

POFs

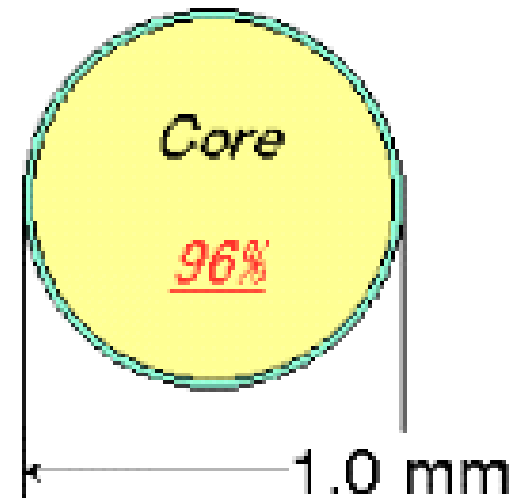
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Photonic Devices

Corso di Componenti Fotonici

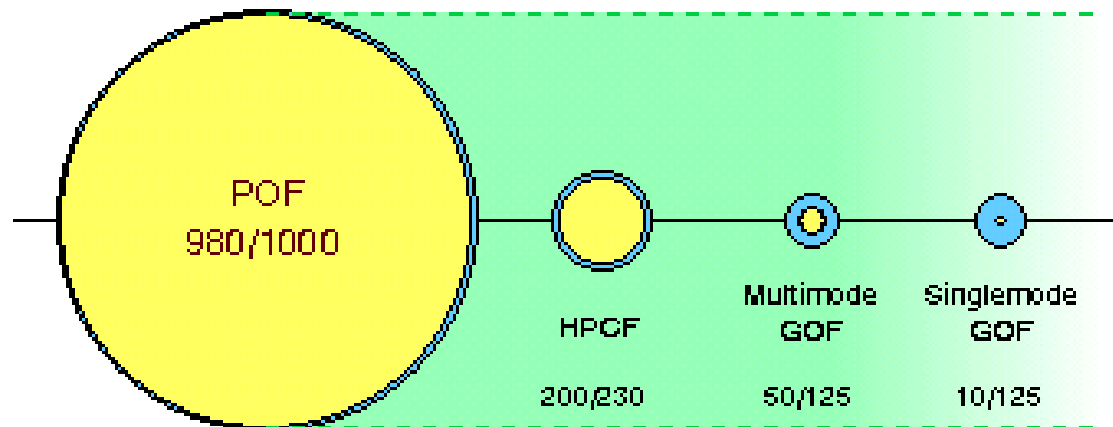
Plastic Optical Fiber (POF)

- POF typically uses PMMA (acrylic), a general-purpose resin as the core material, and fluorinated polymers for the clad material.
In large-diameter fibers, 96% of the cross section is the core that allows the transmission of light.
- POF has been called the "consumer" optical fiber. This is due to the fact that costs of POF, associated optical links, connectors, and installation costs are low. It is being focused on for the following fields in particular:
 - Digital home appliance interfaces
 - Home networks
 - Car networks



Characteristics of POF (1/2)

- POF used for transmissions is of a much larger diameter than other fiber.
- Typically POFs have a fiber diameter of $1000\mu\text{m}$, with a core diameter of $980\mu\text{m}$. Due to this large diameter, transmission is possible even if the ends of the fiber are slightly soiled or damaged, or if the light axis is slightly off center.
- Therefore, parts such as optical connectors can be made inexpensively and installation work is simplified.



Characteristics of POF (2/2)

- Normally, a 650nm (red) LED is used as the light source for POF optical transceiver modules.
- Since this is within the visible light spectrum, it acts as an eye safety feature because the user can easily tell when he/she is in danger of directly viewing the light beam.
- Also, since 650nm will be the wavelength used for a large number of DVD light sources, we can expect the cost to drop even further.
- POF is not suitable for long-distance transmission. compared with quartz fiber.
- There is a large transmission loss. However home and office applications do not require transmission over great distances, having a need for ease-of-use, low cost, and stability instead. POF is best suited for use in these environments.

High attenuation- short distances

