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# Poulticing Bronze and Copper Stains from Concrete

**Procedure code:**

371044S

**Source:**

Hstrc Concrete: Investigation & Rpr/Pre-Conf Training - 1989

**Division:**

Concrete

**Section:**

Concrete Cleaning

**Last Modified:**

08/17/2016

PREFACE: The cleaning or removal of stains from concrete may involve the use of liquids, detergents or solvents which may run off on adjacent material, discolor the concrete or drive the stains deeper into porous concrete. Use the products and techniques described here only for the combinations of dirt/stain and concrete specified.

## PART 1---GENERAL

### 1.01 SUMMARY

- A. This procedure includes guidance on removing bronze and copper stains from concrete by poulticing with a mixture of aluminum chloride or ammonium chloride, ammoniumhydroxide and water.
- B. Green stains on concrete, and sometimes brown stains, are common where water has flowed over copper or bronze.
- C. Safety Precautions:
  - 1. DO NOT save unused portions of stain-removal materials.
  - 2. DO NOT store any chemicals in unmarked containers.
  - 3. EXCELLENT VENTILATION MUST BE PROVIDED WHEREVER ANY SOLVENT IS USED. USE RESPIRATORS WITH SOLVENT FILTERS.
  - 4. No use of organic solvents indoors should be allowed without substantial air movement. Use only spark-proof fans near operations involving flammable liquids.
  - 5. Provide adequate clothing and protective gear where the chemicals are indicated to be dangerous.
  - 6. Have available antidote and accident treatment chemicals where noted.
- D. See "General Project Guidelines" 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 MATERIALS

NOTE: Chemical products are sometimes sold under a common name. This usually means that the substance is not as pure as the same chemical sold under its chemical name. The grade of purity of common name substances, however, is usually adequate for stain removal work, and these products should be purchased when available, as they tend to be less expensive. Common names are indicated below by an asterisk (\*).

A. Aluminum Chloride: Available from chemical supply house, drugstore or pharmaceutical supply distributor.

-OR-

B. Ammonium Chloride - salt-like substance (NH<sub>4</sub>Cl):

1. A white crystalline volatile salt that is used in dry cells and as an expectorant.
2. Other chemical or common names include Ammonium hydrochloride; Chloride of Ammonia\*; Hydrochloride of Ammonia\*; Muriate of Ammonia\*; Sal Ammoniac\*.
3. Potential hazards: TOXIC; CAUSTIC TO FLESH; CORROSIVE TO CONCRETE, STEEL, WOOD OR GLASS.
4. Available from chemical supply house, dry cleaning supply distributor, drugstore or pharmaceutical supply distributor, or hardware store.

C. Ammonium Hydroxide:

1. Other chemical or common names include Ammonia water\*; Aqua ammonia\*; Household ammonia\*.
2. Potential hazards: TOXIC; MAY IRRITATE THE EYES.
3. Available from chemical supply house, grocery store or pharmaceutical supply distributor, or hardware store.

D. Filler material such as diatomaceous earth or talc

E. Mineral water

F. Plastic sheeting

G. Clean dry towels for blotting the area after treatment

H. Masking tape

I. Scouring Powder

J. Clean, potable water

K. Accessible source of water, soap and towels for washing and rinsing in case of emergencies associated with the use of chemicals

### 2.02 EQUIPMENT

- A. Glass or ceramic container for mixing the solution
- B. Wooden utensil for stirring the ingredients
- C. Wood or plastic spatula
- D. Stiff bristle brush (non-metallic)

## PART 3---EXECUTION

### 3.01 PREPARATION

#### A. Protection:

1. Provide adequate wash solutions (i.e. water, soap and towels) before starting the job.
2. Whenever acid is used, the surface should be thoroughly rinsed with water as soon as its action has been adequate. Otherwise it will continue etching the concrete even though the stain is gone.

### 3.02 ERECTION, INSTALLATION, APPLICATION

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

- A. Dry mix by weight 1 part ammonium chloride or aluminum chloride with 4 parts fine-powdered inert material such as diatomaceous earth or talc.
- B. Combine the dry mix with (1 part concentrated ammonium hydroxide diluted with 2 to 9 parts of water) to form a smooth paste. If the concentrated solution is not available, use household ammonia without diluting.
- C. Thoroughly wet the concrete surface to be treated with clean, clear water.
- D. Apply the mixture to the stained area using a wood or plastic spatula (approximately 1/8 to 1/4 inch thick) and allow to dry. Be sure to spread the poultice well beyond the stained area. The liquid portion of the paste will migrate into the concrete where it will dissolve some of the staining material. Then the liquid will gradually move back beyond the concrete surface and into the poultice, where it will evaporate, leaving the dissolved staining material in the poultice.
- E. When the poultice has dried, brush or scrape it off with a wooden scraper.
- F. Using a stiff bristle brush, scrub the surface with scouring powder and clean water to remove any residual staining.
- G. Thoroughly rinse the area with clean, clear water and allow to dry.
- H. Repeat the process as necessary to sufficiently remove the stain.

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