



Water Damage and Your Masonry Chimney

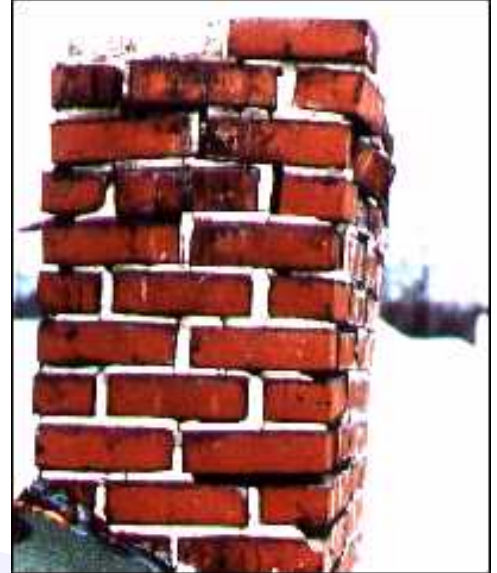
(Article Courtesy of the Chimney Safety Institute of America)

As odd as it may seem, water causes more damage to masonry chimneys than fire.

Think about it for a moment. All the brick and other materials that make up your home are protected by the roof and eave, all that is, except your chimney. The chimney bravely sticks up above the roof constantly exposed to all the elements; rain, snow, and freeze/thaw cycles.

A masonry chimney is constructed of a variety of masonry and metal materials, including brick, mortar, tile, steel and cast iron. All of these materials will suffer accelerated deterioration as a result of prolonged contact with water.

Masonry materials deteriorate quickly when exposed to the freeze/thaw process in which moisture that has penetrated the materials periodically freezes and expands, causing undue stress. Water in the chimney also causes rust in steel and cast iron, weakening or destroying the metal parts.



Water penetration can cause interior and exterior damage to you home and masonry chimney including:

- Spalled and broken brickwork
- Deteriorated metal or masonry firebox assemblies
- Rusted damper assemblies
- Rotted adjacent wood and ruined wall coverings
- Deteriorated central heating system
- Decayed mortar
- Cracked flue liner systems

Preventing Water Damage

Following are the four main ways to prevent water damage.

1. [Install a Chimney Cap](#)

Chimney caps, also called rain covers, are probably the most inexpensive preventive measure that a homeowner can employ to prevent water penetration and damage to the chimney. Chimneys have one or more large openings (flues) at the top that collect rain water and funnel it directly to the chimney interior. A strong, well designed cap not only keeps this water out, but will also prevent birds and animals from entering and nesting in the chimney.

Caps also function as spark arrestors, preventing sparks from landing on the roof or other nearby combustible material.



Water Damage and Your Masonry Chimney (Cont'd...)

2. Repair or replace a damaged chimney crown

The chimney crown, also referred to as the chimney wash, is the top element of a masonry chimney. It covers and seals the top of the chimney from the flue liners to the chimney edge. Most masonry chimneys are built with an inadequate crown constructed from common mortar mix, the same mixture used to lay the bricks of the chimney. This mortar is not designed for and will not withstand years of weather abuse without cracking, chipping or deteriorating; situations that allow water to penetrate the chimney. In fact, most sand and mortar crowns crack almost immediately after installation because of shrinkage.

A proper chimney crown should be constructed of a portland cement based mixture and cast or formed so it provides an overhang, or drip edge, projecting beyond all sides of the chimney by a minimum of two inches. This drip edge directs the runoff from the crown away from the sides of the chimney, helping prevent erosion of the brick and mortar in the chimney's vertical surfaces.

There are also some modern waterproof, non-shrinking, cement like coatings for repairing damaged mortar crowns that seem to work fine.

3. Repair or replace flashing

Flashing is the seal between the roofing material and the chimney. Flashing prevents rain water from running down the chimney into living spaces where it can damage ceilings or walls, or cause rot in rafters, joists, or other structural elements. The most effective flashing is made up of two elements, the flashing and the counter-flashing.

The base flashing is an L shaped piece of metal extending up the chimney side and under the roofing shingles. The counter flashing, which overlaps the base flashing, is imbedded and sealed in the chimney's masonry joints. This two element flashing allows both the roof and the chimney to expand or contract at their own rates without breaking the waterproof seal in either area.

4. Waterproof your chimney

Most masonry materials are porous and will absorb large amounts of water. Common brick is like a sponge, absorbing water and wicking moisture to the chimney interior. Defective mortar joints or the use of improper mortar or brick can greatly increase the tendency to absorb and convey water to the interior of the masonry chimney structure.

Several products have been developed specifically for use as waterproofing agents on masonry chimneys. These formulas are vapor permeable which means that they allow the chimney to breathe out, but not in. Thus water that has penetrated the chimney, or moisture that has originated from inside, is allowed to escape, while the waterproofing agent prevents water from entering from the outside.

Paint, or any non vapor permeable water sealer, should never be used as a waterproofing agent because it will trap moisture inside the chimney, accelerating deterioration.

In Conclusion:

Water damage to masonry chimneys is usually a slow, subtle process. The problem is often not evident until it has become quite serious.

Although these water prevention measures may cost a few dollars initially, they will save you the major expense of large masonry repairs or rebuilding of the entire chimney in the not too distant future, and as such represent a wise investment in your home.