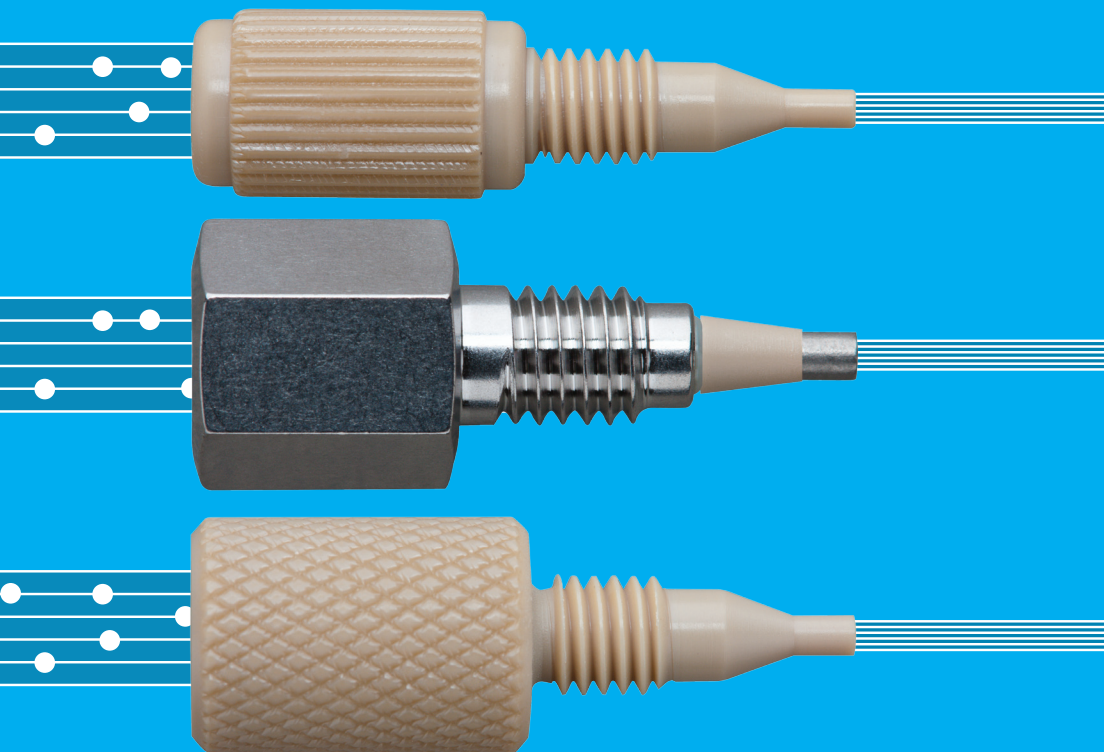


Protect your expensive HPLC
and UHPLC columns from
premature failure with
MAC-MOD Pre-Column Filters



Over 70% of the failures of HPLC columns are caused by inlet frit plugging.

MAC-MOD Pre-Column Filters

One of the most common causes of HPLC column failure is particulate material collecting on the inlet frit of the column, causing high back pressure and/or distortion of peak shape. By one estimate, over 70% of the failures of HPLC columns are caused by inlet frit plugging. UHPLC columns, especially those packed with sub-2 μm size particles, are particularly vulnerable to inlet frit plugging.

MAC-MOD Analytical offers three different pre-column filters, each designed for column specific protection.



UltraShield

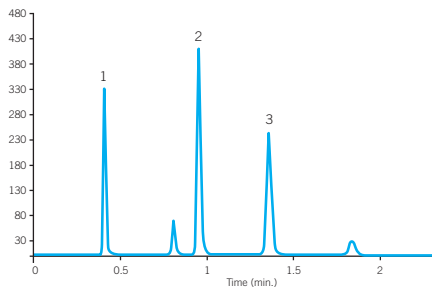
Pre-column filters for UHPLC and UPLC columns

As the name implies, UltraShield pre-column filters are engineered specifically for use in fast, high efficiency “UHPLC” separations requiring high mobile phase velocities and ultra-high pressure. The ultra-low dispersion of UltraShield maintains the efficiency of UHPLC columns, assuring no loss of critical resolution. With its simple design, UltraShield installs on any analytical, UHPLC or UPLC column in seconds and is leak tight to 1000 bar (15,000 psi). Simply finger tighten initially, then wrench tighten beyond finger tight an additional ¼ turn.

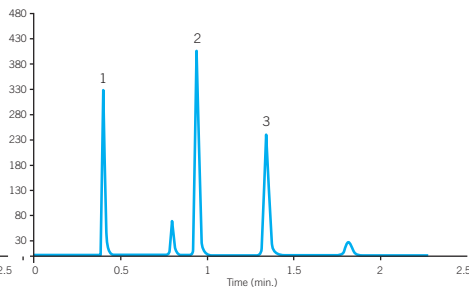
Proof of the low dispersion of UltraShield

This comparison of chromatograms illustrates that an UltraShield pre-column filter can be installed on a UHPLC column (HALO C18, 4.6 x 50 mm) with negligible effect on performance.

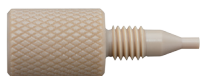
Without UltraShield



With UltraShield installed on UHPLC column



	Peak 1	Peak 2	Peak 3
N w/o UltraShield	10,542	11,459	10,796
N with UltraShield	10,307	11,457	10,784
% Change	-2.2%	0%	-0.1%



ColumnShield

**Pre-column filters for higher performance HPLC columns
or smaller bore columns**

3.5 μm and 3.0 μm particles are often packed in HPLC columns with smaller bores (<3.0 mm ID) and shorter lengths (20 - 50mm). These columns facilitate faster separations and are routinely employed with mass spectrometers as detectors. The operating pressure is not as high as with UHPLC columns, but the need still exists for low system dispersion, since these columns typically generate peaks with small volumes.

ColumnShield pre-column filters are optimal for these types of columns. They provide effective, low-dispersion filtering at a lower cost than the UltraShield. Although they are not recommended for ultra-high pressure applications, they can still be safely used at pressures up to 400 bar (6,000 psi). ColumnShield pre-column filters utilize a PEEK finger-tight design that connects directly to any $\frac{1}{16}$ " 10-32 internal thread inlet fitting port, regardless of the manufacturer.



ColumnSaver

**Pre-column filter for more typical standard bore
(3.0 to 8.0 mm) HPLC columns**

ColumnSavers provide economical protection for HPLC columns packed with 3 μm size particles or larger and with bore sizes (internal diameter) 3.0 mm to 8.0 mm. We even recommend using these pre-column filters on the inlet of guard columns to extend the life and reduce the replacement costs of these items.

Product Guarantee

All MAC-MOD Analytical pre-column filters are backed by our “no hassle” product guarantee. If, for any reason, you are not satisfied with any of these pre-column filters, you may exchange them for other pre-column filters or return them for a full refund.

Pre-column Filter Selection Chart

Maximum Pressure	HPLC/UHPLC Column ID	HPLC/UHPLC Column Length	Pre-column Filter
1000 bar	1.0 to 4.6 mm	30 to 250 mm	UltraShield
400 bar	1.0 to 4.6 mm	50 to 250 mm	ColumnShield
300 bar	2.1 to 8.0 mm	50 to 300 mm	ColumnSaver

Ordering Information

UltraShield

Item Description	Part Number	Price
UltraShield Pre-column Filter, 0.5 μ m porosity titanium filter element, 5/pkg	MMUS-1505	\$165.00
UltraShield Pre-column Filter, 0.5 μ m porosity titanium filter element, 10/pkg	MMUS-1510	\$325.00

ColumnShield

Item Description	Part Number	Price
ColumnShield Pre-column Filter, 0.5 μ m porosity stainless steel filter element, 5/pkg	MMPF-205	\$100.00
ColumnShield Pre-column Filter, 0.5 μ m porosity stainless steel filter element, 10/pkg	MMPF-210	\$195.00

ColumnSaver

Item Description	Part Number	Price
ColumnSaver Pre-column Filter with 0.5 μ m stainless steel filter element, 5/pkg	MMCS-205	\$90.00
ColumnSaver Pre-column Filter with 0.5 μ m stainless steel filter element, 10/pkg	MMCS-210	\$165.00



For more information or to place an order, call MAC-MOD at 1-800-441-7508 or visit www.mac-mod.com



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