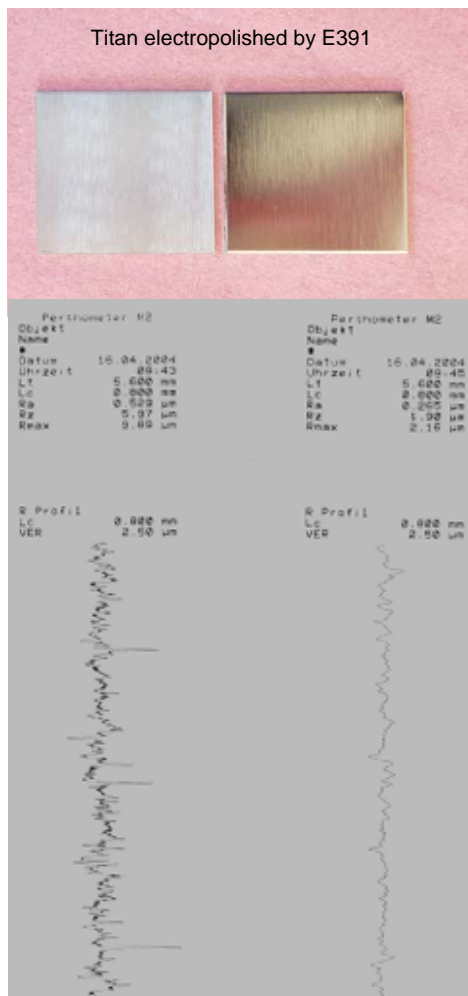


Titan Electrolytes

Characteristics and Effect

For the cleaning and stock removing surface improvement of titanium materials **POLIGRAT** are delivering several electro-polishing processes.

E 395 is applied for all Ti-base alloys as a wide-range electrolyte. The process is characterized by a high deburring power (surface removal $\sim 1 \mu\text{m}/\text{min}$). Surfaces which have been treated with this process are microstructurally levelled (electropolished) and have a clear, silky-matt brightness.



E 391 is applied as high gloss electrolyte for pure titanium (grade 1, 2, 3) especially in the medical technology and the chemical and pharmacological plant construction. The electrolyte has a high throwing power which will much ease the efforts necessary for the cathode construction in case of inner treatment of hollow parts.

Silky-matt up to highly glossy, reflecting surfaces can be achieved at a typical stock removal speed of $10 \mu\text{m}/\text{h}$. In case of a suitable mechanical pre-treatment also highly reflecting surfaces for decorative applications can be polished.

The electrolyte is free of chromic acid.

E 392 achieves similar surface results especially in case of titan alloys (grade 4,5 and special alloys with Fe, Zr, V,...) which are mainly applied as high-strength material for implants (medical technology), in the air and aerospace industries and in the last time also in the automobile industries. The electrolyte is free of chromic acid.

Application

The **POLIGRAT**-Electrolytes E 391, 392 and 395 are applied as concentrates and used in a temperature range of $20\text{-}30^\circ\text{C}$.

The possible current densities in case of E 395 are between 5 and $15 \text{ A}/\text{dm}^2$, in case of E391 or E392 at abt. $1\text{-}2 \text{ A}/\text{dm}^2$. The treatment times are varying from few minutes (E395) up to several hours (E391).

After the electro-polishing the surfaces must be rinsed clean. The resulting rinsing water is highly acidic and contains the metals which will be removed during the electro-polishing. Thus, the rinsing waters must be retreated or disposed according to the legal requirements.

Application samples

Titan-tank electropolished at the inner and outer side with the **POLIGRAT** process E 391 for the pharmaceutical industry

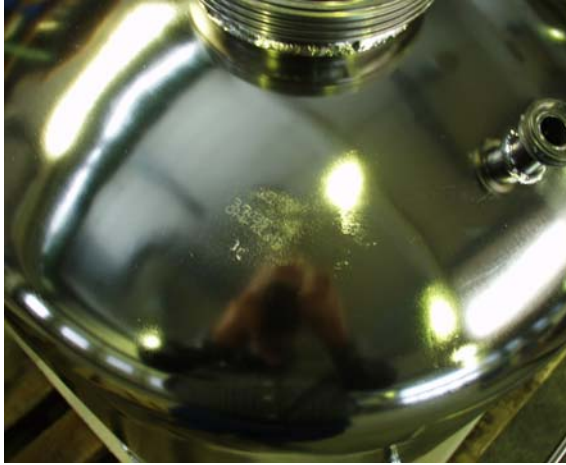
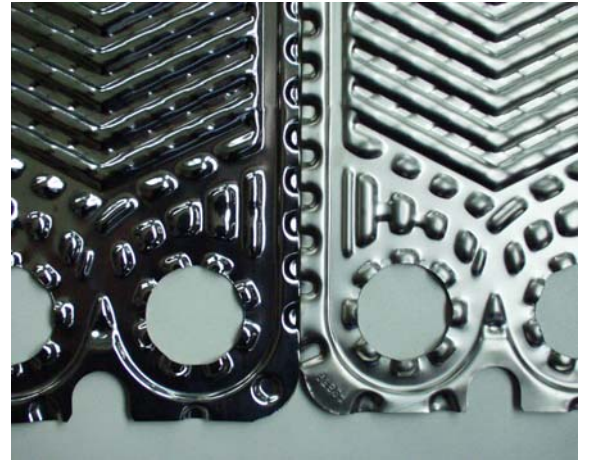


Plate heat exchanger, electropolished, with essentially reduced formation of encrustations during use in the production. The efficiency and the service life time are considerably increased.



Delivery Units

Liquid, in the packaging units

- One-way plastic can 50 kg
- Recyclable steel combi barrel 200 l
- Recyclable container (IBC) 1.000 l

The suitable electropolishing process for a work piece is determined by its alloy composition and the material structure. Also the surface condition is of decisive importance which will be influenced by the preceding mechanical, thermal or wet-chemical treatment steps. Therefore it is recommended to test the electropolishing behaviour of a work piece by use of a sample treatment.

Test treatment of work pieces is possible at the **POLIGRAT** application test laboratory.

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