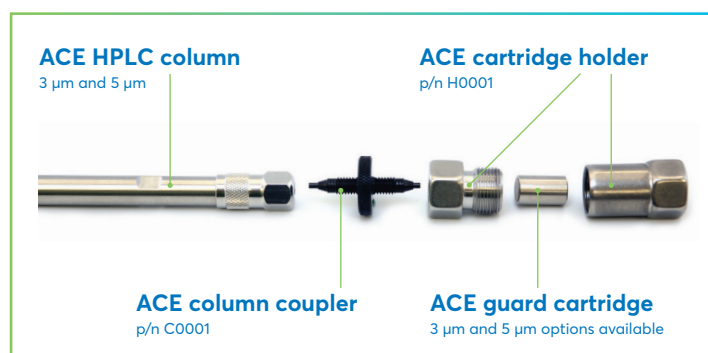


Avantor® ACE® guards and filters

- Protection of columns from 1.0 mm to 30 mm ID
- No loss in column performance or selectivity
- Significantly extends column lifetime
- Available in cost-effective multipacks
- Available for most phases and dimensions

AVANTOR® ACE® GUARD CARTRIDGE

The use of a guard cartridge is recommended to protect the column from both frit blockage and irreversible sample adsorption. Without the use of a guard, column fouling can lead to increased column backpressures, peak splitting and/or tailing. It is generally recommended that guard cartridges should be replaced when the column backpressure increases by 10% or when column resolution or efficiency decreases by 10%.



HARDWARE REQUIRED FOR HPLC GUARD CARTRIDGES

- ACE guard cartridges require a standalone holder and coupler
- The table below summarises the hardware required for HPLC guard cartridges

	Column ID (mm)								
	1.0	2.1	3.0	4.0	4.6	7.75	10.0	21.2	30.0
CARTIDGE PACK SIZE			5				3		3
HOLDER REQUIRED			H0001				H0002		H0009
COUPLER REQUIRED			C0001				C0001		C0002

Please see page 34* for UHPLC Guard cartridge holder

AVANTOR® ACE® PRE-COLUMN FILTERS

Protect your UHPLC and HPLC columns from premature failure with high-quality pre-column filters

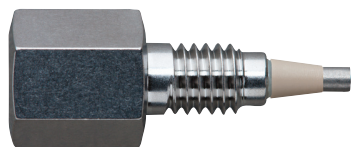
ACE UHPLC/HPLC pre-column filters may be used as protection for any analytical column to help prevent column inlet frit blocking. We offer three different types of pre-column filter depending on the column type as follows:

UHPLC PRE-COLUMN FILTERS

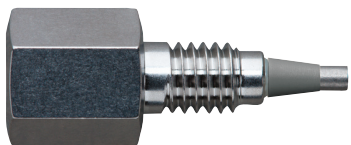
For UHPLC and UPLC columns

- 1000 bar (15000 psi) pressure rating
- Eliminates poor connections
- Compatible with all UHPLC column brands
- Compatible with all UHPLC systems including Waters Acquity®

ACE Excel UHPLC Pre-Column Filter (EXL-PCF10, 10 pack)



ACE Excel UHPLC Pre-Column Filter (Waters Acquity® System Compatible) (EXL-PCF10/ACQ, 10 pack)



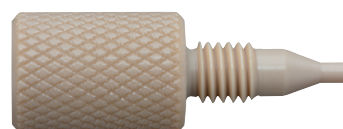
Description	Pack	Part number
ACE UHPLC Pre-column Filter for UHPLC and UPLC columns	5	EXL-PCF05
	10	EXL-PCF10
ACE UHPLC Pre-column filter Waters Acquity® system compatible	5	EXL-PCF05/ACQ
	10	EXL-PCF10/ACQ

MICROBORE HPLC PRE-COLUMN FILTERS

For 2.1 mm id HPLC columns

- 350 bar (5000 psi) pressure rating
- Simple to install and replace
- Effective column protection for all microbore columns
- Compatible with all HPLC systems

ACE microbore HPLC Pre-Column Filter (ACE-HP210, 10 pack)



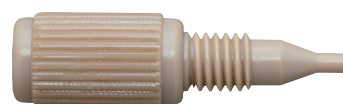
Description	Pack	Part number
ACE Microbore HPLC Pre-column Filter For 2.1 mm id HPLC columns	5	ACE-HP205
	10	ACE-HP210

ANALYTICAL HPLC PRE-COLUMN FILTERS

For more typical standard bore (3.0 to 4.6 mm id) HPLC columns

- 350 bar (5000 psi) pressure rating
- Simple to install and replace
- Effective column protection for all HPLC columns
- Compatible with all HPLC systems

ACE Analytical HPLC Pre-column Filter (EXL-CS210, 10 pack)



Description	Pack	Part number
ACE Analytical HPLC Pre-column Filter with 0.5 µm porosity stainless steel filter element	5	ACE-CS205
	10	ACE-CS210
ACE Analytical HPLC Pre-column Filter with 2.0 µm porosity stainless steel filter element	5	ACE-CS305
	10	ACE-CS310

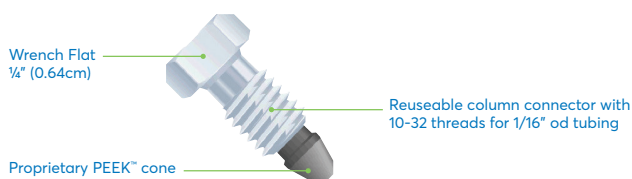
AVANTOR® ACE® GUARDS AND FILTERS

AVANTOR® ACE® COLUMN CONNECTORS

UHPLC COLUMN CONNECTORS

- Pressure rating >1700 bar (>25000 psi)
- Compatible with all UHPLC systems¹
- Compatible with all UHPLC column brands
- Eliminates poor connections
- Innovative reusable design

ACE Excel UHPLC Column Connector (EXL-CC10, 10 pack)



All UHPLC column brands require correct installation in order to realise maximum column efficiency. To avoid connection problems, permanently swaged fittings are not recommended as they do not allow free movement between the tubing, fitting and column inlet on installation. This can result in a poorly connected column that shows unexpected peak tailing due to the introduction of extra column volume (dead volume) to the system. Alternatively, a leak at the inlet fitting connection may be observed.

ACE Excel UHPLC Column Connectors (EXL-CC10, 10 pack) enable the inlet end of UHPLC columns to be correctly installed every time. Their unique reusable design ensures that they maintain a 1700 bar (25000 psi) pressure rating with repeated use, yet do not permanently swage onto the inlet tubing. To maximise the lifetime of the fitting, the correct use of a torque wrench (EXL-TW) is required.

At the outlet end of the UHPLC column (where pressure demands are lower but a correct connection remains important), ACE Fingertight HPLC Column Connectors (ACE-CC10, 10 pack) may alternatively be used.

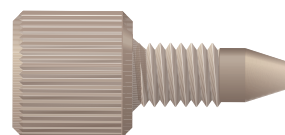
¹Note: For inlet connections onto a Waters Acquity® system (containing a Waters Acquity 1/16" fitting and ferrule on the inlet tubing) the use of a pre-column filter incorporating the unique Waters Acquity® column port profile is alternatively recommended (EXL-PCF10/ACQ - 10 pack) to ensure maximum compatibility.

Description	Pack	Part number
	1	EXL-CC
ACE Excel UHPLC reusable column connector	10	EXL-CC10
Torque Wrench	1	EXL-TW
ACE Excel UHPLC column connector starter kit (contains 4* EXL-CC & 1* EXL-TW)	1	EXL-CCSK

HPLC COLUMN CONNECTORS

- Fingertight to 350 bar (5000 psi)
- Reuseable and simple to install
- Eliminates poor connections
- Compatible with all HPLC column brands and instruments

ACE Fingertight HPLC Column Connector (ACE-CC10, 10 pack)



ACE Fingertight HPLC Column Connectors (ACE-CC10, 10 pack) are recommended for the connection of both the inlet and outlet ends of HPLC columns.

Manufactured from premium quality PEEK™, the fittings simply hand tighten to provide a perfect column connection, and are pressure rated to 350 bar/5000 psi.

ACE Fingertight HPLC Column Connectors may additionally be used at the outlet end of UHPLC columns, where pressure demands are lower but a correct connection remains important.

Description	Pack	Part number
	1	ACE-CC
ACE PEEK™ Fingertight column connector	10	ACE-CC10