



Site Safety Precautions when Cleaning Brickwork

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WARNING This document refers to the use of substances and/or procedures that may be injurious to health or damaging to the environment, if adequate precautions are not taken. It relates only to the technical suitability and does not in any way absolve the user from any legal obligations relating to health and safety at any stage.

For further information reference should be made to BS 8221(6) and BRE 448(7).

HEALTH & SAFETY

Some of the cleaning methods described involve the use of chemicals that could be dangerous if not used correctly.

It is important that any safety warnings issued by the chemical suppliers should be carefully read and strictly adhered to.

- a) When using chemicals, protective clothing such as gloves, suitable face protection, safety boots and overalls should be worn.
- b) Adequate ventilation is required in confined spaces when using chemicals.
- c) When using flammable materials, cigarettes, naked flames and other sources of ignition should be carefully controlled.
- d) When diluting acids, ALWAYS add acid to water and not water to acid.
- e) Any clothing that is contaminated with chemicals should be disposed of safely.
- f) When using any chemicals, care must be taken not to damage, contaminate or stain any adjoining material.
- g) Care must be taken to protect personnel operating in the area of the cleaning from any hazard created by the operation.

It is particularly important with all cleaning methods that trials should be carried out on a small, preferably inconspicuous area, to determine the effect of the chemicals before treating a large area.

Hazardous materials should be used in accordance with The Control of Substances Hazardous to Health Regulation 1994 (COSHH) and, if applicable, the current edition of HSE publication EH 40, Occupational exposure limits.

The public should not be admitted to any cleaning operation areas.

The least hazardous product and system of working should be selected for any cleaning operation.

Protection of operatives

It is essential to recognise that when chemical methods are used, protection for the operative is of prime importance. Thus, protective clothing and face protection should be provided, and the appropriate First-Aid measures should be available on site. An excellent guide is published by CIRIA(8). When chemical cleaning is being carried out internally, or in a confined space, adequate ventilation is vital. Attention is drawn to HSE Construction Note 24(9), which outlines precautions necessary when using chemical cleaners.

Protection of other building materials

Protection of other materials and components used in the building may be necessary. Some chemicals may cause staining or corrosion. Masking of surfaces is recommended.

Legislation relating to the discharge of trade effluent

The water companies and the Environment Agency may regard building cleaning waste products as trade effluents (i.e. non-domestic discharges). Before cleaning operations can start therefore, consent must be obtained from the appropriate regulatory body, although the definition of trade effluent may vary between different authorities.

Chemical cleaning and rinsing

A contractor that uses a system involving water or chemicals, or both, has to consider the means and effects of disposing of effluent containing pollutants.

This must be done by consultation with, and under the control of, the appropriate regulator. The basic chain of events that leads to the production of waste effluents is:

- The principle cleaning method is applied.
- The bond between the soiling and the substrate softens.
- Water is used to rinse off the effluent or is applied as an abrasive.
- The water becomes the carrier of chemical compounds as waste products.
- The softening and rinsing stages of cleaning require considerable quantities of water that may drain into local soft ground or into local surface water drains. There is obviously a risk that the effluent either contaminates the waste water system directly or affects the supply of watercourses beneath soft ground.

Discharge of cleaning effluents

Building cleaning invariably produces residues. Specifications should detail the types of waste likely to occur and the contractor's proposed methods of disposal. The details should include all solid wastes and dusts, chemicals and the water used for abrasive cleaning and rinsing purposes. (The fine dusts produced by abrasive cleaning methods constitute trade waste).

Information should be requested from contractors about the production of gases and air-borne particles resulting from their cleaning methods and the possible dangers to people, animals and the environment.

Specifications may require that water used as part of a cleaning regime, or to rinse residues from surfaces, needs to be trapped and disposed of safely. Allowing waste water to disperse through the ground is not acceptable.

Waste can be disposed of through surface water drainage systems; however, each individual authority has policies to cover these matters and its consent will be needed. (In some regions of the UK, responsibility for water supply, surface water drainage, and sewage disposal and treatment are separated; sometimes they are combined in one Authority).

Different water authorities may have different policies on what trade effluents may be discharged into the drains.

In general:

- An individual authority's policy may completely prohibit disposal of petroleum spirits (such as white spirit) and non-biodegradable detergents. Some building cleaning products contain these chemicals.
- Water authorities may limit the pH value of cleaning water discharged into their drains. This will directly conflict with the use of acidic and alkaline cleaning chemicals unless additives are used to neutralise waste in trapped water. Dilution of acidic and alkaline chemicals does not necessarily change the pH value significantly.
- Many cleaning chemicals contain organic solvents. Discharges of these may be prohibited by water authorities or subjected to consideration on an individual basis.
- Other solid and chemical waste can be disposed of through drains provided consent is obtained from the appropriate regulatory body. The consent is likely to be based on the type, dilution, and total amount of the waste, which may be difficult to determine unless water residues are trapped.

Proprietary cleaning agents

A considerable number of such compounds are available. The majority are based on hydrochloric acid but may contain other chemicals as modifiers. Should the application of proprietary cleaning agents be considered, it is strongly recommended that their use be discussed with their manufacturer, both as regards the nature of the material to be cleaned, and the nature of the stain or deposit to be removed. Trials should be carried out on small areas, strictly in accordance with the manufacturer's instructions.

Supply of chemicals used for cleaning

The majority of the cleaning chemicals should be obtainable from laboratory supplies or trade outlets. In most cases, commercial grades will be satisfactory, but their manufacturer's advice should be sought in cases of doubt. Absolute priority must be given to protection against, and safe handling of, these materials.

Where reference is made to dilute hydrochloric acid, e.g., 10% solution, this is obtained by adding one part of the concentrated solution of hydrochloric acid (35% w/w) to nine parts of water. Similarly 5% hydrochloric acid is obtained by adding one part of concentrated acid solution to nineteen parts of water.

It is strongly recommended that competent personnel should carry out the dilution and mixing of chemicals off site.

It should be noted that some grades of hydrochloric acid intended for other uses might contain an inhibitor, the nature of which may make it unsuitable for cleaning.

Under no circumstances should other inorganic acids, e.g., phosphoric and sulphuric, be used.

CHECK LIST

DO	Carry our risk assessment
DO	Obtain method statements, COSHH Certificates, etc. from chemical suppliers and specialist cleaning companies.
DO	Ensure that all safety measures are taken when handling and using chemicals, and that First-Aid measures are immediately available.
DO	Identify the nature of the surface to be cleaned and the type of stain or deposit to be removed.
DO	Consult the brick or paver manufacturer
DO	Carry out trials on small areas before the main cleaning operation is started.
DO	Ensure that the area is adequately wetted before surface application of chemicals, and unless stated to the contrary, remove all trace of the chemical afterwards.
DO	Allow efflorescences particularly vanadium efflorescence, to weather away naturally whenever possible.
DO	Ensure a high level of ventilation when chemicals are used in a confined space.
DO	Protect vulnerable metalwork, and other materials from chemical liquids, fumes and spray.
DO	Wash thoroughly after handling chemicals or after undertaking chemical cleaning.
DO NOT	Mix chemicals on site.
DO NOT	Allow untrained personnel to handle or use chemicals.
DO NOT	Clean areas that are exposed to hot sunlight or to frost.
DO NOT	Use wire brushes or other abrasive methods on brick or paver faces.
DO NOT	Allow chemicals and washings to contaminate surrounding areas.

REFERENCES

1. **BS 5628 Code of Practice for Use of masonry Part 3. Materials and components, design and workmanship.** British Standards Institution.
2. **BS 8000 Workmanship on building sites. Part 3. Code of practice for masonry.** British Standards Institution
3. **BRE Digest No. 370 Control of Lichens, Moulds and similar Growths.** - HMSO.
4. **BRE Digest No. 418 Bird, bee and plant damage to buildings.** – HMSO.
5. **BS 3761 Specification for solvent-based paint remover.** British Standards Institution.
6. **BS 8221-1 Code of Practice for Cleaning and Surface Repair of Buildings, Part 1, Cleaning of natural stones, brick, terracotta and concrete.** British Standards Institution.
7. **BRE Digest No. 448 Cleaning buildings – Legislation and good practice** - HMSO.
8. **A guide to the safe use of chemicals in construction.** Construction Industries Research and Information Association, 6 Storey's Gate, Westminster, London SW1P 3AU
9. **HSE Construction Note 24**

OTHER SOURCES OF INFORMATION

BRE Digest 449 Part 1 & 2– HMSO.
BRE Good Repair Guide 27 Parts 1 & 2. – HMSO.
BDA Guide to Successful Brickwork.
 Brick Development Association
COSHH Regulations