



How to Prevent and Remove Mildew In Relation To The House and Household Furnishings

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Mildew is a fungus. It grows most extensively in warm, humid environments. Most growth occurs at temperatures of 75 degrees to 85 degrees Fahrenheit. Mildew fungi can be distinguished from dirt by placing a drop of fresh liquid chlorine bleach on the area in question. If the discoloration is mildew, the spot will fade or disappear.

To Prevent Mildew

Get Rid of Dampness

The most successful approach to preventing mildew is to control moisture. Use one or more of the following measures: (1) remove the source of moisture, (2) ventilate the area adequately, (3) dry the air.

Basements

Dampness in the basement is often caused by condensation of warm, moist air on cooler interior wall and floor surfaces. To overcome these effects, use one or more of the following measures: (1) improve the insulation of the walls, (2) provide heat in the basement, (3) use a dehumidifier in the basement. An exhaust fan might also be installed to help remove excess water vapor from the basement area. Use electric heaters because kerosene heaters tend to add water vapor to the air.

A few basements are continually wet from water leaking through crevices in the wall or floor. Commercial waterproofing materials can be used to stop leaks. Check with your local paint or hardware dealer for appropriate applications. Make sure that outside drainage is adequate. Be sure shrubs are not blocking air circulation around the foundation. Runoff from gutters and downspouts should be directed away from the house.

Should interior waterproofing prove to be inadequate, use of a dehumidifier is generally less costly than extensive foundation, wall, and slab repair. Sump areas and pumps should be kept in top operating condition.

Crawl Spaces

Ground areas just outside the crawl space should slope away from the foundation.

Lack of an adequate moisture-vapor barrier over the soil in crawl spaces can cause dampness inside the house. To remedy this situation, spread a layer of polyethylene plastic over the soil under the building. When standing water is apparent, remove sources of water before covering ground with plastic. Ventilate the crawl space by providing at least four foundation vents located near the top of the corners of the foundation. Allow about one square foot of effective vent opening for every 150 square feet of floor area. Where moisture problems are evident, vents should not be closed during the winter. Avoid blocking vents with shrubs or other obstacles.

Kitchen, Bathrooms, Laundry Areas

Cooking, laundering, and bathing may add two or more gallons of water to the house within one day unless ventilation is adequate. It is often necessary to use some type of exhaust fan in kitchen, bathroom, and laundry areas to provide *adequate ventilation*. In the winter, use these fans for short periods as necessary to limit heat loss while removing the dampness. After bathing, leave shower curtain hung loosely so it dries quickly. Rinse rubber bath mats thoroughly after use to remove any residue and hang over edge of tub to dry. *Do not leave mat in tub*. Clothes dryers should be vented to the outside of the house and not into crawl spaces or attics.

Poorly ventilated closets may get damp and musty when humid conditions prevail.

Try to improve the ventilation by opening the closet doors. Louvered closet doors also help the circulation of air. In addition, hang clothes loosely so that air can circulate around them. Be sure clothing is clean and dry before putting in the closet. Small electric heaters designed specifically for closet use can be of value.

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Air in closets can also be dried by using an electric light continuously. The heat will prevent mildew if the space is not too large.

CAUTION: Be sure to place the light bulb far enough from clothing and other flammables to avoid danger of fire.

In closets where air circulation is very limited, use of silica gel, a chemical used for drying flowers, may help dry the air. Place the silica gel in an open container or in a cloth bag. The granules can be reused if they are dried in an oven. Follow the directions on the package. Commercial non-electric dehumidifiers using calcium chloride or other moisture-absorbing chemicals are also available.

Exterior Walls/Siding

Moisture, and therefore mildew, can be controlled to a degree by arranging landscaping so that natural breezes can flow near the house and dry the siding if it becomes wet from rain or dew. Keep shrubs away from the walls.

Gutters and downspouts, as well as a moderate roof overhang, will help. Give special attention to air movement patterns on northern exposures where sunlight cannot assist in drying. On sidings which may have a tendency to absorb moisture from rain or dew, a semi-gloss or gloss latex or oil paint with an appropriate primer is recommended.

When wood siding is stained or left to weather naturally, use a water-repellent (often combined with a wood preservative) finish. These products are available in hardware/paint stores.

Interior Walls

Inadequate or improperly placed insulation in exterior sidewalls and ceilings generally causes cooler interior walls and ceiling surfaces on which moisture can condense. Dampness can also be caused by condensation of warm, moist air on walls which adjoin an unheated room. Dust will accumulate readily on these moist surfaces and provide food for mildew. Information about providing adequate insulation is available from your Extension agent.

Carpets

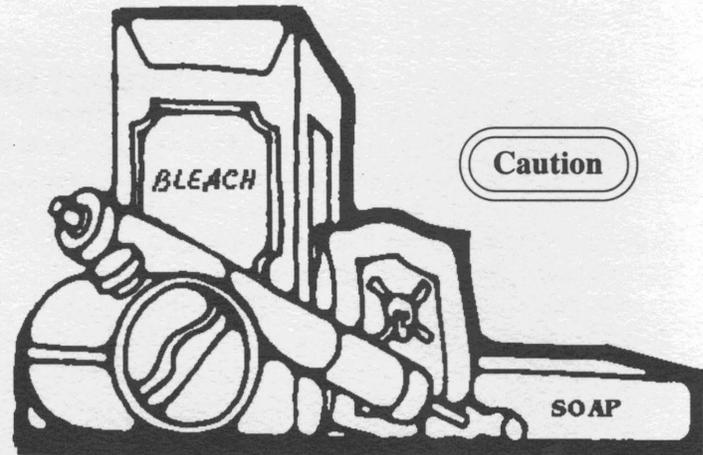
To help prevent mildew growth on carpets, open draperies, shades, or blinds to allow the sun to shine on the carpet. If a carpet or rug is going to be used where mildew growing conditions are present some or all of the time, a carpet or rug with all synthetic fibers (both face and backing) should be used.

Papers, Books, Photos

Areas in which books, papers, and photos may be kept, such as a study or private library, may of necessity require a dehumidifier in addition to the precautions indicated in the other sections of this publication. If you keep books in a closed bookcase, continuous use of a low-wattage light or chemical dehumidifier such as silica gel within the case may be helpful. Keep the doors closed as tightly as possible. Valuable paper items should be inspected regularly to see if mildew growth is present.

Keep Things Clean

Keep any place where mildew is likely to grow as clean as possible. Soil on articles can supply sufficient food for mildew to start growing when moisture and temperature are right. Greasy films, such as those that form on kitchen and bathroom walls, also contain many nutrients for mildew organisms.



1. Read all labels carefully before using any chemical.
2. Wear gloves and eye protection when using chemicals to control mildew.
3. Keep all cleaners tightly covered in the original containers, out of reach of children.
4. Never mix liquid chlorine bleach with ammonia or products containing acids such as toilet bowl cleaners, rust removers, or vinegar. To do so will release hazardous gases.

To Remove Mildew Odor

Take special precautions to treat mildewed areas as soon as any musty odor is detected to prevent further damage. Mildew growth must be stopped and the areas cleaned or musty odors will persist.

Musty odors can be removed by airing the affected space with fresh air. Use of an electric fan to speed up air circulation may be helpful. Drying the area is another important way to banish musty odors.

Use of liquid chlorine bleach (3/4 cup bleach to a gallon of water) also aids in eliminating odors on most washable surfaces.

CAUTION: Chlorine bleach can damage some plastics, aluminum, or chipped enamel surfaces. Check in a small spot first. If bleach cannot be used, try an all-purpose household cleaner that is safe for that surface.

Room air fresheners and deodorizers can also be helpful in coping with mildew odors. Use of these products should be on a continual basis.

To Remove Mildew



Concrete/Masonry Surfaces

Clean mildewed concrete/masonry surfaces with a solution of liquid chlorine bleach (1/2 to 1 quart of bleach to a gallon of water). Rinse with clear water and dry the area as quickly as possible.

Exterior Walls/Siding

To remove mildew from siding follow these steps:

1. Use the following solution on wood siding (may also be used on aluminum and vinyl siding):
 - 1/3 cup all-purpose laundry or household detergent
 - 1 quart household chlorine bleach* (must be fresh)
 - 3 quarts warm waterAn alkaline cleaner such as washing soda, or a cleaner containing trisodium phosphate can be added for extra cleaning. Follow package directions or use 1/2 to 2/3 cup.*
- * Greater concentration of these substances may cause damage to the siding finish.
2. Scrub the surface with a soft brush. **Caution:** avoid splashing on shrubs and other plants.
3. Rinse well.
4. Commercial mildew remover/cleaners are also available.

If the siding needs to be repainted, choose a mildew-resistant paint.

The most mildew susceptible paints are latex paints, especially when linseed oil base primer is used. Acrylic gloss and semi-gloss latex paints are less susceptible to mildew than flat latex. Linseed oil base paints are also very susceptible. The least susceptible paints are exterior enamels. Special paints are available that contain a mildewcide.

The paint pigment (color agent) also has an effect on mildew resistance. Zinc oxide pigments have a mild, inhibiting effect while titanium pigments have very little retarding effect.

Roofing

Asphalt roofing materials should not be washed with a solution containing bleach. Use a soft brush and use the cleaner formula above without the bleach.

Interior Walls, Wallpaper

Walls may be covered with a variety of materials including paint, wood, paper, vinyl, and fabric. These surfaces are susceptible to mildew because they provide the nutrients mildew needs to grow on. Materials such as plastics, fabrics made from synthetic fibers, and fabrics treated with mildew-resistant finishes won't mildew easily, but soil on the surface can be a starting point for mildew growth. Homemade paste made of flour used for paper and fabric wall coverings also can be a starter for mold growth especially when there is soil, humidity, and heat present. Commercial pastes for wall coverings contain mildew inhibitors.

If painting over an area attacked by mildew, remove mildew first. It can quickly grow through any new layer of paint. Any paper or fabric wall covering—mildew resistant and non-treated—must be kept free from soil and dry as possible.

The faster you act, once you have seen the first touch of mildew, the greater your chances of successfully removing it. Most wall coverings rot or permanently stain if exposed to mildew for any length of time.

Fresh air and sunlight are recommended after washing. Use of the air conditioner in summer is helpful because it dehumidifies as it cools, keeping both moisture and heat at low levels. In muggy weather, use window fans to ventilate and dry the walls. If there is a large area involved, first drive the moisture out by turning the heat on for a short while, then cool as above.

In cleaning mildewed walls, some coverings may loosen and colors become bleached. In this case, you will need to repair, repaint, or refinish the wall.

Interior Painted Surfaces

Interior surfaces covered with enamel or oil resin paint rarely mildew. Latex paints mildew more readily. Molds feed on the paint and cause a dirty looking discoloration. They may penetrate the paint deeply, even to the underlying surface.

To remove mildew, clean with a weak solution of liquid chlorine bleach and water (3/4 cup bleach per gallon of water). Rinse and thoroughly dry the area. A commercial cleaner for painted walls, such as is sold to prepare a wall for repainting, can also be used to remove mildew. If necessary, repaint with an enamel, oil resin, or polyurethane paint.

Precaution: Surfaces painted with mildew-resistant paint can be injurious if children suck or bite on them. Therefore, mildew resistant paints should not be used on interior surfaces such as window sills, playpens, or toys.



Wood Floors, Woodwork Finished with Varnish or Sealer

Thoroughly clean wood floors, woodwork, and other wooden surfaces finished with varnish or sealer with a cleaner designed for varnished surfaces.

If mildew remains, it may be necessary to wash area with a solution of liquid chlorine bleach and water and refinish the surface. Remember that the bleach solution is likely to make a white spot so use as weak a solution as will be effective.

Wood Furniture

Normally wood furniture is made with kiln dried lumber and has been properly finished so that it is not likely to be damaged by mildew. However, if soil is allowed to build up on the furniture, and there is a great deal of humidity and poor ventilation, mildew can be a problem.

Try removing mildew by wiping the surface with a solution of all-purpose detergent. Rinse well. Dry immediately by rubbing with a clean cloth.

If mold has grown into the wood under the finish, it may be necessary to scrub the damaged area with a dilute solution of liquid chlorine bleach (1 tablespoon of bleach to one-half cup water). Rinse the wood well with clear water. Dry thoroughly. When excessive mildew has occurred on valuable antique furniture, consult several professional refinishers for suggestions.

Upholstered Articles, Mattresses, Carpets

For upholstered articles, mattresses, rugs and carpets, remove loose mold from outer coverings by brushing with a broom or brush. Do this outdoors, if possible, to prevent scattering mildew spores and dust in the house. Use a vacuum cleaner on the surface of the article for further cleaning.

If mildew remains on upholstered articles or mattresses, sponge lightly with a solution of detergent and warm water. If safe for the fiber, fabric, and finish, use a dilute solution of water and liquid chlorine bleach (one teaspoon bleach to one quart of cool water), applying with a swab directly on mildew stain. Then dab repeatedly with clean, cool water and blot dry. Avoid excessive rubbing as it may damage the fabric. In working, get as little water on the surface as possible so the padding and/or filling does not get wet. Keep in a dry, warm area until articles are fully dry.

If mildew remains on carpets, use as many of the following procedures as are necessary:

1. Apply commercial rug cleaner (shampoo or foam). Follow directions on the container for use in spot removal.
2. If carpet size permits, take it outside and kill the mildew by exposing the back of the rug to direct sunlight. To speed up the killing of the mildew, lightly paint the affected back area with a solution of hydrogen peroxide (one part of 3 percent hydrogen peroxide to five parts of water) and then let the sun shine on area. For wall-to-wall carpet,

depending upon the severity of the mildew, take up the carpet, and replace the pad.

3. Contact a professional carpet cleaner for advice and/or treatment. It may not be possible always to completely remove mildew stains.

Do everything possible to dry articles quickly—using an electric fan can speed up the killing of the mildew. Sun and air articles, if practical, to stop mold growth and remove odors.

Luggage

Dry and air mildewed luggage. Brush off as much loose mold as possible. Do this outdoors if possible. To remove mildew from leather, wipe with a cloth wrung out of dilute alcohol (1 cup denatured or rubbing alcohol to 1 cup water). If mildew remains, clean with thick suds of a mild soap or detergent. Dry thoroughly. Or clean with saddle soap.

Clean mildewed vinyl or fabric by sponging with a solution of mild soap or detergent. Rinse. Dry thoroughly.

Bathroom Surfaces

For mildewed bathroom surfaces, scrub with a dilute solution of liquid chlorine bleach (1/2 to 1 cup of bleach to a gallon of water). Spray and aerosol products for cleaning and sanitizing bathroom areas are also available. Use as directed on the container. An old toothbrush is handy for scrubbing mildewed grouting. Rinse with clean water and wipe as dry as possible.

Mildewed shower curtains should be thoroughly cleaned. Soaking the curtain in a solution of liquid chlorine bleach may be necessary to remove stains. When mildew damage is extensive, replacement of the shower curtain may be necessary.

Paper, Books



Remove any dry, loose mold from paper with a clean, soft cloth. If mildewed paper is damp, dry it first in an airy place if possible. Spread pages of books out fanwise to air. If the books are very damp, sprinkle cornstarch or talcum powder between the leaves to take up the moisture. Leave starch or powder on for several hours, then brush off.

For leather book bindings and covers, wipe off the mold. Wipe the leather surface with a cloth dampened with a solution of one part denatured or rubbing alcohol to one part water. Apply saddle soap or leather conditioner.

Closets

Clean surfaces as appropriate for materials involved.