ThermoFisher SCIENTIFIC

Chromatography consumables

Connected chromatography solutions

Chromatography consumables catalog

thermo scientific

Comprehensive products to support your chromatography workflows

Sample preparation solutions

Thermo Scientific™ products:

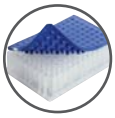
- SMART Digest™ kits
- SOLA™ SPE products
- HyperSep™ SPE products
- TurboFlow™ and online sample preparation products
- QuEChERS products
- Automated micro solid-phase extraction (µSPE) products
- Syringes and syringe filters




Sample handling solutions

- SureSTART™ AVCS™ closures and SureStop vials
- SureSTART™ Gold grade purity glass vials and vial kits
- SureSTART™ low residual microsampling vials and vial kits
- MS certified vials
- Polyspring vial inserts
- Electronic crimping and decrimping tools
- WebSeal™ well-plates and sealing mats for chromatography

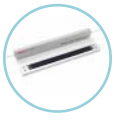
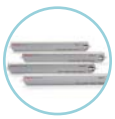


Low-flow LC columns and accessories

- EASY-Spray™ HPLC columns for top-down and bottom-up proteomics
- Double nanoViper PepMap™ Neo HPLC columns for top-down and bottom-up proteomics
- µPAC™ HPLC columns for bottom-up proteomics



BioLC columns and accessories

- MAbPac™ size exclusion chromatography
- MAbPac™ and ProPac™ charged variant profiling
- MAbPac™ intact and subunit analysis
- HILIC and mixed-mode glycan analysis
- DNAPac™ oligonucleotide and gene therapy analysis
- Vanquish™ UHPLC peptide analysis




LC columns and accessories

- Accucore™ U/HPLC columns
- Acclaim™ U/HPLC columns
- Hypersil GOLD™ U/HPLC columns
- Hypercarb™ HPLC columns
- Application specific HPLC columns
- Hypersil™ BDS and Hypersil™ classical HPLC columns
- LC accessories
- Preparative HPLC columns




GC columns and accessories

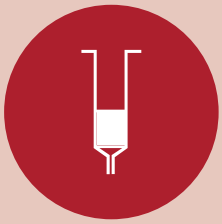
- TracePLOT™ GC columns
- TraceGOLD™ packed GC columns
- GuardGOLD™ capillary GC columns
- LinerGOLD™ liners
- Super Clean™ gas cartridge filters
- GC consumables
- Gas management
- GC equipment
- GC reagents




Our portfolio

Sample preparation solutions

Save time, improve reproducibility, and extend the lifetime of your High/Ultra High Performance Liquid Chromatography (HPLC/UHPLC) and gas chromatography (GC) columns with our comprehensive range of sample preparation products. Achieve high sensitivity, selectivity, and recovery with advanced solid-phase extraction (SPE) consumables.



Sample handling solutions

We provide a broad selection of sample handling and containment solutions from all your chromatography requirements. Our vials, closures and well plates, come with the lowest levels of extractables and leachables, are made from glass that has low compound adsorption, and the highest level of standards and certification available in the marketplace. Whether you have routine and robust samples, or you need to ensure the highest level of confidence and compliance, our market leading portfolio of storage and autosampler vials and closure, well plates and sample handling accessories has everything you'll need.

Low-flow LC columns and accessories

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.

BioLC columns and accessories

Achieve ultrahigh resolution and high efficiency separations of proteins, peptides, monoclonal antibodies, biosimilars, carbohydrates, oligonucleotides and more. Our unique column chemistries for biological samples have a long-standing reputation for providing excellent reproducibility and durability under a broad range of pH, temperature, and mobile phase compositions.

LC columns and accessories

As a leader in LC column technology including silica, polymer and porous graphitic carbon manufacturing, bonded phase production and column packing for 40 years, you can rely on the quality of Thermo Scientific high performance liquid chromatography (HPLC) products: a comprehensive range of innovative columns, accessories and equipment for fast and reproducible analytical and prep HPLC and ultra-high performance liquid chromatography (UHPLC) analysis.

GC columns and accessories

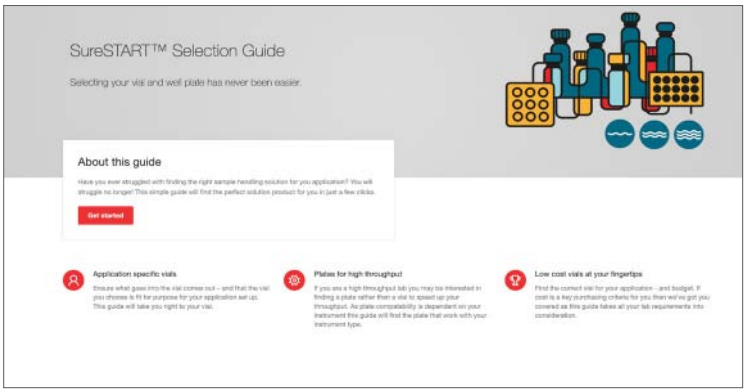
We offer a broad portfolio of GC columns and accessories designed to give optimal system performance for today's challenging analyses. Our range of GC accessories include all the tools needed by today's gas chromatographers.

Product selection tools and additional resources

Sample handling selection guide

Need a quick answer?

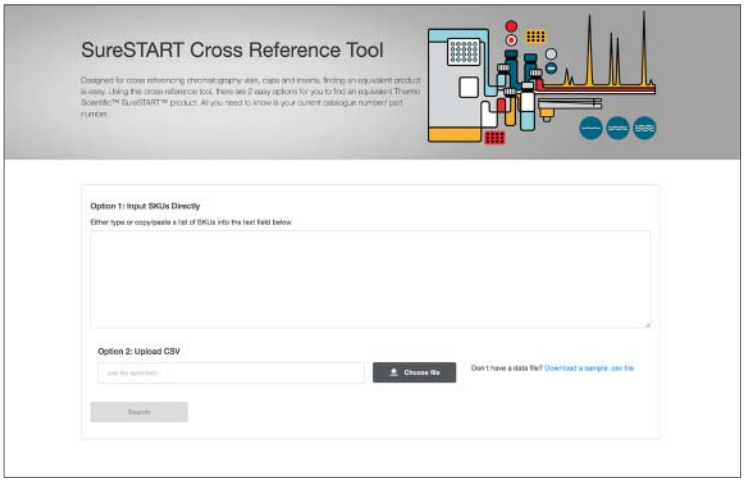
Why not use our online product selector guide that includes our entire SureSTART Collection of vials, caps, well plates and mats.



Sample handling cross reference tool

Already purchasing an existing product from us or someone else?

Let our cross-reference tool find the equivalent SureSTART product/catalog number for you.

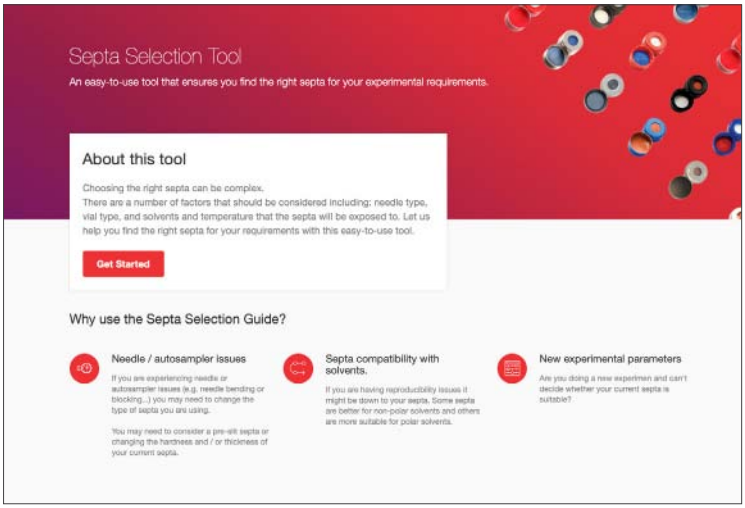


Product selection tools and additional resources

Septa selection tool

Choosing the right septa can be complex!

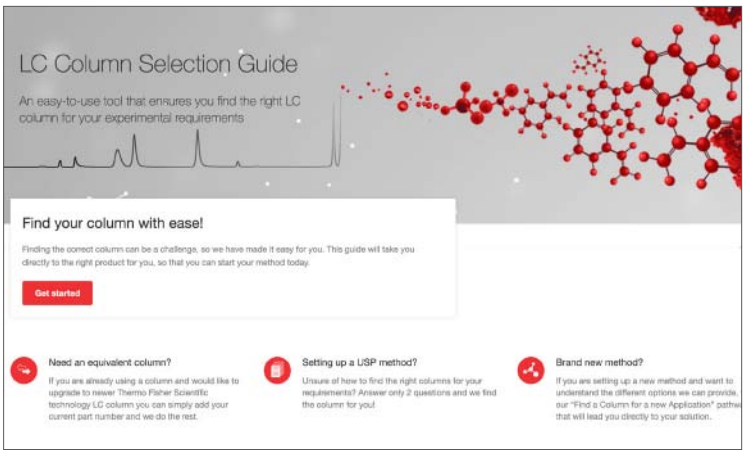
There are a number of factors that should be considered including: needle type, vial type, solvents and temperature that the septa will be exposed to. Let us help you find the right septa with this easy-to-use tool.



LC columns selection guide

Find your columns with ease!

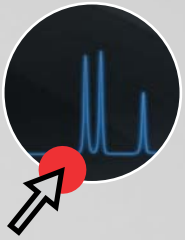
Finding the corect column can be challenge, so we have madeit easy for you. This guide will take you directly to the right product for you, so that you can start your method today.



More information

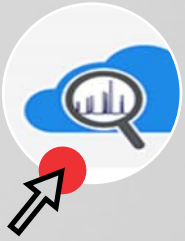
Chromatography columns and consumables

For more information on our range of chromatography columns and consumables, including the latest applications, educational resources, selection guides and product literature, please visit
thermofisher.com/chromatographyconsumables



Instrumentation and key applications

For more information on our instrumentation and key applications, please visit
thermofisher.com/chromatography



AppsLab

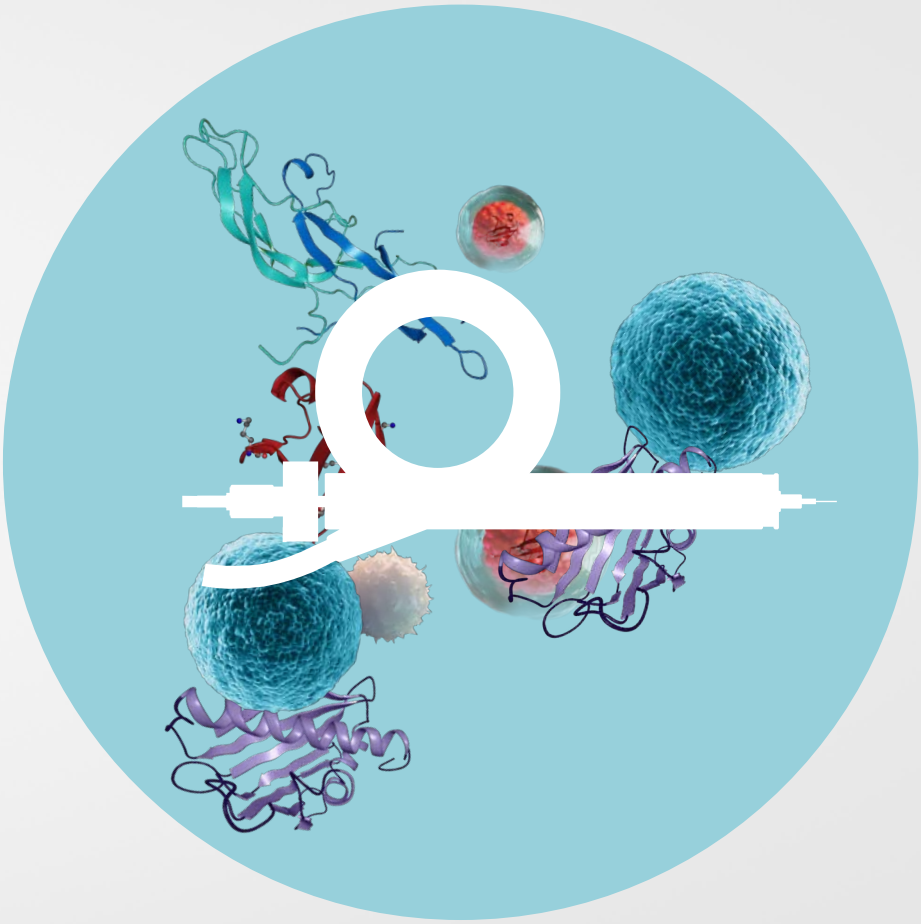
Gain access to our applications expertise on cloud-based Thermo Scientific™ AppsLab library of analytical applications for a comprehensive fully searchable method repository
appslab.thermofisher.com

Webinars

Analytical and life science webinars live and on-demand

NIBRT collaboration information

A collaboration built for Biopharma between the National Institute for Bioprocessing Research and Training (NIBRT) and Thermo Fisher Scientific
thermofisher.com/nibrt



Connected chromatography solutions

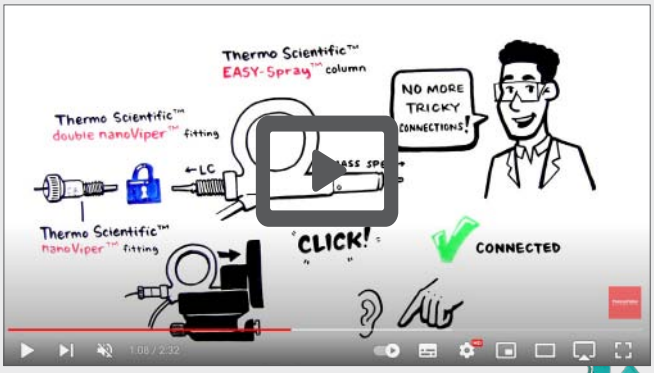
Low-flow columns and accessories

thermo scientific

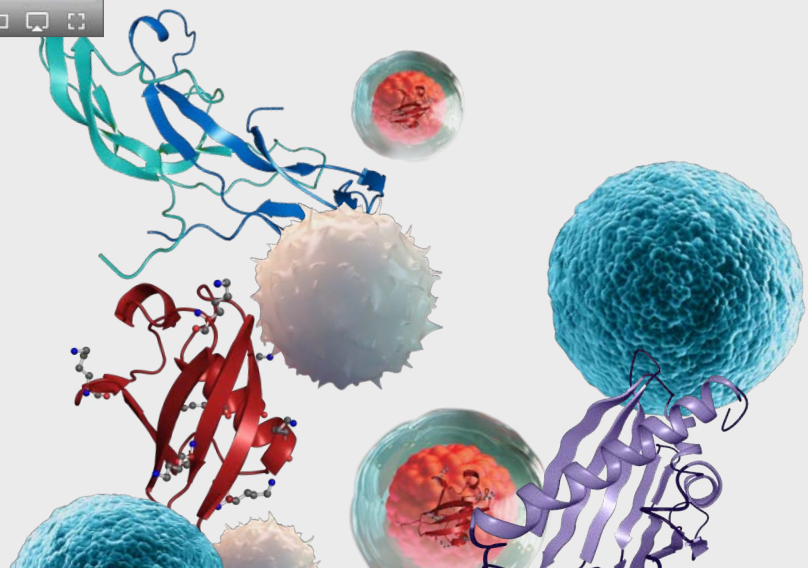
Introduction

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics, metabolomics, and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.

- Thermo Scientific™ EASY-Spray™ HPLC columns
- Thermo Scientific™ Double nanoViper™ HPLC columns
- Thermo Scientific™ µPAC™ HPLC columns

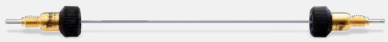


Video:
Low-flow HPLC columns connectivity



Section contents

Column selection guide

	Packed bed format		Pillar array column format
	EASY-Spray	Double nanoViper	µPAC
Technology			
Benefits	**Ease-of-use** • Click-and-Spray ion connection with EASY-Spray source • nanoViper connections • Integrated column and emitter • Integrated temperature control • For use with Thermo Scientific MS Systems	**Analytical flexibility** • Universal Thermo Scientific nanoViper Fingertight Fittings for column inlet and outlet • Simple zero-dead-volume (ZDV) connections • Separate emitters • Compatible with all low flow U/HPLC instruments	**Ultimate separation** • Excellent retention time stability • Low back pressure separations, improving column and emitter robustness • Separate emitters • Compatible with all low-flow U/HPLC instruments
Application areas	**Bottom-up proteomics** PepMap Neo UHPLC columns are the latest addition to our portfolio. PepMap Neo columns are packed to higher pressure, which provides 1500 bar pressure rating, improved column-to-column consistency, and increased efficiency. **Top-down and middle-down proteomics** The MAbPac capillary column is best suited for the characterization of intact proteins in top-down proteomics applications where sample amount is critically limited.		**Proteomics research** • 50 cm column <120 min separations • 200 cm column >120 min separations

Reference guide:
Low-flow chromatography consumables reference guide for LC-MS proteomics research

Flyer:
Low-flow HPLC columns. Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomics research

EASY-Spray HPLC columns

Ensure robust nano and capillary flow LC-MS analysis using Thermo Scientific™ EASY-Spray™ HPLC Columns. The integrated column/emitter design eliminates dead volume and is temperature-controlled for maximum reliability and performance. Rigorously tested to ensure maximum quality, these columns deliver maximum simplicity and ease-of-use.

The capillary flow HPLC columns provide sensitive protein, peptide, and monoclonal antibody (mAb) separation. They give proteomics researchers more than ever before: more throughput, more sensitivity, more separation power, and more ease of use.

Choose an EASY-Spray column when:

- You want simple connections with an EASY-Spray source. This is ideal for novice users.
- Sample amount is limited
- Analytical UHPLC does not provide sufficient sensitivity
- Workflow simplicity is key
- High sensitivity is required to identify proteins and peptides at low expression levels
- Analyses are done in a targeted and untargeted way for screening and verification

What makes an EASY-Spray column special?

Unique design provides uncompromised performance in an ease-of-use format for nano and capillary LC-MS analysis.

Features for optimum data quality:

- Simple connection to the LC and Thermo Scientific MS instruments
- Precision machined and positioned glass emitters
- Integrated nanoViper zero-dead-volume (ZDV) unions
- Integrated temperature control

Video:
Thermo Scientific
EASY-Spray 150 mm
LC columns

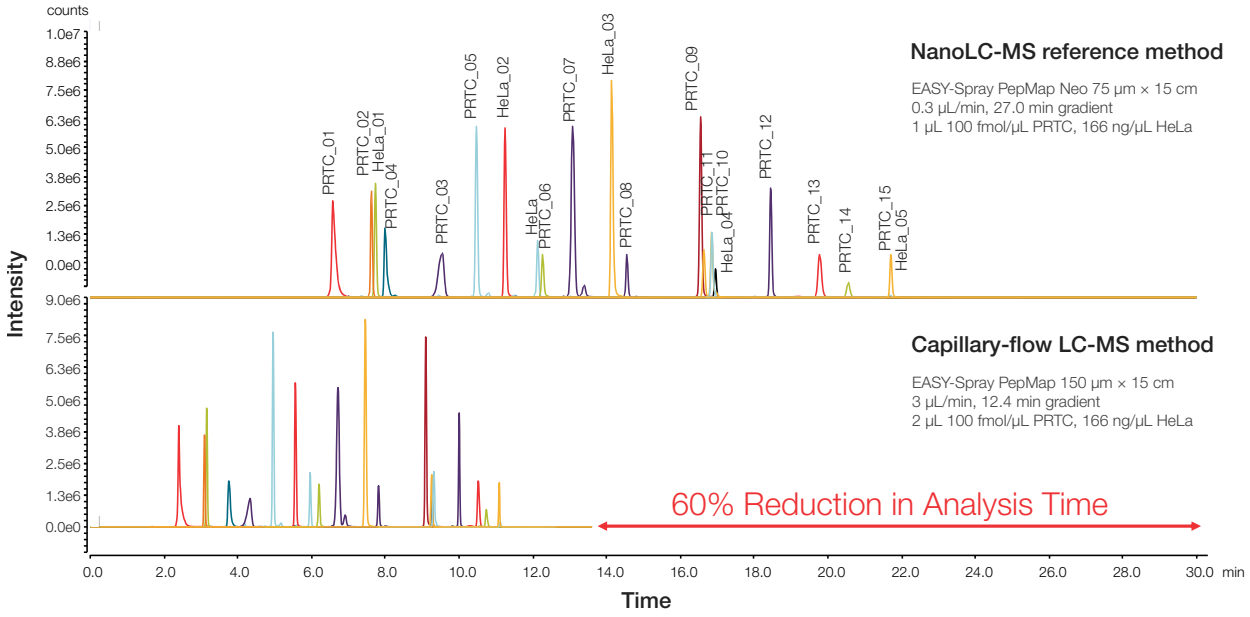
EASY-Spray HPLC columns

PepMap Neo HPLC columns
Bottom-up columns

Additional reading

Learn more at **thermofisher.com/lowflowlc**

The Thermo Scientific™ EASY-Spray™ PepMap™ Neo UHPLC columns are perfect for bottom-up proteomics. Packed at higher pressure and rated to 1500 bar, they provide consistent column-to-column performance, long column lifetime, and excellent efficiency. These benefits are true at any pressure.



The 60% reduction in total analysis time allows increasing the sample throughput moving from the nano- to the capillary-flow LC-MS method.

PepMap Neo columns

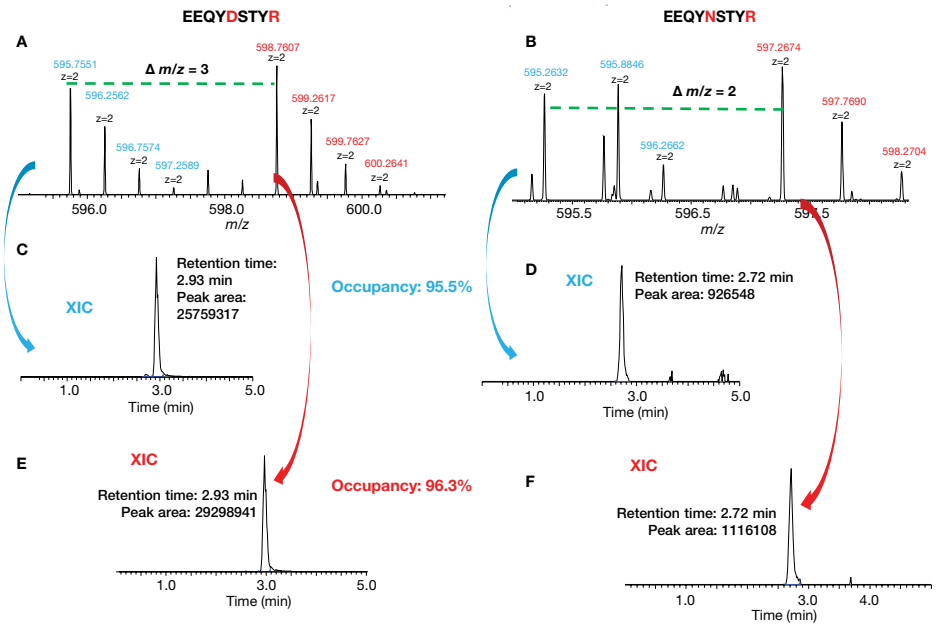
Format	Length (mm)	Column ID (µm)	Part number
Bottom-up columns	150	75	ES75150PN
	500	75	ES75500PN
	750	75	ES75750PN

MAbPac RP Cap HPLC columns
Top-down columns

Additional reading

Learn more at **thermofisher.com/lowflowlc**

The Thermo Scientific™ MAbPac™ RP capillary column is best suited for the characterization of intact proteins in top-down proteomics, clinical and anti-doping applications where sample amount is limited or sensitivity is crucial.



Calculation of site occupancy of N306 in Fab glycosylated mAb

MAbPac column

Format	Length (mm)	Column ID (µm)	Part number
Top-down column	150	150	ES907

Order now!

EASY-Spray HPLC columns
Continued

EASY-Spray accessories

Additional reading

Learn more at **thermofisher.com/lowflowlc**

For the best performance from your EASY-Spray column consider investing in these accessories.

Thermo Scientific™ Acclaim™ PepMap™ traps

Description	Union type	Particle size (µm)	Column ID (µm)	Media bed length (mm)	Trap length (mm)	Part number
PepMap Neo Trap Cartridge	N/A	5	300	5	N/A	174500
PepMap nanotrap 500 bar	Nut/sleeve	5	100	20	150	164199
PepMap nanotrap 500 bar	Double nanoViper	5	100	20	150	164750
PepMap nanotrap 500 bar	Double nanoViper	3	75	20	150	164535
PepMap nanotrap 1200 bar	Double nanoViper	3	75	20	70	164946
PepMap nanotrap 500 bar	Nut/sleeve	5	200	20	150	164213

PEEK Tubing and trap holder

Description	For use with	Part number
PEEK with nanoViper fittings 30 µm X 100 mm 2PK 1500 bar	Low-flow PepMap columns	174501
Trap holder + nanoViper fittings kit 1500 bar		174502

Reference guide:
Low-flow chromatography consumables reference guide for LC-MS proteomics research

Flyer:
Low-flow HPLC columns. Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomics research

Double nanoViper columns

The Thermo Scientific™ Viper™ and Thermo Scientific™ nanoViper™ Fingertight Fitting Systems provide tool-free connections designed to be used for the entire fluidic pathway in LC systems to improve chromatographic results.

Virtually without any dead-volume, Viper and nanoViper fittings combine usability with high performance. Viper and nanoViper connections can be used on all standard LC modules, valves, and columns quickly, independent of different connection geometries and system backpressures. Dedicated capillary kits for standard LC system configurations and application-specific setups enable high qualitative and reproducible results for all flow rates and pressure ranges.

Choose these columns when:

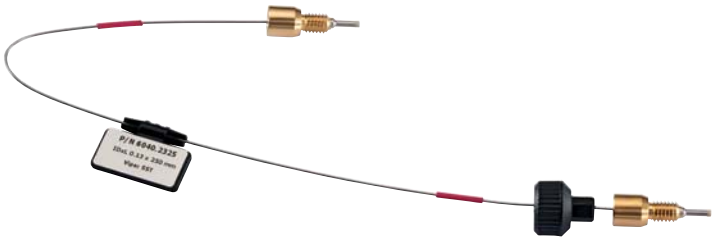
- Maximum flexibility is required
- Changing the emitter and column independently is important

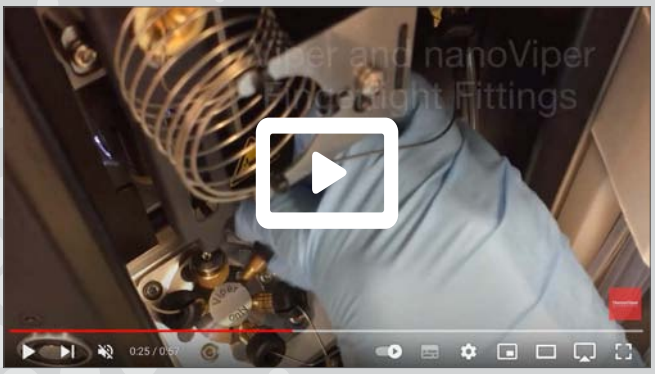
What makes these columns special?

These stand-alone nano-, capillary, and micro-flow columns are:

- Designed with single nanoViper and double nanoViper fingertight fittings for trouble-free connection
- For robust separation in proteomics research, drug discovery, and high-throughput proteomics laboratoriesl

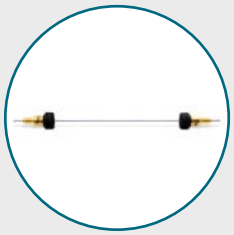
Product specifications:
Viper and nanoViper
Fingertight
Fitting Systems





Video:
Discover a better
LC connection

Double nanoViper columns

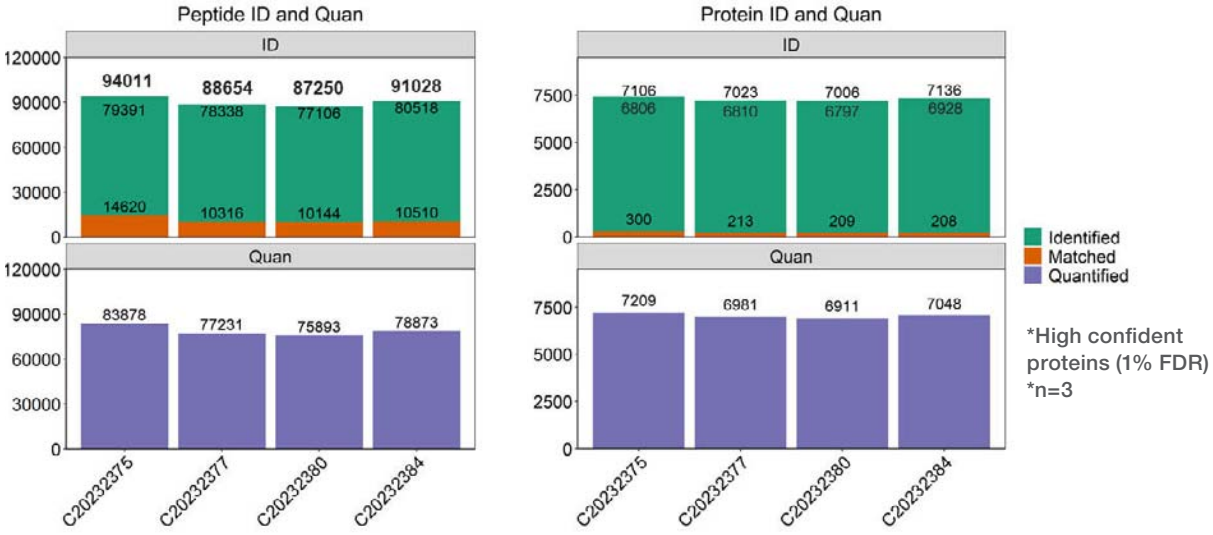


Double nanoViper PepMap Neo UHPLC columns
Bottom-up columns

Additional reading

Learn more at **thermofisher.com/lowflowlc**

Separate challenging peptide mapping samples with Thermo Scientific™ Double nanoViper™ PepMap™ Neo UHPLC columns. These columns feature easy connectivity, high reproducibilty, and excellent separations. Our Neo columns are packed to higher pressure and provide 1500 bar pressure capability, improved column-to-column consistency, and increased efficiency. The column media is manufactured and selected to exacting standards and packed at high pressure, resulting in enhanced peak symmetry, resolution, and column-to-column reproducibility that allows you to obtain greater sample coverage and sample insights.



Reproducible identification and quantification of HeLa peptides and proteins over 4 EASY-Spray PepMap Neo columns while using Vanquish Neo UHPLC system coupled with the Orbitrap Exploris 480 mass spectrometer.

Double nanoViper PepMap Neo columns

Format	Length (mm)	Column ID (µm)	Part number
Bottom-up columns	150	75	DNV75150PN
	500	75	DNV75500PN
	750	75	DNV75750PN

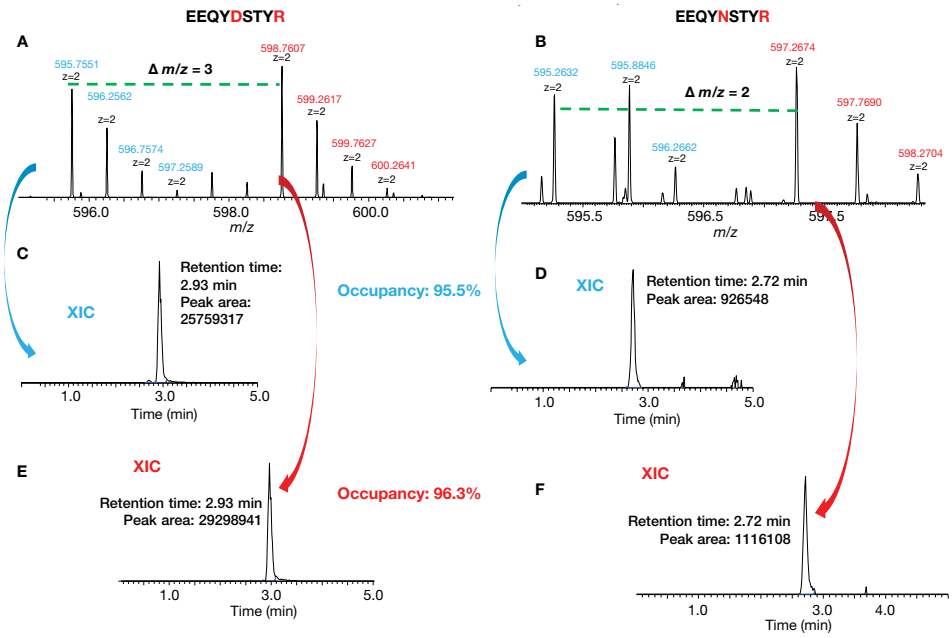
Double nanoViper columns
Continued

MAbPac RP Cap HPLC columns
Top-down columns

Additional reading

Learn more at **thermofisher.com/lowflowlc**

The Thermo Scientific MAbPac RP capillary column is best suited for the characterization of intact proteins in top-down protemics, clinical and anti-doping applications where sample amount is limited or sensitivity is crucial.



Calculation of site occupancy of N306 in Fab glycosylated mAb

MAbPac column

Format	Length (mm)	Column ID (µm)	Part number
Top-down column	150	150	164947

Order now!

Double nanoViper columns
Continued

LC-MS connection accessories and emitters

These emitters, nanoViper tubing kits, and unions offer easy connection from your LC system to an EASY-Spray source.

Acclaim PepMap traps and nanotraps

Description	For use with	Part number
Two Viper unions	Double nanoViper columns	6040.2304
NanoViper tubing 20 µm x 550 mm		6041.5260
Emitter: 10 µm I.D.		ES993
Emitter: 15 µm I.D		ES994

Traps and accessories

For the best performance from your double nanoViper column consider investing in these nanotraps.

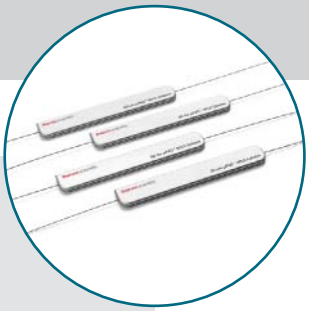
Acclaim PepMap traps and nanotraps

Description	Union type	Particle size (µm)	Column ID (µm)	Media bed length (mm)	Trap length (mm)	Part number
PepMap Neo Trap cartridge	N/A	5	300	5	N/A	174500
PepMap nanotrap 500 bar	Nut/sleeve	5	100	20	150	164199
PepMap nanotrap 500 bar	Double nanoViper	5	100	20	150	164750
PepMap nanotrap 500 bar	Double nanoViper	3	75	20	150	164535
PepMap nanotrap 1200 bar	Double nanoViper	3	75	20	70	164946
PepMap nanotrap 500 bar	Nut/sleeve	5	200	20	150	164213

Order now!

µPAC HPLC columns

These HPLC columns are ideally suited for bottom-up proteomics where resolution is critical to the success of the analysis. Our µPAC HPLC columns provide excellent column-to-column reproducibility and peak capacity at a wide range of flow rates.



Choose a µPAC HPLC column when:

- Highest resolution and peak capacities is required
- Your samples span a wide concentration range
- Highest LC-MS sensitivity is needed
- You want to speed up your runtimes
- LC-MS robustness is needed
- You want an increased column lifetime
- You prefer working at much lower back pressures than with packed-bed columns
- When it is important to compare results from experiments spanning over time or geographical location

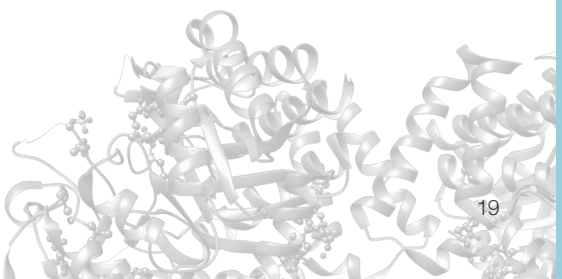
What makes *µ*PAC HPLC columns special?

The unique separation path provides:

- *µ*-pillar stationary backbone, micromachined in a silicon wafer
- Flow path designed for highest analyte concentration during elution
- Extra high-resolution separations, using up to 200 cm column lengths
- Low back pressure separations, improving column and emitter robustness

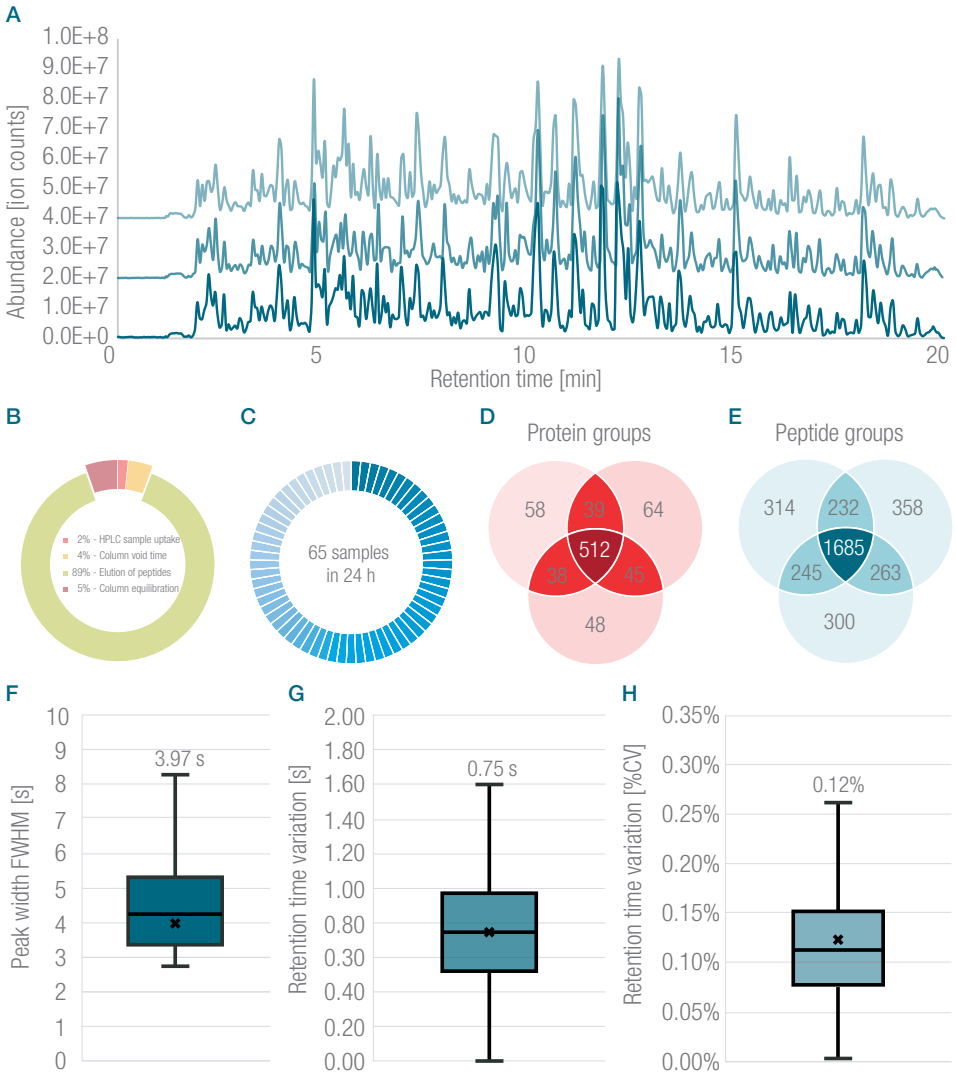
Additional reading

Learn more at **thermofisher.com/lowflowlc**



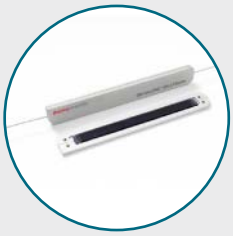
µPAC HPLC columns

High throughput proteome analysis with a µPAC column



High throughput proteome analysis with a µPAC column. 2 µg of HeLa cell digest was injected using a direct injection mode. A) Basepeak chromatograms obtained for triplicate analysis. B) Relative time use of the instrument. C) Sample turnover rate. D) Number of identified protein groups. E) Number of identified peptide groups. F) Average peak widths (FWHM) for all PSMs. G) Retention time variation (absolutes) observed for all peptides shared in triplicate runs. H) Retention time variation (relative %CV) observed for all peptides shared in triplicate runs.

µPAC HPLC columns
Continued



Thermo Scientific™ µPAC™ pillar array

µPAC pillar array

Description	Pillar dimensions	Interpillar distance	Column length (cm)	Flowrate range (µL/min)	Part number
µPAC pillar array	5	2.5	50	0.1–2.0	COL-nano050G1B
µPAC pillar array	5	2.5	200	0.1–1.0	COL-nano200G1B
µPAC pillar array (capillary flow)	5	2.5	50	1.0–15.0	COL-cap050G1B

µPAC traps

µPAC traps

Description	Pillar dimensions	Interpillar distance	Column length (cm)	Part number
µPAC pillar array	5	2.5	1	COL-trpnano16G1B2 (Duo-pack)

µPAC accessories

µPAC accessories

Description	For use with	Part number
Flex iON Connect : Interface to connect Thermo Scientific™ µPAC™ nanoLC columns to Thermo Scientific™ Nanospray Flex™ Series ion source	µPAC nano columns	EMI-flexionB
Grounding union and transfer line to connect to the EASY-Spray source		EMI-easysprayB

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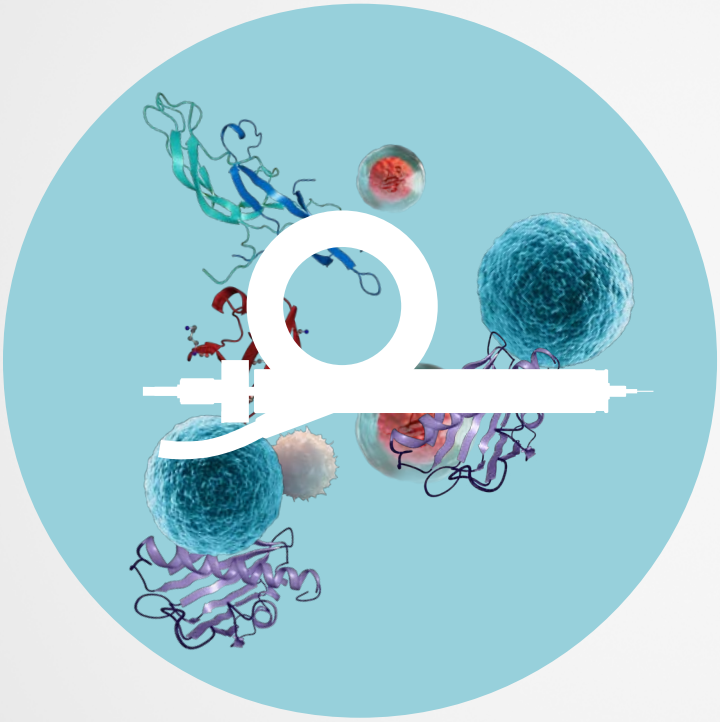

Expect reproducible results with sample prep, columns and vials

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