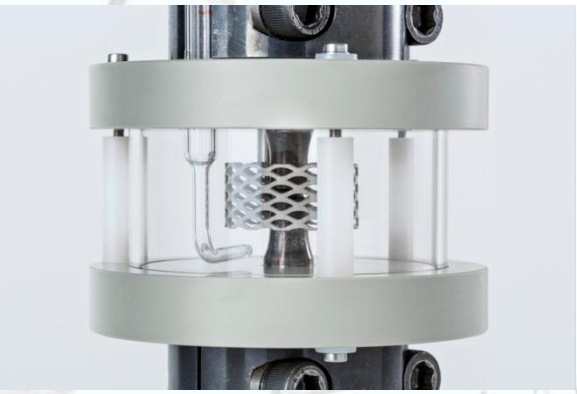
IPS TubeCell



Overview

The IPS TubeCell is used, among other things, to investigate corrosion and also the electrochemical hydrogen loading on tensile specimens .

Description

The IPS TubeCell is installed in a tensile or fatigue testing machine and encloses the tensile specimen with a closed transparent electrolyte vessel. This allows a tensile specimen to be "immersed" in an electrolyte and polarized via a connected potentiostat. A counter electrode and reference electrode are provided and are normally supplied, so that a ready-to-connect system is available.

The shape of the counter electrode provides a homogeneous electric field around the tensile specimen (see picture), which ensures a uniform all-round loading of the specimen. The reference electrode is inserted into the electrolyte via an intermediate vessel (salt bridge). The curved tip of the intermediate vessel with lateral diaphragm allows close positioning of the reference electrode and thus unaltered measurement of the potential.

The specimen is cathodically loaded in such a way that atomic hydrogen is formed on the surface. The hydrogen penetrates the metal lattice and weakens the strength of the specimen by embrittlement (brittle fracture).

The IPS TubeCell can also be used e.g. for galvanic experiments (depositions). Hydrogen input is to be expected in this process in particular. Practical investigations must safeguard the production process.

Furthermore, this measuring cell can also be used for corrosion measurements on tensile specimens. In such a measurement, the metal sample is tensioned and anodically polarized so that corrosion occurs on the surface or in the crack. The duration of the tensile test must be shorter than for an electrochemically unloaded specimen. Metal dissolution must be detectable. Finally the reasons for specimen breakage are the mechanical tensile load and corrosion.

Applications

- Corrosion tests with overlaying external load
- Corrosion tests with different substances
- Loading of material specimens with hydrogen under superimposed external load
- Use in the determination of tensile test characteristics under the influence of hydrogen or fluids

Technical Details

Cell	
Volume	200ml – 1000ml
Heatable	with additional immersion heater possible
Material	
Vessel	Glass
Body	Polypropylene
Mounting material	Stainless steel
Reference electrode	Ag/Ag/Cl (Kalomel)
Counter electrode	Platinized titanium

Practical Example

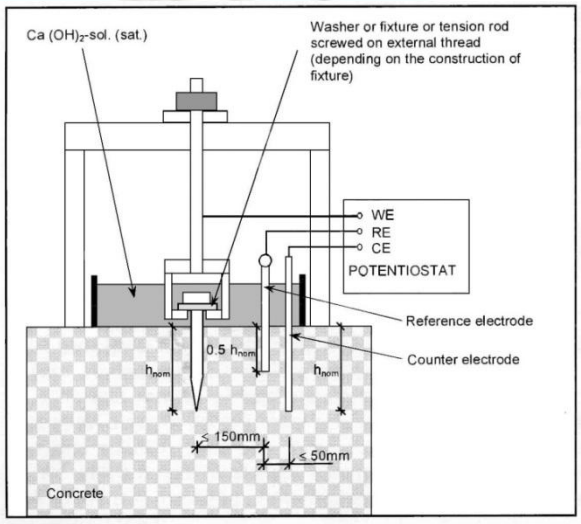


Figure shows schematically the structure of a test device

According to current regulations, fasteners are not only tested mechanically but also electrochemically.

In addition to the mechanical tensile testing equipment of a tool manufacturer in Lichtenstein, we have supplied the components for electrochemical testing of set bolts

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