Exterior Wood Finishing:
A Study of Several Leading Deck Sealers

By Andrew A. Sokol
Spring 1998
(UPDATED OCTOBER 15, 2003)

ABSTRACT

An average homeowner will spend thousands of dollars installing and maintaining a wooden deck and then watch their investment deteriorate from lack of sufficient protection. Even periodic treatment with a leading exterior wood finish can not stop exterior wood surfaces from weathering. Today's consumer is placing his faith and money in products that have, until now, a less than satisfactory track record for effectively protecting their outdoor investments from destructive weathering and decay.

Studies conducted by the USDA Forest Products Laboratory (included as addendum to this paper) on exterior wood treatments investigated:

1. Modes of damage to exterior wood;
2. Types of exterior wood treatment;
3. Benefits and shortcomings of treatment types;
4. Compatibility between types of treatment;
5. Criticality of treatment; and,
6. When and how best to treat/finish exterior wood.

It was found that the most acceptable, effective and least prone to fail exterior wood finish is the oil-like penetrating wood preservatives that enter and fill wood fibers and cells. USDA research notes that especially effective protections against UV damage were high solids, acrylic resin systems.

Using the USDA research on exterior wood finishing as a backdrop, this study provides comparative data between several unpigmented penetrating wood preservative/sealers currently on the market on:

- Per-gallon coverage;
- Product performance;
- Long-term maintenance costs;
- Long term maintenance costs;
- Service life (perceived and actual),

This study also compares and contrasts the value-added performance of the new polymer technology incorporated into PROTECH™(TM) 1200 Penetrating wood preservative/sealer with other water and solvent borne competitive products.

INTRODUCTION

We conducted tests on two surface types:

- Previously untreated Exterior wood surfaces with an in-service life of 5+ years; and,
- Previously treated exterior wood surfaces with an in-service life of less than 5 years.

All products were applied as per label directions on the respective products. PROTECH™ 1200 is cured not by an evaporative process but by polymerization reaction. The reaction is triggered on several hours of exposure to direct or indirect sunlight. The result is a deep and rich oil finish that is non-slick wet or dry. In all cases, PROTECH™ PROTECH™ 1200 out-performed the other major brands used in this study in the areas of coverage service life, and long-term maintenance costs.

PROTECH™ PROTECH™ 1200 is a totally unique product technology that stands apart from any sealant available today. Unlike other products which offer minimal penetration, PROTECH™ 1200's make-up allows wood to drink-in and absorb the product, providing deeper penetration and longer-term protection against weathering, erosion and fungal attack. This exceptional penetration allows PROTECH™ 1200 to become part of the cellular structure of wood, which the attached research by the USDA supports as a critical factor in long-term protection, durability and strength-enhancing properties (Fig. 1).

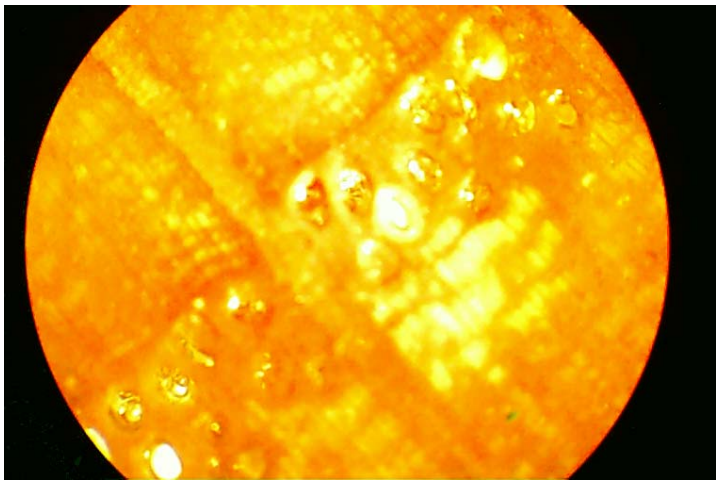


Fig. 1. Photo microscopy showing PROTECH™ 1200 filled wood fiber, cells, vessels and pores. Wood saturated and cured with polymer in this manner resists weathering, fungal rot and structural erosion resulting from environmental damage.

Consumers will also notice that PROTECH™ 1200 is solvent *and* water-free. Both water and polar solvents tend to swell wood cellular structures which limits penetration, which limits long term protection, durability and strength-enhancing properties. This elimination of solvent results in the elimination of flammable and pungent solvent fumes. PROTECH™ 1200 provides long term protection for fungal graying and rot by time releasing fungicides and other non-polymeric additives. This is evident by the pleasant, natural scent of cedar or citronella oils used in PROTECH™ 1200 as effective, time-released insect repellants. The consumer will notice this release mechanism working immediately with the initial release of fungicide on, in and throughout the wood. This is evident in the initial dry surface texture and as a harmless trace-oil slick on rain water run-off. The initial release is washed off within a week by rainwater but continues to release and work under the wood surface. Spectroscopic studies conclude that PROTECH™ 1200 cures from the bottom up (Fig. 2 & 3).

PROTECH™ 1200 offers the consumer market -- a quality, value-added product that is also environmentally safe. This report, backed by data from case studies, and the attached research papers from the USDA, reveals that PROTECH™ 1200 Deck Sealer is superior to the studied clear, penetrating wood preservative/sealer. Based on the strength of the data generated by this study, it can be concluded that PROTECH™ 1200 Deck Sealer is uniquely superior in technology, performance, longevity and long term cost savings to all other products of this type.

Fig.2. An FTIR/ATR Spectroscopic study conducted by by the author. This graphic shows a portion of a 720 minute Cure vs. UV Exposure study.

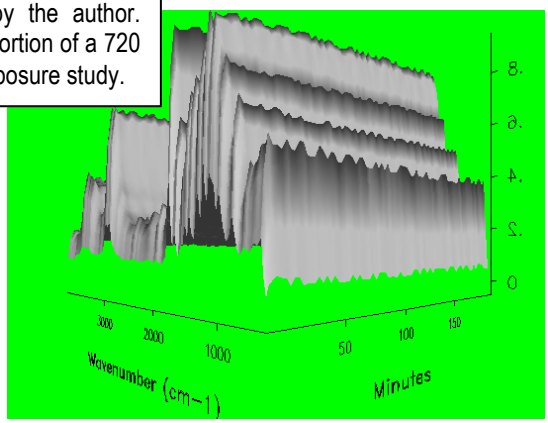
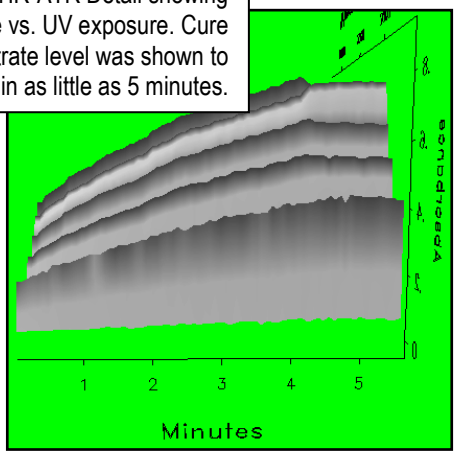


Fig. 3. FTIR-ATR Detail showing cure response vs. UV exposure. Cure at the substrate level was shown to be complete in as little as 5 minutes.



OBJECTIVE

The objective of this report is to provide performance data of PROTECH™ 1200 Deck Sealer on both new and old wood surfaces. Our intent is to prove, through comparative field testing, that 1200 not only offers value-added benefits but is also more cost effective than the lower priced sealants marketed by established specialty coatings companies.

Product testing and data gathering was conducted at four separate locations. The wood surfaces tested were in varied degrees of weathering - from undamaged to extremely deteriorated. This variance of wood damage allowed us to gather a comprehensive range of "real life" field data including product coverage, most efficient application method, and over-all product performance in comparison with competitive deck care products.

Our report concludes that the superb product quality and long-term durability of PROTECH™ 1200 Deck Sealer provides significantly longer lasting protection than any other product on the market. The coverage per gallon and excellent permeability of PROTECH™ 1200 offers both long-term cost savings and superior long-term protection when compared with competitive brands.

.

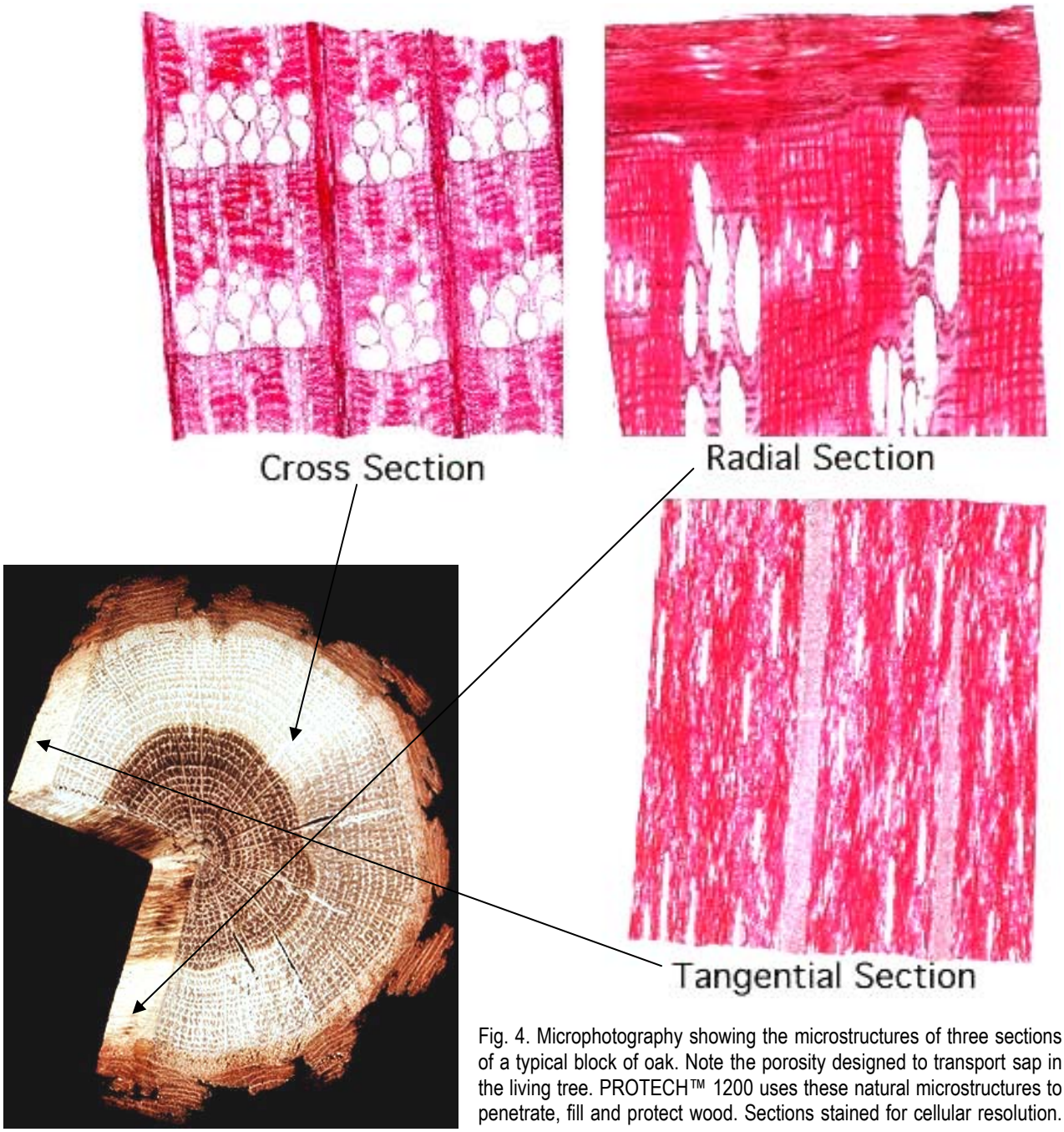


Fig. 4. Microphotography showing the microstructures of three sections of a typical block of oak. Note the porosity designed to transport sap in the living tree. PROTECH™ 1200 uses these natural microstructures to penetrate, fill and protect wood. Sections stained for cellular resolution.

PART 1: COVERAGE

SUBSTRATE PROFILE

- **Previously Untreated**
- **Exterior Wood Horizontal**
- **In-Service Life of 5+ Years**

On September 26-28, 1997 a comparative coverage study was conducted to determine the reliability of a competitor's reported coverage per gallon and compare coverage per gallon between PROTECH™ 1200 Deck Sealer and several other major brands of unpigmented, penetrating wood preservative/sealers. This case study was also used to determine:

- The worst case coverage per gallon
- Product coverage using brush/roll vs. spray application
- Best method of applying PROTECH™ 1200
- Cost per Sq. Ft. comparison
  1200 vs. other penetrating wood preservative/sealers
- Determine application method for PROTECH™ 1200
- Recoatability Profile of PROTECH™ 1200
  Evaluate decks previously sealed with PROTECH™ 1200
  Recoat decks previously sealed with PROTECH™ 1200
- Compatibility of PROTECH™ 1200 with conventional deck cleaning products and associated cost per square foot
- Cause of darkening of wood when using product on old wood
- Number of coats required for effective protection

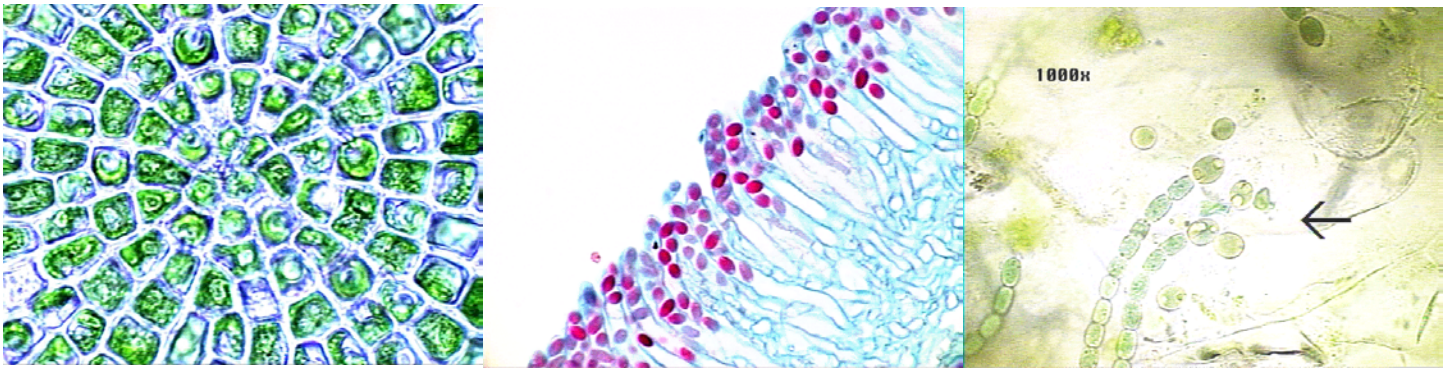


Fig. 5. Exterior wood's worst enemy is fungus. Depicted here are three examples of such fungi that cause wood rot. PROTECH ™ 1200 renders wood a NON-NUTRIENT for fungi. However, this does not prevent fungal growth on surface debris.

The Test Site

The test site is located in the mountains of upstate New York. This site provided a large number of standard sized wooden tent platforms constructed from previously untreated and unsealed pine lumber. The average in-service life of the decks was over 5-years. The condition of the test platforms varied widely in terms of fungal decay and weathering. The older platforms exhibited severe fungal damage and rot while the four newest platforms (sealed in May, 1996 with PROTECH™ 1200) exhibited NO fungal growth and minimal graying from UV damage.

Materials

The following major brands of deck sealer were purchased from K-Mart and used for this study (PROTECH™ 1200 obtained from UV Coatings, Ltd.):

Sealer Brand	Retail Package	$/Pkg.	$/Gal
Thompson's Waterseal Ultra	5 gallon pkg.	$ 64.99	$12.99
Olympic Water Guard	5 gallon pkg.	$ 59.99	$11.99
Armor All Deck Protector	3.5 gallon pkg.	$ 20.00	$5.71
PROTECH™ 1200	4.31 gallons	$862.00	$100.00 (Projected price/Gal.)

PART 2: COVERAGE

SUBSTRATE PROFILE

- **Previously Treated Wood**
- **Exterior Wood-Horizontal**
- **Less than 5 Years In-Service Life**

Three residential decks were selected for this portion of the coverage study.

Deck A (Avon Lake, Ohio)
Deck Age: Less than 5-years-old
Previous Treatment: Thompson's (16 months prior)
Total Area: 960 sq. ft.

Amount of sealer used: 2.25 gallons
Coverage per gallon: 426-sq. ft./gal.

Fig. 6. Fungus on wood. Destructive fungal infestation is not limited to the microscopic.

Remarks: The deck was power washed with a bleach and soap solution by the owner four days prior to sealing. Heavily weathered areas away from the house and areas not under roof showed no evidence of Thompson's sealer being active – as predicted by USDA research. Both porosity and absorbency were high. Areas under the roof and closer to the building exhibited nominal viability of previous treatment with Thompson's sealer. There appeared to be a gradient effect with the Thompson's sealer, where some seal coating remained near the house, but areas farther from the house exhibited little to no sealing. In areas where previous treatment was still viable, absorbency of PROTECH™ 1200 was minimal, again as predicted by USDA research. After four hours, excess PROTECH™ 1200 was hosed-off without any detrimental effects to the deck or finish. Inadequate bleaching and washing (evidence of gray paint was observed) darkened the wood slightly on sealing. This darkening effect tends to lighten with time.

Deck B (Strongsville, Ohio)
Deck Age: 3.5-months-old
Previous Treatment: CCA/Pressure Treatment (Green Wood)
Total Area: 902 sq. ft.
Amount of sealer used: 2 gallons
Coverage per gallon: 451-sq. ft./gal.

Remarks: Deck surface was power washed with a bleach and soap solution by the owner four days prior to sealing. This test deck readily absorbed PROTECH™ 1200. A two-foot-long board appeared saturated and required redistribution of the sealer by simply wiping with a paper towel. Knotty areas absorbed PROTECH™ 1200 to a lesser degree than edge grain and clear areas, once again as predicted by USDA research. No darkening of the wood was observed.

Fig. 7. White fungal rot on wood.

Deck C (Medina, Ohio)
Deck Age: 2-7-years-old
Total area: 3,528 sq. ft.
Amount of sealer used: 7.5 gallons
Coverage per gallon: 470 sq. ft./gal.

Remarks: This deck was severely neglected. Fungal damage was extreme over a majority of the surface area. Wood damage manifest as fibrous stringy "fuzz" on severely damaged areas. Initial power washing was followed by bleaching the entire surface area. Staining was so severe that an oxalic acid-bleach treatment was required followed by a final power washing. The deck was allowed to dry 2.5 days before sealing. No darkening of the wood was observed; rather the sealed wood displayed a remarkable rejuvenation as evidenced by the return of a pleasant, golden wood color.

Test Data Synopsis

The following is a review of the test data collected on all four case studies and extrapolates cumulative maintenance costs for subsequent reapplication of treatment in subsequent years:

NOTE: Price per gallon of ProTech™ 1200 has dropped since the writing of this paper. Wholesale pricing of ProTech™ as of late 2003 is $40.00USD per gallon. – A.S. 10/15/03

	RETAIL PACKAGE COST			COVERAGE (Sq.Ft.)			Initial	Cost of	Cumulative Maint. $	
Brand	Pkg. (Gal)	$/Pkg.	$/Gal	Total	Ave./Gal	Claimed	$/Sq.Ft.	400 Sq.Ft	2nd Time	4th Time
Olympic Water Guard	5	$ 59.99	$ 11.99	761	152	(200)	$0.42	$168	$336	$672
Thompson's Waterseal Ultra	5	$ 64.99	$ 12.99	630	126	(225)	$0.44	$176	$352	$704
PROTECH™ 1200 (Spray)	4.31	$431.00	$100.00*	1,512	351	(300)	$0.62	$248	Not Required	
PROTECH™ 1200 (Rolled)	1.9	$190.00	$100.00*	504	265	(300)	$0.72	$288	Not Required	
Armor All Deck Protector	3.5	$ 20.00	$ 5.71	378	108	(150-350)	$0.39	$156	$312	$624

*Projected Price/Gal.

PROTECH™ 1200 Spray Applied Using a Krebs 360

Thompson's™ Deck Scrub™ was used to was to wash and clean the residential decks. Coverage of this product was reported to be 250 Gal per gallon. Actual coverage was 153 Ft2/Gal. Cleaning supply costs averaged an additional $0.08/Sq. Ft. and application hardware (brushes and pans) averaged an additional $0.11/Sq. Ft. This totals to $0.19/Sq. Ft. only for cleaning and application supplies. Labor cost component varies, however assuming a labor rate of $8.50/hr for this study resulted in an average of $0.15/Sq. Ft. per application of sealer for labor.

To determine cleaning and material costs Subtract $0.15 (Labor cost/Sq. Ft.) from Initial $/Sq.Ft. column

To determine Sealer cost only Subtract $0.34 (Labor, Cleaning Materials and Hardware/Sq. Ft.) from initial $/Sq.Ft. column

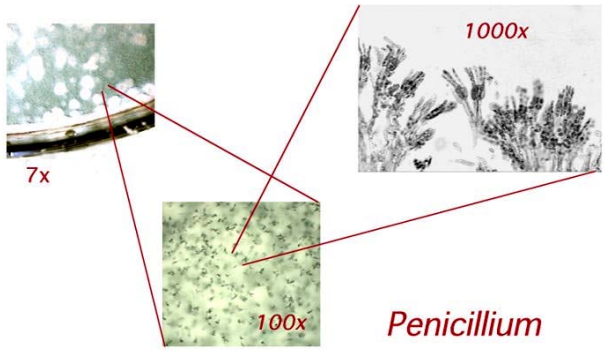


Fig. 8. Common green penicillin not only grows on old bread, it grows in and on wood as well

PRODUCT APPLICATION METHODOLOGY

Rather than applying a single heavy application, we concur with USDA Forest Products Laboratory recommendations of applying two coats of PROTECH™ 1200. The second coat should be applied 30 to 60 minutes after the first coat. If the second coat is applied after the first coat is cured, then the second coat may not be able to penetrate the wood. Multiple coats of sealer are suggested only in cases of severe weathering or extensive fungal damage. Apply enough product to make the wood appear damp but do not allow pools to form. Due to the nature of wood, different parts of the wood will absorb faster than others. Any areas with excess sealer should be redistributed with a brush or wiped with a cloth which has been dampened with PROTECH™ 1200.

Less coverage per gallon means more penetration and deeper protection which results in longer protection. The following application methods are listed in order of least to greatest coverage per gallon:

- **Brush:** Heaviest sealer application resulting in deeper penetration and longer protection. This method is also the easiest way to over saturate the wood with sealer. To clean brushes, wash with soap and water. If the sealer starts to harden in the container, simply remove the hardened sealer as necessary.

- **Roller:** Moderate sealer application with both moderate penetration and per gallon coverage. The use of disposable rollers is advised. If the sealer begins to harden in the container, remove the hardened material as necessary.

- **Airless Sprayer:** This is the lightest and fastest application method with the greatest per gallon coverage. Depending on the sprayer, this method applies just enough PROTECH™ 1200 to seal the wood surface. So not spray on windy days. Cover vegetation. If vegetation is contaminated with over-spray, use a garden hose to wash the vegetation down 10-20 minutes.
- **Disposal:** pour out unwanted PROTECH™ 1200 into a pan and allow to sun-cure fully (until dry to the touch) and dispose the hardened sealer as non-hazardous solid waste.

The use of a black and opaque spray container is mandatory; otherwise the sealer will harden from UV exposure through the container wall. As with any chemical, avoid breathing the spray mist of PROTECH™ 1200. Wear goggles and mask when spraying PROTECH™ 1200.

Directions For Use

1. Prior to use, test PROTECH™ 1200 on an inconspicuous location on the deck. This will provide an idea of how the product will appear on the deck.
2. We strongly recommend that the deck surface be as clean as possible before sealing. The use of bleaching deck cleaner and power washing is recommended to remove any stains, fungus/mildew and dirt in and on the wood surface. The surface must be allowed to air dry after washing (or after rain) for between 48 and 72 hours before sealing. Note: Dirt and stains in or on the wood will be permanently sealed into the wood if not removed.
3. Choose your application method to achieve the desired effect. If spray applying, DO NOT BREATH THE SPRAY MIST OF PROTECH™ 1200. PROTECT VEGETATION AND AREAS NOT INTENDED TO BE SEALED FROM OVER-SPRAY. If vegetation is inadvertently sprayed with 1200, immediately hose the vegetation down with water continuously for 15-20 minutes.

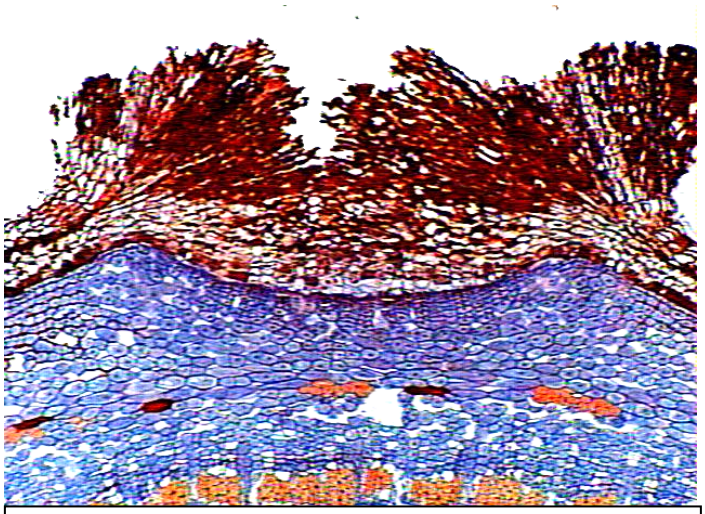


Fig. 9. Photo microscopy of wood stained to reveal microstructures

4. In all cases, minimize the exposure of PROTECH™ 1200 to sunlight. Keep the original container covered at all times. If using a roller pan, keep it in the shade. If the sealer begins to harden while in the container, remove the hardened sealer as necessary. To dispose of extra material, expose the product to full sun until hardened. PROTECH™ 1200 can then be disposed of as nonhazardous solid waste. In bulk, the sealer will generate heat during cure — this is normal. If using a sprayer, the tank and spray lines must be painted black, masked or otherwise covered to prevent the sealer from exposure to sunlight. Failure to prevent exposure may cause permanent damage to your spray equipment. Early morning, evening hours, or overcast days provide ideal UV levels for application of PROTECH™ 1200.
5. Apply PROTECH™ 1200 until the wood appears damp. The sealer should absorb into the wood within 30 minutes without leaving a shiny wet appearance. Do not over-apply the sealer. Either redistribute pooled areas or hose off excess sealer with water between 6 and 12 hours after application. Any surface areas that cure to a high gloss can be scuffed with sandpaper to remove the shine.
6. Note: Once PROTECH™ 1200 has been applied to a wood surface, light rain or drizzle will not affect the sealer.
7. Check for cure. The deck is ready to use when there is no oily residue on the surface. Typically curing will take from 6 to 24 hours, depending on sunlight conditions.
8. Note: Direct sunlight is not required for cure.
9. Clean-up. Use soap and water to clean up 1200.

TYPICAL APPLICATION EQUIPMENT

- An airless sprayer (Krebs 360) system was used at full open liquid flow.
- 1/8-inch nape rollers and conventional brushes were used to apply the sealer to compare coverage with brush or roller application.
- Thompson's Olympic and Armor-All were applied with a conventional pump-up garden sprayer.

Features & Benefits: PROTECH™ 1200

Conventional deck treatments use waxes, stearates (processed animal fat) and other materials that have very limited “deck life” because they are either washed away during weathering, or are overwhelmed by fungal growth.

When PROTECH™ 1200 is applied to a wooden deck, it will soak into the wood surface and spread like a penetrating oil finish. The product will move through the wood giving it a damp appearance. The process taking place is the absorption of the sealer into the wood cells, cracks and places where moisture can enter the wood. Simultaneously, PROTECH™ 1200 begins to react to the natural UV in sunlight to at the surface and eventually throughout the wood — acting as a reinforcement and binder that resists UV damage. Once hardened, PROTECH™ 1200 continues to time release fungicide, UV blocker and insect repellant oils such as citronella and cedar.

ANTI-FUNGAL

PROTECH™ 1200 also contains an antimicrobial agent which kills the cause of rot: fungus. This component is non-reactive in the product's polymerization mechanism enabling it to slowly release from within the wood. In addition to killing fungus already in the wood, this agent helps to resist fungal re-infestation and the damage associated with fungus.

UV BLOCKING

PROTECH™ 1200 provides excellent UV protection. In addition to the inherent UV absorption of PROTECH™ 1200, UV blockers have been added to enhance the protection of wood from UV damage. UV absorption by PROTECH™ 1200 does not destroy its protective properties as is does conventional products. (An accelerated weathering study is being completed at the time of this writing.)

NATURAL CITRONELLA AND CEDAR OILS (OPTIONAL)

PROTECH™ 1200 is available with a natural insect repellent. The cedar scent is a natural cedar wood oil. In addition to providing a pleasant scent to the product, cedar is known to naturally repel spiders while citronella is well known for its mosquito repellant properties. The repellant oils are non-reactive in cure mechanism and as such are slowly released with time from within the wood. This aids in deterring the re-infestation by insects. Initially after applying the sealer, a slightly oily film may appear on runoff rainwater. This is the time release of the fungicide and repellent oils in the wood.

LASTING PROTECTION

PROTECH™ 1200 uses the UV light found in natural sunlight to trigger a chemical reaction that turns the sealer solid. For this reason it is important to keep the sealer from exposure to sunlight until it is applied to the wood. PROTECH™ 1200 does not need direct sunlight to cure, though the less sunlight there is, the longer the curing will take.

Fig. 10. Fungus and bacteria use empty cellular structures in which to multiply and grow.

THE FINISH

Our product provides deck surfaces with a deep, rich looking finish that enhances the natural beauty and color of a wooden deck. Older wood may exhibit a darker finish after a fresh coat of our penetrating wood preservative/sealer. This darkening is generally temporary, and eventually lightens. A surface treated with 1200 will not become slick and is dry to the touch.

COVERAGE

PROTECH™ 1200 coverage will vary with the type, age, weathering and previous treatments of wood to be treated. Generally, an average coverage of 300 sq. ft./gallon can be expected on untreated wood 5 years and older. On newer (less than 5-year-old) decks, previously treated and higher density wood, an average coverage of 400 sq. ft./gallon or greater can be expected. Actual coverage will vary due to the variable nature of wood.

SUMMARY

Multiple objectives are addressed by this study. Our first objective was to discover per gallon coverage of PROTECH™ 1200 on various conditions of wood. It was discovered that the average coverage for previously untreated wood older than 5 years is 308 sq. ft./gal. The average coverage for new as well as previously treated wood (less than 5 years in service) is 375 sq. ft./gal. With this data on hand, we are able to present the following observations:

1. The reported coverage by all competing brands fell far below their reported values. This ranged between 25 and 40% below manufacturer's coverage claims.
2. Under identical conditions, PROTECH™ 1200 out-performed the other brands of sealer tested both in terms of reported and actual coverage. PROTECH™ 1200 provided from 2.3 to 3.25 times more actual coverage per gallon than competitive brands.
3. The worst case coverage for using PROTECH™ 1200 is brush or roll application onto old wood with severe weathering and fungal decay. In this study, the coating was intentionally over-applied. Even in this instance, PROTECH™ 1200 provided significantly better actual coverage than the major brands tested in this study.
4. Spray application provided the best coverage and easiest application of our penetrating wood preservative/sealer. Brush and roll application resulted in 25% less coverage per gallon, which means that 25% more material is applied and absorbed by the wood using this method of application.
5. The most efficient way to apply PROTECH™ 1200 appears to be via airless sprayer. We must note that even when this method is used, care must be taken not to intentionally over-apply the sealer.
6. Recoatability of 1200 is excellent. Recoating, *only if desired*, is recommended after one year of weathering on wood previously sealed with PROTECH™ 1200 or another penetrating wood preservative/sealer.
7. The condition of decks previously sealed with our product was excellent. There was no evidence of fungal damage and minimal graying due to UV damage. The test platforms are holding-up remarkably well.

8. PROTECH™ 1200 proved to be compatible when applied over conventional deck cleaning products. Our tests revealed no incompatibilities when applied to wood 24 hours after use of a bleach-based deck cleaner. The average cost of using the cleaning product was: $0.08/Sq.Ft; Brushes & Roller: $0.11/Sq.Ft; Labor: $0.15/Sq.Ft.
9. When a fungus-infested deck was washed using Thompson's deck scrub and Thompson's deck wash and allowed to dry 24 hours prior to sealing with PROTECH™ 1200, no darkening of wood was noted. Rather, the wood assumed a golden-brown hue. Old, unwashed decks tended to darken when 1200 was applied. The older the deck and the more severe the fungal infestation, the darker the wood became. As such, it is indicated that fungus and dirt in the deck darken and the wood when our product is applied over the unwashed/unbleached surface. We recommend that old wood be washed/bleached prior to sealing with PROTECH™ 1200. In general, the darkening has been observed to lighten with time.
10. One coat appears to provide sufficient protection for a wood surface. Touch-up of missed “dry” spots after brush/roll applications may be required. In line with the other brands studied, redistribution or wipe-up of standing pools or shiny wet spots is required. PROTECH™ 1200 provides for a slow cure of over-applied areas to facilitate redistribution and workability.

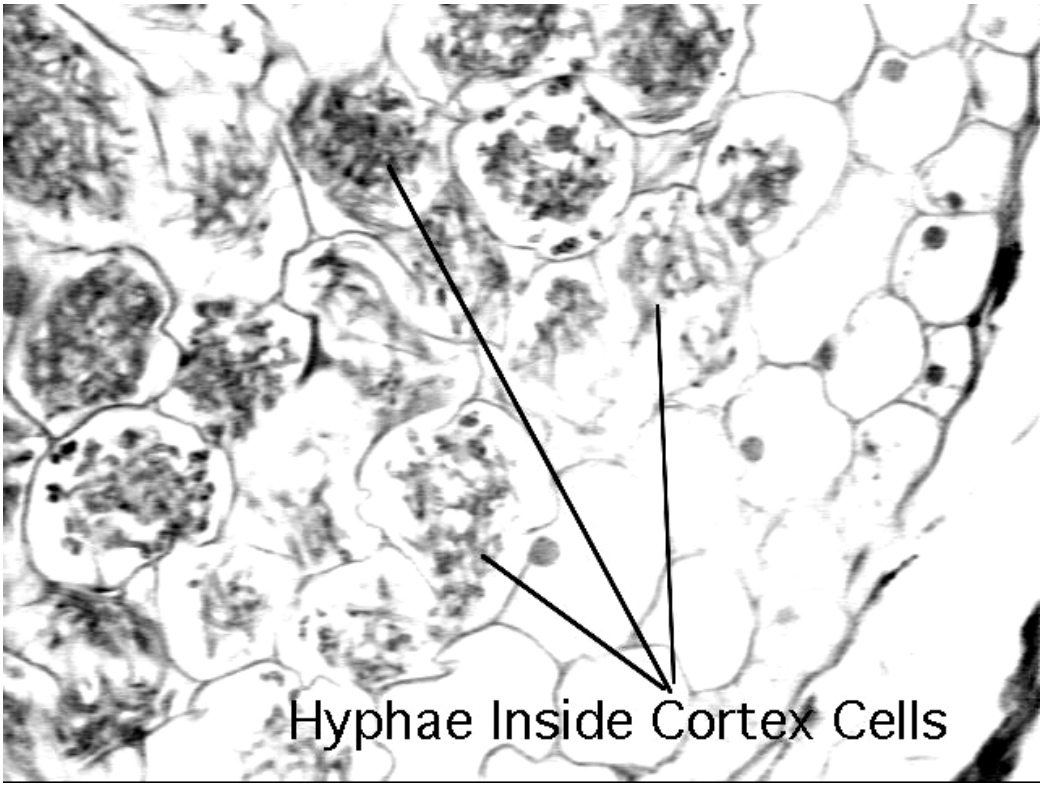


Fig. 12. Fungus residing in wood cells.

SUBSEQUENT WORK

The mechanism of color loss via the mechanism of tannin leaching needed to be investigated. The ability of Tannic Acid to leach from natural wood was anticipated to be a problem associated with *perceived* "graying" of the wood and hence *a perception* that the product has failed. Indeed, this was found to be the case especially with dark colored woods such as South American Redwood marketed in the US under various trade marks such as Palope™ and E Pae™.

Color loss due to the leaching of tannins was simply corrected by incorporating transoxide pigment systems. Transoxides are specially processed iron oxides. Unfortunately, these highly stable pigments absorb nearly ALL the UV bands required to cure the product using the original product technology. Since the writing of this paper new technology has been independently developed by this author which allows the incorporation of such pigments without causing cure issues. This technological development allows for tinting of the fundamental (clear) product with various colors including white, brown, red, yellow, black as well as blend shares of these colors. The details of this technology are proprietary to Andrew A. Sokol and beyond the scope of this paper.

Lastly, since the writing of this paper, it has been found that IPBC (Iodo-2-Propynyl Butycarbamate), a well known and highly effective fungicide approved for use in the USA, is stable when compounded into ProTech™ 1200. IPBC has a well known effective field service life of 10-15 years when used in conventional deck treatment products in the USA.

Lastly, an initial investigation was started on the possibility of using ProTech™ 1200 as a replacement for CCA (Copper, Chromium, Arsenic solution) pressure treatment of Southern Yellow Pine. ProTech™ 1200 was found to be exceptionally well suited for such an application. Preliminary testing showed southern yellow pine tolerated the infusion of ProTech™ 1200 with little if any dimensional changes due to pressure treatment and excellent permeation of the wood. The cost of pressure treatment with ProTech™ 1200 versus standard CCA was lower on a per unit basis. Further, the health benefits of eliminating CCA indicated secondary and tertiary savings as well.

FUTURE WORK

Initial investigation of commercial pressure treatment of wood with ProTech™ 1200 warrants further study of this method of wood treatment. Beyond the economic and commercial viability of pressure treating with ProTech™ 1200, the elimination of CCA and associated hazards make for a societal contentious act which may be capitalized upon via marketing avenues to facilitate market penetration and commercial success.

-Andrew A. Sokol
October 15, 2003
Cleveland, Ohio U.S.A.