

Understanding Rust Blemishes in Stainless Steel Tank Pools

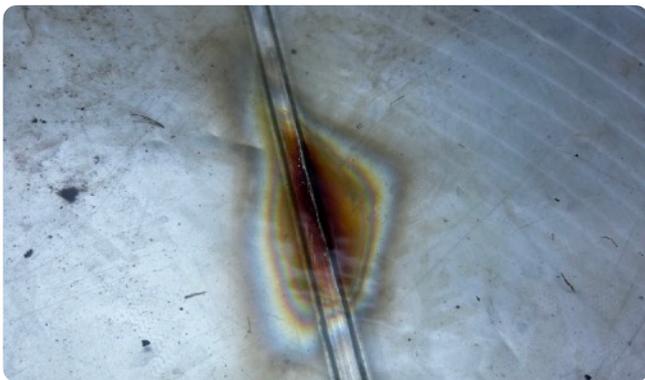
Stainless steel tank pools are prized for their durability and sleek appearance—but under certain conditions, they can develop rust blemishes that detract from their look and compromise their lifespan. While stainless steel is resistant to corrosion, it is not entirely immune. Recognising the causes and implementing preventative strategies is key to maintaining your pool's integrity.



Common Causes

Surface Contamination:

Rust stains often originate from external sources like incorrect or low-quality chemicals, can be airborne or carried into the pool by construction activities, or micro contaminants introduced via tank water or pipework from the treatment plant. These metal particles settle on surfaces, oxidise, and leave stains—even though the underlying stainless steel isn't corroding. This is similar to how bottle caps, hairpins, nails, or metal shavings can stain pool surfaces if left undisturbed.



Chloride Exposure:

Stainless steel can be vulnerable to chloride-induced corrosion, particularly in high-salt environments such as coastal regions. This can lead to pitting or tea staining, a dull, brownish discolouration often seen near welds or waterlines.

Poor Water Chemistry Management:

Imbalanced pH, high chlorine, or neglecting water maintenance can accelerate rust formation. This includes reactions between copper-based algaecides and high chlorine concentrations, which may lead to copper plating and staining.

Mechanical Damage or Abrasions:

Scratches compromise the stainless steel's protective oxide layer, leaving raw metal exposed to oxidation. This can happen through aggressive brushing or impact from foreign objects.

Identifying Blemishes

Visual Clues:

- Reddish-brown spots or streaks on the pool wall or floor
- Discolouration or "tea staining," especially near welds or fittings
- Rough or dull patches on an otherwise smooth surface

Common Locations:

- Around fixtures and fittings
- Silicone joints or overlaps
- Waterline or splash zone areas
- In and around seats and corners

Preventive Measures

Maintain Balanced Water Chemistry:

Keep levels within ideal ranges:

- pH: 7.2 – 7.6
- Chlorine: 1.0 – 3.0 ppm
- Total Alkalinity: 80 – 120 ppm
- Calcium Hardness: 200 – 400 ppm

Avoid sharp pH swings and maintain stable water conditions, especially when using products like copper-based algaecides, which can react with chlorine levels.

Check Regularly TDS and Metals:

- TDS: Less than 1,500 ppm above the original fill
- Metals:
 - Iron: 0.0 ppm
 - Copper: 0.0 – 0.2 ppm
 - Manganese: 0.0 ppm

Even trace amounts can cause rusty or green/blue staining, particularly when combined with imbalanced pH.



Use Appropriate Cleaning Tools:

Use non-metallic brushes and avoid introducing steel or iron-based tools that may corrode and cause transfer staining.

Protect the Surface:

Apply passivation treatments or stainless-steel-safe cleaners that maintain the chromium oxide layer. Light

applications of fish oil can help prevent staining on welds and joins.

Avoid Cross-Contamination:

Keep rust-prone items (like shovels, nails, hair pins, and hose fittings) away from the pool. Store cleaning tools away from dirt or construction areas.



Remedial Actions

Manual Cleaning:

For general rust blemish removal, use a non-abrasive stainless steel cleaner or a phosphoric acid-based rust remover such as Ranex Rustbuster. Always rinse thoroughly and neutralise the surface (i.e. sodium bicarbonate) to prevent residual chemicals from reigniting the corrosion process. For pool surfaces, an effective technique is the Sock Method—place Sodium Bisulphate (pH Down tablets) inside a sock, tie it off securely, and apply it directly to the rust stain. For deeper or hard-to-reach areas, attach the sock to a pole and hold it against the stain for several minutes before scrubbing with a pool brush. The acid action helps dissolve rust without damaging the surrounding surface.

Buffing and Passivation:

Polish light blemishes with a fine plastic based pad, then re-passivate the surface to restore its rust-resistance properties.

Install a Sacrificial Anodes:

Installing zinc, copper or magnesium anodes can protect stainless steel elements by diverting corrosive activity.

Install a Pool Liner or Membrane:

Installing a vinyl liner will provide a barrier between pool water and the metal shell, reducing exposure to corrosive elements.