



# WEATHER-RESISTIVE BARRIERS

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## INTRODUCTION

Weather-resistive barriers are a part of exterior wall systems that protect building materials from exterior water penetration. They perform like a shell for buildings—liquid water that has penetrated the exterior finish does not pass through, yet water vapor can escape. By keeping building materials dry, a weather-resistive barrier improves building durability, decreases maintenance costs, and reduces the risk of moisture-related problems such as bugs, mold, mildew, and rot. Some weather-resistive barriers also reduce air infiltration, cutting utility costs and increasing comfort.

## TYPES AND COSTS OF WEATHER-RESISTIVE BARRIERS

Building paper is a traditional paper sheet or felt material that is asphalt coated or impregnated to increase its strength and resistance to water penetration. It is primarily employed to protect against moisture as a drainage layer. Housewrap refers to spun-plastic sheet materials that are wrapped around a house to protect against moisture penetration. If properly sealed, housewrap can also serve as an air retarder to reduce infiltration. In some wall systems, sealed water-resistive sheathing, such as rigid foam board, can serve as the weather-resistive barrier, eliminating any need for building paper or housewrap.

Building paper typically costs about \$300, material and labor, to cover a 2,500-square-foot home. It usually comes in a 3-foot roll that one person can install. Housewrap costs about \$450, materials and labor, for the same size house. While it is available in 3-foot rolls, rolls are usually 9-foot wide and require two people for installation.

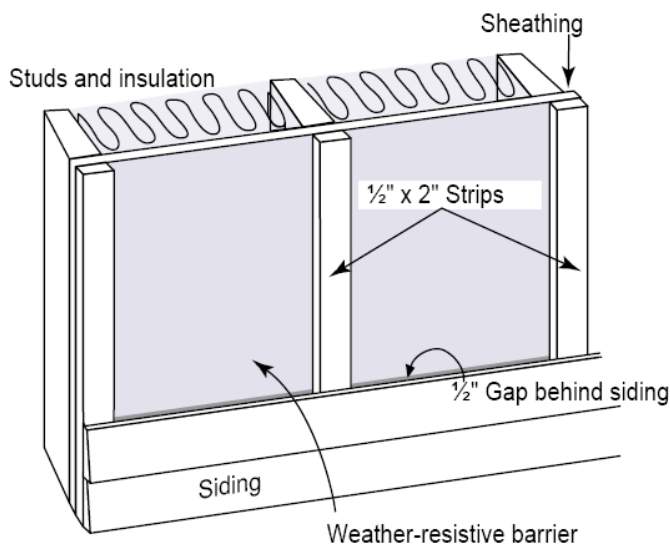
## WHEN AND HOW TO USE WEATHER-RESISTIVE BARRIERS

As part of a whole-wall design, weather-resistive barriers need to be integrated with other wall system components, including structure, insulation, vapor retarder, air retarder (if separate), and flashing systems.

A comprehensive approach to water management prevents water from reaching the sheathing or framing. Primary water management strategies include water-shedding characteristics that include overhangs and exterior claddings. Secondary (redundant) water management usually employs a weather-resistive barrier to protect the sheathing and framing from moisture damage.

A weather-resistive barrier is a drainage plane. It allows water that has penetrated past the siding to drain away from the wall system. Building paper or housewrap is usually used to form the barrier. Attaching siding to furring strips provides an air gap between the siding and weather-resistive barrier that improves drainage and addresses related moisture issues.

## FURRED-OUT SIDING



# HOUSEWRAP INSTALLATION DETAILS

## INSTALLATION

Weather-resistive barriers require thorough, comprehensive integration with other building envelope elements to retain system integrity. Flashing and other components, including windows, doors, attached decks, and band joists, usually present the most difficulty. Expert supervision by a knowledgeable person can foster proper field installation. While some general installation guidelines are outlined here, it is essential to accommodate regulatory and product manufacturer procedures.

The approach used to install an appropriate weather-resistive barrier is dependent on why it is being used. If intended only to resist water entry, a weather-resistive barrier must be properly lapped and integrated with other flashing—taping of all seams is not critical. If it is used to reduce air infiltration, all seams and edges must be sealed with compatible tape or sealant.

Suitable attachment of the weather-resistive barrier to the sheathing is important. Wide-crown staples, nails with a large head, or nails with a large plastic washer are recommended for woodframe construction. Distance between fasteners is specified by the manufacturer or by codes, but 12 to 18 inches is typical.

When installing a weather-resistive barrier, especially building paper, remember that materials higher on a wall should overlap materials lower on the wall—consider the path that a drop of water would take if impacting the top of the wall and running downward. Water may also be driven sideways or even upward for a distance by wind pressure. Therefore, laps must be of sufficient length to prevent water entry—4 to 12 inches of overlap is typically recommended. Material should also extend around corners by 6 to 36 inches.

Housewrap installation may be eased by attaching the material to walls before standing the walls up—just leave sufficient additional length at all sides for later overlaps. This approach improves speed and safety, and results in a more wrinkle-free application (wrinkles can impede drainage and hinder cladding

application).

To maintain a continuous air retarder around the building envelope, housewrap should cover the seams between framing members (e.g., between bottom plate and foundation). This may be accomplished by incorporating housewrap into the framing or by adhering housewrap continuously across the assembly. Overlap and seal all seams, and seal penetrations in the housewrap. Tape is usually used to cover seams, while sealant is used where tape may not provide sufficient adhesion, such as sealing to wood or concrete. Use manufacturer-approved tapes and sealants, not generic tape such as duct tape.

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