



Tubes & Fittings

Surfaces from Europe's Number 1
tube electropolisher.

Why Electropolishing?

The advantages of electropolished tube systems over bare-metal or mechanically processed (grinded) surfaces are numerous. The following characteristics are achieved with electropolishing:

- | Microsmooth surfaces
- | Reduced roughness Ra
- | Reduced layer build-up
- | Easy to clean
- | Minimisation of the real surface
- | Significantly reduced degassing behaviour (optimised vacuum behaviour)
- | Metallic purity and chemical passivity
- | Optimally developed passive layer (in relation to thickness and Cr/Fe ratio)
- | Increased corrosion resistance
- | Reduced Rouging formation
- | Optimised welding-related further processing

Facts about HENKEL Tube EP.

The pharmaceutical, biological and semiconductor sector, in particular, take advantage of the benefits of electropolished surfaces. In order to provide optimal support for these key sectors, we electropolish according to customer specifications or factory standards, as well as according to the ASME BPE (NMA H) and SEMI F19 standards, amongst others.



Tube lengths	6 – 8 m standard (larger and smaller lengths on request)
Tube diameters for interior EP	from 2 mm (smaller diameters on request)
Tube length for outer EP	up to 18 m (including U-tubes)

Cleaning, conditioning and packing

Passivating	according to the HENKEL method (VHC 1100, VHC 4000) or DIN EN, ASTM or ASME standards
Rinsing	with treated water (RO, DI)
Drying	with purified air or pure nitrogen
Packing	with PE caps and in PE foil packaging (single or multiple)
Marking	Ink lettering or needle engraving

Interior EP of Coiled Tubes.

DIMENSIONS

- | 1/4" OD x 0.035" w in maximum lengths 100 ft.
- | 3/8" OD x 0.035" w in maximum lengths 100 ft.
- | 1/2" OD x 0.049" w in maximum lengths 100 ft.
- | 1/8" OD x 0.020" w on request



HENKEL-Surfaces Assure Your Components 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
- | Engineering and Construction



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Quality.

All tubes and fittings are fully visually inspected by our QA. In addition, the surface roughness is measured (in accordance with DIN EN ISO 4287 and DIN EN ISO 4288) before and after for 5% of each batch. On request, the surface test can also be expanded or supplemented with specialised analysis (REM, EDX, XPS/ESCA, AES). Furthermore, we have suitable production capacities to undertake a final cleaning of the tubes and fittings in our clean rooms. The clean rooms are classified according to 8, 7, 5 and 4 (DIN EN ISO 14644-1).

For our quality and environmental management system, we are certified according to the ISO 9001:2008 and ISO 14001:2009 standards.

Additional Services.

- | Chemical cleaning (degreasing)
- | Chemical pickling
- | Anodic cleaning (for fast and lasting removal of production-related impurities, e.g. for oxygen applications)
- | Passive layer test, including test documentation
- | Drying through baking out
- | Specification-compliant cutting (sawing)
- | Marking with needle engraving or ink lettering
- | Final cleaning and packaging in the clean room
- | Extensive processing documentation

Materials.

Every material has particular characteristics. The composition of the metallic alloy has an appreciable influence on the electropolishing process. The HENKEL electrolytes support the following materials, amongst others:

Stainless steels (1.4301/304L, 1.4435/1.4404/316L, 1.4539/904L, etc.), duplex steels (e.g. 1.4462), nickel and nickel alloys (alloy 59, Hastelloy®, Inconel®, etc.), aluminium, copper, niobium, titanium and titanium alloys (incl. nitinol), zirconium, tantalum, other materials on request.

Fields of Application.

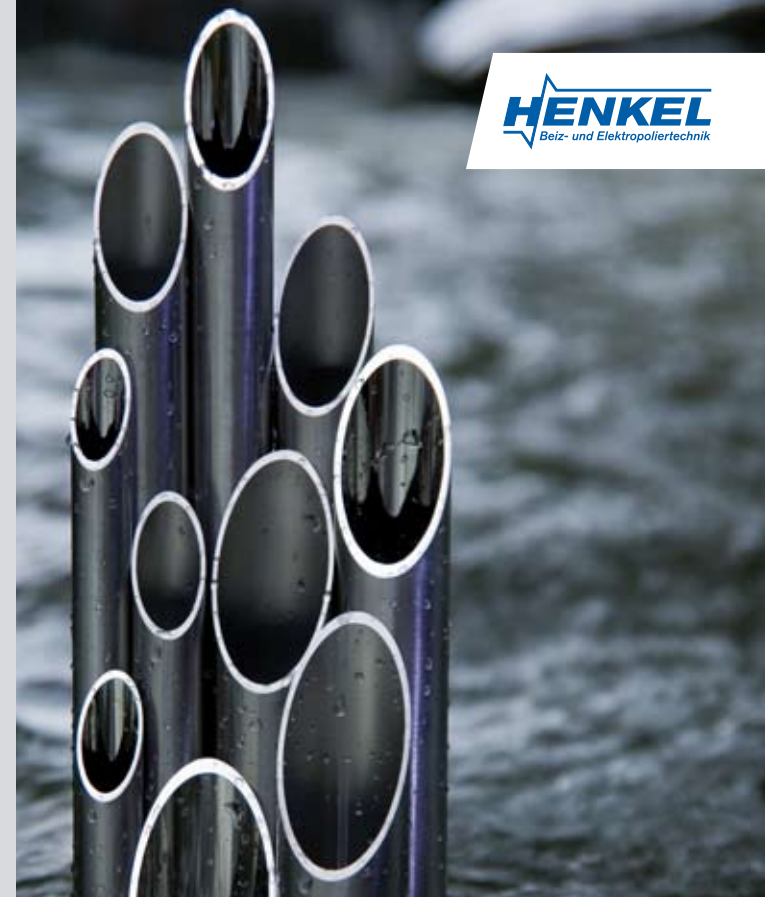
The possible applications for tube and fitting electropolishing are many and varied. Typical fields of applications are:

Biotechnology, the pharmaceutical, chemical, semiconductor, food and beverage, and cosmetics industries, power stations, cooling plants, heat technology, medical technology, aerospace, swimming pool technique, marine and others.

Your Benefits.

The processing of your tubes and fittings by us provides many benefits for you and your products:

- | Over 40 years of experience in electropolishing
- | Method and EP result tailored to your product
- | Cost-efficient series production on several systems
- | All conventional tube size ranges possible
- | Component/surface inspection through extensive QA
- | Alternative or additional surface treatment (degreasing, pickling, anodic cleaning)
- | Additional services from a single source, e.g. final cleaning in the clean room, customer-specific marking and packaging, etc.
- | Adherence to delivery dates and order processing



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