

Scion Instruments Capillary Ferrules

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Column Inside Diameter	Column Outside Diameter	15 % Graphite 85%Vespel pkg/10	100% Graphite pkg/10
Max Temp		350 °C	450 °C
No-Hole		41312153	--
Single-Hole			
0.15 mm	0.3 mm	41312156	--
0.25 mm	0.4 mm	41312148	--
0.32 mm	0.5 mm	41312149	41312141
0.53 mm	0.8 mm	41312150	41312143
Two-Hole			
0.25 mm	0.4 mm	41312154	--
0.32 mm	0.5 mm	41312155	--

Pure 100% graphite ferrules are generally avoided with capillary columns connections with electron capture detectors and mass spectrometers due to several critical physical and operational issues:

Gas Permeability: Graphite is porous to gases. Because the mass spectrometer operates under a high vacuum, atmospheric air (N₂, O₂, H₂O) bleeds through pure graphite ferrules. This causes high background noise, reduces detector sensitivity, and speeds up the oxidation and degradation of the mass spec's filament and column stationary phase. With electron capture detectors very responsive to oxygen, this leakage will impact detector performance.

Electrical Conductivity: Graphite flaking produces fine conductive dust. If these conductive particles fall inside the vacuum chamber, they can contaminate the ion source, bridge electrical contacts, or cause short circuits on high-voltage components like quadrupoles, lenses, electron multipliers and innards of electron capture detectors

Softness and Flaking: Pure graphite deforms extremely easily under compression. Inserting the capillary column through a soft graphite ferrule often shaves off tiny fragments that migrate inside the column tubing, causing partial blockages or active sites.

Lack of Vacuum Seal Strength: Because graphite deforms continuously under pressure rather than maintaining elastic resilience, it is prone to forming micro-leaks under the continuous suction of a high-vacuum system.

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