

SCHOOL REQUIREMENTS

1. **No person is to use liquid nitrogen without first reading the SOP and Information Sheets relating to Microtomes.**
2. All staff and students wishing to use a microtome/cryostat and/or sharpen a blade must be trained by an authorised person and the records documented and kept.

INTRODUCTION

The School has five microtomes currently in use:

- A Shandon cryostat in MLS Lab 4.16
- A Leica 1900 cryostat in MLS Lab 3.07
- A Leica microtome in MLS Lab 3.07
- A Lancer vibratome in MLS Lab 1.33
- A Leica cryostat in MSS Lab 521

HAZARDS

1. Extremely sharp blades – all operations with the blade must be done with the greatest of care. There are some operations where the hands must be brought close to the blade. For these procedures, hand protection must be worn e.g. cut resistant gloves. (**Note: Cut resistant gloves are not “cut proof”; they are not a substitute for careful work practices**)
2. Knives need to be cleaned – Disposable knives have an anti corrosion coating that must be removed; diamond paste must be removed from knives when they are sharpened. The smallest silicon particle can ruin the sections; all dust must be removed. Such careful cleaning must bring the hands close to the blade, so great care must be taken.
3. Disposable Knives – are much smaller and thinner than standard knives, this makes handling more difficult.
4. The material being sectioned can increase the risk of injury or illness if cut. The correct safety procedures must be used when handling human material or any material containing human pathogens. All human material and material containing human pathogens must be considered infective unless treated in a way known to inactivate all human pathogens e.g. treatment with an aldehyde fixative.
5. Cryostats are held at -20C, normal precautions against cryogenic injury must be taken (see Risk Assessment and Safe Operating Procedures for Liquid Nitrogen).

MICROTOME KNIVES

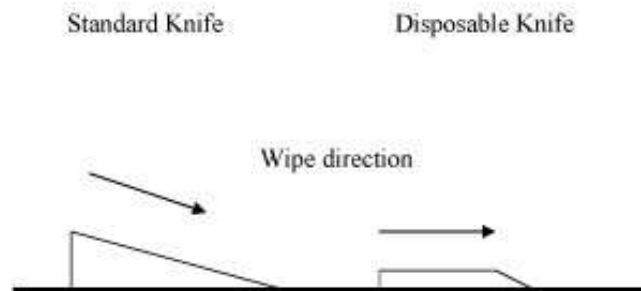
There are four types of knives available for use with these microtomes:

1. **Standard microtome knives:** these are 10 – 15cm long, triangular in section, sharpened at the apex. These may be sharpened “in house”; the person responsible for the microtome will advise on this.
2. **Disposable knives:** 5 – 7cm long blades that come in a plastic cassette. The blades can be ejected similar to razor blades. These are installed in a holding device which then mounts in the microtome blade vice.
3. **Standard Razor Blades:** usually the single edge type.
4. **Diamond Knives:** made from a piece of diamond crystal. These are sharpened and repaired by return to the manufacturer.

IMPORTANT SAFETY INFORMATION

Some important safety points for using microtomes; cleaning and sharpening microtome knives:

- Whenever handling knives, use cut resistant gloves
- When cleaning the knife, the preferred method is to lay the blade on a flat surface and wipe from the base toward the edge (see sketch)



- When mounted in the microtome, the knife can only be cleaned using a brush, cotton bud or swab.
- Specimens can only be placed in the microtome chuck when the knife is guarded or, when there is no guard, the knife is removed.
- The knife will not be left mounted in the microtome when it is not in use.
- The movement of the vibratome blade is powered by an electric motor. When the blade is being handled, the machine must be unplugged.
- Latex gloves at a minimum should be used when handling cold equipment in the cryostat.
- Extreme care must be taken when picking up sections from the knife. Every effort must be made to organise the procedures to keep hands away from the knife.
- All knives must be stored or disposed of safely when not in use. Standard knives are stored in their box, disposable and razor blades disposed of in a dedicated sharps container.
- Knives are NEVER transported in the bare hand, even for the shortest distance.

REFERENCE DOCUMENTATION

- Microtome/cryostat/vibratome risk assessment
- Safe Operating Procedures Leica Cryostat
- Safe Operating Procedures Shandon E Cryostat