

TenuPol-5



Automatic electrolytic thinning of specimens for transmission electron microscopy



Unique advantages and technologies

Scan function

Determination of correct polishing voltage through built-in scan function

Built-in database

With 18 Struers and up to 200 user methods

Automatic shut-off

Thinning process stopped automatically through infra-red light when hole appears

Pre-thinning

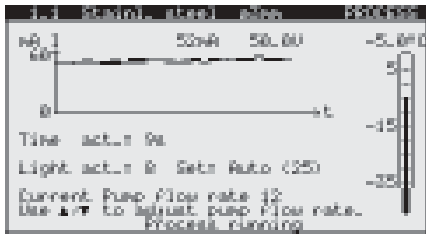
Large samples can be pre-thinned electrolytically to avoid mechanical deformation

Simultaneous thinning

Thinning from both sides to avoid damaged structures.

With TenuPol-5 a perforated specimen for transmission electron microscopy can be made from a sample of 3 or 2.3 mm dia. in just a few minutes. The specimen is polished from both sides simultaneously, thus providing a structure with a minimum of deformation. When the perforation appears, the polishing can automatically be stopped by the infra-red detector system, and the specimen is ready for a TEM examination.

No special operator training is required. Also electrolytical pre-thinning or blanking can easily be carried out.



The control unit

Both the power supply and the programming and monitoring functions are incorporated in the control unit. The unit is operated on the touch pad and on the backlit graphic display all parameters are presented. Upon pressing the Start button, the display changes, and the ongoing process can be monitored. Parameters like current, electrolyte temperature and elapsed thinning time are displayed. Both the display of parameters before and the display of actual values after process start provide an exceptional amount of immediately usable information. Deviations from one process to the next can be detected straightaway, and necessary measures can be taken. Required changing of electrolyte can be detected before changes of the polishing result will be noticed.

The polishing/thinning unit

The design as a separate unit makes it possible to place the polishing/thinning unit away from the control unit. If required the polishing unit can be set up in a fume cabinet while the control unit is set



The polishing unit with the electrolyte pump, electronic thermometer and exchangeable specimen holder.

up outside. TenuPol-5 comprises 2 electrolyte reservoirs, an insulated one for use with the built-in cooling coil and an uninsulated one for cooling the electrolyte, e.g. by placing the reservoir in an ice bath.

Specimen holders

The TenuPol-5 standard equipment includes a specimen holder for 3 mm specimens. A 2.3 mm specimen holder and a sample holder with an opening of 10 mm dia. are also available. The holders are made of reinforced Teflon and consist of two main parts. The holders are easily opened and closed, allowing simple mounting and fast cleaning. One of the two parts carries the platinum conductor. When the closed holder is mounted in the polishing cell, electrical connection to the polishing circuit is automatically established. No extra plug or cable is necessary.

The other part has a sliding diaphragm which allows the mounting of samples with any thickness less than 0.5 mm.

The 3 mm and 2.3 mm specimen holders are normally used for final thinning (perforation), and the holder with a 10 mm diaphragm for pre-thinning and electrolytic "punching".

Jet holders

The standard set of jet holders has a 1 mm jet bore for use with the 3 and 2.3 mm specimen holders. A set of jet holders with a 2.5 mm jet bore for use with the holder with a 10 mm opening is also available.

PC-Interface

With this interface TenuPol-5 can be operated from a PC. The scans can be transferred into a spreadsheet and compared and saved. This allows for the comparison of the behaviour of different materials or tracking the ageing of electrolytes. It is also possible to save different methodscreens as bitmaps.



A specimen holder for 3 mm samples for final thinning, with 10 mm dia. hole for pre-thinning or electrolytic punching and a set of jet holders. The platinum connector and the sliding specimen fixture can be seen.

Technical data

Control unit

Mains voltage:
Single-phase, 100-120/220-240V, 50-60 Hz.
Power consumption:
220-240V / 1.50A
110-120V / 3.15A
Output:
0-100V / 0-2A

Dimensions:

Width: 385 mm
Depth: 350 mm
Height: 160 mm
Weight: 17 kg

Polishing unit

Sizes of original specimen:
12-21 mm dia., max. 1 mm thick
3 mm dia., max. 0.5 mm thick
2.3 mm dia., max. 0.5 mm thick

Dimensions:

Width: 270 mm
Depth: 180 mm
Height: 276 mm
Weight: 3.8 kg

Specifications

TenuPol-5 control unit, with electronic thermometer and adapter for the connection of (TENPO)

TENFI

TenuPol polishing unit, with specimen holder for 3 mm dia. specimens (TETRI), sets of jets (TETOR), pump, cooling coil, insulated PVC container, non-insulated PVC-container and built-in photo cell

TENPO

Connection print for data transfer between TenuPol-5 and a PC

LECP

Specimen holder for 3 mm dia. specimens

TETRI

Specimen holder for 2.3 mm dia. specimens

TETTO

Specimen holder, 10 mm diaphragm for pre-thinning

TETMA

Set of jets, 1 mm bore

TETOR

Set of jets, 2.5 mm bore for use with (TETMA)

TETET

Tape Kit for electrolytic "punching"

TENKI



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