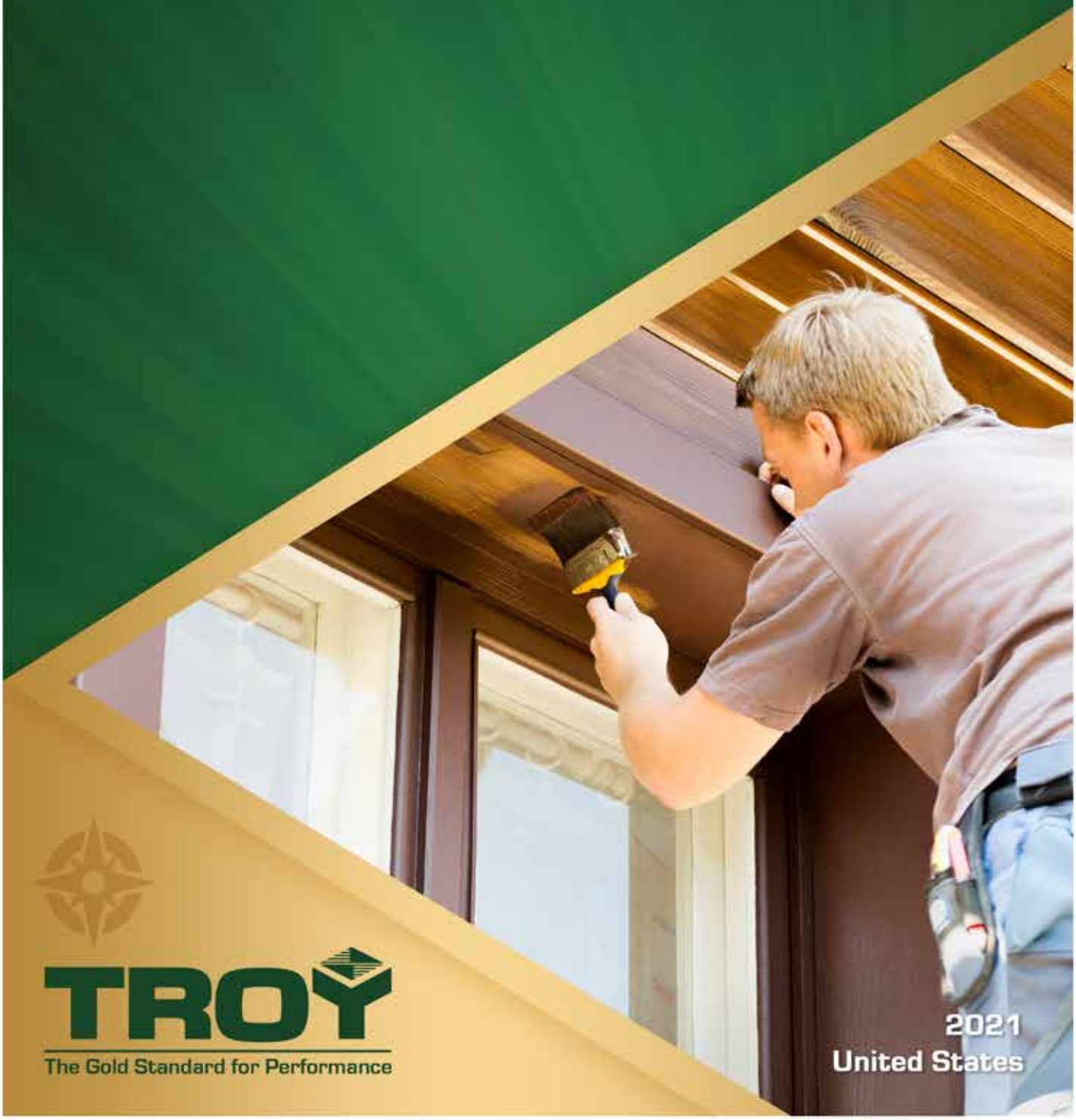
Polyphase®

WOOD PRESERVATIVES FOR JOINERY & WINDOWS



TROY

The Gold Standard for Performance

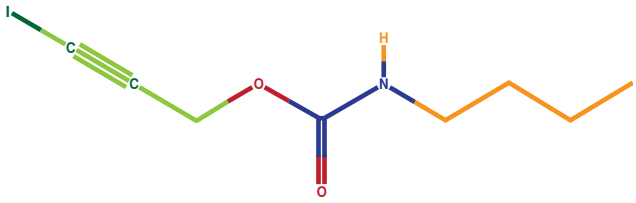
2021
United States

Introduction

The film preservative 3-iodo-2-propynyl butylcarbamate (IPBC) is renowned in the coatings and wood preservation industries for its long-lasting, broad-spectrum protection against fungal species, as well as its favorable toxicological profile and regulatory compliance. IPBC is relatively new to the wood windows market, which has relied for many years on currently heavily restricted fungicides such as pentachlorophenol (penta) and tributyl tinoxide (TBTO). IPBC offers the distinct performance edge over conventional fungicides, as will be demonstrated through long-term exposure testing data presented in the Performance section of this brochure. In addition to the regulatory compliance benefits of IPBC, the technology's effectiveness can be enhanced in the presence of solvents, as test results will also demonstrate.

Polyphase® Preservatives for Wood Products

Troy Corporation, the global leader in preservatives, is the inventor of IPBC, and manufactures IPBC-based Polyphase for wood preservative formulations and wood protective stains for interior and exterior use.



Polyphase P20T
Wide-spectrum fungicide for interior & exterior film protection
Effective against mold, mildew, staining, and rot fungi
Carrier solvent acts as a coalescent for waterborne coatings
Proven effectiveness in wood preservative formulations and wood protective stains

Physical Properties
Color (Gardner): 2
Specific Gravity, 25°C: 1.04
Viscosity, (Gardner) 25°C: A max
Lbs/Gallon (25°C): 8.7
Solubility: Soluble in aromatics and alcohol

Polyphase PW40
Wide-spectrum fungicide for interior & exterior film protectio
Highly effective against mildew, blue stain, and mold
For wood preservation & wood protection in above-ground applications
Excellent for wood protective stains

Physical Properties
Appearance: White to brownish, flowable dispersion
Specific Gravity, 20°C (g/mL):1.2
pH (as is) 7.5
Viscosity, 20°C (mPas): 500 - 1200

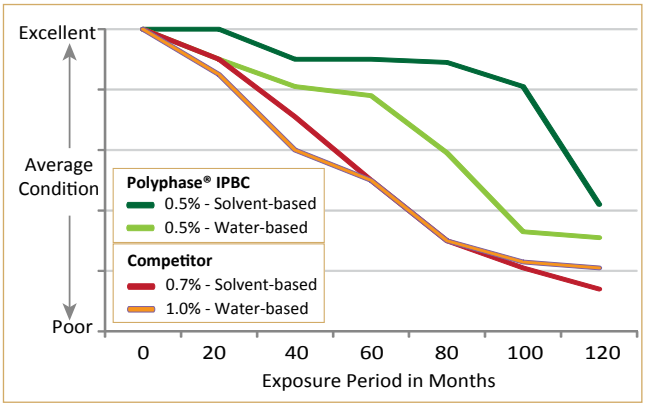
Performance

In order to evaluate the effectiveness of Polyphase P20T and PW40 in window joinery, Troy began an extensive series of long-term field exposures in Hilo, Hawaii and Corvallis, Oregon. Using Ponderosa pine sapwood lumber to construct window L-joints, Troy treated the samples with Polyphase P20T and PW40, as well as with conventional preservatives, including TBTO, propiconazole, and penta. These treatments used either water or an organic solvent as the carrier. In addition, the samples were treated with a water repellent.

The Hilo, Hawaii test site was selected for its extremely heavy rainfall (averaging 5m per year) and consistently high temperatures (averaging 24-30°C), factors which greatly promote the growth of mold and mildew. L-joints at the Hilo site were left exposed to the elements for 112 months, and evaluated periodically. The Hilo site constitutes the extreme testing environment.

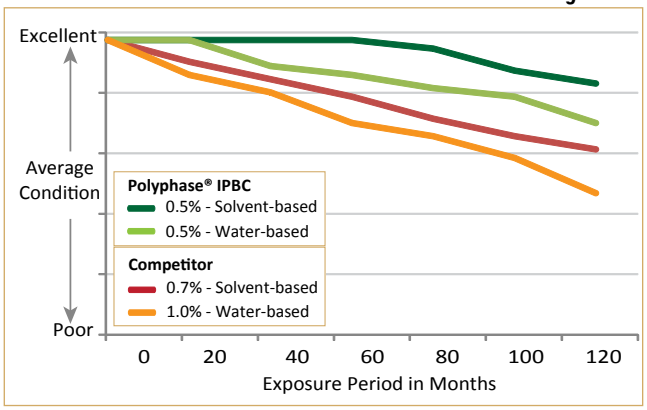
The Corvallis, Oregon test site was selected for its temperate climate and its reflection of the typical conditions found in the geographies in which most wood coatings are sold and applied. Wet, cool winters and mild, dry summers are the norm at this site, factors which present a lower risk of mold and mildew growth. L-joints at the Corvallis site were left exposed to the elements for 110 months, and evaluated periodically.

Figure 1



As the data indicate in Figure 1, L-joint samples containing Polyphase IPBC delivered in an organic solvent provided the best results after the 112 months of severe exposure conditions in Hilo. While these samples still registered some decay, they were still serviceable, as well as dry following heavy rainfall. All other samples, had failed. It should be noted that 112 months of exposure is a very long time for intense testing of this nature; the conditions at Hilo represent an even further acceleration of results due to the severity of the climate. In short, it is significant that any of the samples were still serviceable after this testing. Waterborne samples, on the other hand, did not prove as durable, as the data indicates. However, those waterborne samples incorporating Polyphase IPBC far outlasted the waterborne samples incorporating conventional preservatives.

Figure 2



While waterborne systems eventually proved susceptible to the extreme environment in Hilo, they fared better in the temperate climate in Corvallis. As the data indicates in Figure 2, the L-joint samples containing Polyphase IPBC delivered in an organic solvent provided the best protection after 110 months of exposure. Meanwhile, the L-joint samples containing Polyphase IPBC in a waterborne carrier outperformed all other waterborne samples.

Conclusion

As the data indicate, Polyphase preservatives provide an excellent level of protection over longer periods of time than conventional materials. While there is a migration toward waterborne systems in all coatings markets, including windows, results illustrate that solvent treatments combined with Polyphase provide superior protection.

Nevertheless, Polyphase preservatives offer the performance advantage in waterborne systems as well.

For more information on windows exposure testing or the range of advanced Polyphase preservatives, please contact your Troy representative.

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Services

As a Performance Partner, Troy offers a variety of services to support our product line of preservatives and additives to meet customer needs and provide market solutions.

Troy invites you to take advantage of the Troy services that can help you achieve your market objectives.

- Technical Service representatives can provide formulation assitance, product evaluation, and microbiological, analytical, and field testing to assist you in developing an optimum formulation that meets your product objective.
- Regulatory support is offered globally with regional and national expertise to meet your needs.
- R&D scientists work to anticipate future industry needs and develop innovative technology. Contact your Troy representative to discuss your unique requirement that may not be met by materials currently on the market. In fact, Troy may have just what you need already under development and if not, may be able to work with you to achieve your objective.
- A global supply network is in place to ensure product availability and fast delivery. Contact your local representative to ensure the product you need is available when you need it.

Contact your nearest Troy representative for immediate assistance or visit us online at www.troycorp.com. When visiting the website, become a registered user to obtain access to a wide range of resources.

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