



Disc Punch

Disc Preparation

TEM Specimen Preparation of Ductile Materials. For the preparation of ductile and soft materials for transmission electron microscopy (TEM) one normally would start with small specimen discs of 3 mm (2.3 mm) diameter and material thicknesses ranging from 10 μm to above 100 μm . Such discs are usually obtained by punching, however, some preconditions must be considered.

Most important is the prevention of plastic distortion of the disc during the punching process, especially in the central region of the specimen.

To meet this requirement, the cutting piston of the Gatan Disc Punch is dimpled in its center part, surrounded by a flat 500 μm wide rim. This rim presses the specimen against a spring-loaded support piston. The dimple prevents overall compression of the specimen material, and the rim prevents the cutting forces from extending into the center region of the specimen.

The exact fit of the cutting and support pistons guarantees a sharp cut edge and easy ejection of the punched disc.

The construction of the disc punch is such that one can easily select the position to be punched.

A small removable tray simplifies collection of punched discs. The mechanical layout ensures a uniform application of pressure to the specimen. A strong metal base makes the Gatan Disc Punch rigid and contributes to the long-term use without loss of precision.

In test experiments the following materials have been punched repeatedly with little, if any, mechanical distortion:

Membrane filter	10 μm thick
Aluminum foil	20 μm thick
Copper foil	50 μm thick
Paper	100 μm thick
Razor blade	230 μm thick
Aluminum sheet	400 μm thick



Contact Gatan for information on our complete line of specimen preparation hardware

Disc Punch. The preferred method for preparing disks from ductile materials, such as metals. The Gatan Disc Punch is specifically designed to avoid compression and distortion of the sample.

Disc Grinder. Pre-thins and polishes specimens for shorter ion milling times.

Dimple Grinder. Produces an exceptionally smooth thin area only a few microns in thickness, while minimizing distortion. Precision positioning and accurate electronic thickness control provide a wide thin area every time.

Variable Angle PIPS is a self contained, compact benchtop precision ion polishing system which produces high quality TEM specimens with exceptionally large, clean electron-transparent areas in a short period of time.

- > Powerful ion guns for a high thinning rate.
- > Variable milling angles for single-, or double-sided milling from angles $\pm 10^\circ$ down to 0° .
- > Ion Beam Modulation eliminates differential milling rates of cross-sectional specimens.
- > Specimen viewing in the working and airlock positions.
- > Autoterminator for precision termination of thinning.

Dimensions are approximate. Due to continuing improvements, specifications are subject to change without notice.

Ordering Information

Model	Description
659.00001	Disc Punch, 3mm
659.00002	Disc Punch, 2.3mm

Contact Gatan or a Gatan representative for more information about spares and consumables.

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