Cleaning of Clay Paved Surfaces

Maintenance & Repair. No 4.2 December 2001

INTRODUCTION

These notes are intended for general guidance and are not intended to be exhaustive.

Clay paving provides a durable, hardwearing surface but, like any surfacing material, this may suffer from time to time from staining, due to general trafficking and contamination from other sources.

Due to the nature of construction, there may also be some vegetation growing in the joints, or on the paving themselves in shaded areas or areas subject to long periods of dampness.

As for any other surfacing material regular maintenance and good cleaning practice will enhance the overall appearance of the paving.

Initial maintenance - flexibly laid clay pavers

During the very early life of the pavement, the joints between the pavers will be relatively porous.

The ingress of water will consolidate the jointing sand and it is important that the joints are regularly filled with jointing sand to replace the sand consolidated by the rainwater.

The joints will soon become semi-impervious due to detritus tending to seal the joints. Until this has occurred the paving should only be brushed by hand.

Mechanical sweepers, and in particular sweepers with high suction forces should not be used. If they are used, there is a real risk of loss of jointing sand from between the pavers.

There is a number of water miscible liquids that can help to stabilise the joint filling sand. These can aid in the reduction of the removal of sand by suction cleaners, and at the same time, helps to prevent the ingress of water during the early life of the pavement.

It is essential to consult with the paver manufacturer before applying any form of surface treatment.

General dirt and detritus

To remove general dirt and detritus, regular brushing is recommended. If detritus masks the colour of the material then this can be re-established by scrubbing with hot soapy water. This can be carried out by hand or by using an industrial cleaner. Ensure that all the detergent has been thoroughly washed from the surface on completion of the cleaning and the resulting run-off is carefully channelled to either drainage points or containers where it can be safely disposed of.

If a hose is used, then care must be taken to avoid the removal of the jointing material (sand or mortar).

Moss, lichens and algae

Moss, lichens and algae should not grow on clay pavers unless the area is heavily shaded, is under trees, or is not laid to an adequate fall. If such growth does occur and is considered undesirable then the area should be treated with a proprietary moss killer used in accordance with the manufacturer's instructions.

Such products take some days to be effective and work best when applied during a spell of dry weather. Any thick growths should be scraped off first and the chemical treatment well brushed in.

Some treatments leave a residue to discourage the re-growth of the moss and algae, but this will only be of limited value if the paving remains damp and in shade.

Rust stains

First of all, action must be taken to eliminate the sources of staining.

To remove the rust stain the surface should be made wet and then the affected area treated with a 5-10% hydrochloric acid solution. Before cleaning, provision should be made for the collection and disposal of waste chemical materials, in accordance with legislative requirements.

Buff clay pavers should NOT be treated with acid without first discussing the stain with the paver manufacturers.

Oil stains

Oil does not penetrate readily into clay pavers, but if oil is spilt on the pavers, the spillage should be removed promptly with an absorbent material, such as paper towels. The oil should not be wiped up; otherwise this will spread the contamination on the surface of the paver.

Steam cleaning can be used on clay pavers to remove such staining, but if this is unsuccessful an emulsifying de-greaser should be employed. Brush with plenty of water to safe disposal. An alternative cleaning method is to brush the area with a strong detergent and hot water. This will not affect the colour of the clay paving.

Bitumen stains

Bitumen does not penetrate readily into clay paving. The best method of removal is to leave the bitumen until it has cooled.

A paint scraper or a similar mechanical device can then often remove it. 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 a scouring 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.

Graffiti and paint stains

Both paint and graffiti are difficult to remove. Fresh wet paint should be soaked up with an absorbent material without wiping the paint, as this will spread the stain. It should then be treated with a suitable solvent, such as white spirit, and then the area washed with a de-greasing agent taking care in the disposal of the run-off material.

With dried paint, the paint should be scraped off as far as possible and then a paint remover to BS3761 (4) should be applied.

Smoke, fire and tobacco stains

Normally these stains can be removed by scrubbing with hot soapy water. Where the stains persist, scouring powder or household bleach solution has been found to be successful.

Beverage stains

These can normally be removed by scrubbing the stain with hot soapy water. If the stain is persistent, apply bleach solution and then rinse the area with clean water, taking care to dispose of the run-off safely.

Chewing gum

Chewing gum is one of the most difficult substances to remove from any surface material.

Newly discarded gum can be scraped off by using a scraper, but hardened gum can only be removed by freezing the gum and chiselling it from the surface of the paving or, alternatively, by using a hot water/steam cleaner.

There is a number of contract cleaning companies who specialise in this type of cleaning, and it is advised that they are contacted directly for further details.

Scuff marks from vehicle tyres

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

Efflorescence on clay pavers

Any soluble salts showing on the surface of the paver should be allowed to weather away naturally, as experience shows that such weathering will occur quite rapidly. These salts are not damaging to clay paving. **Chemical treatments should not be used.**

Certain light coloured pavers are manufactured from fireclay and in extreme cases may suffer from metallic salts staining. Vanadium efflorescence takes the form of a yellow/green stain, and orange/brown deposits may result from iron or manganese compounds.

These stains should be allowed to weather away naturally, but if they persist contact the paver manufacturer.

Cement staining

Remove large deposits with wooden implements to avoid damaging the paver surface.

Following the pre-wetting of the area, treat the residue of mortar by careful application of a dilute hydrochloric acid solution or a proprietary cleaning solution. The application of the acid breaks down the cementitious components but is not damaging to clay pavers.

As with all cleaning procedures a rinsing operation should be carried out shortly after application, and care taken to dispose of run off solutions safely.

If the above method is not successful with coloured mortars, specialist advice from the coloured mortar supplier should be sought.

On the rare occasions when a vanadium efflorescence is present, hydrochloric acid based cleaners must *not* come into contact with the efflorescence, otherwise a dark stain will result which will become fixed on the surface.

Lime staining

Lime staining should not occur on flexibly laid clay pavers. However, contamination from an external source, such as concrete street furniture or concrete units, which are discharging run-off water onto the clay pavers, is a possibility.

Lime staining eventually becomes insoluble and appears as a white stain. In the unlikely event that such staining occurs, the clay pavers should be wetted and the surface then treated with a hydrochloric acid solution of 5-10% concentration.

As with all cleaning procedures a rinsing operation should be carried out shortly after application, and care taken to dispose of run off solutions safely.

Iron staining

This can appear in several forms from orange through to dark brown in colour and can affect the paver surface and lead to staining of any mortar joint.

Iron staining will recede over time and is best left to weather away naturally. In severe cases however, the following techniques have found to be successful in removal of the stain.

Removal from the face of the mortar joint is best achieved by scraping or rubbing with a round file or carborundum slip. Where overall cleaning is required the following chemical treatment has been found to be effective:

Brush on 5-10% hydrochloric acid solution. This is frequently satisfactory on fresh stains. To this end, proprietary brick or patio cleaners may be effective, but, as with all treatments, a small trial area should be carried out first. For more persistent stains, repeated application may be necessary.

Manganese staining

This is similar to iron staining but is generally dark brown or black in colour, and the treatment is essentially similar. If chemical treatment is required the following methods have been used:

On fresh stains, brush on 5-10% hydrochloric acid solution or a proprietary brick or paver cleaner.

In more severe cases a combined solution of hydrochloric acid (10%) and hydrogen peroxide (10%) can be effective or, alternatively, paint the stain with oxalic acid solution (120g/litre).

Mechanical Cleaning

The following recommendations deal with vehicles and associated equipment and their use:

1) Equipment should be purpose designed to sweep the particular area. If there is any doubt, the vehicle manufacturer should be consulted.

2) Tyres should be inflated according to the manufacturer's recommendations to ensure maximum weight distribution.

3) Polypropylene, not wire, brushes should be used.

4) Sweeping brush pressures should be set to the minimum required to suit the particular task, i.e. surfaces swept regularly will require a lesser setting than those swept infrequently or those covered with heavy deposits.

5) When sweeping, engine revolutions should be set at the minimum required to maintain vacuum (suction) pressure.

6) Operators, including reliefs, should be trained to vehicle manufacturer's recommendations and tyre and brush pressures should be regularly checked.

7) Advice should be given to operators that, when equipment is stationary or left unattended, suction, brush rotation and water jetting equipment should be switched off to avoid the risk of damage to the area below the stationary equipment.

8) In new or re-laid areas, agreement should be reached with the local Highways Authority to allow

the pavement to settle and the joints to seal before manual cleaning.

9) When water jetting equipment to wash such areas is used, the jets or hand held lance should be directed at the surface at an angle not greater than 30^{o} and across the diagonal (i.e. not parallel to joints) using a suitable detergent solution.

10) The area should be inspected after cleaning to ensure that joints are refilled with jointing sand if necessary.

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