

Chemical Pickling

Production of pure & passive stainless steel surfaces.

Why Pickle Stainless Steel?

Chemical pickling is essentially a controlled corrosion process that is used for sustainable cleaning of the metal surface (material removal of 1.5 to 2 μm is generally achieved). The metallic purity and passivity of the surface is essential especially because the stability of stainless steel depends on the formation of a very thin chromium-rich oxide passive layer that only develops on metallurgically pure stainless steel surfaces.

Scale layers, welding colours and heat tints, ferritic impurities (e.g. abrasion) and mechanical processing (e.g. grinding, blasting, etc.) inhibit the formation of a closed passive layer.

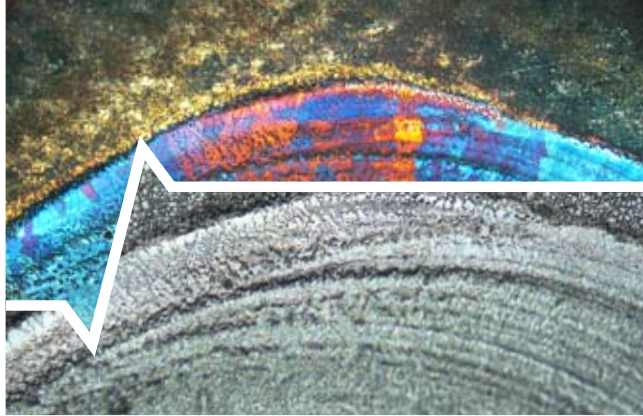
Only fully controlled pickled stainless steel surfaces and weld seams therefore ensure full corrosion resistance of the material and offer a decorative metallic appearance.

The chemical pickling process is defined by a set of significant parameters. In addition to the concentration of the pickling solution (often an aqueous mixture of hydrofluoric acid and nitric acid), the pickling temperature and exposure time are determining factors.

Technical Procedure.

Depending on the requirements and size of the workpieces, the components to be processed are immersed into pickling baths or the pickling medium is sprayed directly onto the metal surface and rinsed off with conditioned (demineralised) water.

The chemically pickled components are then passivated and rinsed free of acid using conditioned water with limited conductivity.



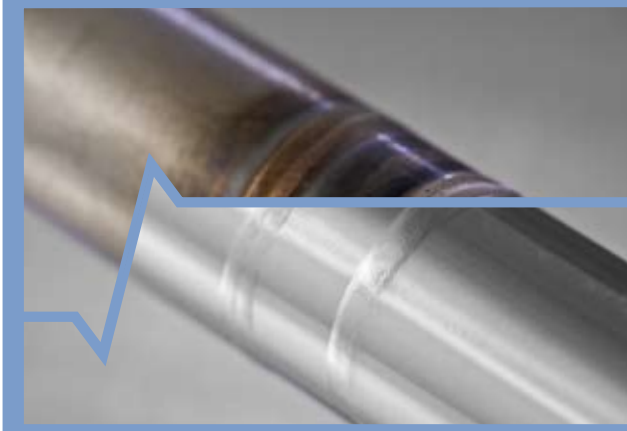
Comparison under the microscope: Weld with heat tints vs. chemically pickled material 1.4301; magnification 100x

Even the pickling of stainless steel tube systems is no problem for us. The systems to be treated are pickled with a circulating rinse and then passivated.

Types of chemical pickling processes:

- | Bath pickling
- | Spray pickling
- | Circulation pickling (e.g. tube systems)
- | Brush-on pickling (e.g. local welding seams)

Tube weld seam before and after HENKEL pickling treatment.



HENKEL-Surfaces Assure Your Component's Value.

Our Service Range.

- | On-site and factory service
- | Electrochemical polishing
- | Anodic cleaning
- | Chemical polishing / deburring
- | Chemical pickling and passivation
- | Professional cleaning (also in clean room)
- | Derouging and repassivation
- | Process and cleaning chemicals
- | Documentation
- | Construction



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	AT	HU	DE
Bath pickling	✓	✓	✓
Spray pickling	✓	✓	
Circulation pickling	✓	✓	✓
Brush-on pickling	✓	✓	✓

Enquire about our capabilities directly on site.

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Wet-chemical Passivation.

The characteristic passive layer of the stainless steel is removed in the course of the surface treatment. Passivation of the stainless steel surface is therefore highly recommended after every chemical surface treatment, such as pickling, as a final processing step.

Passivation supports the stainless steel surface during the renewal of the chromium oxide layer. With wet-chemical passivation, the layer structure is also more homogeneous. After this kind of repassivation treatment, the surface is completely passive and ready for use again.

Materials.

Every material has particular characteristics. The composition of the metallic alloy has a considerable effect on the pickling treatment. HENKEL pickling supports the following materials, amongst others:

- | High alloy steels,
- | Copper & copper alloys,
- | Nickel & nickel alloys,
- | Titanium & titanium alloys,
- | Niobium & niobium alloys.

Components.

Due to the various processing options, there are almost no limits to our chemical pickling treatment. The following components, amongst others, are typical:

- | Tubes, tube systems, fittings,
- | Heat exchanger tubes, tube bundles and plates,
- | Fences, railings and handrails, racks,
- | Storage tanks, mixing and batch tanks,
- | Cryostats, fermenters, agitators and built-in components,
- | Reactors,
- | Instruments and plant systems,
- | Special parts

Our Services.

Benefit from our more than 40 years of experience and from these additional advantages:

- | Processing of workpieces of every size (pickling baths up to 80,000 litres)
- | Processing documentation
- | Execution of pickling work, including on-site work
- | Development and delivery of chemicals for pickling and passivation.

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