Wood Decay and Repair

LEAKY BUILDINGS AND DECAYING WOOD - WHAT'S HAPPENING?

The news across North America seems to frequently contain stories about serious moisture failures in wood-frame buildings. Whether it's Vancouver's "leaky condo crisis" or the "EIFS disaster" in North Carolina, homeowners are struggling with wood decay wherever the other components of the building's walls and roof aren't properly protecting the wood structure from excessive moisture. Interestingly, leaks are also getting attention in steel and concrete high-rises, causing rust in steel studs and fasteners and degradation of gypsum wallboard.

Why are we suddenly finding so many failures in buildings, including in our tried-and-true wood construction? This is a frustrating problem for everyone in the building industry, because there are no easy answers. It's convenient to blame unskilled or unethical practitioners in the building industry. Other occasional targets for blame include municipalities for developing zoning ordinances that conflict with performance issues; energy efficiency codes for making our building envelopes tighter; new and complicated materials in our building envelopes; the building occupants for not practising proper maintenance; or the wood, which some seem to feel has declined in quality. The bottom line: many people have opinions, but so far there is little firm technical data to answer these questions. Please see our Links page for some of the research institutions working in this area.

Buildings have probably always leaked, although it is only recently that moisture seems to be a problem. Some believe that the difference is that today's buildings are less tolerant of those leaks; that perhaps the older buildings were able to dry out. Another theory is that today's leaky buildings leak more than in the past, due to design errors, sloppy construction, lack of overhangs, etc.

Thankfully, many people working in the building industry have turned their attention towards better design and construction practice for moisture control. A number of "best practice guides" are listed in our Links section.

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HOW CAN I TELL IF WOOD IS DECAYED?

If wood is badly decayed, this will be quite obvious. The wood will be soft and perhaps even be breakable by hand. Decayed wood breaks with a carrot-like snap versus the splintering of sound wood. Use the pick test to be sure.

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MY WOOD IS STAINED - IS IT DECAY?

Probably not, if this is new lumber. There are many harmless sources of wood stains, including dirt, iron filings, or staining fungi that merely colour the wood without damaging it. Please see the fact sheet "Discolourations on wood products: Causes and Implications" for a thorough explanation including photos. If the discoloured wood is

found in a leaky building under repair and may have been wet, perform the pick test to see if it is rotted - see our page on Assessing decay.

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I HAVE DECAYED WOOD - WHAT SHOULD I DO?

Remove all decayed wood and additionally remove another two feet of sound wood all around the decayed section. Any sound wood that is left in place when decayed wood around it has been removed should be field treated with a penetrating preservative. Also field treat any wood that may continue to get wet after repairs. We recommend preservatives containing a diffusible low-toxicity fungicide such as sodium borate, and low-toxicity formulating agents which assist in penetrating dry wood, such as propylene glycol. By the time the cladding has been removed, the structure has been inspected and the decayed wood has been removed, the wood left in place will likely have dried too much for effective use of formulations without a penetration aid. Under conditions of high relative humidity, the propylene glycol may cause a short term increase in the moisture content at the wood surface. For more information, please see our page on Assessing decay.

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IS KILN-DRIED LUMBER MORE RESISTANT TO DECAY THAN GREEN OR AIR-DRIED LUMBER?

One advantage of kiln-dried lumber is that any live fungi present in the green lumber will have been killed by the heat of the kiln; in other words, KD lumber is sterile after leaving the kiln. However, if it gets sufficiently wet afterwards, then it is at the same risk of decay as any other wood.

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ARE COMPOSITE WOOD PRODUCTS MORE RESISTANT TO DECAY THAN SOLID LUMBER?

No. Composite products (glulam, OSB, laminated veneer lumber, etc.) have the same resistance to decay as the wood from which they were made. The adhesives used in composites do not affect decay resistance.

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DO WE HAVE TERMITES IN CANADA?

Yes, in a few limited areas across the country and to a greater extent around Toronto, termite species causing damage to buildings are present. Although termites are a significant problem in parts of southern Ontario, overall they are only a mild concern in this country. They prefer warmer conditions and are a far greater problem in parts of the United States. In Canada we do not have the voracious Formosan subterranean termite causing so much damage in the southeastern US.

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WHAT IS DRY ROT?

Contrary to popular usage, dry rot does not mean rot that can happen in dry wood, or wood that has rotted and dried out. Dry rot is a specific kind of fungus, although the term is very commonly misused to describe all wood rot. This is unfortunate, because it disassociates rot from moisture. Wood rot always requires moisture, and the

key to wood durability is the control of moisture. Wood that rotted long ago and is now dry was moist at the time of the rot. The true dry rot fungus has the ability to tap into a water source and conduct water to what would otherwise be dry wood. However, it has to wet the wood before it can attack the wood. The true dry rot fungus is more likely to be found in buildings that contain brick or stone than in all-wood buildings.

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HOW FAST DOES WOOD DECAY?

It's impossible to say; there are so many variables that influence the process. In a laboratory, under ideal conditions for decay fungi, wood can rot quite quickly. However, in real life applications, the entire process is slower and unpredictable.

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