

NOTE 1:

Backreflection often causes the signal intensity to fluctuate in some systems as well as change the laser frequency. To minimize the backreflection, both ends of the fiber should be angle polished and / or AR (antireflection) coated.

NOTE 2:

Sometimes the customer does not know what type of fiber he has or wants. In that case we need to know the customer's application to help him pick the proper fiber. The following information might help you select the fiber type.

The term multimode means there is more than one path for light to travel inside a **single** fiber. These paths are known as modes. It does not mean the unit consists of multiple fibers in a bundle. When coherent laser light is coupled into multimode fiber, the output shows speckles as shown in the following figure. Bending the fiber causes the speckle pattern to change. If the losses in a system depend on which modes are excited, then changing the modes excited in the fiber changes the output power. This is known as modal noise. If the source being used is an LED, then one does not see speckles, and modal noise is not an issue. However, for laser sources, modal noise is an issue.

When blocking style attenuators are used with multimode fiber, some modes are blocked, while others are transmitted. This can produce 1dB or greater modal noise fluctuations with coherent sources. A variable attenuator using a neutral density filter is not as strongly affected by modal noise. However, neutral density filter attenuators only offer 30dB range and can only handle about 50mW of power.

The output from a singlemode (SM) fiber shows a nice smooth gaussian profile as shown. This pattern does not change with bending, so the blocking technique gives accurate results. Modal noise is not an issue. Singlemode fiber does not maintain polarization under stress such as bending. For that you need polarization maintaining (PM) fiber. PM fiber is also singlemode.

