Mastering Roof Inspections: Underlayment, Part 1

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The purpose of the series "Mastering Roof Inspections" is to teach home inspectors, as well as insurance and roofing professionals, how to recognize proper and improper conditions while inspecting steep-slope, residential roofs. This series covers roof framing, roofing materials, the attic, and the conditions that affect the roofing materials and components, including wind and hail.

In this section, we'll look at the various types of underlayment and their different properties.

When a roofer first walks onto a job, unless he's tearing off an old roof-covering material, he's faced with a bare roof deck. After the edge metal on the eaves, the first component to be installed on the roof is underlayment.

Underlayments are manufactured with different properties designed to meet the needs of homes in different climate zones. An underlayment that works well under metal roofing in a hot, humid place such as New Orleans, Louisiana, may not work well beneath wood shakes in a cold, dry climate such as Jackson, Wyoming.

The different types of roof-covering materials may have specific underlayment requirements. You will not be responsible for confirming that the proper type of underlayment was used, but if you see problems with the roof, understanding the basic properties and general installation requirements of underlayment may give you clues as to the source of the problem.

Although underlayment is typically required by building codes in new construction, in the past, roof-covering material manufacturers haven't always required it.

The PURPOSES of UNDERLAYMENT

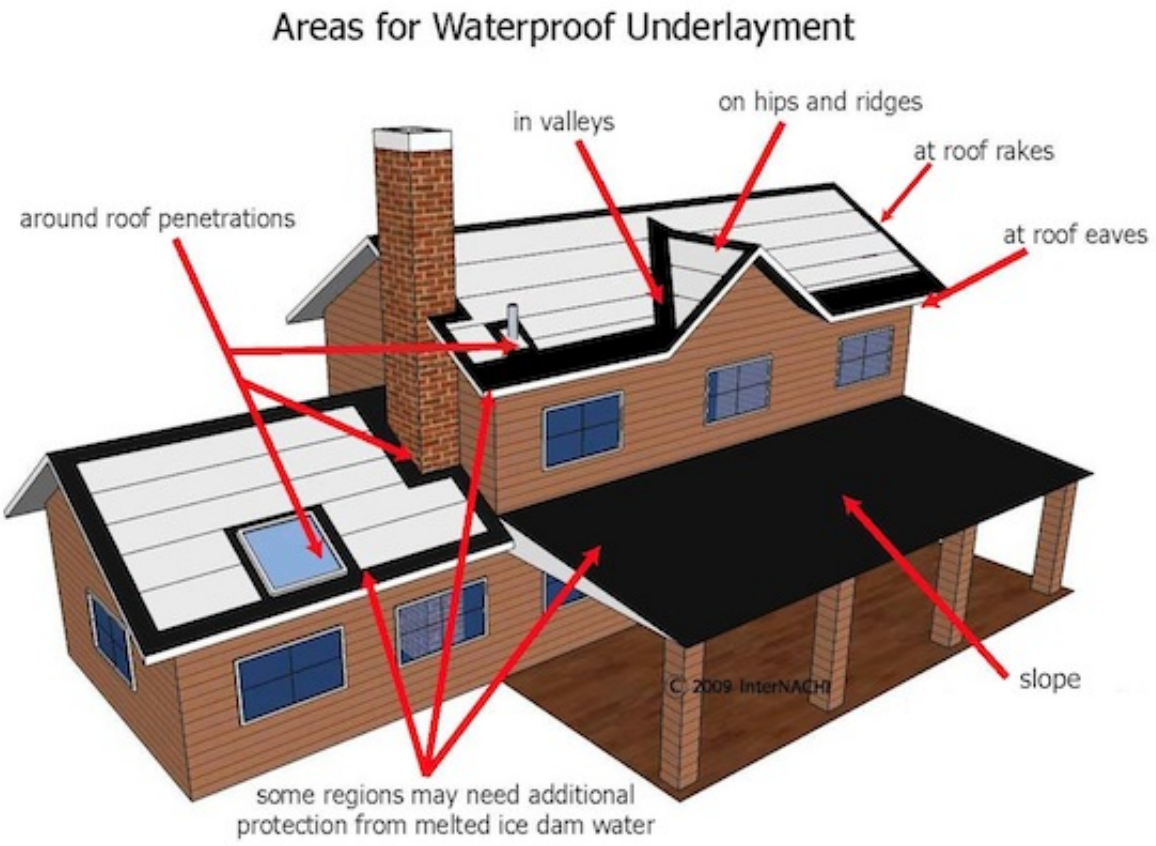
Moisture Barrier

Most roof-covering materials are not waterproof, but they are water-resistant, and are designed to be installed over a waterproof or water-resistant membrane of some type. "Underlayment" is the general term used to describe these membranes.

Even though underlayments are the first materials to be installed on the roof deck, the roof-covering material -- the shingles, tiles, metal or slate -- makes up the primary barrier against roof leakage. Underlayment is a secondary barrier.

Water-resistant underlayment may allow the passage of moisture vapor but prevent the passage of water in its liquid form.

Waterproof underlayment will prevent the passage of both liquid water and water vapor.



Waterproof underlayment is typically used on parts of the roof that are more likely to leak or suffer moisture intrusion. This includes penetrations, areas where roof-covering materials change or end, and low-slope sections of the roof. It's not unusual to use combinations of underlayment on a home's roof.

The "permeability" of underlayment is the extent to which it allows the passage of water vapor. Although all underlayments are designed to prevent the passage of moisture in its liquid form, they can have different levels of resistance to the passage of water vapor.

Underlayment permeability ratings are provided by the manufacturers and are less important in roof underlayment than they are in housewrap. Underlayments with a perm rating of 1 or less are moisture barriers. Underlayments rated above 1 are moisture retarders.

Temporary Protection

Underlayment provides temporary protection of the building interior and the roof deck before the roof-covering material is installed.

In a perfect world, the roof-covering material would be installed as soon as possible. But in the real world, the roof may be protected by underlayment alone for days, weeks and, sometimes, months.

Protecting the building interior is especially important when an old roof-covering material is being replaced and the home interior is finished.

During that time, the underlayment may be under attack from weather elements, such as high winds, UV radiation and precipitation.

It also needs to resist the wear and tear that occur when the roof-covering material is being installed.

Preventing Chemical Degradation

Underlayment also provides a layer of separation between roof sheathing and the roof-covering material.

Newer homes use plywood or an engineered panel called oriented strand board (OSB) for roof sheathing.

For many years, pine or fir boards were used as sheathing, and many older homes still have these boards in place.

Resin pockets in these boards can react chemically with some roof-covering materials, such as asphalt shingles. In these situations, missing underlayment can cause accelerated deterioration and premature failure of the roof-covering material.

Fire Resistance

Underlayment materials are available for wood roofs which increase their resistance to fire. In fact, without special underlayment, wood shakes and shingles cannot achieve a Class A fire rating, which is the highest available.

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