



## Glass Fiber Air Transmission Systems:

# The Facts About Mold Growth

*In this issue, we address the results of recent research into the nature of mold growth which confirms that fiber glass duct liner and duct board will not sustain such growth.*

### Introduction

**F**iber glass duct liners and duct board have been incorrectly blamed for contributing to mold growth in high humidity and high temperature conditions. The fact is that fiber glass is inherently resistant to mold growth. Stringent testing in accordance with UL and ASTM standards confirms that fiber glass duct liners and duct board do not support mold growth.<sup>1,2</sup>

In instances where mold growth has been detected on the interior surfaces of the duct system, the cause has been an accumulation of dust and dirt combined with the presence of water. Under these conditions, mold can grow on any interior surface.

### **Fact #1:** High humidity may not lead to microbial growth

According to a recent Duke University study<sup>3</sup>, mold growth appears to be linked to dew-point conditions rather than the relative humidity. Researchers found that sustained mold growth could occur when wet conditions were produced through condensation, as the air is cooled past its dew point.

It is important to note, however, that condensation is not the only source of water in an HVAC system. It can occur as a result of water carryover due to faulty coil design, dirty coils, or failure of the drain pan to operate properly, or improperly operating humidifiers.

### **Fact #2:** Mold growth is not surface specific

According to the Duke study, wherever water was available, microbial growth could be found on any surface of the HVAC system, including metal "flex" duct, the flat surfaces of metal ducts, plastic-lined flex duct, caulks and sealants, conditioning coils, metal sound attenuators, mixing box dampers and internal duct liners.

The Duke researchers strongly suggest that removing excess water from supply air will minimize conditions that can result in sustained microbial growth.

### **Fact #3:** Fiber glass insulations do not support mold growth

Fiber glass insulations are inorganic and inert and do not support mold growth. The myth has

## Maintenance Procedures

Maintenance procedures include inspection, detection and remediation of probable sources of airborne contaminants and water.

In its publication, *Indoor Air Quality*, SMACNA (Sheet Metal and Air Conditioning Contractors' National Association, Inc.) makes several system design and maintenance recommendations to prevent mold growth:

- Promptly detect and permanently repair all areas where water collection or leakage has occurred.
- During the summer, cooling coils should be run at a low enough temperature to properly dehumidify conditioned air.
- Check for, correct, and prevent further accumulation of stagnant water under cooling deck coils of air handling units, through proper inclination and continuous drainage of drain pans.
- Water-damaged furnishings, including carpets, upholstery and ceiling tiles, should be discarded rather than disinfected, to effectively eliminate microbial contamination.
- Air handling units should be constructed so that equipment maintenance personnel have easy and direct access to both heat exchange components and drain pans for checking drainage and cleaning. Access panels or doors should be installed where needed.
- Materials with hard surfaces where moisture collection has promoted microbial growth (e.g., drain pans, cooling coils) should be cleaned and disinfected with detergents, chlorine-generating slimicides (bleach), and/or proprietary biocides. Care should be taken to insure that these chemical agents are removed before air handling units are reactivated.

been that microbes can utilize the binder and the glass as a food source which will enable them to grow; that microbial growth may affect the material and eventually diminish the structural integrity of the product.

## Fact #4 Mold growth can be prevented

The conditions which promote mold growth - the presence of dust and dirt combined with water - do not normally occur in properly designed, installed, operated and maintained systems. A regular maintenance schedule, along with an efficient filtration system, assures protection of both HVAC system components and building occupants.

## Conclusion

The conditions which promote mold growth do not normally occur in properly designed, installed, operated and maintained systems. However, in instances where water is allowed to accumulate in the system, and/or the system is shut down for periods of time, conditions can occur which allow mold growth to occur in the air handling duct system, whether it is lined or unlined.

## References

1. UL181 Standard for Factory-Made Air Duct and Air Connectors.
2. ASTM G21 Standard Practices for Determining Resistance of Synthetic Polymeric Materials to Fungi, and ASTM G22 Standard Practice for Determining Resistance of Plastics to Bacteria.
3. *Fungal Contamination of HVAC Surfaces: The Role of the Dew Point in Microbial Amplification*, Jerry J. Tulis, and Wayne R. Thomann; Occupational and Environmental Medicine Division, Duke University Medical Center, Durham, N.C., 1997.

## About NAIMA

NAIMA is the association for North American manufacturers of fiber glass, rock wool, and slag wool insulation products. Its role is to promote energy efficiency and environmental preservation through the use of fiber glass, rock wool, and slag wool insulation, and to encourage the safe production and use of these materials.

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