

SERIES 325 Extruder Transmission Probes

PSD's Series 325 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.

The probe comes with an internal single strand fiber that is terminated at the back of the probe in an SMA connector. The standard probe contains an internal 600 micron ultra low OH silica fiber, other optional sizes are available based on customer requirements. This probe can be easily connected to single fiber spectroscopy-grade fiber assemblies via its SMA connectors. PSD will manufacture the fiber optic assemblies to satisfy specific type and length 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

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