

# Safety: Fiber Handling

## Introduction

Operators familiar with electronic wires and cables may not be aware of the special features of optical fiber and components. Optical fibers are made of glass. Although such material is inherently strong and flexible, optical fibers require proper handling to ensure long lifetime and prevent fiber breaking. Listed below is a set of general rules/guidelines that are commonly used to ensure handling procedures that are safe for both the fiber and the operator.

## Fiber Handling

- Never expose the fiber to a bend diameter less than 200 times the fiber diameter:
  - For 125 $\mu$ m fiber: 25 mm bend diameter
  - For 400 $\mu$ m fiber: 80 mm bend diameter
- Never place tools or other hard and heavy items on top of the fiber
- Never allow the fiber to come into contact with sharp edges (such as edges of optical tables)
- Never wipe an optical fiber with abrasive material or organic solvents such as acetone
- Dispose of all cleaved pieces of fiber into a debris container. Alternatively, a small petri dish lined with double-sided adhesive tape can be used
- Never dispose of loose glass fibers into a wastebasket and never allow loose pieces of glass to accumulate
- Do not eat or drink in the termination area. Ingested fibers can cause internal damage

## Safety Precautions

Normally, for optical fibers with a diameter of 125  $\mu$ m, cleaving, cutting and breaking of the fiber will result in the fiber breaking into 2 pieces. However, for thick, stiff fibers, a fiber break often results in glass pieces flying away from the break.

- Wear safety glasses with side shields to protect the eyes from errant pieces of fiber. Note: safety glasses will not protect the retina from light damage
- Do not touch your eyes or face at any time while handling bare fiber. Wash your hands immediately after working with bare fiber or solvents
- Never look into a fiber, or connect to a fiber microscope, while system laser is on