U.S. General Services Administration

Removing Biological Growth from Exterior Masonry and Stucco

Procedure code:
420002S
Source:
NPS Southeast Regional Office
Division:
Masonry
Section:
Unit Masonry
Last Modified:
01/04/2018

REMOVING BIOLOGICAL GROWTH FROM EXTERIOR MASONRY AND STUCCO

PART 1---GENERAL

1.01 SUMMARY

A. This procedure includes guidance on removing biological growth such as lichens, algae, mold and mildew from masonry and stucco.

B. Biological growths such as lichens, algae, moss and fungi growing on masonry walls is usually an indication that there is excess moisture in or around the masonry. These growths should be removed, as they attract moisture to the masonry surface and hold it there, which can lead to more serious problems. Lichens and mosses in particular, produce oxalic acid which can damage certain types of historic masonry.

C. See 01100-07-S for general project guidelines to be reviewed along with this procedure. These guidelines cover the following sections:

1. Safety Precautions

2. Historic Structures Precautions

3. Submittals

4. Quality Assurance

5. Delivery, Storage and Handling

6. Project/Site Conditions

7. Sequencing and Scheduling

8. General Protection (Surface and Surrounding)

These guidelines should be reviewed prior to performing this procedure and should be followed, when applicable, along with recommendations from the Regional Historic Preservation Officer (RHPO).

PART 2---PRODUCTS

2.01 MANUFACTURERS

A. ProSoCo, Inc.

2.02 MATERIALS

A. For Removing Mold and Mildew:

1. Non-sudsing ammonia or one of the following bleaches:

CAUTION: DO NOT MIX AMMONIA WITH CHLORINE BLEACHES, A POISONOUS GAS WILL RESULT! DO NOT USE BLEACH ON BIRD DROPPINGS.

Sodium Hypochlorite (NaOCl):

a. An unstable salt produced usually in aqueous solution and used as a bleaching and disinfecting agent.

b. Other chemical or common names include Bleaching solution*; Household bleach*; Laundry bleach*; Solution of chlorinated soda*.

c. Potential Hazards: CORROSIVE TO FLESH.

d. Available from chemical supply house, grocery store or supermarket, hardware store or janitorial supply distributor.

-OR-

Hydrogen Peroxide (H202):

a. An unstable compound used especially as an oxidizing and bleaching agent, an antiseptic, and a propellant.

b. Other chemical or common names include Peroxide of hydrogen*; Solution of hydrogen dioxide*; Superoxol* (hydrogen peroxide is commonly sold as a 3% solution; Superoxol is a 30% solution. Superoxol causes flesh burns; 3% hydrogen peroxide does not).

c. Potential Hazards: TOXIC (when concentrated); CORROSIVE TO FLESH; FLAMMABLE (in high concentration).

d. Available from chemical supply house, drugstore, pharmaceutical supply distributor, or hardware store.

-OR-

Calcium Hypochlorite (CaCl2O2):

a. A white powder used especially as a bleaching agent and disinfectant.

b. Other chemical or common names include Chlorinated calcium oxide; Bleaching powder*; Calcium oxymuriate*; Chloride of lime*; Chlorinated lime*; Hypochlorite of lime*; Oxymuriate of lime*.

c. Potential Hazards: CORROSIVE TO FLESH; FLAMMABLE (WHEN IN CONTACT WITH ORGANIC SOLVENTS).

d. Available from chemical supply house, dry cleaning supply distributor, drugstore or pharmaceutical supply distributor, janitorial supply distributor, swimming pool supply distributor, or water and sanitation supply distributor.

-OR-

Chloramine-T: Chloramine is any of various compounds containing nitrogen and chlorine.

2. Trisodium Phosphate:

NOTE: THIS CHEMICAL IS BANNED IN SOME STATES SUCH AS CALIFORNIA. REGULATORY INFORMATION AS WELL AS ALTERNATIVE OR EQUIVALENT CHEMICALS MAY BE REQUESTED FROM THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REGIONAL OFFICE AND/OR THE STATE OFFICE OF ENVIRONMENTAL QUALITY.

a. Strong base-type powdered cleaning material sold under brand names.

b. Other chemical or common names include Sodium Orthophosphate; Tribasic sodium phosphate; Trisodium orthophosphate; TSP*; Phosphate of soda*.

c. Potential Hazards: CORROSIVE TO FLESH.

d. Available from chemical supply house, grocery store or supermarket or hardware store.

3. Powdered detergent such as "Tide" or approved equal.

B. Proprietary cleaner such as "Limestone Restorer" (ProSoCo, Inc.), or approved equal.

C. Clean, potable water

2.03 EQUIPMENT

A. Garden hose and nozzle

B. Rubber or polyethylene bucket (DO NOT USE A METAL BUCKET AS IT MAY REACT WITH THE CHEMICAL CLEANER AND PRODUCE TOXIC FUMES)

C. Glass or ceramic mixing bowl

D. Knife blade

E. Stiff, natural bristle brushes (non-metallic)

F. Tampico brush, roller or low pressure (50 psi maximum) spray such as pneumatic garden sprayer

G. Rubber gloves

H. Safety glasses

PART 3---EXECUTION

3.01 EXAMINATION

A. Determine the source of excessive moisture, i.e. leaky downspout, standing water, roof overhang, vegetation, etc., and make any necessary repairs before continuing with this task.

B. Determine the type of stain, i.e. algae and lichens, or mold and mildew.

3.02 PREPARATION

A. Protection:

1. Provide adequate wash solutions (i.e. water, soap and towels) before starting the job.

2. Do not spray in the immediate vicinity of unprotected people and animals.

3.03 ERECTION, INSTALLATION, APPLICATION

NOTE: DO NOT ATTEMPT MORE THAN ONE TREATMENT ON A GIVEN AREA UNLESS THE CHEMICALS USED FROM ANY PRIOR TREATMENT HAVE BEEN WASHED AWAY.

A. Removing Lichens and Algae (ONLY):

1. Remove as much plant growth as possible using a knife blade and stiff bristle brush.

2. Water rinse the surface to remove most of the plant material.

a. If the substrate is sound and dense, use low to medium water pressure (100-400 psi).

b. If the masonry is softer, use standard water pressure from the spigot.

3. Allow water to soak plant growth for approximately 30 minutes.

4. Gently scrub the surface with a stiff, natural bristle brush.

5. Thoroughly rinse the surface again with clean, clear water at low pressure from a garden hose.

NOTE: DO NOT USE ANY CHEMICALS WITHOUT FIRST CONSULTING WITH RHPO.

B. Removing Mold and Mildew (ONLY):

CAUTION: DO NOT MIX AMMONIA WITH CHLORINE BLEACHES, A POISONOUS GAS WILL RESULT!

1. Mix the following:

3 oz. (2/3 cup) trisodium phosphate (TSP) cleaner
1 oz. (1/3 cup) powdered detergent (i.e. Tide)
1 qt. 5% sodium hypochlorite bleach (laundry
bleach)
3 qts. warm water

-OR-

1 part ammonia with 3 parts water

2. Apply the solution to the affected area and scrub with a medium-hard natural bristle brush. Keep the surface saturated until the stain is bleached,

CAUTION: BE SURE TO WEAR RUBBER GLOVES AND SAFETY GLASSES WHEN APPLYING THE SOLUTION.

3. Thoroughly rinse the surface with clean, clear water from a garden hose and allow to dry.

4. Repeat the process as necessary to achieve the desired level of cleanliness.

-OR-

C. For treating any of the above (lichens, algae, mold or mildew), try using a proprietary cleaner such as Limestone Restorer (ProSoCo, Inc.), or approved equal.

1. Add 1 part Limestone Restorer to 3 parts water and mix in a rubber or polyethylene bucket.

2. Apply a flood coat of this mixture to the masonry using a low pressure spray (approximately 50 psi).

CAUTION: DO NOT USE A HIGH PRESSURE SPRAY WHEN APPLYING THIS SOLUTION AS THIS MAY CAUSE THE SOLUTION TO BE DRIVEN DEEPER INTO THE PORES OF THE MASONRY, MAKING REMOVAL OF THE SOLUTION DIFFICULT.

a. Begin spraying at the top of the vertical surface and move across horizontally. Allow 100mm rundown.

b. Continue the next horizontal pass across the previous run down.

c. Allow the solution to remain on the surface approximately 5-30 minutes depending upon the thickness of the growth.

d. Gently scrub the surface with a stiff, natural bristle brush.

e. Thoroughly rinse the treated area using pressure-applied water (approximately 400 to 1500 psi) with a 40-60 degree fan spray or garden hose with nozzle adjusted to a tight stream. Rinse from the bottom of the treated area to the top.

f. Allow the surface to dry a minimum of 24 hours.

Last Reviewed: 2018-10-25