



FAQ

- Crammix Clay Bricks
- Crammix Clay Pavers
- **Cleaning & Maintenance**

1. What is efflorescence?

Efflorescence is a white, salty powder that appears on a brick surface. It is usually caused by the deposit of dried soluble salts from cement and mortar, particularly in new brickwork that is drying. Wind, rain, groundwater and inferior building practices can also contribute towards this temporary condition.

2. How can I remove efflorescence, stains and smears?

Because the salts are water-soluble, the stain often disappears with washing, wind, rain or weathering. Less and less efflorescence may occur over time, unless affected by an external source of salts.

Wooden scrapers, sponges and stiff fibre brushes are highly recommended for small areas. However, a specialist contractor should be engaged to clean larger areas. Where chemicals are used, the brickwork should be rinsed thoroughly with clean water to prevent chemical absorption.

Note: To remove common, white, water soluble salts, light brushing and hosing down with clean water is highly recommended. Avoid using alkaline or acid treatment as this may increase the salts in the wall.

3. Precautions when cleaning brickwork

Staining can mar the appearance of brickwork, but incorrect cleaning techniques can cause permanent damage. Every method of cleaning should be tested in a small unobtrusive area and monitored for at least a week before the entire job is tackled. Most of the chemicals recommended are dangerous, so care should be taken with protective clothing and goggles. Volatile solvents should only be used in areas with good ventilation. It is essential to identify the type of stain or deposit before any cleaning is undertaken. Remember to wet the brickwork with clean water before applying any chemical, and wash down with clean water afterwards.

4. Cleaning mortar smears from new masonry

Ideally brickwork should be cleaned as it is laid. The only "chemical" recommended for removing mortar smears is clean water, and should be undertaken within 24 hours after completion of the brickwork. The use of copious amounts of clean water, a bristle brush and sponge remains the most efficient and cost effective

method of cleaning freshly smeared, new masonry (warm to hot water is most effective).

5. How to remove hardened mortar on new brickwork

If the mortar has hardened, water and a chemical agent will have to be used. The most successful agent is a weak solution of hydrochloric acid in water (1 part acid to 10 parts water). Products with a phosphate-ester base are also suitable for removing vanadium stains.

The manufacturer's instructions must be strictly adhered to. Where possible, remove larger pieces with a scraper, then wash down with a diluted solution of acid cleaner. To prevent the recurrence of the vanadium staining, treat the brickwork with a 15% - 20% solution of Potassium Hydroxide.

6. Staining on new masonry that has saturated during construction

Free lime leaching under excessively wet conditions often emanates from mortar joints or from cast concrete and stone members of the structure. If clean water and scrubbing down does not work while the masonry is still fresh, and carbonation has occurred, acid treatment may be required.

The most cost effective chemical is hydrochloric acid in solution of 1:10 - acid to clean water - as mentioned for hardened mortar. The acid dissolves both the cement and the lime from the mortar, which then needs to be washed with clean water. It is highly recommended for all acid solutions to be handled by experienced contractors who will wash off and/or neutralise the acid before "brick burn" staining occurs.

Note: Mineral acids such as sulphuric and phosphoric acids should not be used for cleaning mortar smears. They are not volatile and remain in the brickwork after being absorbed causing negative reactions within the brick and mortar.

7. Vanadium Staining

Light coloured face bricks appear to have a greenish yellow surface discoloration. The thin film on the surface of the bricks is not harmful and normally weathers away over time. The effects on the aesthetics may cause customer dissatisfaction, resulting in accelerated removal to be undertaken. The treatment consists of a number of chemical options such as oxalic acid, hypochlorite and strong alkaline treatment.

Bricks prone to vanadium staining often give early warning signals after being wet and then dried out. Fresh brickwork that exhibits early vanadium staining should be brushed with a bristle brush and hosed down. If this approach fails, only then should alternative chemical treatments be used - wash down with a 20% solution of Potassium Hydroxide. Do not wash the wall with clean water afterwards. (Hydrochloric or sulphuric acid should never be used on vanadium stains since it 'fixes' them and turns them brown). Both acetic acid and hydrogen peroxide have also proved successful.

a) Oxalic Acid

Oxalic acid should be mixed in solutions of 20g - 40g per litre of water. A series of tests on small sections of the affected area will determine the best strength for the overall job. The action will be more rapid if the oxalic acid solution is applied hot to dry wall surfaces. Once the stain has been removed, the wall should be neutralised by applying a solution of 10g of washing soda per 1 litre of water to the treated surface and this should be allowed to remain on the wall. This step is most important to prevent any further unwanted action by the oxalic acid.

b) Hypochlorite Treatment

Apply a solution of 100g per litre of water using either pool chlorine or a household bleach based on sodium hypochlorite. As with the other options, always test a small area first prior to treating the whole area. Solutions that are too strong can lead to further problems.

c) Alkaline Treatment

Wash the wall with a solution of 100g to 1 litre of water using either caustic soda or washing soda (use the corresponding potassium salts as these will be less likely to cause visible secondary efflorescence). If such secondary efflorescence occurs, wash it off with clean water.

8. Manganese Stains

Bricks may exhibit a dark brown to violet stain where manganese dioxide has been used to pigment them brown or grey, or where manganese occurs naturally in the raw materials. Brush the stain with a solution of 1 part acetic acid and 1 part hydrogen peroxide in 6 parts of water.

9. Rust or Iron Stains

The brown rust stain produced by iron or steel embedded in brickwork or so near it that water can run from the metal onto the bricks can usually be removed by applying a solution of oxalic acid in water (1 part to 10 parts of water by mass).

Heavy stains can be washed with a solution of 50g oxalic acid, 20g sodium fluoride and 15g citric acid per litre water. Wash down the treated area with a solution of bicarbonate of soda (50g/l).

Brown staining that does not respond to this treatment, particularly at the junction of the brick and mortar, is probably due to manganese.

Note: Remember that oxalic acid is extremely toxic.

10. Bitumen and Tars

Bitumen, creosote and tars used on site must be handled with care and be properly stored. Their low surface tension allows for quick and deep penetration into the brick surface making them difficult to remove. The chemical resistance to both acids and alkalis is high, adding to the difficulties of their removal.

Remove all excess matter with a wooden or plastic scraper to avoid damaging the brickwork and follow this with a scrubbing application in a solution made up of a commercial degreasing agent (emulsifier) mixed with paraffin. The mix proportions should be established with the chemical supplier. When the stain appears to have dissolved, clean the paraffin solution off with the emulsifier mixed in water.

Note: Do not wet brickwork with water first.

11. Smoke and Soot

Scrub with a household detergent or a scouring powder that contains bleach, followed by a good rinse. The more stubborn patches can be removed from the brick pores using trichloroethylene, although good ventilation is needed if this is used indoors.

12. Paint (Including Graffiti)

Water-based PVA's, acrylics and various enamels cause different problems - hardened old paint being the most difficult to remedy. The surest method of paint removal from brickwork is sand blasting (wet or dry) followed by power sanding. This procedure is also the most abrasive. Both methods usually abrade the faces of the bricks and cause damage to the mortar joints, therefore a chemically based treatment is preferable.

Where the type and brand of paint is known, the paint manufacturer should be approached for guidance to the best paint solvents and paint removers.

Scrubbing with copious amounts of water will usually remove wet, water based paint. Small areas of paint may be cleaned with a commercial paint remover or solution of trisodium phosphate (1 part to 5 parts of water by mass). Allow the paint to soften, and remove with a scraper. Wash the wall with soapy water and

finally rinse with clean water.

Paint on difficult surfaces such as face brick have been successfully removed using poultices and gels. The caustic poultice typically consists of 300g of caustic soda dissolved per litre of water and made into a thick paste with inert filler such as diatomaceous earth, or using flour, methylcellulose wallpaper paste or similar. The poultice is left on the wall surface for 24 - 36 hours and is removed by first hosing down with water and subsequently (if necessary) with a high pressure water jet.

Again, it must be stressed strongly, ***caustic substances are extremely hazardous and great care must be taken to avoid contact with skin and eyes.***

In addition to, or instead of the caustic poultice, a special blend of gels are used by professional cleaning contractors.

13. Oil Stains

Oil spills will involve either mineral oils used in the automotive and engineering industries, or vegetable oils such as linseed, sunflower, peanut and castor. The treatment will depend on the type of oil to be removed.

Mineral oils will require solvents such as petrol, benzene and naphtha, while vegetable oil stains should be treated with methylated spirits, turpentine and trichlorethylene.

Treatments for the removal of tars may also prove effective in removing oil stains.

Note: The complete removal of oil stains is difficult to impossible. However, most oils, when exposed to long periods of weathering, will break down and get washed away by rain. Over time, the staining will barely be visible to the naked eye.

14. Industrial Pollution, Dust and Grime

Air pollution is a constant problem in most industrial areas and cities, causing buildings to look dirty and drab. Regular treatment processes should be incorporated into the buildings' ongoing maintenance programme. Ingrained grime and airborne chemical attacks only become serious and expensive problems if left unattended over time.

Remove loose dirt from exposed parts of buildings, especially horizontal surfaces such as sills, copings, and deep raked mortar joints, etc., by regularly hosing down. Grime adhering to the surface should be scrubbed and washed down with detergent and water and then rinsed with clean water.

Where staining has become fixed, the services of a professional cleaning contractor should be sought. Steam cleaning and chemical treatment may be the only options.

15. Organic Growth

Micro-organic growths such as fungi, moulds, lichens and mosses on brickwork often cause unwanted dark stains or smears on portions of buildings and garden walls.

The most common micro-organic growths occur in constant shade but are often encouraged by high and prolonged humidity, poorly ventilated spaces and damp or wet conditions both inside and outside buildings. High water condensation in mass housing under certain climatic and social conditions may result in black mould spots internally.

Eradication by chemical substances will be a waste of money without addressing the root causes such as rising damp, water ingress from above and from

leaking walls, pipes and roofs. These defects should be tackled as a priority.

Organic growths can be killed with a solution of Copper Sulphate (1kg to 10 litres of water) or a proprietary weed killer. Boiling water or steam is very effective in cleaning mosses.

16. Running Water

Running water over prolonged periods of time can produce pattern staining. These stains can usually be removed by scrubbing after wetting the surface with a high pressure mist spray of cold water.

17. Timber

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

18. Lime and Lime Bloom

Follow the treatments recommended for 'Mortar and Mortar Smear' above. In older brickwork lime staining originating from the reinforced concrete structure can be particularly difficult to remove. It is important to stop the flow of moisture through the structure to overcome the problem.

19. Large Projects - Multi-Story Buildings

Sandblasting is not recommended. High pressure cleaning is most suitable if well managed by experienced contractors, with the input of the architect, contractor, sub-contractor and brick manufacturer.

- Hand labour should be used to remove large mortar particles
- Cleaning should only start about seven days after the building is complete, when the mortar is set
- Metal, glass, wood surfaces, etc., should be appropriately masked
- Cleaning should commence at the top of the building, working downwards
- The walls should be saturated with clean water before chemicals are applied
- Choice of application pressures and chemicals are critical to the operation

20. Site Safety Precautions when Cleaning Brickwork

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

- It is important for all safety warnings issued by the chemical suppliers to be strictly adhered to
- When using chemicals, protective clothing such as gloves, suitable face protection, safety boots and overalls should be worn
- In confined spaces adequate ventilation is most essential
- When using flammable materials, cigarettes, naked flames and other sources of ignition should be avoided or carefully controlled
- When diluting acids, ALWAYS add acid to water and not water to acid
- Any clothing that is contaminated with chemicals should be safely disposed
- Care must be taken not to damage, contaminate or stain any adjoining materials
- Care must be taken to protect all personnel in the same area from hazards that may be created by the cleaning operation
- It is particularly important for trials to be carried out on a small, preferably inconspicuous area, to determine the effect of the chemicals before treating a larger area.

