

Cleaning stainless steel



Stainless steels are alloy steels with a chromium content of at least 10.5% and a carbon content of less than 1.2%.

A dense, chemical-resistant layer of chromium oxide (passive layer) forms on the stainless steel surface as the result of a reaction with oxygen. This is resistant to many aggressive fluids and no further surface protection is required.

The final treatment determines the quality of the stainless steel surface. Pickling gives the surface more of a matt appearance. Grinding and/or polishing produces glossy or high-gloss, reflective surfaces. Irrespective of the surface quality, all stainless steel surfaces are sensitive to fingerprints, hand prints, oily substances, adhesives and similar.

- General**
- Do not stick any adhesive films, adhesive tapes, crepe strips or similar onto stainless steel surfaces to provide temporary identification. It is often very difficult to fully remove adhesives or they simply can't be fully removed. They will leave behind unwanted marks and residues on surfaces.
 - Avoid welding and grinding steel parts near stainless steel. Grinding sparks and weld splashes will permanently damage the passive layer in places and cause rust spots.
 - You **must not** use abrasive cleaning items such as steel scrapers, steel wool, steel brushes or steel sponges.
 - Acids, particularly acids containing chlorides, bleaches or silver polishing agents, can penetrate or permanently damage the passive layer. Stainless steel must therefore not be cleaned with unsuitable agents.



Surface cleaning Stainless steel surfaces are hard, smooth and free of pores. This ensures no cavities form where dirt and micro-organisms could otherwise accumulate. Nevertheless, stainless steel components still need to be cleaned regularly and disinfected when necessary. Stubborn dust and production residues must be removed carefully during initial or basic cleaning. You must take the quality of the surface into account when cleaning surfaces. Ground or polished surfaces can be wiped off wet, e.g. using a microfibre cloth. A sponge is often better on pickled surfaces. The type of dirt determines whether you require a cleaning agent or not.

Light dirt can be easily removed with stainless steel cleaners. Stainless steel cleaners loosen mineral dirt and lighten the surface without attacking the base metal.

Using cleaning agents

Outer surfaces Mineral deposits such as lime and cement residue, extraneous rust and light oil and grease contamination can be removed effectively with E-NOX Clean. E-NOX Clean is a highly effective, ready-to-use cleaning gel that is used either undiluted or diluted, depending on the amount of dirt (can be diluted up to 1:10 with water). This water-based acid cleaning gel contains biodegradable surfactants. It is applied with a sponge or cloth and adheres to vertical surfaces effectively thanks to its gel-like structure. Suitable for use in companies handling foodstuffs, this cleaning agent can be removed using water and leaves no residue behind.

Surfaces in contact with water Substances such as limescale, iron, manganese and organic matter in the drinking water cause unsightly or unhygienic surface deposits or discolouration on the inner surfaces of tanks for drinking water in some cases, particularly in the water exchange zone. These deposits cannot be removed by merely flushing with high-pressure water. In such cases, you need to use chemical cleaning agents (disinfectant cleaners).

Light dirt, organic deposits:

pH-neutral cleaning agents such as Carela puroDes EN or Carela Novopur

Heavy dirt and iron, manganese or limescale deposits:

Acid cleaning agents such as Albilex-3000, Witty Aqua Rasant, Carela Bio-X

Important: Cleaning agents containing hydrochloric acid must not be applied to stainless steel surfaces.

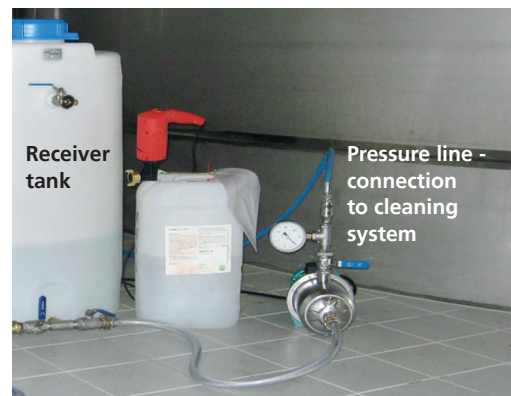
The agent can be sprayed on. With existing cleaning systems, it is possible to spray directly with a high-pressure cleaner or using a separate low-pressure pump with the cleaning system (available as a supplementary set).

Light dirt deposits:



Applying pH-neutral cleaning agents using high-pressure cleaners

Heavy dirt deposits:



Applying acid cleaning agents using a separate, acid-resistant pump

High-pressure water from the cleaning system is used for the final flushing. This removes all traces of the cleaning agent from both the cleaning system and the inner surfaces. The flushing process must be continued until all flushing residue has been completely removed. A spray lance or the special base/roof cleaning system is used to flush the roof and, if necessary, the base. The manufacturer's instructions must be observed to dispose of the backwash water.

- Pickle cleaners** A pickle cleaner may be required on damaged or very dirty surfaces. Pickle cleaners contain at least 25% phosphoric acid and small quantities of nitric acid and hydrofluoric acid. This composition ensures even extraneous ferrites or tarnish marks are reliably removed. Thanks to its oxidising components, the pickle cleaner passivates the surface at the same time.
- Mechanical surface damage, extraneous rust or deeply embedded surface damage must be completely removed with an abrasive fleece or by grinding and polishing in order to produce a passive layer with long-term resistance.
- When using cleaners or abrasive fleece, note that the whole surface often needs to be treated due to the lightening effect to ensure the surface has a uniform appearance (risk of staining). Only trained expert staff should carry out pickle cleaning.
- Using pickle cleaners** Pickle cleaners come in a paste form and are applied with a sponge, brush or low-pressure spraying unit. Rubber gloves, acid-resistant protective clothing and tight-fitting goggles are required to provide protection. The exposure time is between 30 minutes and 2 hours, depending on the temperature and the amount of dirt. The cleaner must then be flushed off with water, ideally under high pressure.
- The pickle cleaner can be disposed of via the sewerage system. It must be neutralised first if necessary. We recommend using DERUSTIT 4023 pickling cleaner. You will need about 150 to 250 g/m².
- Pickling with pickle paste** Heavy surface damage or welds added at a later date must be expertly reworked locally with pickle paste. Only trained persons may carry out pickling and they must comply with safety regulations.
- Disinfection** Stainless steel surfaces, pipelines and tanks can be cleaned using products such as hydrogen peroxide-based disinfectants or cleaning agents.
- When disinfecting surfaces, bear in mind the required concentrations (standard disinfection and exposure times as per manufacturer's specifications). When using a high-pressure cleaner with a receiver tank, the disinfectant can be dosed directly into the receiver tank.
- You must dispose of used disinfectants and pickling and cleaning agents correctly.

You will find information about suitable mechanical and chemical cleaning agents on Data Sheet 824 from the "Non-corroding stainless steel" information centre among other places: *Under "Publikationen" at www.edelstahl-rostoffrei.de.*

Stainless steel cleaning agents

Surfaces in contact with water You can purchase cleaning agents to clean the entire surface of HydroSystemTanks® from the **following manufacturers, for example**

Schermann GmbH/SEWERIN	www.schermannmbh.com/en/
Albilex	www.albilex.de/en/
Witty GmbH & Co. KG	www.witty.de
CARELA GmbH	www.carela-group.com

Outer surfaces You can purchase the following cleaning agents to remove small stains directly from **Hydro-Elektrik GmbH:**

Designation	Article No.
Hydro stainless steel care set Contents: 1 bucket 10 l 1 x microfibre cloth, 1 abrasive fleece (grain 400) 1 abrasive fleece (grain 1000) 1 x E-NOX Clean highly-concentrated cleaner 0.5 l 1 pack of over-shoes (disposable shoes, 100 ea. per pack) Area of use: Cleaning external surfaces.	110800
E-NOX Clean highly-concentrated cleaner 1 l	204437
E-NOX Clean highly-concentrated cleaner 10 l Area of use: for removing tarnish marks, extraneous rust, limescale, welding scale, water spots and other contaminants or stains on stainless steel surfaces.	204556
Multi Clean cleaning concentrate 1 l	201509
Multi Clean cleaning concentrate 30 kg Area of use: Versatile, environmentally-friendly cleaning concentrate for effective dirt removal. Optimum properties to loosen oil and grease residues, stubborn deposits, resinification and other deeply-ingrained dirt.	203451
Abrasive fleece 158 x 224 mm, grain: 400	205843
Abrasive fleece 158 x 224 mm, grain: 1000 Area of use: For stubborn dirt, removing corrosion, degreasing and matting metal surfaces.	204275
Care spray for stainless steel Can, 400 ml Area of use: Surface care and removal of dust, light surface dirt, fingerprints and grease residues.	204276

Important **It is essential to follow the manufacturer's instructions and the safety instructions in the safety data sheet when using cleaning products and disposing of the backwash water.**
Contact the cleaning agent manufacturers directly if you need further information or have any questions.