



## Polycrystalline Fiber Cables

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### 1. Specifications

Polycrystalline fiber cables are assembled with Mid Infra-red transmitting silver halogenide polycrystalline fibers. Standard cables consist of Titanium-SMA connectors and PEEK protective tubing which protects the fibers outside of the connectors.

#### Specification of PIR Cable Materials

Material of the fiber	Silver chloride-silver bromide solid solution
Inner protective tubing	PEEK
Outer protective tubing	PEEK
SMA ferrules	Titanium
Connector material (except for ferrules)	Brass

**Caution!** Epoxy in standard cable can withstand not more than 80°C.

Please take care against overheating of connectors.

## 2. Handling Instructions

*Handle PIR cable with care!*

The cable contains silver halogenide fiber which is flexible but can be damaged at the shock of the connector or fiber protective sleeve. Also, the bending radius of these fibers are limited, i.e., not less than:

- 30cm diameter for PIR 900/1000 fiber cable
- 20cm diameter for PIR600/700 fiber cable
- 15cm diameter for PIR 400/500 fiber cable

**Caution!** The bending of the cable to less diameter results in irretrievable transmission loss especially in spectral range of 3-8 microns.

- Do not bend the cable less than specified diameter
- Put protective caps onto both ends of the cable when not in use
- Do not immerse connectors into any liquid!
- Plug/unplug the cable by gripping the connector, not the cable jacket.
- Hold the cable at both ends when transporting
- Prevent the drop of the cable when laying on the surface
- Prevent the springing the connectors onto the hard surface.
- Avoid any contact of fiber ends with metal dust or metal parts as it results into chemical reaction with silver halogenide and fiber damage.
- Avoid any scratches and notches of PEEK protective tubing
- Keep the cable in to original box when not in use



*Take care to insert the cable into the FC/PC adapter properly according the position key as shown in the photo!*



- **Caution!** ·Special working order is to be maintained when using of the cable at cryogenic temperatures – attach the cable to the source/detector/etc., insert the cable into the cryo-chamber/reactor, adjust the position of all the equipment before cooling down the reactor/chamber, cool the reactor/chamber, do not move/touch any part of the cable while the part of the cable is cooled because of risk of fiber break. At the end of the work allow the system to heat up to the room temperature then only touch the cable to disconnect it or pull out of the reactor/chamber.

### 3. Cleaning of PIR Cables

The dust can be cleaned with a soft painting brush.

The fiber ends in SMA connectors can be cleaned using lint-free tissue with Isopropanol. Do not wet tissue too much. After cleaning wipe off fiber end carefully. We strongly recommend to do the cleaning while using a microscope.

Wipe also the side surface of the connectors as the dust from side surface can reach fiber end face.

Do not touch fiber ends with hard tool even through the napkin.

Inspect visually fiber ends. Small contaminations can be not critical as do not prevent long wavelength radiation.

### 4. Storage

When you are done using the PIR cable, carefully remove the cable from adaptors. Do not strike the connectors because the shock can damage the fiber.

- Put protective caps onto connectors.
- Place the cable into the storage box when not in use or place it in a suitable location for safe storage.



## 5. Special Handling Instructions for Cables with Bare Fiber Ends

- Pull carefully the protective tube from the bare fiber end. Do not incline/tilt it to cable axis when pulling.
- Polycrystalline fiber is very soft and can be easily bent / damaged / broken. Be careful handling with bare fiber end.
- No contact with metals/ metal dust except gold, silver, Titanium, Vanadium, platinum is allowed for polycrystalline fiber because of fast corrosion of both fiber and metal. Stainless steel is not suitable! Polymers are allowed for the contact with polycrystalline fiber.
- No contact with SO<sub>4</sub>- and SO<sub>3</sub>- containing substances and dust.