

# Guidelines for the maintenance of areas of clay paving

Clay paving provides a durable, hard wearing surface but, like any other surfacing material, may suffer from staining. Due to the nature of its construction, vegetation may also grow in the joints, or on the paviors themselves in shaded areas which remain damp. Regular maintenance and good cleaning practices will enhance the overall appearance of the paving in the long term.



## Initial Maintenance

During the initial life of a flexible clay pavement, the joints between paviors will be relatively porous. The ingress of water may consolidate the joining sand and it is important that the joints are refilled at the earliest opportunity. The joints will soon become relatively impervious due to a build up of detritus. Until this has occurred, the paving should be cleaned, preferably by brushing with hand-held brooms or by low suction mechanical sweepers. Mechanical sweepers with high suction forces should not be used until flexible pavements are established. Even then there is a risk of loss of jointing sand from between the paviors.

Materials are available for sealing the surface of clay pavements. These are not necessary to protect the clay paving, but may provide some benefit in stabilising the sand in the joints in the short and longer term. Should paviors become loose or start to rock, the reason for this should be ascertained and then appropriate measures taken to avoid any ongoing problems. Paviors should be laid in accordance with the recommendations in BS 7533: Part 3:1997.

Where new services are to be installed or access is required to existing services under the paved area, the paviors should be lifted carefully, cleaned and stockpiled for later use. Devices for removing individual paviors are available. Once the initial paviors have been removed, it should be relatively straightforward to uplift an area of paving. When work on underground services is complete, trenches should be backfilled using

layers of suitable material detailed in BS EN 13285: 2003 or the Specification for Highway Works. These materials should be laid in thicknesses of 100-125mm and compacted with suitable equipment. Non-settling items such as foamed concrete can also be used. The paving should then be relayed on a sand bedding course in accordance with the recommendations of BS 7533: Part 3: 1997. During relaying a slight surcharge should be created in the sand bedding course to allow for settlement of the paving following initial compaction and early trafficking. Typically, reinstated areas of paving should have a surcharge of 2-3mm over the surrounding paved area. As the majority of clay paviors are rectangular in shape, there should be no difficulty in obtaining replacement paviors. Ideally, these should be obtained from the original supplier. Any replacement paviors should be mixed with the existing paviors to ensure an adequate colour blend between the old and new products. The new areas should be carefully maintained until detritus has sealed the joints.

## Cleaning of Paving

### General Dirt and Detritus

To remove general dirt and detritus regular brushing is recommended. If detritus dulls the colour of the paviors, it can be re-established by pressure washing or scrubbing with soap and water. This can be carried out by hand or by using industrial cleaning equipment. Ensure all soap has been thoroughly washed from the surface on completion of the cleaning processes. If pressure

washing techniques are used, care must be taken to minimise the removal of jointing sand. Steps should also be taken to ensure that any sand lost is replaced at the earliest opportunity.

### Efflorescence

The majority of clay paviors have a low soluble salt content. Notwithstanding this, immediately after laying there may be a slight white deposit on the surface of the paving. This is most commonly derived from the jointing sand. Such salts should be allowed to weather away naturally and experience shows that this occurs quite rapidly. These soluble salts are not damaging to paviors. Chemical treatments are not necessary and should not be used. Certain buff coloured paviors are manufactured with a percentage of fireclay in the body and in extreme cases may suffer from vanadium staining. This takes the form of a yellow/green stain. Ideally vanadium staining should be allowed to weather away naturally.

### Lime Staining

This may occur on flexibly laid clay paviors if there is contamination from an external source such as concrete street furniture, concrete structures which are discharging run-off water onto the clay paviors, or certain limestone sub-bases. Lime staining eventually becomes insoluble and appears as a permanent white stain. It may be removed from clay paviors by first wetting their surface and treating them with a 10% solution of hydrochloric acid. After cleaning, the area should be washed down to remove all traces of acid.

## Moss, Lichen and Algae

Moss, lichen and algae may grow on clay paving in areas which are heavily shaded, under tress or not laid to an adequate fall, leading either to slow run-off or ponding of surface water. If such growths do occur, the areas should be treated with an appropriate proprietary weed or moss killer, used in accordance with the manufacturer's instructions. Such products are most effective when applied during a spell of dry weather.

## Rust Stains

If rust stains occur on the paving, the first requirement is to eliminate the source of the staining. To remove rust stains, the surface should be wetted and the affected area treated with a 10% hydrochloric acid solution. After cleaning, the paving should be thoroughly washed down to remove all traces of the acid.

## Oil Stains

Oil does not penetrate readily into the body of clay paviors, but if oil is split on the paving the spillage should be removed promptly with an absorbent material, such as paper towelling. The towelling should be used to soak, rather than wipe up the oil. The latter course of action may spread the contamination over a greater area of paving. After soaking up the majority of small spills, prompt washing with a strong detergent and hot water solution should remove the stain. Steam cleaning can be used on clay paviors to remove more extensive or stubborn stains but, if this is unsuccessful, an emulsifying degreasing agent should also be employed. Brush the cleaner onto the affected area and then wash the emulsified oil away with plenty of water. Neither hot water, steam cleaning or emulsifying agents will affect the colour of the paviors.

## Bitumen Stains

Bitumen does not penetrate readily into clay paviors. The best method of removal is to leave the bitumen until it has cooled and remove it with a paint scraper or similar mechanical device. If it is particularly resistant, the use of ice to make the bitumen even more brittle may be required prior to scraping it from the paving. Any residue should be removed with an abrasive powder and finally the whole area rinsed with clean water. Certain proprietary cleaning agents are available to remove bitumen, but these should be tested on an inconspicuous area of paving first.

## Paint and Graffiti

Both paint and graffiti are difficult to remove. Wet paint should be soaked up with an absorbent material. The area should not be wiped, as this will spread the paint. The spillage should then be treated with a suitable solvent, such as white spirit and the area washed with a strong detergent and hot water solution. Steam cleaning can also be employed. When paint has dried, it should be scraped off as far as possible and an appropriate paint stripper applied. This should be used in accordance with the manufacturer's instructions. Once the paint has been removed by the chemical, the area should be washed with strong detergent and hot water solution. Paint manufacturers may often be able to give more detailed advice on the removal of their own products. There are companies specialising in the removal of graffiti and it may be necessary to consult them if there are large areas affected by accident or as a result of vandalism.

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## Epoxy and Polyester Stains

Solidified epoxy or polyester resin can be removed by carefully burning the spillage with a blow torch or other heat source. Care must be taken not to inhale the fumes given off during the process. If, after burning, a black stain remains on the paving, this can normally be removed by scrubbing the paviors with a strong detergent and hot water solution. A small area should be tested before any large scale cleaning is undertaken.

## Smoke and Fire Stains

Normally these stains can be removed by scrubbing with a strong detergent and hot water solution. Where the stains persist, a mixture of scouring powder and household bleach can be used, but this should only be used in a very well ventilated area. When using bleach, it is important that the affected area is thoroughly washed when cleaning is completed.

## Beverage Stains

These can normally be removed by scrubbing with a strong detergent and hot water solution. If the stain is persistent, apply a bleach solution and then rinse the area well with clean water. Pressure jetting can be used, taking care to minimise the loss of sand in the joints between the paviors.

## Chewing Gum

Chewing gum is difficult to remove from all paving surfaces. Newly discarded gum can be scraped off using a scraper, but hardened gum can only be removed by either freezing the gum and chiselling it from the surface of the pavior or by using a high pressure water jet.

## Scuff Marks

These can normally be removed by steam cleaning, or by scrubbing the area with a strong detergent and hot water solution.

## Winter Maintenance

Clay paved areas may be treated with de-icing materials. Normal de-icing salts can be applied without any risk of damage to the pavement. Once the pavement has dried out after a thaw, however, the paving may be temporarily discoloured by the de-icing salts, as is the case for any other surfacing material. Normal weathering should soon remove such discolouration. If there is a concern about the temporary discolouration of paved areas, then other de-icing materials, such as urea, should be used.

## Health and Safety

Some of the cleaning methods described above involve the use of chemicals which may be damaging or dangerous if not used in the correct manner. It is important that safety warnings issued by the manufacturer of the chemicals should be read carefully and strictly adhered to.

In general, the following precautions should be taken:

- When using chemicals, protective clothing such as gloves, goggles, boots and overalls should be worn.
- Ensure there is adequate ventilation in confined spaces.
- When using flammable materials, ban the use of cigarettes, naked flames and other sources of ignition in the immediate vicinity.
- When diluting acids, always add acid to water and not water to acid.
- Dispose of, safely, any clothing which is contaminated with chemicals.
- Ensure care is taken not to damage, contaminate or stain any adjoining material.
- Protect personnel operating near the area to be cleaned from any injury or hazard created by the cleaning.
- Whenever possible, care should be taken to ensure that the disposal of 'run-off' materials containing chemicals does not harm personnel, animals or any part of the environment.
- Trials should be carried out on a small, preferably inconspicuous, area of paving to determine the effect of the chemicals before treating a larger area.

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