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TECHNICAL BULLETIN

TROYSAN POLYPHASE ANTI-MILDEW

EPA Registration Number: 5383-18

PRODUCT: TROYSAN POLYPHASE is a liquid, non-metallic compound designed for use as an additive to interior or exterior protective coatings to inhibit the growth of mildew on the film surface. It may also be used as a fungicide in cutting oils, textiles, paper coatings, inks, plastics, adhesives and canvas and cordage. It is also recommended as a wood preservative for use in above ground applications.

USE: All recommendations of use levels are in percentage by weight, and refer to the product, TROYSAN POLYPHASE. Dosage ranges are given for the various applications to indicate the approximate levels for a particular application. Exact levels of use should be determined by field trials.

PAINTS: TROYSAN POLYPHASE may be used as a fungicide in both aqueous and solvent based paints. It should be added towards the end of the production cycle with good agitation, to prevent possible mechanical losses.

TROYSAN POLYPHASE will generally impart protection when used at levels of four to twelve pounds per one hundred gallons of paint. More may be required in hot, humid areas where the mildew is particularly a severe problem, up to a maximum of twenty pounds per one hundred gallons.

For use in interior paint, levels of one to four pounds per one hundred gallons will usually be adequate.

PLASTICS: TROYSAN POLYPHASE may be used in polyvinyl chloride plastics to prevent surface mildew growth on items such as tarpaulins, sun umbrellas, etc.

Levels of 0.5 - 2.5% by weight of the plastic are generally adequate. It is recommended that the TROYSAN POLYPHASE be dispersed in the plasticizer before it is incorporated into the resin. (Use of TROYSAN POLYPHASE is not recommended if processing entails treatment above 350°F for prolonged periods,

nor should it be used in a polyvinyl chloride plastic that will be in contact with food.)

CUTTING OILS: TROYSAN POLYPHASE may be used in metal-working fluids to prevent fungal growth at concentrations of .05 - 0.5%. It is preferably added to the cutting oil fluid concentrate in amounts sufficient to yield the desired percent of TROYSAN POLYPHASE in the diluted composition.

It is recommended that the biocide levels be checked periodically as many cutting oils are known to be unstable upon standing.

WOOD: TROYSAN POLYPHASE may be applied from solvent solutions or aqueous dispersions to new lumber, plywood, particle board, millwork, etc., to prevent the growth of mildew, sapstain and wood rot on these substrates. Polyphase is recommended for use on wood in above ground use only.

Treating solutions may be prepared by diluting TROYSAN POLYPHASE in alcohols or aromatic solvents or by dispersion in water. Levels of 0.5% - 2.0% TROYSAN POLYPHASE are suggested depending upon the severity of conditions for the end use, and the extent of time that protection is required.

To prepare an aqueous dispersion, blend ten parts by weight of TROYSAN POLYPHASE with three parts by weight of a non-ionic surfactant such as Tergitol NPX (a nonylphenol ethylene oxide condensation product manufactured by Union Carbide), Igepal CO-630 (a nonylphenolethylene oxide condensation product manufactured by G.A.F. Corp.) or Triton N-100 (a nonylphenol ethylene oxide condensation product manufactured by Rohm & Haas), and add to water while agitating vigorously. Other non-ionic dispersants such as Tween 20 and Tween 80 (manufactured by I.C.I. Americas) or combinations of any of these, may also be used.

For freshly sawn lumber, a concentration of 0.5% of TROYSAN POLYPHASE is suggested as a starting level. A one minute dip at ambient temperatures in a solution or aqueous dispersion containing 0.5% POLYPHASE 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 Polyphase to be used.

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 TROYSAN POLYPHASE 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, rear alleys 8 feet wide, and side alleys from 2 to 4 feet wide. Stack foundations should be sufficiently elevated to permit ready access of air to the pile, and allow water to drain off quickly.

TROYSAN POLYPHASE 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 the growth of mildew, sapstain and wood rot organisms on these materials.

Wood treated with TROYSAN POLYPHASE does not change in appearance and may be painted when dry.

For applications of this type, TROYSAN POLYPHASE may be applied by dipping, brushing or spraying. Levels

of 0.5% - 2.0% TROYSAN POLYPHASE in solution in a suitable solvent 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 TROYSAN POLYPHASE is not recommended for wood surfaces which 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 TROYSAN POLYPHASE. TROYSAN POLYPHASE may also be used as an additive to stains to be applied to such materials as exterior siding, decks, lawn furniture, etc., in order to prevent the growth of fungal organisms. It is recommended that levels between .5% - 2% POLYPHASE by weight of the final formulation be added to these materials.

The services of the TROY Microbiological Laboratory are always available to assist in determing optimum levels for specific systems in any type of application.

TEXTILES:

TROYSAN POLYPHASE may be used as a mildewcide in both aqueous and solvent based coatings or dyes which are applied to textile material. Typical end use of these materials are in such areas as carpets, drapes, etc. Not to be used in materials for human wear or frequent human contact. TROYSAN POLYPHASE should be added at the end of the production cycle of the coating or dye with good agitation to prevent possible mechanical losses.

TROYSAN POLYPHASE will normally impart protection to the substrate when added at levels between .1% - 1% based on the total formula weight.

PAPER COATINGS:

TROYSAN POLYPHASE may be used as a mildewcide in both aqueous and solvent based coatings which are applied to paper substrates. Examples of such paper coatings are: corrugated cardboard or soap wrappers. Not to be used around food or feed or food or feed processing machinery. TROYSAN POLYPHASE should be added at the end of the production cycle of these particular coatings with good agitation to prevent possible mechanical losses.

TROYSAN POLYPHASE will generally impart protection to the substrate when added at a level of .05 - 0.3% based on the total formula weight.

CANVAS AND CORDAGE:

TROYSAN POLYPHASE may be used as a mildewcide in both aqueous and solvent based formulations which coat canvas and cordage substrates. Typical end use of these materials are in such areas as sun umbrellas, tarpaulins, rope, etc. Not to be used in materials for human wear or frequent human contact. TROYSAN POLYPHASE should be added at the end of the production cycle of the particular coating with good agitation to prevent possible mechanical losses.

TROYSAN POLYPHASE will generally impart protection to the substrate when used at levels of .5 - 2% based on the formula weight.

INKS:

TROYSAN POLYPHASE may be used in aqueous based ink solutions for protection of these solutions against attack of fungal organisms. It is recommended that TROYSAN POLYPHASE be added at the end of the production cycle with good agitation.

TROYSAN POLYPHASE will generally impart protection when used at levels of .05 - 3% based on the formula weight.

ADHESIVES:

TROYSAN POLYPHASE can be used as an additive to caulk and adhesive formulations to prevent the growth of fungal organisms in the material both in the wet stage and once the film has formed. Not to be used around food or feed or food or feed processing machinery. Recommended levels are between 0.5% - .2% based on the formula weight. TROYSAN POLYPHASE should be added toward the end of the production cycle with good agitation to prevent mechanical losses.

SPECIFICATIONS:

Active Ingredient (3-iodo-2-propynyl-butyl carbamate)	40%
Appearance	Amber mobile liquid
Color	13 maximum
Viscosity	C maximum
Specific gravity	1.18 - 1.2
Lbs./Gal.	9.82 - 10.1
Odor	Characteristic