

Electropolishing



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Beschreibung

Smooth and bright shining metal surfaces can be made by electropolishing. The manufacturing procedure can be described as anodic, electrolytic or electrochemical removal process with outer power supply. According to the goal of the manufacturing process electropolishing can be named as electrolytic or anodic brightening, smoothing, cleaning or deburring. The electrochemical removal process is a process used in metal finishing. Electropolished surfaces are characterised by their low specific extension and their enhanced corrosion resistance. They can be cleaned more easily and buds adhere badly. It is used to smooth and to clean surfaces before galvanisation. In addition the process can be used for deburring metallic workpieces.

The process is used in tank and pipeline construction. In the beverage and food industry as well as in the pharmaceutical industry the outstanding properties of electropolished surfaces come into account. Even in medical technique the process is used. Implants are electropolished, if smooth surfaces and Pieces without sharp edges are needed. Therefore stents are electropolished often. Electropolishing is used for decorative purposes in cases where brightness and metallic appearance comes into play. Even in material sciences electropolishing or similar anodic removal processes are used to prepare metallic samples. Depending on the desired properties of the surface, the process parameters have to be optimized.

The book is based on research on the process over many years. Base of the book are several own publications on electropolishing an electrochemical removal as well. It is based on the german version of this book. It was rewritten. News findings were added. The author describes electropolishing techniques for many metals and their alloys. They can be transferred to comparable alloys and materials, but a new optimization of the process parameters will be necessary most of the time. In this book one will find what the author together with others carried out with experiments and what can be found in the newer literature on the matter.

After a short look on the manufacturing process and the general relations of process parameters and manufacturing result the influence of the main parameters of the process are discussed. Different possible manufacturing steps and their benefits are discussed. Further different

electrolytes for different metals respectively alloys can be found. At least some manufacturing results for some combinations of metals and alloys are given. Naturally only a part of this topic can be presented, but a closer insight into this matter will be given.