type	Net Wgt	Pkg Type	Net Wgt
Fungitrol™ 430S	Liquid	Drum	204.12 kg	IBC	907.2 kg	Pail	18.14 kg

## Product Safety Information

For health and safety data and handling, storage and disposal procedures, please refer to the Safety Data Sheet (SDS) and product label.

## Registration

The active ingredient in Fungitrol 430S fungicide is listed in TSCA, EINECS, DSL, KECI and MITI. Iodopropynl butylcarbamate is on the official RAL list in Germany.

Regulatory requirements governing the use, registration, and approval of industrial biocides around the world are continually changing and evolving.

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