

Mold growth in building materials

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Mold is present everywhere, in the air and on almost every outdoor surface. Molds have been around for much longer than humans and are an integral and important part of the earth's ecosystem. However, certain types and elevated amounts can cause adverse effects to humans.

Mold grows only at specific conditions. Mold growth can start if the relative humidity is high (RH >80–85 %), the temperature is above 10°C and there is enough nutrition. Mold growth is not fast and therefore short-term exposure of materials to moisture is not a concern. Thus, to be able to build and design structures not affected by mold growth is important. Mold growth can be an indication of too high moisture content in building materials.

In a numerical study performed by Sweco, by Paroc's request, the heat and moisture transport taking place in 13 different building application solutions was analyzed. The studied solutions consisted of ten external wall solutions and three roof solutions. The mold growth was estimated by using the index developed by VTT and TTY.

In short, all the studied solutions performed correctly in the terms of building physics. Concrete and mineral wools belong to the mold growth sensitivity classes 3 and 4, i.e., the most durable categories where mold growth is possible only at >85% RH and the mold growth index simulations results verified this. To see more details, please see the following study (in Finnish).

Mold sensitivity class	MSC	Description
Very sensitive	1	Untreated wood that contains large amounts of nutrients
Sensitive	2	Planed wood, paper coated materials, wood based board
Resistant	3	Mineral wool, concrete or plastic based materials
Very resistant	4	Glass and metal, anti-mold treated materials

Source: TTY/VTT (Viitanen 2001)