

Moisture, Mold, Mildew and Construction Practices

Repairing Water-Damaged Building Systems

What should you do if your wallboard has mold and mildew on it? This document discusses the conditions necessary for mold and mildew growth and provides basic repair steps. You'll also find additional information to assist you in understanding mold and mildew.

Conditions Necessary for Mold and Mildew Growth

Mold and mildew are microorganisms that can, under the right conditions, find a suitable environment in which to grow and survive on building materials. The best way to address mold and mildew is to make sure that building materials do not get wet before installation and are not exposed to moisture inside the finished building.

When building materials get wet, mold and mildew may grow. Condensation, pipe leakage, roof and window leakage, and incidental splashing can cause building materials to become wet. Water combined with other conditions such as temperature, humidity, shade or darkness, and oxygen supply helps the development of mold and mildew.

In all situations, immediately identify and address the source of water to prevent re-occurrence of the problem.

Repair

Use caution when evaluating and repairing water-damaged building systems. Do not investigate or begin repairs unless you are qualified to do so and understand the potential risks involved. Where mold growth is extensive, a qualified independent construction professional should assess your specific situation and help develop and implement a plan that addresses each of the following:

- Eliminating the conditions for mold and mildew growth
- Cleaning mold and mildew from surface of material(s)
- Removing damaged material that cannot be cleaned

Elimination of Conditions: Keep It Clean, Keep It Dry!

Focus your efforts on removing the conditions that cause mildew growth. In the cases of leaking roofs, ceilings, walls, or plumbing problems, repair the source of the water immediately. In a flood situation, follow the American Red Cross and FEMA (Federal Emergency Management Agency) guidelines for the safe return to affected areas.¹ Once you eliminate the conditions for mold and mildew growth, the cleaning, repair, or removal begins.

Cleaning or Removal: Which is best for you?

This is a very complex question, and proper investigation and research on your part is critical. This document provides a small portion of the information necessary to evaluate your situation along with additional reference information.

Cleaning

Clean It, Dry It, Disinfect It

If cleaning the surface of the materials is your decision, proper scrubbing removes surface mold and mildew. Once conditions for mold and mildew growth have been removed, the following procedure is suggested to remove mold growth and staining:

- Use appropriate protective equipment
- Mix detergent and potable water in a clean container
- Use detergent, bleach and potable water for stubborn stains (follow manufacturer's instructions for use of cleaning supplies; never mix bleach and ammonia); provide adequate ventilation with use of bleach
- Scrub areas that exhibit growth and staining
- Rinse with water—make sure you don't soak the gypsum board while cleaning and rinsing
- Allow gypsum board to dry and inspect for visible growth and staining
- Repeat as necessary until affected areas are clean

Removal

A Project Specific Decision

Proper cleaning addresses the surface of the gypsum board. However, when construction materials get wet, mold and mildew can also be present in the material or structure itself (e.g. wall cavity where they cannot be seen). Eliminating the water source takes care of part of the problem. If you doubt the effectiveness of cleaning, replacement of all water-damaged materials may be your solution. The decision to remove and replace affected materials should be made with care by qualified individuals such as an independent construction professional. USG does not require the removal of SHEETROCK® Brand Gypsum Panels simply because they once were wet. However, if you have conditions for mold and mildew growth and your gypsum board has gotten wet continuously for more than 24 hours or intermittently for many days or weeks, the best assurance against mold and mildew growth is elimination of the conditions for growth along with replacement of affected materials.

For additional detail to assist your decision, contact the FEMA office near you for more information on the repair of water-damaged structures. Many university extension programs and public health departments can also provide guidance on flood and moisture remediation measures.^{2,3,4}

Summary

We hope that this information and the additional references help you to select a strategy best suited to your project. If you have additional questions, please contact us at 1.800.USG.4YOU.

Additional Sources

- New York City Department of Health, <http://nyc.gov/html/doh/home.html> (search for mold resources)
- United States Environmental Protection Agency, <http://www.epa.gov/iaq> (search for mold resources)

Additional Information

For complete information regarding moisture control and other performance solutions, please refer to the following literature:

- *The Gypsum Construction Handbook*
- USG Leadership brochure (WB2332)
- Moisture Control System Performance (WB2325)
- Moisture, Mold, Mildew and Construction Practices – Frequently Asked Questions (WB2317)
- SHEETROCK Brand HUMITEK Gypsum Panels Submittal Sheet (WB2327)
- Good Construction Practices (WB2334)
- Storage and Handling – Wallboard and Other Products (WB2333)
- FIBEROCK® Brand AQUA-TOUGH Interior Panel Submittal Sheet (F134)

Footnotes

1. American Red Cross. After a Flood: The First Steps, ARC 4476, FEMA L-198, Aug. 1992, <http://www.fema.gov/library/lib08.htm>.
2. University of Minnesota Department of Environmental Health and Safety, <http://www.ci.cambridge.ma.us/~EM/floodinf.html>.
3. Iowa State University Extension, <http://www.exnet.iastate.edu/Information/Flood/>
4. Cambridge Emergency Management Department, City of Cambridge, Massachusetts, <http://www.ci.cambridge.ma.us/~EM/floodinf.html>

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