



# Mirrored Disk for 1300M Beveler

Part #2478

We recommend that the 1300M Beveler be used to bevel glass microelectrodes using a rotating surface covered with an abrasive slurry. The substrate surface is an optically flat, fully reflective 7.5 cm diameter glass disk. On the substrate a slurry containing 0.05  $\mu\text{m}$  alumina particles bevels the micropipette tip and lessens its electrical resistance. An AC motor drives the horizontal grinding surface at 50 RPM.

The Beveler is mounted on a 1.0 cm thick base plate, 22 cm by 28 cm in size, which provides a stable surface for a micropositioner with a magnetic base, such as the 1350M. A glass disk and 0.05  $\mu\text{m}$  alumina is supplied with the Beveler. Also included is a wetting wick and electrolyte reservoir for use as a reference electrode for the measurement of microelectrode resistance during the beveling operation.

## Instructions

To make the slurry take 10 ml of 0.5 M KCl solution, add a drop of detergent to decrease the surface tension, and add the alumina powder (about 5% by weight) while stirring until a suspension with a milk-like color is formed. Place the disk on the support table and fit the rubber seal gently around the periphery of the disk and under the lip of the support table. Completely cover the disk with a few drops of the stirred alumina slurry.

Adjust and position the bottom of the wick so that it just touches the abrasive disk at its center. It may be necessary to initially saturate the wick with solution also. When measuring resistance the reference half-cell may be placed in the reservoir bath. Using a good quality micropositioner and a low power binocular microscope, position the electrode about 20 to 40 degrees with respect to the horizontal and parallel to the motion of the circumference of the abrasive disk.

Advance the electrode until it is just in contact with the surface solution and monitor the electrode resistance. The mirrored surface of the abrasive disk allows one to view the reflection of the electrode as the disk is being approached. Beveling should begin at this point. Typically the resistance will decrease at a rate of 1M every few seconds.

Raise the electrode promptly when the resistance has diminished to an appropriate value. A sudden drop in resistance signals electrode breakage. What is desired is a gradual decrease of electrode resistance in a somewhat monotonic fashion. Cutting speed increases as the electrode is positioned more radially outward from the center of the disk. Thus the beveling time can be varied by beveling at different radii with respect to the center of the disk.

## Cleaning

After each use the beveler should be thoroughly cleaned and dried.

1. Use a moist tissue or soft paper towel to gently blot up the solution remaining on the beveling surface. Do not rub.
2. Remove the rubber gasket seal and wash gasket in water until clean. Blot remaining water on beveling surface and allow to dry.
3. Carefully remove the disk and wash in water until clean and allow to dry.
4. Wipe out any solution which may be inside of the gasket groove and support table surface. After the electrolyte has been removed, wipe down the gasket groove and support table surface several times with a tissue moistened with water. Then dry.
5. The disk and gasket may be replaced when thoroughly dry.
6. Do not allow any solution or water to run down on the outside of the support table or onto the mechanism housing.



www.wpiinc.com

*\* Electrodes, batteries and other consumable parts are warranted for 30 days only from the date on which the customer receives these items.*

## Warranty

WPI (World Precision Instruments, Inc.) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of one year\* from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

## Claims and Returns

- Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within 10 days after receipt of shipment. Claims for lost shipments must be made within 30 days of invoice or other notification of shipment. Please save damaged or pilfered cartons until claim settles. In some instances, photographic documentation may be required. Some items are time sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container.
- WPI cannot be held responsible for items damaged in shipment en route to us. Please enclose merchandise in its original shipping container to avoid damage from handling. We recommend that you insure merchandise when shipping. The customer is responsible for paying shipping expenses including adequate insurance on all items returned.
- Do not return any goods to WPI without obtaining prior approval and instructions (RMA#) from our returns department. Goods returned unauthorized or by collect freight may be refused. The RMA# must be clearly displayed on the outside of the box, or the package will not be accepted. Please contact the RMA department for a request form.
- Goods returned for repair must be reasonably clean and free of hazardous materials.
- A handling fee is charged for goods returned for exchange or credit. This fee may add up to 25% of the sale price depending on the condition of the item. Goods ordered in error are also subject to the handling fee.
- Equipment which was built as a special order cannot be returned.
- Always refer to the RMA# when contacting WPI to obtain a status of your returned item.
- For any other issues regarding a claim or return, please contact the RMA department

**Warning: This equipment is not designed or intended for use on humans.**

## World Precision Instruments, Inc.

International Trade Center, 175 Sarasota Center Blvd., Sarasota FL 34240-9258

Tel: 941-371-1003 • Fax: 941-377-5428 • E-mail: sales@wpiinc.com

**UK:** Astonbury Farm Business Centre • Aston, Stevenage, Hertfordshire SG2 7EG • Tel: 01438-880025 • Fax: 01438-880026 • E-mail: wpiuk@wpi-europe.com  
**Germany:** Liegnitzer Str. 15, D-10999 Berlin • Tel: 030-6188845 • Fax: 030-6188670 • E-mail: wpide@wpi-europe.com