

Raman Spectroscopy

PerkinElmer Raman
Fiber Optic Probes

Introduction

PerkinElmer® Raman fiber optic probes are compatible with the RamanStation™ 400F benchtop Raman spectrometer, Raman IdentiCheck™, RamanFlex™ 400 and 400F analyzers and the RamanMicro™ 200F.

This document presents confirmed performance specifications based on product testing. All instruments will meet or exceed the confirmed specifications under normal conditions of use as described in the user manual.

The PerkinElmer fiber optic probes offer research grade performance and are maintenance free. Standard fiber cable lengths are 5 m. Longer cables, up to 100 m, are available upon request. All probes are stainless steel 316, but are available in chemical resistant Hastelloy® C. Spectral range can be modified in standard and triggered fiber optic probe to have a cut-off down to 120 cm^{-1} .



Raman Probe Long with immersion sleeve in place.



Triggered Raman probe.



Raman Probe with optional immersion sleeve.



Raman Probe Max with and without optional purge enclosure.

Technical Description and Specifications

	Standard Raman Probe*	Raman Probe - Long	Raman Probe - Max
Optical Performance			
Excitation Source	785 nm	785 nm	785 nm
Spectral Range	230–3,500 cm ⁻¹	230–3,500 cm ⁻¹	230–3,500 cm ⁻¹
Resolution	Spectrometer dependent	Spectrometer dependent	Spectrometer dependent
Spot Size	100 microns	100 microns	100 microns
Probe Cable	5 m, armor clad with stainless steel	5 m, armor clad with stainless steel. Longer cable lengths available	5 m, armor clad with stainless steel. Longer cable lengths available
Probe Head Material	Stainless steel 316 (Also available in Hallestoy® C)	Stainless steel 316 (Also available in Hallestoy® C)	Stainless steel 316 (Also available in Hallestoy® C)
Probe Head Diameter	12.7 mm	16 mm	9.5 mm
Overall Probe Length	203 [▲] mm	350 mm	430 mm
Probe Immersion Length	150 [■] mm, optional immersion sleeve is required	330 mm	230 mm
Liquid Immersion	Optional immersion sleeve for liquid immersion	Immersion sleeve for liquid immersion provided as standard	Probe head is immersible
Window Material	Optional immersion sleeve contains a sapphire window	Sapphire window with gold seal	Sapphire window with gold seal
Working Distance	7.5 mm, user-adjustable between 4 and 0 mm if optional immersion sleeve is employed	7.5 mm	Factory set, select from 4 and <1 mm
Operating Temperature	0 to 80 °C Relative humidity: <70% (non-condensing) Heating/cooling rate: Up to 20 °C	0 to 200 °C Relative humidity: <70% (non-condensing) Heating/cooling rate: Up to 20 °C	Probe can be used between 20 °C and 200 °C without a purge enclosure and between -80 °C and 500 °C with a purge enclosure. Above 200 °C a purge gas must be circulated below 20 °C that purge gas must be dry. The probe must be purged for 10 mins prior to cooling. Relative humidity: <70% (non-condensing). Heating/cooling rate: Up to 20 °C/min.
Max Pressure	Atmospheric 1 Bar 14.7 PSI	100 Bar 1,500 PSI	200 Bar 3000 PSI
Optional Extras	Immersion sleeve Fixed distance contact tip Adjustable distance contact tip Vials and powder kit for class 1 environment		Purgeable housing to seal external optics and enable operation above 200 °C

* The triggered Raman probe has the same specifications as the standard Raman probe, with the following additional features:

- Start/stop trigger option
- Activation and acquisition status by LED

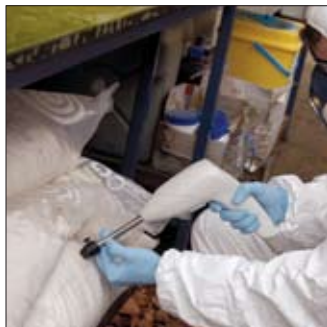
▲ 300 mm overall probe length for triggered Raman probe version

■ 100 mm probe immersion length for triggered Raman probe version, immersion sleeve required

Additional Accessories



Short immersion sleeve – stainless steel 316 and sapphire window



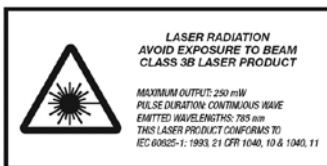
Fixed working distance contact tip – Optimize data acquisition and avoid environmental light contamination



Adjustable working distance contact tip



Vials and powder kit – For use in a class 1 environment



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