

Wood-Epoxy Repairs for Exterior Woodwork

You can restore and strengthen deteriorated wood by applying liquid epoxy resins which solidify within the wood. Wood-epoxy repairs complement traditional repair methods and modern part replacement. They save time and money when you know how and where to use them.

- **Advantages:**
 - A wide range of deterioration types can be treated; decayed pockets, split grain, broken parts, end-checks, nail-holes, knot-holes, absorbent end-grain, etc.
 - Large or complex building parts with limited areas of damage can be repaired at lower cost than complete replacement; railings, windows, porch columns, cornices.
 - Epoxy materials are water-resistant and hold paint very well.
 - Parts can sometimes be repaired without removing them from the building.
 - Saves more of the original material than complete part replacement.
- **Disadvantages:**
 - Epoxies are not a miracle cure for all deterioration problems.
 - When applied without regard to a few basic guidelines epoxies can actually cause further damage.
 - If improperly handled during application epoxies can be toxic and a safety hazard.

Table of Contents

Most Common Methods	2
Conservation	3
Materials	3
Preservative Treatments.....	3
Appropriate Use.....	4
Understanding Wood	5
Flexibility.....	5
Decay Process	6
Materials	7
Epoxy Basics	7
Consolidant.....	8
Adhesive Paste Filler	8
Tools	10
Epoxy Kit.....	10
Safety and Health.....	11
Methods	13
Preparation.....	13
Mixing Epoxies.....	15
Housekeeping	16
Typical Wood-Epoxy Repairs	17
Decayed Pedestal Top.....	17
End of Crown Molding.....	24
Maintenance.....	25
Paint.....	25
Epoxy Failures	25
Resources.....	27
Suppliers	27
Publications	28

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Most Common Methods

There are two types of wood-epoxy repair methods that differ significantly in their combination of procedures and materials. They are the **consolidation method** and the **decay removal method**. Effective long-lasting repairs can be made with either method, but you must understand their differences and characteristics to apply them effectively.

Consolidation Method



The consolidation method uses an “epoxy consolidant,” a syrupy liquid that soaks into porous or decayed wood and then hardens within the wood. The wood deep within the zone of decay must be dry (15% equilibrium moisture content or less) for the epoxy consolidant to completely penetrate the porous wood. Holes are drilled into the wood in a honeycomb pattern to aid drying and consolidant penetration. It is critical for the decayed wood to be completely saturated with consolidant, with some penetration into the neighboring sound wood. This is difficult to do because the sound wood is hidden from view by the decayed wood. To assure full penetration to sound wood, test borings or cuttings often must be made during or after application of the consolidant. This is necessary because the conditions at the interface of the decayed and sound wood are quite variable. Decay voids and holes are then filled with “epoxy filler,” a thick paste. When cured, the consolidated wood and filler has hardness, flexibility and working characteristics similar to sound wood.

The consolidation method can leave parts of the fungus organism in the wood leading to continuing decay of adjacent wood, or reactivation of the decay when the wood becomes wet enough.

Decay Removal Method



In the decay removal method, all decayed wood is removed to expose a sound wood surface, epoxy is applied as a primer to the wood surface, and the voids are filled with an epoxy paste filler. Repairs with this method are quicker because the exposed wood dries out sooner. It is easier to get more consistent results with this system because the condition of the newly exposed surface of sound wood is much more consistent than the interface of the decayed and sound wood in the consolidation method.

The decay removal method is more likely to remove all of the fungus organism, limiting further decay in the adjacent wood.

Step 5. Apply Consolidant.

Fill each hole with consolidant. Let it soak in for about 10 to 15 minutes. Repeat application until no more soaks in within the 15 minutes. (Your exact timing will vary based on the nature of the repair, porosity of the wood, epoxy formula, etc.) Keep the consolidant in the holes as much as possible, You want to fill the volume of porous wood from the inside, to the outside.

- **Do not coat the entire surface**, which could trap moisture in the wood.
- **Do not apply consolidant to the preservative application holes**, because it could surround and entrap the preservative, preventing its migration throughout the sound wood.
- **Do not apply consolidant to the railing joints**, which would make future disassemble and repairs difficult.

Saturate the entire volume of the loose part with consolidant.

A hair dye applicator bottle is ideal for mixing and applying small amounts of epoxy consolidant. The narrow spout makes it easy to control application, putting consolidant right where you want it. If the bottle is knocked over only a few drops will spill.

Allow the consolidant to cure as recommended by the product manufacturer— which may take a few hours, up to a few days.



How to Use this Report

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