

TI_2404: Cleaning and usage recommendations for stainless steel



iVario 2-XS & iVario Pro 2-S, L, XL



-



-



01/04/2024

Topic

Prevention of corrosion through correct use and cleaning

Affected product/accessories

iVario

- 2-XS

iVario Pro

- 2-S
- L
- XL

General information

The quality of RATIONAL products is based on the highest standards during material selection and production. Careful cleaning of units and accessories by the user or unit operator is essential to ensure correct function and value retention.

Stainless steel is corrosion resistant in principle, but can corrode under certain conditions, especially due to salt deposits and contact with certain chemical substances.

Cleaning and usage recommendations are provided by RATIONAL to prevent corrosion and ensure the service life of the units.

This includes measures such as the necessary removal of salt, lime, fat and protein deposits, regular cleaning after use and the use of suitable cleaning agents and methods.

RATIONAL products are developed and manufactured to the highest standards of quality. The materials used for the manufacture of RATIONAL products and accessories are therefore high-quality materials from reputable manufacturers. To ensure the correct function of the material and the value retention of the investment, the units and accessories must be cleaned carefully.

Basic explanations for stainless steel

Most materials used in professional kitchens are stainless steel. One of the most important properties of stainless steel is the corrosion resistance under a wide variety of environmental conditions. Such material behaviour is a result of the presence of what is known as a "passive layer", which is formed on the surface of the steel and ultimately constitutes a protective barrier between the metal and any corrosive medium around it. This protective layer forms as a reaction to the high chromium content in stainless steel. Any damage to this chromium oxide layer through mechanical handling has no damaging effect as it reforms immediately when there is atmospheric oxygen and the steel is once again protected against corrosion. However, corrosion can still occur on stainless steel. Stainless steel can rust if the formation or regeneration of the passive layer is delayed or prevented, or if this chromium oxide layer itself is attacked. This can be caused by reducing agents if they are concentrated and/or act on the steel at high temperatures.

The main cause of corrosion on stainless steels in commercial kitchens is the enrichment with Cl ions (chlorides) or simply salt deposits. This occurs, for example, when units are used for a single type of production (e.g. cooking pasta in the iVario). Salt deposits can accumulate and also concentrate in corners and cavities. Poor quality water with a chlorine concentration above 50 mg/l can lead to additional enrichment with Cl ions (even though water up to 250 mg/l is drinkable).

Careful cleaning is essential in these cases. A humid atmosphere will further accelerate corrosion if the chromium oxide layer is attacked. These corrosion phenomena also occur in private households, e.g. on the bottom of the stainless steel cookware.

In addition to the attack by chlorides, further damage can be caused by:

- Sulphurous substances
- Seasoning concentrates such as mustard, vinegar essence, concentrated spices, saline solutions, etc.
- Deposits of fat, lime, starch and protein
- External rust (e.g. from other components, tools or flash rust)
- Iron particles (e.g. grinding dust)
- Contact with non-ferrous metals (element formation)
- Lack of oxygen (e.g. no air access, low oxygen water)

Cleaning and usage recommendations

NOTICE
Damage to the steel layer due to incorrect cleaning Incorrect cleaning will damage the passive layer of the chrome-nickel stainless steel and may result in discolouration on the unit. ▪ Do not use hydrochloric acid, sulphuric acid or other reducing agents to clean the pan.

- To ensure that the salt dissolves quickly, do not add the salt to the water until it starts to boil. This effectively prevents pitting corrosion.
- Even when boiling "only" with water, the apparently clean units must be cleaned after each use to remove corrosive substances, in particular Cl⁻ ions (chlorides).
- Clean the pan, especially the corners and edges, with lukewarm water and a sponge after each cooking process. Intermediate cleaning is essential, especially after use with foods containing salt.
- Remove any scale, fat, starch, or protein deposits from the unit and accessories. Below such layers, corrosion may occur due to a lack of air supply. If necessary, use a fat-dissolving cleaning agent, citric acid or diluted vinegar (do not use hydrochloric acid!) to remove limescale or discolouration ("rainbow colours" after cooking). Then drain or remove the liquid, rinse thoroughly with clean water and rub dry with a cloth.
- Stubborn dirt can be removed with a brush (plastic or natural bristles, e.g. RAT accessories). The use of sharp or pointed tools for cleaning is not permitted.
- A packet of baking powder can also be added to the baked on mass for stubborn dirt. Then fill the pan with enough water to cover the baked on areas with water. Bring the mixture to a slow boil. The baked on residues will loosen from the stainless steel.
- During prolonged periods without use (e.g. overnight), leave the pan valve open and do not fully close the lid to ensure oxygen access for the formation/maintenance of the passive layer.
- It is not recommended to load the cooking cabinet exclusively with food containing high levels of salt. It is better to load different foods, e.g. cook pasta alternately with fatty foods.
- Avoid damaging the stainless steel surface, especially with metals other than stainless steel. Foreign metal residues form tiny chemical elements that can cause corrosion. For mechanical cleaning, only use stainless steel wool or brushes with natural, plastic or stainless steel bristles (e.g. RAT accessories). Fresh rust spots can be removed with mild abrasives or fine-grained sandpaper.

The following cleaning agents may be used:

- Commercially available stainless steel cleaning agents without chlorides
- Commercially available chloride-free water-based cleaning agents
- Commercially available descaling agents based on organic or inorganic acids that are not harmful to stainless steel (e.g. acetic acid, citric acid, amidosulfonic acid, phosphoric acid); If in doubt, contact the cleaning agent manufacturer
- Soft cleaning cloth or damp microfibre cleaning cloth

After using cleaning agents, rinse thoroughly with plenty of clean water and rub the surfaces dry. Never use the built-in heating for drying. Always keep stainless steel surfaces clean, dry and accessible to air.