

MASONRY 101: HISTORIC BUILDING

Cleaning exterior masonry walls not only improves the overall appearance of your building, but also helps maintain the wall's structural integrity. Embedded dirt keeps in moisture and hosts harmful microorganisms, both of which damage a building's surface over time. However, inappropriate masonry cleaning can also cause irreparable damage to the masonry, so the decision to clean the masonry comes with these considerations:

- 1. Mortar** | The mortar between masonry units may need to be repointed before any cleaning method is undertaken. Otherwise, water will seep through deteriorated mortar, damaging exterior surface, inner metal support, and wall finishes. Infiltrating water can additionally cause salt deposits on or below a wall's surface upon evaporation, known as subflorescence and efflorescence, respectively. Water itself can contain minerals which discolor or stain masonry, as can dissolved de-icing salts from adjacent sidewalks. An expert can help you determine if such salt deposits on your building are indicative of a need to repoint.
- 2. Masonry Type** | The term "masonry" encompasses a multitude of building materials (i.e., brick, limestone, granite, cast concrete, glazed terra cotta, etc.), each with their own respective cleaning methods. Knowing the type of masonry is important because certain cleaning agents are incompatible with certain types of masonry. Ideally, multiple methods should be patch-tested to assess compatibility with your building's geological composition.
- 3. Building condition** | Do you know what has changed since your building's construction, or prior treatments? What exactly needs to be removed, and where did it come from? These answers affect the type of cleaning agent is the best fit for your building and preventing future deterioration depends on the nature of the building's damage. Other potential cleaning prerequisites include replacing damaged masonry units, sealing doors and windows, investigating your building's architectural history and assessing environmental conditions.
- 4. Paint** | As a rule, unpainted brick should remain unpainted. Paint is notoriously difficult to remove from bricks to the point where it is generally more practical to leave it on. Reasons for having painted a building range from design choice to protective coating; in some cases, buildings were painted later on to cover repairs and alterations. More information can be found in our one-pager, "Painting Your Building".



The importance of identifying your building's history, environment, and materials cannot be overstated, along with doing test patches. Additionally, it is important to keep in mind that some stains remain impossible to remove, and environmental conditions can impact the effectiveness of many cleaning methods. Resources exist to help you determine appropriate cleaning methods. The Technical Preservation Services (National Park Service) website, local historic commission, independent preservation consultants, and the National Trust for Historic Preservation's Main Street Center are among many that can provide guidance.

CLEANING MASONRY

Ultimately, the goal is to clean as gently as possible, and that means different things for different materials. As a rule, abrasion is an inappropriate cleaning method for historic materials because of the irreparable damage it will cause to the surface of the masonry; sources of abrasion include metal bristle brushes, high pressure washing, and sand blasting (as well as blasting with other mediums, such as pecan shells, dry ice, crushed glass, etc). Seek verification from reputable resources before attempting anything more than a simple low-pressure water cleaning to ensure masonry surfaces remain intact and pollutants stay out of the environment.

How To Clean Masonry Buildings

1. Make sure all openings are watertight prior to cleaning, caulking around windows and doors. If using chemicals, protect the surrounding flora with a water-resistant material and line up appropriate receptacles to collect chemical runoff, also known as cleaning effluent. Also make sure all automobiles are removed well away from the building to avoid etching their paint finishes since these chemicals can be carried by even a light breeze!
2. Spray building with water using a low-pressure nozzle at least 18 inches from the surface. Pressure should be below 600psi – not much more than a garden hose jet spray nozzle. Research the mineral composition of your city's water supply to understand how it will affect your building, as some minerals have been known to stain.
3. Water is one of the gentlest cleaning agents, often paired with a non-ionic detergent and natural or synthetic bristle brush. This method is often the most economical. For particularly acid-sensitive masonry, steam cleaning is an effective, yet expensive option, but constant misting is a more affordable alternative.
4. Alternatively, use water to soften dirt before applying an appropriate chemical solution, using either a low-pressure sprayer, roller, or paintbrush. Leave cleaner on masonry for the time recommended by the manufacturer.
5. Start cleaning at the bottom of the wall and work your way up. Periodically check surface for signs of abrasion – pock marks, rough surface texture, rounded edges, or disintegration.
6. Graffiti removal often requires a cleaning agent separate from traditional paint and tar removal methods. The best product will depend on the type of masonry and graffiti, as well as the surface dimensions. The methods range from paste of inert clays to cellulose products mixed with water or other appropriate solvent. If applying paste, cover with plastic sheet to prevent evaporation.
6. Thoroughly rinse off any chemical treatment with water. Residue left behind can cause efflorescence. Follow manufacturer's recommendations for capturing the run-off to prevent polluting local waterways.
7. Make sure that all cleaning effluent is safely and legally disposed of after rinsing. Masonry walls can take several weeks to dry completely, at which point paint can be applied.

Safety First

While we've highlighted the hazards cleaning chemicals pose to the environment, they can also be dangerous to your health. Airborne particles can enter surrounding buildings and cars, affecting nearby individuals and can badly burn the skin or eyes. It may be necessary to clean during non-business hours, nights, or weekends. Personal Protective Equipment (PPE) must be provided and worn at all times, especially when removing graffiti; cleaning agents of this level must be disposed of professionally. Always check manufacturer's guidelines before cleaning.

