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A guide to cleaning stainless steel

Cleaning stainless steel

All grades of stainless steel will stain and discolour due to the surface deposits and can never be accepted as entirely maintenance-free. To achieve maximum corrosion resistance, the surface of the stainless steel must be kept clean.

Surface contamination and the formation of deposits must be prevented. The deposits may be minute particles of iron or rust from other sources used on the building of new premises and not removed until after the stainless steel items have been fixed. Industrial and even naturally occurring atmospheric can be equally corrosive, e.g. salt deposits from marine conditions.

Strong acid solutions are sometimes used to clean masonry tiling of buildings, but these should never be permitted to come into contact with metals, including stainless steel.

In some situations, bleach (or other hypochlorite based cleaners) are used to clean stainless steel this should be avoided wherever possible. The consequence of bleach coming into prolonged contact with stainless steel is surface pitting.

Other liquids which cause a similar effect are some toilet cleaners, photographic developing liquids, acids, concentrated disinfectants, chlorine and strong alkalis (i.e. caustic soda). If any of these solutions do come into contact with the surface these should be thoroughly rinsed off with water.

Regular cleaning

1. Wash down the surface regularly using water containing soap or mild detergents
2. Always rinse the surface with clean water
3. A thorough cleaning operation can be completed by polishing the surface with a soft dry cloth

Cleaning aids

Always avoid using coarse abrasive materials such as harsh scouring pads, wire wool etc. which can scratch stainless surfaces. Metal particles left on the surface can also quickly turn to rust and leave stains on the stainless steel. Use brushed and scrubbers etc. which utilise mild or soft bristles such as nylon (or similar).



Effects of hypochlorite bleaches on stainless steel sinks

A consultant metallurgist made the following report to advise on pitting problems concerning stainless steel sinks. This type of problem involves all makes of sinks made from various sources of steel supply. After conducting metallurgical examinations on sinks with pitting in service, none had a metallurgical or fabrication fault that could account for the failure.

British Standard Specification B.S.1244 for stainless steel sinks lays down the quality of stainless steel to be used. It is invariably found that the quality of steel in the pitted sinks met the requirements of that specification. This indicates that some features of the service condition accounted for the failure.

Stainless steel contains chromium as an essential constituent, and this alloying imparts to the steel the same property as chromium steel - it has a resistance towards corrosion. This is because an invisible passive chromium-rich oxide film forms on the surface of the steel, and this film remains intact, providing conditions remain oxidizing, these exist under most normal domestic conditions. However, this oxide film can be broken down, and pitting can occur if exposed to reducing conditions. Certain acids, chemicals and halogens (iodine, chlorine, fluorine, bromine) can provide these conditions.

Domestic bleaches contain chlorine in the form of a hypochlorite, and such bleaches are sometimes used to soak cloths in overnight, using a diluted solution, these bleaches being supplied under the name of Domestos, Chloros, Biotex etc. If cloths are soaked even in a weak solution of this type of liquid, or if these are soaked in the liquid in a plastic bucket, and the contents poured down the sink and not finally washed away, extended contact with the bleach can break down the passive oxide film and in time cause corrosion and pitting of the stainless steel.

Normal dishwashing liquids are not detrimental.

It is strongly recommended to all users of stainless steel sinks that they avoid contact with domestic hypochlorite-contained in bleaches (their smell of chlorine can recognize these) as almost inevitably, in time, pitting and probable complete perforation will occur.



Cleaning methods for stainless steel

Requirement	Suggested Method and Comments				
Routine cleaning of light soiling	Soap, detergent or dilute (1%) ammonia solution in warm clean water. Apply with a clean sponge, soft cloth or soft-fibrebrush then rinse in clean water and dry. This method is satisfactory on most surfaces.				
Fingerprints	Detergent and warm water, alternatively, hydrocarbon solvent. Proprietary spray-applied polishes available to clean and minimise re-marking.				
Oil and grease marks	Hydrocarbon solvents (methylated spirit, isopropyl alcohol or acetone). Alkaline formulations are also available with surfactant additions e.g.'D7' Polish.				
Stubborn spots, stains and light discolouration. Water marking. Light rust staining	Mild, non-scratching creams and polishes. Apply with soft cloth or soft sponge and rinse off residues with clean water and dry. Avoid cleaning pastes with abrasive additions. Suitable cream cleansers are available with soft calcium carbonate additions, e.g. 'Jif', or with the addition of citric acid, e.g. Shiny Sinks. Do not use chloride solutions.				
Localised rust stains caused by carbon steel contamination	Proprietary gels, or 10% phosphoric acid solution (followed by ammonia and water rinses), or oxalic acid solution (followed by water rinse). Small areas may be treated with a rubbing block comprising fine abrasive in a hard rubber or plastic filler. Carbon steel wool should not be used, nor should pads that have previously been used on carbon steel. A test should be carried out to ensure that the original surface finish is not damaged.				
Burnt on food or carbon deposits	Pre-soak in hot water with detergent or ammonia solution. Remove deposits with nylon brush and fine scouring powder if necessary. Repeat if necessary and finish with 'routine cleaning'. Abrasive scouring powder can leave scratch marks on polished surfaces.				
Tannin (tea) stains and oily deposits in coffee urns	Tannin stains - soak in a hot solution of washing soda i.e. sodium carbonate. Coffee deposits - soak in a hot solution of baking soda (sodium bicarbonate). These solutions can also be applied with a soft cloth or sponge. Rinse with clean water. Satisfactory on most surfaces.				
Adherent hard water scales and mortar/cement splashes	10-15 volume % solution of phosphoric acid. Use warm, neutralise with dilute ammonia solution, rinse with clean water and dry. Alternatively soak in a 25% vinegar solution and use a nylon brush to remove deposits. Proprietary formulations available with surfactant additions. Take special care when using hydrochloric acid based mortar removers.				
Heating or heavy discolouration	<table border="0"> <tr> <td>a) Non-scratching cream or polish e.g. Solvol Auto Chrome Metal Polish.</td> <td>b) Nylon-type pad, e.g. 'Scotchbrite'</td> </tr> <tr> <td>a) Creams are suitable for most finishes, but only use 'Solvol' on bright polished surfaces. Some slight scratching can be left.</td> <td>b) Use on brushed and polished finishes along the grain.</td> </tr> </table>	a) Non-scratching cream or polish e.g. Solvol Auto Chrome Metal Polish.	b) Nylon-type pad, e.g. 'Scotchbrite'	a) Creams are suitable for most finishes, but only use 'Solvol' on bright polished surfaces. Some slight scratching can be left.	b) Use on brushed and polished finishes along the grain.
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Badly neglected surfaces with accumulated grime deposits	A fine, abrasive paste as used for car body refinishing, e.g. 'T-cut' rinsed clean to remove all paste material and dried. May brighten dull finishes. To avoid a patchy appearance, the whole surface may need to be treated.				
Paint, graffiti	Proprietary alkaline or solvent paint strippers, depending upon paint type. Use soft nylon or bristle brush on patterned surfaces. Apply as directed by manufacturer.				