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Pelco Tripod Polisher

AG59100, AG59200, AG59300

The PELCO® Tripod Polisher™ 590 can be used to prepare a sample for both TEM and SEM cross-sectional analysis.

For TEM samples, this technique has been used successfully to limit ion milling timesto less than 15 minutes and, in some cases, has eliminated the need for ion milling.

Although this technique was designed for preparing semiconductor cross-sections, ithas been used to prepare both plan-view and cross-section samples from such diverse materials as ceramics, composites, metals, and geological samples.

- AG59100 Tripod Polisher 590TEM precision sample thinning for TEM
- AG59200 Tripod Polisher 590SEM precision sample thinning for SEM
- AG59300 Tripod Polisher 590TS precision sample thinning for TEM and SEM

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Operation – Standard Technique

The PELCO® Tripod Polisher™ 590 can be used to prepare a sample for both SEM and TEM cross-sectional analysis. To accomplish this, the sample is mounted on the face of a special SEM stud which is clamped into the slotted L-bracket of the PELCO® Tripod Polisher™ 590. Initial grinding is done on a 15µm metal bonded diamond disc. Further lapping and polishing continues with a succession of diamond films ranging in size from 30µm to 0.5µm. The final polish is done with a colloidal silica suspension. As lapping progresses, the two rear micrometers are used to adjust the plane of polish. With periodic examinations in an inverted microscope, the plane of polish is adjusted until it is parallel to the plane of interest. At this point the SEM stud may be moved to an ion mill for a quick milling to remove fine scratches, polishing debris and to give the surface topography prior to SEM analysis. The SEM stud can be mounted directly in the SEM for analysis. When analysis is complete, a TEM sample of the same area is made. The sample is removed from the SEM stud and attached to a single aperture TEM grid. The slotted L-bracket is removed and the TEM grid is attached to the round sample mount which is affixed to the center of the polisher. The sample is now mechanically thinned using Diamond Lapping Film. During this process the sample is periodically examined in an inverted microscope and the micrometers are adjusted to maintain the correct plane of polish. The sample is FINAL polished to 1µm or less and then ion milled for up to 15 minutes.

Operation – Wedge Technique

The preferential thinning and surface topography that occurs in briefly ion milled samples makes the study of interfaces between dissimilar materials difficult. These problems can be reduced by completely eliminating the ion milling step and mechanically polishing the sample to electron transparency by employing the wedge technique. With this technique the SEM stud is replaced, in the slotted L-bracket, with a Pyrex insert. The sample is mounted on the face of this insert. After the plane of interest is obtained, the sample is removed and mounted on the bottom of the Pyrex insert. The two rear micrometers are adjusted and the micrometer nearest the sample is retracted to produce a wedge shape as material is removed from the sample. The sample, with the features of interest at the apex of the wedge, is thinned from the back side until the edge of interest is ~1µm thick. The sample is then polished on a final polishing cloth with a colloidal silica suspension until thickness fringes are visible (below a few thousand angstroms). The sample is then removed from the Pyrex insert and attached to a single aperture TEM grid for analysis.

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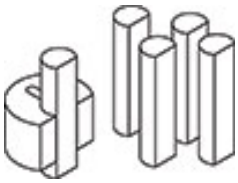
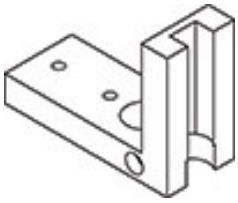
Accessories



AG59306 Wedge Polishing Mount

Includes one AG59311 Wedge Polishing Clamp and five AG59309 Pyrex® Wedge Polishing Rods

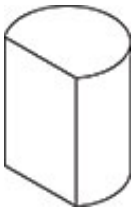


AG59307 Slotted L-bracket

For use with AG59311 Wedge Polishing Clamp and AG59313 SEM Stub

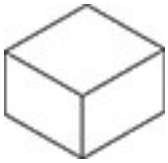
AG59308 Pyrex® Wedge Polishing Stub

For use with AG59311 Wedge Polishing Clamp



AG59310 Pyrex® Insert Large

For use with AG59307 Slotted L-bracket



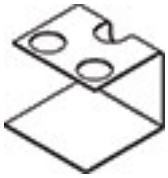
AG59312 Heater Block

For use with AG59307 Slotted L-bracket

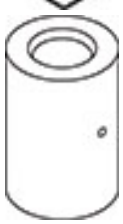
AG59313 SEM Stub

For use with AG59307 Slotted L-bracket

AG59314 Glass Levelling Slide



AG59315 Microscope Stand



AG59316 Delrin® Foot for Micrometer Assembly

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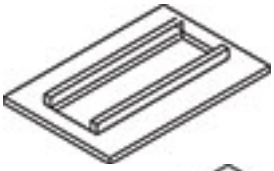
Optional Accessories

AG59301 Parallel Polishing Mount with Pyrex® Insert

For use with basic tripod base

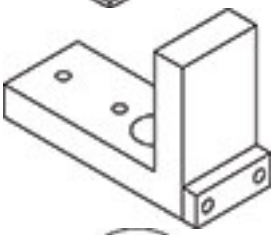
AG59302 Parallel Polishing Mount 1.25" dia. Stainless Steel

For use with basic tripod base



AG59303 Planarising Tool

For feet resurfacing



AG59304 X-Section L-bracket Assembly

AG59309 Pyrex® Wedge Polishing Rod

For use with AG59311 Wedge Polishing Clamp

AG59311 Wedge Polishing Clamp

For use with AG59307 Slotted L-bracket

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Accessories included with Pelco Tripod Polisher

Part Code	Accessories	Pelco Tripod Polisher 590TEM	Pelco Tripod Polisher 590SEM	Pelco tripod Polisher 590TS
AG59306	Wedge Polishing Mount	1	-	1
AG59307	Slotted L-bracket	1	1	1
AG59308	Pyrex Wedge Polishing Stub	1	-	1
AG59310	Pyrex Insert (Large)	1	-	1
AG59312	Heater Block	1	-	1
AG59313	SEM Stub	-	4	4
AG59314	Glass Leveling Slide	2	2	2
AG59315	Microscope Stand	1	1	1
AG59316	Delrin Foot for micrometer	3	2	3