

SAPPHIRE KNIFE, 1.5" (40mm) L

Product No. 121-18

Your new sapphire knife is made from synthetic single crystal sapphire. A remarkably sharp and uniform edge can be created on sapphire because it is extremely hard and its crystalline structure is very regular.

Nevertheless these characteristics also result in an edge where the tip of the edge is very thin and delicate. To prolong the life of this edge, never touch it with any solid object. Use the following guidelines:

1. Avoid touching the edge when inserting or removing the knife.
2. Don't contact the edge with any tools when operating your microtome.
3. Safely store the blade in its box when not in use.

The best sections come from a clean environment. Keep your knife clean by:

1. Using clean water, buffers or reagents in your microtome.
2. Rinsing and wiping the reservoir and stage of your microtome between use.
3. Preventing sections from drying on the knife.

Sectioning problems usually come in three forms: Chatter, compression and knife marks. As a general rule, vibratome sectioning with a sapphire knife is done with high amplitude, slow approach speed and a knife angle setting of about 23°. You should spend some time learning the effects that changes in these operating parameters have on section quality.

Chatter is the result of vibration during cutting and appears as regularly spaced thick and thin lines on the section perpendicular to the direction of cut. Too low a clearance angle, too fast an approach and too hard a specimen are several causes of chatter.

Compression is a crushing of the section as it is cut, resulting in a section that is shorter than the original block face and thicker than the microtome setting. Too high a clearance, too soft a specimen and a dull knife can cause compression.

Knife marks are lines that appear on the section parallel to the direction of cut. A dirty or damaged knife edge causes knife marks.

If you have sectioning problems, especially knife marks, a dirty knife may be one of the causes. Clean the edge using a Diamond Knife Cleaning Tool, Product No. 122-10, following the steps on next page. This PVA spear tip wicks liquids instantaneously to make a safe and sure cleaning tool. The spear does not expand with alcohol so it can be used in its rigid form by dipping in reagent alcohol only: or it can be expanded using clean water and then dipped in reagent alcohol. The expanded spear can be allowed to dry and stiffen, then dipped in reagent alcohol. Dipping the expanded spear in alcohol can speed up the drying time.

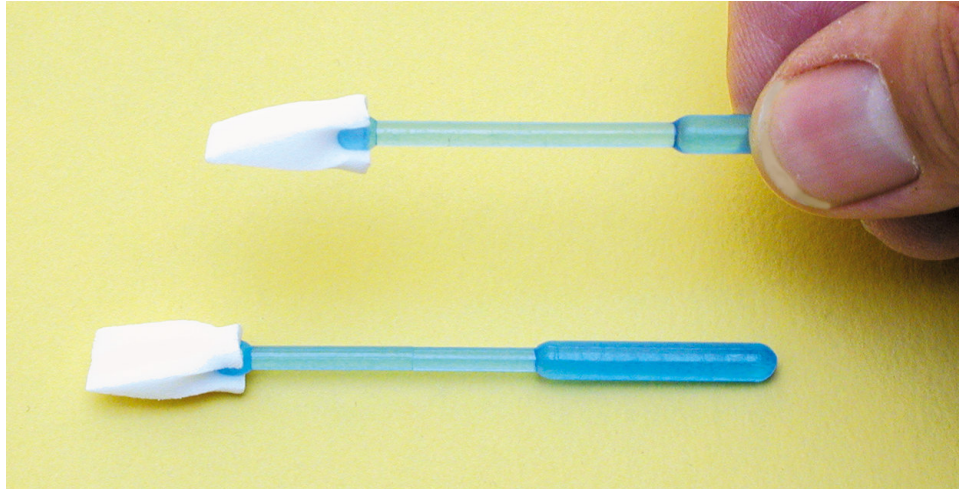
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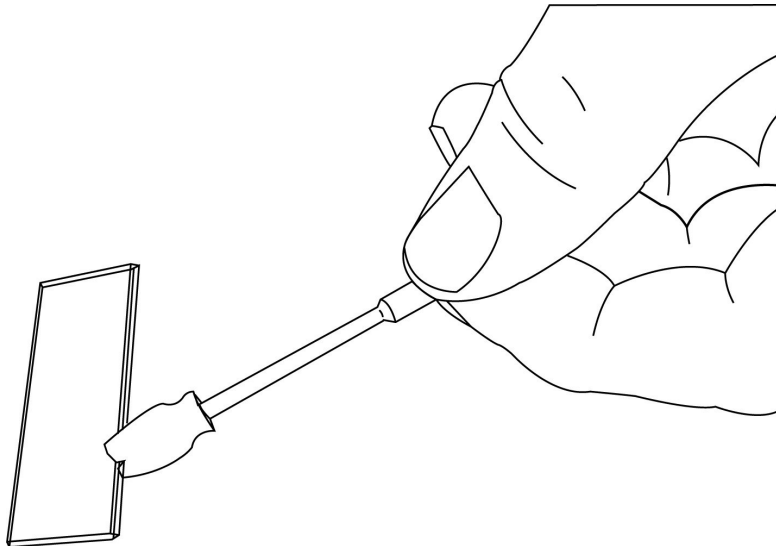
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1. Premoisten the spear with clean water and dry if desired to achieve the desired shape and stiffness.
2. Dip the spear in reagent alcohol.
3. Gently drag the tip of the spear along the side of the knife, parallel to the edge.
4. Repeating on the other side of the blade and allowing to air dry.



Alternatively view the knife edge under a dissecting microscope and press the spear tip against the edge of the knife as though to split the tip. **DO NOT USE DRY.** Dip an expanded and dried spear into reagent alcohol and shake or blot on filter paper to remove excess.



Using little force, wipe the spear tip parallel to the cutting edge, never obliquely or at a right angle. Move across the entire length of the knife edge, then use a fresh part of the spear and repeat in the opposite direction.

If these methods don't eliminate your problems, contact us.

121-18 TN V2 09112003

Page 2 of 2

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