PRECISION SENSING DEVICES

Where Innovation, Application & Technology Come Together

SERIES 350 Extruder Transmission Probes

PSD's Series 350 1/2"-20 UNF Dynisco-type Extruder Transmission Probes are precision optical instruments that allow remote fiber optic near-IR, UV or visible transmission measurement of polymer materials in reactors, extruders, injection molding machines at elevated temperatures and pressures.

A flexible bundled fiber optic assembly is an integral part of the probe. The standard assembly consists of 200 micron low OH silica fiber, other sizes are available based on customer requirements. The end of the fiber assembly are terminated with SMA connectors. However, the fiber termination can be changed to satisfy the specific connection requirements of any spectrometer. The length of the micro-bundle fiber optic assembly can be made to satisfy specific customer requirements.

The probes are screwed into a "well" in the barrel or wall of the machine or reactor, where the tip of the probe is flush with the inside diameter surface and in direct contact with the polymer material. The probes can also be screwed into a PSD Model CLS High Pressure Cross-Line Spool piece that can be attached to the barrel of an extruder or injection molding machine.

A major advantage and unique design feature of this probe is a proprietary sapphire-to-metal seal capability. This technique eliminates the use of O-ring seals or brazed joints that can be chemically attacked and limit the long-term reliability of the sapphire seal and lead to potentially dangerous failures. The only sample contact materials are the 316/316L Stainless Steel, or the metal specifically requested, and the sapphire windows. The capability enables this probe to operate at temperatures up to 300˚C and pressures up to 5,000 PSI, with an optional design to reach pressures up to 30,000 PSI. This probe can also be provided in a purged configuration using a vortex cooler (Ranque-Hilsch Tube) to provide long term reliable operation at polymer process temperatures up to 400˚C. The sapphire windows are chemically inert and have a very hard surface that resists etching from caustic solutions and scratching from hard or rough surfaces.

The optical arrangement to perform a transmission measurement requires two of these probes, one for transmitting the radiant energy from the spectrometer and the other for collecting. Each probe provides very efficient transmission that provides superior quantitative performance. The probe contains an optically efficient collimating sapphire window. The result is high transmission capability, excellent optical stability and photometric accuracy.

PRODUCT HIGHLIGHTS & SPECIFICATIONS

- No O-rings or brazed joints to fail
- Optional UV and visible light sampling
- Robust and inert construction for industrial process applications
- Different probe lengths available
- Alternate material per customer request to construct probe
- Internal purge capability available for higher temperature applications
- Flexible integral micro bundle fiber optic assembly
- Proprietary sapphire-to-metal seal providing robust and inert design
- Capable of operating up to 300˚C and 5,000 PSI with optional design to reach 30,000 PSI

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