

CLEANING Concrete

SCOPE

This data sheet sets out procedures for the general cleaning of concrete surfaces and the removal of dust, dirt and soil contamination. For advice on the removal of specific stains (eg oil spills), see Data Sheet [*Removing Stains from Concrete*](#).

GENERAL

The procedures outlined are for cleaning hardened concrete surfaces. They should not be used on concrete less than seven days old. If used earlier than that there is a risk of abrading and damaging the surface and/or finish.

Before undertaking cleaning by any of the methods described below, provision should be made for the removal of any wash water and contaminants generated by the cleaning process and any loose material (eg leaves), should be brushed or blown off the surface.

The three cleaning methods in increasing order of intensity are: water washing, pressure washing and steam cleaning. Various general purpose concrete cleaning products (detergents and chemicals) can be used with any of these methods to reduce the effort required to clean the surface. Whichever method is used, the cleaning should be carried out systematically from one edge or corner.

Water washing

Water washing typically refers to the use a water jet from a garden hose (connected either to the mains water supply or via a pump to a water tank) to loosen and flush dirt from the concrete surface. The method may also be referred to as low-pressure water washing, as the water pressure is typically only 100–200 kPa (15 to 30 psi). Water washing would also include the use of a bucket of water and scrubbing the surface with a stiff-bristled brush or broom. Even with the use of a hose, because of the low pressure, scrubbing the surface with a stiff-bristled brush or broom may be required to loosen stubborn deposits.



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Figure 1: Sweeping a large pavement to remove bulk of loose material prior to pressure washing

A cleaning product may also be applied to the concrete surface to assist in the removal of stubborn deposits. Initially, the use of a household or laundry detergent, bleach or sugar soap could be tried. If this fails to remove the deposits, most hardware outlets carry a range of suitable concrete cleaning products. Typically they are caustic and highly alkaline solutions containing sodium-based chemicals such as sodium hypochlorite, sodium hydroxide and sodium tripolyphosphate. Some may contain acidic solutions of oxalic or phosphoric acid.

Because of the risk of affecting the colour of decorative concrete surfaces, whenever using chemicals, they should first be trialled on an inconspicuous area. Only when their effect has been assessed should they be used more extensively over the surface to be cleaned. Note that some cleaning chemicals may affect adjacent finishes by staining woods, damaging metal and painted surfaces and etching or leaving residue on glass surfaces. The manufacturer's recommendations should always be followed. After washing, the surface (plus any adjacent surfaces) should be thoroughly rinsed with clean water to remove all traces of the detergent or cleaning product.

Pressure washing

Pressure washing is simply water washing with a significantly higher water pressure, avoiding the need to manually scrub the surface. Typically, electric or petrol driven pumps are used to increase the water pressure to about 10,000 kPa (1,450 psi) for domestic models and up to about 14,000 to 18,000 kPa (2,000 to 2,600 psi) for the larger commercial/professional models.

The increased pressure is used to create a water jet that has sufficient force to break the bond of the dirt or other contaminant to the concrete surface, allowing it to be washed/removed from the surface. Nozzles producing a fan spray are the most common for pressure washing as they allow a wider area to be cleaned with each pass. Nozzles producing a narrow concentrated jet are seldom used for general cleaning, but may provide greater force for removal of small stubborn deposits.

With fan nozzles, the force the water exerts on the concrete surface quickly decreases with the distance from the surface. This is because the width of the fan increases with distance and the air provides considerable resistance to the small water droplets created by the higher pressure atomising the water as it leaves the nozzle. The nozzle distance from the surface should therefore be adjusted to provide optimum cleaning: close enough to dislodge the dirt but far enough not to damage the surface

Figure 2. As a guide, for domestic models 100 to 250 mm should provide satisfactory cleaning; for higher pressure models, 200 to 450 mm.



Figure 2: Pressure washing pavement – nozzle distance adjusted depending on force required to dislodge dirt

Note that the pressure of domestic type models is sufficient for general cleaning of concrete surfaces. The combination of pressure and rate of water flow do, however, affect the cleaning ability of a pressure washer or the speed with which a surface can be cleaned; higher-pressure machines delivering more water can have the nozzle held further from the surface to achieve the same force at the surface. The resultant wider fan width at the surface means that a larger area can be cleaned with each pass, an important consideration when the cost of labour must be included.

Professional pressure washers may also have provision to introduce detergents and cleaning chemicals into the water stream. Only products that are specially designed for use in pressure washers – biodegradable, harmless to humans, easy to use and will not damage the equipment should be used. Most suppliers of equipment will also carry a range of suitable products. Some pressure washers may also allow higher temperature water to be used. Detergents are more effective and faster at emulsifying the dirt as the temperature increases, allowing the bond between the dirt and concrete surface to be broken more easily.

Steam cleaning

The main benefit of steam cleaning is the ability to use temperatures greater than that of high-temperature water or pressure washing. The higher temperature further increases the effectiveness of detergents and, depending on the temperature used, can dissolve many of the substances such as chewing gum that are resistant to other cleaning methods. Another advantage of steam cleaning is the ability to disinfect by killing bacteria. This may be a particularly desirable aspect for cleaning surfaces in food-preparation areas.

Steam cleaning concrete may be difficult and will typically be considerably slower than pressure washing. As such, it is often used in conjunction with water or pressure washing to remove specific stains or particularly stubborn deposits.

If considering steam cleaning, the use of an industrial/commercial high-pressure steam cleaner together with detergents or non-solvent emulsifying agents suitable for use in high-pressure steam cleaners will reduce the time required. After removing the contaminants, the surface should be thoroughly rinsed with clean water.

FURTHER INFORMATION

Further information on good concreting practices can be downloaded from the Cement Concrete and Aggregates Australia website at www.ccaa.com.au.

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