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Wall Cladding

Below you will find check lists that require you to know the kind of wall structure (or structures) used in your house. One kind is frame construction (houses whose structural walls are made of wood studs) and the other is block construction (houses whose structure is made of concrete blocks). Don't judge based on what you see as the outside skin. Instead determine by what you know or how thick the walls are. Frame houses have outside walls that are about 5" to 7" thick whereas block houses have walls that are closer to 10" thick. Bear in mind that a house may have both kinds of construction. Entry walls or front walls may be wood frame while the rest of the house is concrete block. There may be wood frame sections where doors or windows were filled in or where a carport or garage was converted to living space. Answer the questions for both frame and block if your house has both.



House missing its vinyl siding
(click image for larger version)

Inspecting your house:

Frame house with boards running horizontally, vertically, or diagonally:

Frame houses with board siding may have been built with a water resistive barrier applied to the studs and then boards fastened to the studs through the barrier. This may result in a fairly effective system at keeping interior walls from becoming saturated as long as any water that accumulates in droplet form has a direct passage out of the house. In other houses plywood may have been applied directly to studs, then a water resistive barrier, and finally boards. Because boards can become saturated with wind driven water and because water resistive barriers may then become saturated the plywood in contact with the barrier can also become saturated.

The direction siding is run makes a difference in how much risk there is that water will get past the boards towards the interior. Horizontal boards can be pretty effective whereas boards run vertically or diagonally sometimes

result in water being routed towards the interior of the house. Once the boards are in place you can't do much other than to take precautions. However, if you see places at the lower ends of boards that are apt to dump water behind the boards you may be able to fill those gaps with caulk in an aesthetically pleasing or hidden way. If you do this you definitely need to check before the next hurricane that the caulk has withstood expansion and contraction between seasons and between humidity conditions.

Filling holes and cracks with caulks and good layers of paint over the walls can reduce the chance of water saturating plywood. They won't prevent water from getting driven in through cracks between boards but may substantially reduce the amount of water intrusion.

Frame houses with vinyl or metal siding: Frame walls with vinyl or metal siding are similar to those with horizontal board siding except that these siding materials may be more apt to let wind driven rain get behind them than wood planks.

Frame houses with stucco: Some frame houses with stucco finishes do not have plywood or similar sheathing applied to the studs. Some do. The key issue is whether there is a way for water that will get absorbed by the stucco to fall to the ground behind the wall before it gets absorbed into the water resistive barrier. This will depend on the knowledge of the person who did the installation. The latest research shows that a single layer of water resistive membrane is not always adequate to keep water from saturating a wall whereas two layers properly installed provides a drainage path that will render most of the water harmless. Because it is difficult for most people to determine whether stucco was applied properly, it is especially important to assume the worst by ensuring that the surface of the stucco allows little passage of water. See the discussion below about porous surfaces.

Frame houses with brick or stone: Frame houses with brick or stone most likely have a wall sheathing (plywood, OSB, or other sheathing (thermoply) in place) that should have a water resistive barrier applied to it. It is likely that the water barrier is not completely effective and it is likely that mortar has formed a dam that will allow moisture to accumulate and soak the sheathing.

Block, raw with just paint: Enough layers of paint (or more accurately said, a thick enough coat of paint) can be pretty effective as a water barrier. It is likely that a house with raw block walls and paint is an older house that may well have received several layers of paint over the years. If you add another coat of paint, be sure to caulk any cracks before painting.

Block with thin a layer of cementitious material: Cementitious materials may be a very thin layer of concrete (stucco material) applied by hand with a trowel or a similar material applied by a sprayer. These finishing materials do help fill the holes in concrete block, but most often they are so thin that they are not very effective in providing a water barrier. Even when painted these finishes do not provide a really good barrier. However, multiple layers of paint have been found to be much more effective than no paint.

Block with brick or stone facade: Brick is very, very porous. In just minutes a brick can absorb a lot of water when put into a pail of water. Wind driven rain is even more effective at causing brick to absorb water. Brick walls are supposed to be constructed with an air space between the brick and the block. However, it is a common installation problem that the space gets filled up during the brick laying process with mortar debris. This debris can cause water that gets absorbed by the brick to become trapped between the brick and the interior face of the house. Cracks that inevitably develop in brick and stone walls also contribute to the amount of water absorbed by the wall.

Block with wood, vinyl, or metal siding: If your house has wood, vinyl, or metal siding that has been applied to fur strips, then you probably have a pretty good barrier against water. However, wind driven rain can get past the siding. For this reason you want to be sure that the larger openings in these sidings are well sealed against water.

Porous surfaces: Porous surfaces include practically every building material except vinyl or metal siding. Brick, concrete, stucco, and wood clearly are porous surfaces that can become saturated with water if subjected to wind driven rain for a long enough time. For surfaces that are porous the two principal ways to keep them from becoming saturated are to have them thick enough and to have a surface coating applied like paint that resists water. Paint can slow down water penetration, but it does not stop it.

Dealing With Porous Surfaces With Paint:

Almost no surface applied to a house is waterproof. Contrary to what many think neither concrete nor paint are waterproof. They are water permeable; but, they do not allow water to pass quickly. One might suppose concrete to be waterproof after all swimming pools are made of concrete. However swimming pools have a very dense surface coat (commonly known as marcite) applied to the concrete to help keep water from the concrete shell. Some paints are more effective at keeping water out than others; however, in practical applications these paints are perhaps not best suited for houses. What does help is having enough paint thickness on stucco or boards. Houses that have only been painted once or twice do not provide as much water protection as houses with more coats.

Frame Houses:

If your frame house has an effective water resistive barrier it may be able to tolerate water getting behind the outer surface. Two criteria have to be met. One is that the material actually is impermeable to water droplets under pressure, that it is applied in a shingle fashion so that water continuously flows away from the interior, and that water has a way to flow out harmlessly to the ground. It is very difficult to determine all these criteria without removing the skin.

Houses with board siding

- [] Knots. Knots are missing resulting in knot holes through which one sees the bare house.
- [] Is there a vapor barrier between the plywood of the house and the vinyl or metal siding? Such sidings do not pretend to be a water proof surface in high wind conditions unless it is supplemented by a properly installed vapor resistive barrier system.

Houses with stucco or cementitious coverings

- [] Are there stair step cracks following some block lines where the width of the cracks are such that if the crack was smooth you could insert a piece of paper?
- [] Are there hairline cracks in the stucco or cementitious finish? Include very, very thin cracks.
- [] When you look at the house after a rain and it is drying out you can see multiple lines that upon closer examination show to be hairline cracks? This indicates that water has gotten into those cracks and has not yet dried out.
- [] Are there places where stucco has been repaired? If so look very, very carefully for cracks. It is most likely that such repairs were not done properly because it takes a thorough knowledge of stucco installation standards, is not easy, and it takes diligence.

For repairing hairline cracks caulk is a good material to use. Because the cracks are so small caulk will inevitably get smeared outside the crack and thus be unsightly if the wall is not painted. In fact two coats of paint may be necessary in areas to mask the difference in texture caused by the application of caulk.

Stair step cracks or other larger cracks can be filled with caulk as just described. If holes are too big to be filled with caulk, then consider using a plastic type stucco repair material such as StuccoFlex.

Inside wall coverings can affect mold:

As discussed to elsewhere, walls that get wet need to dry. They can potentially dry to both the outside and inside. If interior walls have water impermeable coverings such as tile, vinyl or aluminized wallpaper, or are painted with enamel paint they will not readily dry through that material. Walls need to dry out quickly (within a day or two) to prevent mold. So when refinishing interior walls avoid using impermeable materials.

Paint considerations:

Acrylic latex paints are probably the best for wood and cement. Clear

stains do not protect wood from damage caused by ultraviolet light and typically do not offer much water protection. Rigid coatings like urethanes and enamels tend to crack as wood changes width with humidity. Cracks in these coating open the wood to water while limiting the surface area for drying. Elastomeric paints are generally not recommended because in spite of their generic name they are not very elastic and unless they are installed perfectly they can bubble and trap water. They may well make sense in some commercial applications, but are regarded as a poor choice for residential applications. If you have any questions about paint, seek advice from knowledge paint store personnel.

When painting walls one may find that one can paint just the affected walls corner to corner without having to paint the whole house. Because light angles change at corners of houses and at corners of rooms, one can have a fair change in paint shade without it being immediately apparent or objectionable.

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