



Why House Paint Fails

House paint can fail prematurely—the following identifies some reasons and remedies.

Wood was wet when it was painted.

If only the surface of the wood is wet, then only one sunny day is usually needed for drying prior to painting. If the wood is saturated, several sunny or windy days are necessary.

Unfinished siding was exposed to several weeks of sunlight before painting.

Sunlight degrades the unfinished wood surface, thus it will never hold paint as well as fresh wood. If the unfinished wood was exposed more than a few days, lightly sand or power wash the surface to remove the thin layer of degraded wood before applying paint. If power washing, be careful not to point the wand up as this can force water behind the siding. Taping a stick on the wand will force you to maintain a safe distance and prevent otherwise easily caused damage. You also have to wait for the siding to dry, permitting more sun exposure.

Tests of wood painted, at least primed, before any exposure to sunlight show that the surface is not in need of repainting for at least 30 years. Duplicates exposed to sunlight facing south for 1 week prior to priming required repainting at 13 years. Wood exposed to 2 weeks of sun prior to priming required repainting at 10 years. Light sanding can remove the thin layer of UV-damaged wood, and it is advised to prime immediately.

Although instructions on primer paint frequently indicate topcoats should be applied soon, we found with a limited number of primers that 6 months of primer alone over the winter had no effect on topcoat life. A second primer can always be applied before top coating if it is suspected that the primer had been exposed for too long. When repainting, prime sanded wood as soon as possible after sanding. **Test:** Old paint that wipes onto a cloth or hand (chalk) should be cleaned. If paint still wipes off, repriming is necessary. If cleaning stops chalkiness, only cleaning is necessary before top coating.

Temperature was too cold when the wood was painted.

Oil-based paints should be applied when the temperature is at least 40 °F; for latex paints, the temperature should be at least 50 °F. Conditions should remain above these temperatures for 24 hours after painting. We do not know if paints formulated to be applied in even cooler temperatures perform as well as standard paints. When pretreating the wood with a paintable water-repellent preservative (a recommended practice), best results are achieved if it is applied when temperatures are greater than 70 °F.

Wood was too hot when it was painted or was heated soon after painting.

Do not paint when the temperature is greater than 90 °F. To prevent temperature blisters, avoid painting surfaces that will soon be heated. Painting with white paint on a white surface can be okay any time of day because white generally reflects the sun's heat. With colors, the best procedure is to "follow the sun around the house," although this presents a problem on the west side. The east side of the building should be painted late in the morning, the south side in the middle of the afternoon, and the west side late in the afternoon unless it gets full sun. Painting the west side in the morning would be a better choice if it receives full sun, you stop before noon, and there is little or no morning dew. The north side can be painted at any time during the day. However, at least 2 hours are needed for the fresh paint to dry before weather conditions cool to the point where dew forms. If blistering on the wood surface does occur, allow the paint to dry for a few days, scrape off the blisters, smooth the edges with sandpaper, and paint the area.

Weather was too humid when the surface was painted.

When water-based paints cure, the water should evaporate as fast or faster than the solvents. After the water has evaporated, the paint will shrink to nearly its final shape. As the solvents evaporate the paint chemically reacts to form a hard material. When it is too humid, water cannot evaporate and the solvents may evaporate first, causing the paint to cure while still in a water-filled state. You cannot recover from this type of disaster. Oil-based paints may also fail if conditions are too humid.

Humidity in the house was too high during the heating season.

A high level of humidity inside the house is probably the cause if paint failure occurs on the outside walls of the bathroom or kitchen, and it can be even more pronounced on the outside of an upper floor. In multistory buildings, there is a chimney effect. Warm moist air is trying to vent upstairs, and eventually this moisture travels out through the siding. Paint failure may be more noticeable near electrical outlets or other breaks in the vapor barrier. Drier air enters the house through cracks on the main level; therefore, paint failure caused by high humidity is usually not a problem on the main level. (If failure is more pronounced outside of a lower floor, the moisture more likely comes from outdoor sources such as poor flashing.) Condensation on the windows also indicates excessive humidity in the house. Turning down your humidifier setting or turning on a bathroom exhaust fan

will help lower the humidity level inside the house. An energy-efficient but somewhat expensive solution to high levels of humidity is to install an air-to-air heat exchanger. Here, warm moist air gives its heat to the incoming fresh, dry air.

Wood was installed directly over foam or foil-faced insulation board.

Water can travel in behind the siding of the house through various routes but has to travel out through the wood, pushing the paint off. Even if the paint remains on the surface, this moisture can cause other problems. Large overhangs, proper caulking, and a 12-inch-minimum ground clearance may decrease the chance of water getting in behind the siding.

Additional suggestions to prevent paint failure in this situation include the following:

- Driving small wedges (1/16 inch) under every sixth row of siding may permit water to escape and reduce the moisture problem. However, wind-driven rain may also use this as an access and aggravate the situation. It is easiest to place them halfway between nails; however, the siding will then be wavy. Partially pulling the nails and inserting wedges near each nail (and resetting the nail) will provide more opening and the siding is more likely to be flat.
- Back priming (painting the back of the siding before installation) may help reduce or prevent paint failure. The best back primers (water-repellent preservatives and solvent-based semitransparent stains) block liquid water from entering but permit water vapor to escape.
- Install roofing paper (15- to 30-lb felt) beneath the siding.
Note: The best solution is to attach furring strips to the studs through the insulation board, making air spaces behind the siding. Furring strips also make a nice home for bugs, if you do not screen the bottom. A new spacer-type webbing called “cedar breather” is sometimes used under wood shingles and may have merit for use under siding. See also the FinishLine “[Before You Install Exterior Wood-Based Siding.](#)”

House has no interior vapor barrier.

The absence of an interior vapor barrier is related to the problems of high levels of humidity inside the house during the heating season and wood that was installed directly over foam or foil-faced insulation board. Driving wedges (previously noted) under the siding may be the easiest solution. Applying certain interior vapor-retarding paints and installing electrical outlet gaskets may also be effective, especially on the upper floor of a multistory house.

Wood siding is dirty.

If the siding is dirty, the surface of the siding should be power washed or cleaned with detergent and a stiff bristle or brass brush and rinsed well. Never use steel or iron, which causes iron stain and may glaze the surface (see the FinishLine “[Iron Stain on Wood](#)”).

Wood has mill glaze.

Research at FPL has not continued on a “mill glaze” effect. See the FinishLine “[Mill Glaze: Myth or Reality](#)” for more information.

Brown stains appear on the surface of the paint.

Paint does not have to fall off to fail. Moisture traveling through wood pulls water-based extractives through the paint, leaving brown stains on the surface of the paint. If the wood is kept dry, the water-based extractives in the wood will not bleed through paint. Keeping all moisture out may be difficult. Oil-based primers usually block extractive stains better than do latex primers and may be a better choice on redwood and cedar; however, oil paints can increase mildew. Compared with oil-based primers, latex primers produce a more flexible paint film with better durability. Extractives may bleed into latex stain-blocking primers, but if allowed to fully cure for 24 to 48 hours, they do not bleed into topcoats. In rare cases of high extractives, a second primer may be necessary although you won’t know that until you have begun top coating. Multiple topcoats will not stop extractives.

Wood has decayed (rotted).

Decayed wood can result if the wood has been wet for extended periods. If the wood is soft and spongy, it is degraded to the point that it will never hold paint and should be replaced. If there is only a small area of decay, it can be dug out. The remaining wood can be stabilized with a consolidant and the missing wood replaced with waterproof compounds. Be aware that wood shrinks when warmed because of loss of water and almost everything else expands—to be compatible, compounds must be and stay flexible.

Summary

Note the following to prevent house paint failure (not applicable to semitransparent or solid-color stains):

- Sand or power wash the surface of the wood if it is smooth.
- Apply paint during recommended weather conditions and temperatures.
- Treat the surface of the wood with a paintable water-repellent preservative (especially the end grain).
- Prime the surface of the wood with a stain-blocking primer.
- Install siding properly.
- Properly apply caulking material (see “[The Ins and Outs of Caulking](#)”).
- Apply two latex topcoats over the primer.

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