



# Ferrules

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# Ferrules

## Graphite Ferrules

Graphite ferrules are made from high-purity exfoliated graphite. They seal with minimal torque and can frequently be re-used. They do not shrink in use, but they are very soft and must be packed and handled carefully.



Straight Ferrules - for tubing with ODs listed	Item No
1/16", 10/pk	211100
1/8", 10/pk	211200
1/4", 10/pk	211400
3/8", 10/pk	211600
1/2", 5/pk	211800
3/4", 5/pk	211120



Blank Ferrules - no holes	Item No
1/16", 10/pk	2111XX
1/8", 10/pk	2112XX
1/4", 10/pk	2114XX



Capillary Column Ferrules	For Capillary Sizes - ID	Item No
1/16" to 0.4 mm, 10/pk	0.25 mm	211104
1/16" to 0.5 mm, 10/pk	0.32 mm	211105
1/16" to 0.8 mm, 10/pk	0.53 mm	211108
1/16" to 1.0 mm, 10/pk	0.65 mm	211110
1/16" to 1.2 mm, 10/pk	0.75 mm	211112
1/16", two hole 0.5 mm; each	0.32 mm	211125



Short Ferrules for Agilent Inlets*	For Capillary Sizes - ID	Item No
1/16" to 0.4 mm, 10/pk	0.10 - 0.25 mm	211164
1/16" to 0.5 mm, 10/pk	0.32 mm	211165
1/16" to 0.8 mm, 10/pk	0.45 - 0.53 mm	211168
1/16" to 1.0 mm, 10/pk	0.53 - 0.65 mm	211160

\*short ferrules for Agilent inlet systems: 5890, 6890 and 7890.



1/16" to 1/16" Straight Ferrule, 10/pk	1/16" OD	211170
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Reducing Ferrules for Capillary Columns	For Capillary Sizes - ID	Item No
1/8" to 0.4 mm, 10/pk	0.25 mm	211204
1/8" to 0.5 mm, 10/pk	0.32 mm	211205
1/8" to 0.8 mm, 10/pk	0.53 mm	211208
1/8", two hole 0.5 mm; each	0.32 mm	211222
1/4" to 0.5 mm, 10/pk	0.32 mm	211405
1/4" to 0.8 mm, 10/pk	0.53 mm	211408



Reducing Ferrules for Tubing	For Tubing Sizes - OD	Item No
1/8" to 1/16", 10/pk	1/16"	211210
1/4" to 4 mm, 10/pk	4 mm	211440
1/4" to 6 mm, 10/pk	6 mm	211406
1/4" to 1/16", 10/pk	1/16"	211410
1/4" to 1/8", 10/pk	1/8"	211420



Shimadzu Ferrule	Item No
5 mm, Shimadzu 5 mm OD columns, 10/pk	211500



Shimadzu Capillary Column Ferrules	For Capillary Sizes - ID	Item No
Shimadzu 17A, 2010 & 2014 GCs 0.4 mm, 10/pk	0.25 mm and less	211174
Shimadzu 17A, 2010 & 2014 GCs 0.5 mm, 10/pk	0.32 mm	211175
Shimadzu 17A, 2010 & 2014 GCs 0.8 mm, 10/pk	0.53 mm	211178



Thermo Instrument Ferrules - M8 Nut	Item No
0.5 mm ID, 10/pk	211905
0.8 mm ID, 10/pk	211908



Thermo Instrument Cup Ferrules - M4 Nut	For Capillary Sizes - ID	Item No
0.28 mm ID, 10/pk	0.10 mm	211982-10
0.38 mm ID, 10/pk	0.25 mm	211983-10
0.48 mm ID, 10/pk	0.32 mm	211984-10
0.80 mm ID, 10/pk	0.53 mm	211988-10

# Ferrules

## GC Inlet Liner Seals; O-rings - Graphite and Fluoroelastomer



For Agilent Instruments	Item No
Graphite Liner Seal, 6.35 mm ID, 10/pk	216635
Graphite Liner Seal, 6.52 mm ID, 10/pk	216652
O-ring made of Fluoroelastomer, 12/pk	216973



For Bruker (Former Varian) Instruments 1078/1079	Item No
Graphite Liner Ferrule, 10/pk	211550



For PerkinElmer Instruments	Item No
Graphite O-Ring, 10/pk	216637



For Shimadzu Instruments	Item No
Graphite Liner Seal, 10/pk	211195
Graphite O-ring, Split, 10/pk	216638
Graphite O-ring, Spiltless, 10/pk	216639



For Thermo Instruments Trace GC	Item No
5 mm Graphite Seal, 2/pk	216949
8 mm Graphite Seal, each	216948

## Vespel® Ferrules (SP-1)

Vespel ferrules are made from high temperature Dupont polyimide, a hard polymeric material that tends to seal permanently to capillary columns when in use.



Straight Ferrules - for tubing with ODs listed	Item No
1/16", 10/pk	212100
1/8", 10/pk	212200
1/4", 10/pk	212400



Blank Ferrules - no holes	Item No
1/16", 10/pk	2121XX
1/8", 10/pk	2122XX
1/4", 10/pk	2124XX



Capillary Column Ferrules	For Capillary Sizes - ID	Item No
1/16" to 0.3 mm, 10/pk	0.10 mm	212103
1/16" to 0.4 mm, 10/pk	0.18 - 0.25 mm	212104
1/16" to 0.5 mm, 10/pk	0.32 mm	212105
1/16" to 0.8 mm, 10/pk	0.53 mm	212108
1/16" to 1.0 mm, 10/pk	0.65 mm	212110
1/16" to 1.2 mm, 10/pk	0.75 mm	212112
1/16", two hole 0.4 mm; each	0.25 mm	212124
1/16", two hole 0.5 mm; each	0.32 mm	212125



Short Ferrules for Agilent Inlets*	For Capillary Sizes - ID	Item No
1/16" to 0.4 mm, 10/pk	0.25 mm	212164
1/16" to 0.5 mm, 10/pk	0.32 mm	212165
1/16" to 0.8 mm, 10/pk	0.53 mm	212168

\*Short ferrules for Agilent inlet systems: 5890, 6890 and 7890

# Ferrules



Reducing Ferrules for Capillary Columns	For Capillary Sizes - ID	Item No
1/8" to 0.4 mm, 10/pk	0.25 mm	212204
1/8" to 0.5 mm, 10/pk	0.32 mm	212205
1/8" to 0.8 mm, 10/pk	0.53 mm	212208
1/8", two-hole, 0.5 mm each	0.32 mm	212222



Reducing Ferrules for Tubing	For Tubing Sizes - OD	Item No
1/8" to 1/16", 10/pk	1/16"	212210
1/4" to 1/16", 10/pk	1/16"	212410
1/4" to 1/8", 10/pk	1/8"	212420

Please note general ferrule sizing:

- 0.3 mm ID ferrules fit 0.18 mm ID capillary columns
- 0.4 mm ID ferrules fit 0.25 mm ID capillary columns
- 0.5 mm ID ferrules fit 0.32 mm ID capillary columns
- 0.8 mm ID ferrules fit 0.53 mm ID capillary columns
- Straight ferrules are used for packed columns

## Vespel®/Graphite Ferrules - SP-22 (60% / 40%)

Vespel/Graphite ferrules are made from DuPont polyimide/graphite blended compounds. They are ideal for GC/MS interface applications because they are non-porous to oxygen. They seal with minimal torque and are not re-usable. Due to slight shrinking at high temperatures, they must be retightened after initial temperature cycles to avoid leaks. Two types of Vespel/Graphite are commonly used, one with 40% graphite and one with 15% graphite (page 37).



Straight Ferrules - for tubing with ODs listed	Item No
1/16", 10/pk	213100
1/8", 10/pk	213200
1/4", 10/pk	213400
1/2", 5/pk	213800



Blank Ferrules - no holes	Item No
1/16", 10/pk	2131XX
1/8", 10/pk	2132XX
1/4", 10/pk	2134XX



Capillary Column Ferrules	For Capillary Sizes - ID	Item No
1/16" to 0.3 mm, 10/pk	0.10 mm	213103
1/16" to 0.4 mm, 10/pk	0.18 - 0.25 mm	213104
1/16" to 0.5 mm, 10/pk	0.32 mm	213105
1/16" to 0.8 mm, 10/pk	0.53 mm	213108
1/16" to 1.0 mm, 10/pk	0.65 mm	213110
1/16", two hole 0.4 mm; each	0.25 mm	213124
1/16", two hole 0.5 mm; each	0.32 mm	213125



Short Ferrules for Agilent Inlet*	For Capillary Sizes - ID	Item No
1/16" to 0.3 mm, 10/pk	0.10 - 0.18 mm	213163
1/16" to 0.4 mm, 10/pk	0.25 mm	213164
1/16" to 0.5 mm, 10/pk	0.32 mm	213165
1/16" to 0.8 mm, 10/pk	0.53 mm	213168

\*Short ferrules for Agilent Inlet systems: 5890, 6890 and 7890

# Ferrules



Reducing Ferrules for Capillary Columns	For Capillary Sizes - ID	Item No
1/8" to 0.4 mm, 10/pk	0.25 mm	213204
1/8" to 0.5 mm, 10/pk	0.32 mm	213205
1/8" to 0.8 mm, 10/pk	0.53 mm	213208
1/8", two-holes 0.5 mm, each	0.32 mm	213222
1/8", two-holes 0.8 mm, each	0.53 mm	213228
1/4" to 0.4 mm, 10/pk	0.25 mm	213404
1/4" to 0.5 mm, 10/pk	0.32 mm	213405
1/4" to 0.8 mm, 10/pk	0.53 mm	213408



Reducing Ferrules for Tubing	For Tubing Sizes - OD	Item No
1/8" to 1/16", 10/pk	1/16"	213210
1/4" to 1/16", 10/pk	1/16"	213410
1/4" to 6 mm, 10/pk	6 mm	213406
1/4" to 1/8", 10/pk	1/8"	213420



## Vespel®/Graphite Ferrules - SP-21 (85% / 15%)

Vespel/Graphite ferrules are made from DuPont polyimide/graphite blended compounds. They are ideal for GC/MS interface applications because they are non-porous to oxygen. They seal with minimal torque and are not re-usable. Due to slight shrinking at high temperatures, they must be retightened after initial temperature cycles to avoid leaks. Two types of Vespel/Graphite are commonly used, one with 40% graphite (page 35) and one with 15% graphite.



Straight Ferrules - for tubing with ODs listed		Item No
1/16", 10/pk		215100
1/8", 10/pk		215200
1/4", 10/pk		215400



Blank Ferrules - no holes		Item No
1/16", 10/pk		2151XX
1/8", 10/pk		2152XX
1/4", 10/pk		2154XX



Capillary Column Ferrules	For Capillary Sizes - ID	Item No
1/16" to 0.3 mm, 10/pk	0.10 mm	215103
1/16" to 0.4 mm, 10/pk	0.18 - 0.25 mm	215104
1/16" to 0.5 mm, 10/pk	0.32 mm	215105
1/16" to 0.8 mm, 10/pk	0.53 mm	215108
1/16" to 1.0 mm, 10/pk	0.65 mm	215110
1/16", two hole 0.4 mm; each	0.25 mm	215124
1/16", two hole 0.5 mm; each	0.32 mm	215125



Short Ferrules for Agilent Inlet*	For Capillary Sizes - ID	Item No
1/16" to 0.4 mm, 10/pk	0.10 - 0.25 mm	215164
1/16" to 0.5 mm, 10/pk	0.32 mm	215165
1/16" to 0.8 mm, 10/pk	0.53 mm	215168

\*Short ferrules for Agilent Inlet systems: 5890, 6890 and 7890

# Ferrules



Reducing Ferrules for Capillary Columns	For Capillary Sizes - ID	Item No
1/8" to 0.4 mm, 10/pk	0.25 mm	215204
1/8" to 0.5 mm, 10/pk	0.32 mm	215205
1/8" to 0.8 mm, 10/pk	0.53 mm	215208



Reducing Ferrules for Tubing	For Tubing Sizes - OD	Item No
1/8" to 1/16", 10/pk	1/16"	215210

## PTFE Ferrules

PTFE ferrules are made from 100% PTFE. They are soft and completely inert. PTFE ferrules are commonly used in liquid applications.



Straight Ferrules - for tubing with ODs listed	Item No
1/16", 10/pk	214100
1/8", 10/pk	214200
3/16", 10/pk	214300
1/4", 10/pk	214400



Blank Ferrules - no holes	Item No
1/16", 10/pk	2141XX
1/8", 10/pk	2142XX
1/4", 10/pk	2144XX



Capillary Column Ferrules	For Capillary Sizes - ID	Item No
1/16" to 0.3 mm, 10/pk	0.10 mm	214103
1/16" to 0.4 mm, 10/pk	0.18 - 0.25 mm	214104
1/16" to 0.5 mm, 10/pk	0.32 mm	214105
1/16" to 0.8 mm, 10/pk	0.53 mm	214108
1/16" to 1.0 mm, 10/pk	0.65 mm	214110
1/16" to 1.2 mm, 10/pk	0.75 mm	214112



Reducing Ferrules for Capillary Columns	For Capillary Sizes - ID	Item No
1/8" to 0.4 mm, 10/pk	0.25 mm	214204
1/8" to 0.5 mm, 10/pk	0.32 mm	214205
1/8" to 0.8 mm, 10/pk	0.53 mm	214208



Reducing Ferrules for Tubing	For Tubing Sizes - OD	Item No
1/8" to 1/16", 10/pk	1/16"	214210
1/4" to 6 mm, 10/pk	6 mm	214406
1/4" to 1/16", 10/pk	1/16"	214410
1/4" to 1/8", 10/pk	1/8"	214420
1/4" to 3/16", 10/pk	3/16"	214430