

Do Epoxies Really Penetrate and Consolidate Rotten Wood?

Introduction

The myth of epoxy consolidation has long been understood as a good way of dealing with rotten window sills, beam ends and log home logs. Consolidation of several inches of rotten wood involves two requirements. One, the product must be able to penetrate through **all** of the rotten wood **and** into the first few cell layers of good wood. Secondly, all of the rotten wood should become at least as solid as the original wood. Several manufacturers make these claims, yet many times these repairs fall out or become loose after a few months or years because of inadequate penetration and virtually no consolidation below the surface. More importantly, the decay fungi that is causing the wood to rot goes unchecked and its growth is often accelerated since moisture is trapped in the wood.

Procedure

Five of the most commonly available liquid Epoxies were purchased for this test. They are 1.) Liquid Wood, by Abatron. 2.) RotFix by System Three Resins. 3.) Clear Penetrating Epoxy Sealer by Smith aka Rot Doctor 4.) Minwax Wood Hardener by Minwax and 5.) PC Rot Terminator by PC Products.

One ounce of each product was mixed per manufacturers instructions or used as is, if no mixing was required. Temperature and humidity were controlled to 68 degrees F. and 70% Relative Humidity.

Exactly one ounce of each product was poured out onto a separate stack of newsprint and was left untouched for 72 hours.

Observations

After 72 hours, each product was dry to the touch. Since an epoxy used for Rot Repair is supposed to penetrate and consolidate wood fiber, then the epoxy should soak through several sheets of newsprint and more importantly, “glue” them together. See chart for specific product results.

Conclusions

None of the epoxies tested showed adhesion of more than 10 sheets of newsprint or about 1/16”. Therefore the myth of epoxy consolidation is busted. The Clear Penetrating Epoxy Sealer appears to have penetrated the deepest but only 2 sheets of newsprint were stuck together. This leads one to believe that epoxy molecules do not have the ability to penetrate cell walls of wood. Furthermore, the solvent content may penetrate but the epoxy gets filtered out in the first cell layer of the wood. Therefore, claims of deep penetrating epoxies and solvents that carry epoxy resin deep into the wood are false. The

only exception may be when there are cracks in the wood and the epoxy may flow down into those cracks and cure.

The real problem with rot damaged wood is that there is a living fungus that is the cause of the problem. Rot damaged wood is a *symptom* of the problem and treating the symptoms is akin to putting a band-aid over cancer. Liquid Epoxies are beneficial as *part* of a repair, but in and of themselves do not cure the problem and may even make it worse since the moisture and fungus can become trapped in the wood and will continue to grow and spread until a more serious problem manifests itself.

A combination of borate based wood preservatives to kill the fungus and keep it from returning is the best method of rot repair. Then and only then can epoxies be expected to repair the damage.

Product	Sheets of Newsprint showing Penetration	Sheets of Paper Stuck together	Percent Active Ingredients by Volume	Percent Solvent	Comments
Liquid Wood	7	7	100	0	Good
RotFix	10	10	100	0	Excellent
Clear Penetrating Epoxy Sealer	15	2	25	75	Excellent Penetration but virtually no consolidation
Minwax Wood Hardener	2	2	20	80	Poor penetration and consolidation
PC Rot Terminator	2	2	18	82	Poor penetration and consolidation