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Poulticing Linseed, Soybean And Tung Oil Stains From Concrete

Procedure code:

371030S

Source:

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

Division:

Concrete

Section:

Concrete Cleaning

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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 oil stains such as linseed, soybean and tung oils from concrete by poulticing with chemical solvents.
- B. 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.
- C. 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).

D. For additional information on poulticing, see "Removing Unknown Stains from Marble Using a Poultice".

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. For Light Staining:

1. Mineral spirits:

- a. A petroleum distillate that is used especially as a paint or varnish thinner.
- b. Other chemical or common names include Benzine* (not Benzene); Naphtha*; Petroleum spirits*; Solvent naphtha*.
- c. Potential Hazards: TOXIC AND FLAMMABLE.
- d. Safety Precautions:
 1. AVOID REPEATED OR PROLONGED SKIN CONTACT.
 2. ALWAYS wear rubber gloves when handling mineral spirits.
 3. If any chemical is splashed onto the skin, wash immediately with soap and water.
 4. Available from construction specialties distributor, hardware store, paint store, or printer's supply distributor.

B. For Heavy Staining - Method 1 (see Section 3.02 below):

1. Sodium Perborate:

- a. Other chemical or common names include Perborax*.
- b. Potential Hazards: TOXIC AND FLAMMABLE (WHEN IN CONTACT WITH ORGANIC SOLVENTS).
- c. Available from chemical supply house, drugstore or pharmaceutical supply distributor, grocery store or supermarket.

2. Sodium Orthophosphate:

- a. Other chemical or common names include Tribasic sodium phosphate; Trisodium orthophosphate; Trisodium phosphate; TSP*; Phosphate of soda*.
- b. Potential Hazards: CAUSTIC TO FLESH.
- c. Available from chemical supply distributor, supermarket, grocery, or hardware store.

C. For Heavy Staining - Method 2 (see Section 3.02 below):

1. Hydrogen Peroxide (H₂O₂):

- 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); CAUSTIC TO FLESH (gasoline, kerosene and mineral spirits are each a mixture of compounds from petroleum, all of which fall within a specified range of properties); FLAMMABLE (in high concentration).
 - d. Available from chemical supply house, drugstore, pharmaceutical supply distributor, or hardware store.
2. Ammonium Hydroxide (NH₅O):
- a. A weakly basic compound that is formed when ammonia dissolves in water and that exists only in solution.
 - b. Other chemical or common names include Ammonia water*; Aqua ammonia*; Household ammonia*.
 - c. Potential hazards: TOXIC; MAY IRRITATE THE EYES.
 - d. Available from chemical supply house, grocery store or pharmaceutical supply distributor, or hardware store.
- D. Filler material such as diatomaceous earth, fuller's earth or talc
- E. Cotton wadding for bandage (method 2 only)
- F. Mineral water
- G. Clean dry towels for blotting the area after treatment
- H. Liquid soap solution
- I. Clean, potable water
- J. 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. Absorb excess oil by blotting the surface with paper towels or cloths. Avoid wiping the oil into the surface.
- B. Cover the surface with one of the dry powdered filler materials listed in Section 2.01 above. Leave in place for approximately 24 hours and sweep up or brush off.
- C. Repeat with fresh powder until as much oil as possible has been absorbed from the surface.
- D. If light staining remains, apply a poultice containing mineral spirits:
 - 1. Mix mineral spirits and filler material to make a stiff paste.
 - 2. Follow poulticing procedures below under Method 1, Section 3.02 E.1. c.-g.
- E. If heavy staining remains, try one of the following methods:

1. Method 1:

- a. Mix 1 part by weight of sodium orthophosphate, 1 part by weight of sodium perborate and 3 parts by weight of powdered talc.
- b. Add enough liquid soap or solution of strong soap in hot water to make a stiff paste.
- c. Thoroughly wet the concrete surface to be treated with clean, clear water.
- d. Apply the poultice to the stained area using a wood or plastic spatula to a thickness of 1/8" 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. Repeat the process as necessary to achieve the desired level of cleanliness. The dried poultice can be used over again each time by remixing it with the liquid soap or soap solution.
- g. Thoroughly rinse and scrub the area with clean, clear water using a stiff bristle brush and allow to dry.

2. Method 2:

- a. Soak a bandage of undyed cloth or cotton batting in a solution containing 1 part hydrogen peroxide (3% solution) in 10 to 15 parts of water.
- b. Apply the treated bandage to the stained surface.
- c. Apply over the top of it a bandage soaked with an ammonium hydroxide solution as concentrated as household ammonia (about 3% ammonia gas).
- d. Allow to stand 50-60 minutes.
- e. Remove the bandage and scrub the surface with a stiff bristle brush, scouring powder and clean water.
- f. Thoroughly rinse the area with clean, clear water and allow to dry.
- g. Repeat the process as necessary to sufficiently remove the stain.

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