Mould in Buildings: Interior Moisture During Construction

Until recently concerns about excessive moisture in a building and the subsequent danger of mould growth - particularly ***Stachybotrys Chartarum*** - has centered about water intrusion and the resultant high humidity in completed structures.

Excessive moisture in finished buildings is, and will remain, a very real threat to the health and safety of all those occupying and working within them. A warm, humid environment encourages the growth of moulds and mildew.

However, there is growing concern over excessive moisture present in buildings under construction. Many processes involved in the construction of a building result in the production of moisture that is now known to be potentially damaging both during the construction stage and also to the completed building in the future.

The most frequent sources of moisture present in a building during construction are the materials used in its assembly. Products containing substantial amounts of water in their mixtures or make-up include concrete, mortar, drywall compound, fireproofing, some forms of insulation and paint.

If this excessive moisture can be dissipated quickly, and if the relative humidity (RH) can be controlled at low levels, the costs of building can be reduced and the dangers associated with the development of moulds due to excessive humidity can most likely be eliminated.

Sometimes the HVAC system in a building is used to evacuate the excessively moist air from the structure. However, this procedure can be both costly in terms of potential damage to the system, and dangerous in terms of the possible distribution of mould spores throughout the structure. Spores thus distributed remain dormant in the building until such time as a source of excessive moisture such as high outside humidity together with diminished or outright HVAC failure, water leaks or flooding combines with suitable food supply to allow the mould to establish a colony and grow. An established mould colony may grow and send out spores and remain undetected for a very long time. If the mould is ***Stachybotrys Chartarum*** this can, according to research and wide spread experience in North America, lead to serious health problems for those occupying the building.

The process of desiccant drying for buildings under construction seems to offer a suitable solution to the problems of excessive moisture. In this system, temporary ducting is set up to convey warm air to the targeted areas and heat is supplied by a temporary source separate from the building's HVAC system. To speed dehumidification warm moist air is passed over a desiccant material that can absorb many times its weight in moisture. This system is also effective in controlling the distribution of mould spores and subsequent mould growth in a building.

For more detailed information on desiccant drying, please see:

Donald Schnell
Desiccant Drying For Construction Material
Construction Canada, January 2003.

Why is an insulation manufacturer interested in excessive moisture in buildings during construction?

We are interested because we produce spray applied fibre-based thermal and acoustic insulation products. Our products **TC-417, *AF90*** and those comparable to it fall into three categories:

a) Fibreglass-based **(TC-417);**

b) Cellulose-based;

c) Mineral fibre-based

Our products **TC-417** and ***AF90*** are installed using a water-based adhesive, as are all spray-applied fibre-based thermal and acoustic materials. Therefore, they give off some moisture during the drying process. However, they give off much less moisture than does an equivalent cellulose installation for the following reasons;

a) Fibreglass is inorganic and impervious to moisture, so it does not absorb water during the installation. The only moisture to be discharged during drying is that which evaporates from the adhesive. It should be noted that mineral fibres do not absorb moisture either, so they also discharge only moisture that evaporates from the adhesive.

b) Cellulose, in contrast, is organic, paper-based and absorbs a great deal of moisture. Therefore, during the drying process a cellulose installation must evaporate not only the moisture present in the adhesive but also that absorbed by the paper.

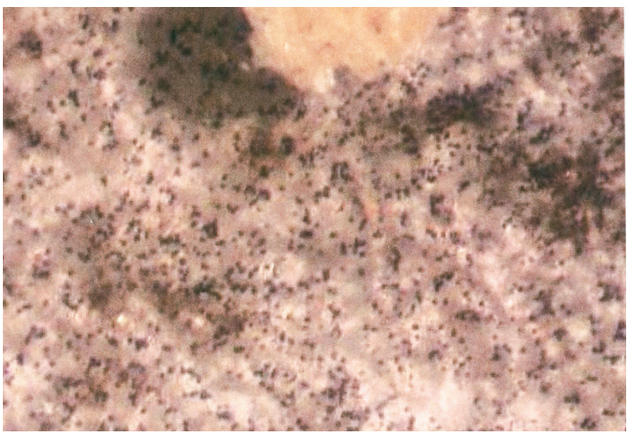
This means that a cellulose installation must evaporate approximately 2 -3 times as much moisture during the drying process as does an equivalent ThermaCoustic installation.

In addition, cellulose is the growth medium for ***Stachybotrys Chartarum.*** Therefore, should any mould spores be present in the building during construction and remain undetected there is a possibility that, over time, the fungicide in the cellulose may weaken and leave it vulnerable to infestation by ***Stachybotrys***.

Note: We make the foregoing statement based on literature published by at least one cellulose manufacturer that states: **"The fire retardant chemicals are water soluble. When the insulation is used in areas where condensation will form or where it is in contact with water, a periodic fire retardant over-spray may be necessary."**

The fire retardant commonly used in cellulose products is also a fungicide. Therefore, if the effectiveness of the fire retardant is vulnerable to degradation so also is the effectiveness of the fungicide.

It is our contention that the choice of fibreglass-based **ThermaCoustic** products over any cellulose-based material is the wise decision for any building professional concerned about the possibility of the growth ***Stachybotrys Chartarum*** in any building either new or existing.



Heavy infestation of ***Stachybotrys Chartarum*** on cellulose-based material.

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