Design Note M1

Maintenance Of Bricks

October 2024

Bricks are virtually maintenance free which is one of the benefits of choosing to build with brick.

To ensure the best performance, the following routine maintenance should be followed.

Information is also provided to assist with the cleaning of stains that may occur during or subsequent to construction.

Routine Maintenance

Weep holes should be checked annually to ensure they are clear of obstacles such as spider webs, dirt, etc.

For aesthetic purposes only bricks can be washed down with an acid free cleaning agent every two years or as necessary.

For brick claddings that have been plastered, please refer to Plastering Suppliers maintenance recommendations.

Products for cleaning bricks - Contact information

Green Acid Replacement (G.A.R)
John Christopher
Horizon International Ltd
04 568 3435

Andy Blaber
Pacific Nanotechnology Group Ltd
P.O.Box 315 583
Silverdale 0944
021 932 904
0800 626 669

Dricon CT concrete cleaner
Firth Industries Ltd
09 583 2121

Cleaning of Mortar Stains on Brickwork

The appearance of brickwork can be permanently spoiled by bad cleaning. If cleaning is left too long or if improper cleaning methods have been used, it may be impossible to rectify the situation. Here are some basic steps to follow to achieve best results.

Use the right cleaning agent.

Spirits of Salts (weak hydrochloric acid) is not the answer for anything other than old mortar stains. It will not cure efflorescence, nor will it remove stains caused by oil, timber leachings, iron rust stains, paint, smoke or soot. Never use spirits of salts on green or yellow stains on a light coloured brick. Acid used on such stains may “fix” them on the brickwork permanently.

Begin at the top.

Clean brickwork from the top down, and look out below!

On commercial work larger areas can be tackled at one time, about a metre square. Channel dirty water away from untreated areas if an entire vertical section cannot be cleaned from top to bottom in one day.

Clean all stains as soon as possible.

If fresh mortar has splashed or spattered onto the brickwork, remove promptly with a clean wet paint-brush. Keep the brush handy in a glass of water containing a small amount of detergent. Do not allow the mortar smears to remain longer than one or two hours before cleaning off. **In particular, where mineral oxides are used as a colouring agent, clean off immediately.**

Lots of water is the story.

Cleaning with acid involves three steps. The work must be sopping wet before applying the acid; the area should be a smallish one of about 6 to 10 bricks at one time; the residue must be thoroughly hosed down with copious amounts of water.

Protect Metals

Protect any metal, particularly aluminium window frames, with vaseline or with masking tape.

Use the right tools.

If acid cleaning is called for, remember that the acid attacks mortar and nothing else. This means the mortar in the joints as well as the smudged areas. To begin with remove as much mortar as possible with an old putty knife or wooden paddle, or scrape with a piece of the same colour brick .

Use a plastic bucket, fill with water, and pour the acid into the water. Wear rubber gloves and use a long handled fibre-brush (not metal). Scrub the bricks, and not the mortar.

Don’t overdo acid treatment.

One part acid to 10 parts water is powerful enough - even 1:20 will do in some cases. Should the treatment not seem to work at first, do not increase the acid content. Instead, carry on and scrape down with a piece of wood to continue the process.

After the bubbling has stopped, try not to let the acid scum dry on the surface, but clean off immediately. It may prove impossible to shift once it has solidified.

When in doubt, proceed carefully.

If in doubt about any aspect of treating brickwork, try out small unobtrusive areas, and leave for a week or so to judge the effect before tackling the whole job.

Vanadium Staining

Light coloured clays often contain naturally occurring vanadium salts which may appear as a yellow, green or reddish-brown discolouration on the bricks.

Vanadium Staining is neither permanent nor harmful, and they do not indicate any defects in the bricks.

It will eventually break down in sunlight. We recommend leaving brickwork with vanadium to break down on its own, however should you want to speed up this process, you can use one of the following methods.

- Note

See General Advice on Removal of Stains for important information.

The removal of vanadium staining from new brickwork would be the home owners responsibility.

Do not ever use hydrochloric acid on these stains as it may turn the stains black and make them more difficult to remove. Should your vanadium staining already have been affected by hydrochloric acid, the use of caustic soda or one of the proprietary cleaners may help remove these stains although in some cases the stains may be permanent.

It is essential that vanadium salt deposits be removed prior to using hydrochloric acid to remove mortar deposits.

After the initial removal of vanadium salt stains, more water on the masonry - even that used in the cleaning process - may induce further efflorescing of vanadium salt to the surface, depending on the amount within the brick.

These deposits must be removed by the same methods specified for the initial treatment.

- Note

Do not apply anti graffiti coatings such as Cleanwall 2000 to bricks which have not been in place for at least 4 weeks or that have vanadium stains on them.

Potassium Hydroxide or Sodium Hydroxide (Caustic Soda)

This alkaline treatment is the preferred treatment.

Mix up 150g potassium or sodium hydroxide per litre of water and apply to the stained bricks. Leave on the wall until the stain disappears, then wash off. Usually several days.

A white residue may appear after this treatment and this should also be hosed off.

Proprietary Cleaners - Noskum

This is a general purpose cleaner used 1 part Noskum, 2 parts water: Neutralize with “Neutril” or bicarbonate of soda solution 1 part, 20 parts water. Apply to dry brick.

Proprietary Cleaners - Vango

A caustic soda based solution. Apply to stains and leave until stain disappears. May be several days. Wash off. A white residue may appear this should also be washed off. Apply to dry brick. This can also be used on vanadium stains which have been darkened by the use of acid.

Oxalic Acid

This is probably the best known chemical removal of vanadium salt.

However, if used it must be followed by a neutralising wash. This action is commonly omitted and further staining of a serious nature can result.

Correct use of the oxalic treatment is:

1. Mix 20g to 40g of oxalic acid per litre of water (preferably hot water).
2. Apply to the stained bricks without pre-wetting.
3. Then neutralise the oxalic acid by applying a solution of 15g of washing soda per litre of water.
   Do not wash off.

Proprietary Cleaners - Oxcid

An oxalic acid based cleaner. Apply to stained areas leave until stain disappears. Neutralize with “Neutril” or bicarbonate of soda solution. (See under Noskum). Apply to dry bricks.

Do not use on vanadium stains which have darkened as a result of cleaning with hydrochloric acid (Spirits of Salts).

General Advice on Removal of Stains

Like other wall materials, brickwork can be stained by elements that are due to external causes. Most stains will respond to treatment, but the correct method of treatment will involve specific remedies for particular problems.

Following are some basic rules for 'do-it-yourself' treatment of relatively small jobs.

- Determine the efficiency of any cleaning agent by first testing a sample area.
- More than one application may be necessary.
- Do not use Spirits of Salts for anything other than dissolving mortar.
- Chemical compounds are toxic. Wear protective clothing and goggles where necessary.
- Volatile solvents should be used indoors only where good ventilation exists.

Removal of specific stain types

Paint

Fresh paint stains usually respond to a commercial paint remover, or, turps for oil based paints.

A make-it-yourself solution of 1 kg of trisodium phosphate to 5 litres of water may be used. Allow the application to soak in, and remove soft paint with a scraper. Wash with soapy water and rinse with clean water.

Certain paints can be removed successfully by softening with a propane torch and then scraping off, or by burning to a char and brushing away the ash.

All paint removers are toxic, and some fumes are flammable. Extreme care should be exercised and adequate ventilation is essential, particularly indoors i.e. removing paint from an old fireplace. The by-product of paint removal may present a hazard also if treating paints which contain lead.

Rust or Iron

The brown rust stain produced by iron or steel near or embedded in brickwork can usually be removed by applying a solution of oxalic acid in water (strength 1:10 by weight; 100 g/L) to which has been added ammonium bifluoride (50 g/L).

If the stain is heavy, the solution should be applied hot, with a second application if necessary. In extreme cases a poultice, which holds the cleaning material in contact with the brick and draws the stain out, may have to be applied. Such a poultice may be made of sodium citrate, glycerine and water, in proportions 1:7:6, in a thick paste with a filler such as talc and left on the stained area for several days before being brushed away.

Copper and Bronze

The bluish-green stains that betray run-off of water from copper flashings and bronze fixtures can be removed from brickwork by the application of a poultice prepared from one part ammonium chloride (sal ammoniac) to four parts talc or diatomaceous earth to which is added household ammonia. The paste is applied to the bricks and, when dried, brushed off.

Timber (brown or grey)

These stains are due to water spreading tannin and resin from the timber across the bricks and mortar, and can normally be removed by scrubbing with a 1:40 solution of oxalic acid in hot water.

Windows and Doors

Smoke and soot

Scrub with a household detergent (JIF for example) or a scouring powder that contains bleach, followed by a good rinse. In difficult cases a 6 to 10mm thick poultice may be required, prepared from a filler such as talcum powder and trichloreythlene to form a stiff paste. Cover the poultice with a pan to prevent rapid evaporation. Handle this poultice with care and with adequate ventilation to avoid inhaling the fumes.

Bitumen or tar

Remove as much as possible by scraping off with a putty knife. Apply a poultice as for smoke and soot removal. A repeat application may be required. Remember the solvent is toxic, so handle with care. Scrub down with water and detergent after the poultice has been brushed off.

Lichens and mosses

These can be knocked back with an application of copper or ammonium sulphate or a proprietary weed killer. Vegetable growth is generally indicative of damp brickwork and will usually reappear if this basic cause is not cured. Green staining which does not respond to this treatment is possibly due to vanadium salts from within the bricks.

Efflorescence

(white crystals or white furry deposit)

This usually disappears from new brickwork due to the action of wind and rain. The process can be accelerated by repeated washings allowing the wall to dry out at intervals. Brushing down the wall at times of maximum efflorescence will help.

The salts brushed off should not be allowed to accumulate at the base of the wall, otherwise they may be carried back into the brickwork by subsequent rain.

Efflorescence on indoor brickwork

Ensure that brickwork is as dry as possible. Dab the affected area with a damp (not wet) sponge, rinsing the sponge in clean water.

Allow bricks to dry and repeat as necessary.

The efflorescence should not reoccur if the brickwork remains dry.

Oiling brickwork

Oiled brickwork gives a darker shade to bricks, particularly red bricks, and is suitable as a cosmetic finish to improve the appearance of a job on which there may be light staining - for instance due to mortar droppings which have not been removed carefully.

Mix ordinary clean motor oil and kerosene in the proportion of 1:1 and paintbrush over bricks and mortar joints. This is all that is necessary. This treatment is for appearance only, and should not be used as a water-proofing technique.

Additional Remarks

Persistent efflorescence, extensive salt staining from within the bricks themselves and vegetable growth on the brickwork are due to excessively wet conditions, and unless the basic problem of water penetration is cured, the staining will repeatedly reappear.

In such cases, it is necessary to overhaul faulty flashings, repair leaking rainwater downpipes, renew copings, etc.

Where chemical treatments are recommended you should note that is is essential for brickwork to be cleaned down afterwards, using copious quantities of water to clear all traces of chemicals from the surface, adjacent areas and drains.

Industrial and manufacturing chemists as listed in the Yellow Pages may be contacted for the chemicals mentioned.

Please note:

We are unable to guarantee the effectiveness of the above treatments for each and every situation, in particular where staining may be due to a variety of causes.