ThermoFisher SCIENTIFIC

Sample preparation

Connected chromatography solutions

Sample preparation solutions

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Introduction

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.

SMART Digest kits

Thermo Scientific™ SMART Digest™ kits are designed for biopharmaceutical applications that require highly reproducible, sensitive and fast analyses of proteins often in high throughput workflows.

SOLA SPE products

The fritless SPE product range which has been specifically designed for bioanalysis provides greater reproducibility with cleaner, more consistent extracts. Thermo Scientific™ SOLA™ SPE products provide unparalleled performance characteristics compared to conventional SPE, phospholipid removal and protein precipitation methods.

QuEChERS products

QuEChERS methods offer a convenient and effective approach for extraction and clean-up of pesticide residues in food and other complex matrices. Thermo Scientific™ HyperSep™ Dispersive SPE Clean-Up products contain the proper sorbents for optimum clean-up of analytes extracted using QuEChERS methods.

Syringes and syringe filters

Provide cleaner sample extracts by removing interfering materials and fine particles.

Section contents

SMART Digest kits
Facilitating perfect digestion

SMART Digest and **SMART Digest ImmunoAffinity (IA)** kits are designed for biomarker and bio-therapeutic characterization and quantitation.

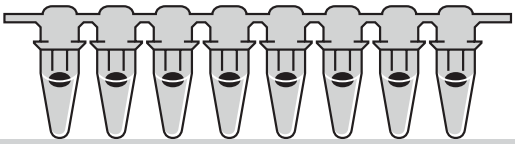
The kits provide options for the sample preparation of proteins that are:

- Fast
- Simple
- Highly reproducible
- Sensitive
- Compatible with automation

SMART Digest kits

Additional reading

Learn more at thermofisher.com/smartdigest



Compendium:
SMART Digest peptide mapping and quantitation

SMART Digest webinar series
In this webinar series, four new technologies will be demonstrated that dramatically improve upon established mapping workflows and help increase confidence in biopharma peptide mapping.

SMART Digest kits
Continued

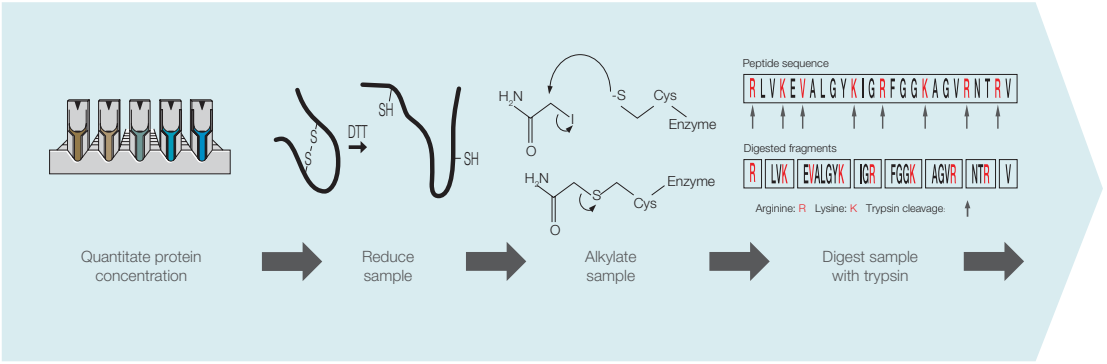
SMART Digest kits improve workflows by quickly and efficiently digesting proteins for characterization and quantitation applications, due to the heat-stable immobilized trypsin design.

Simplicity of use

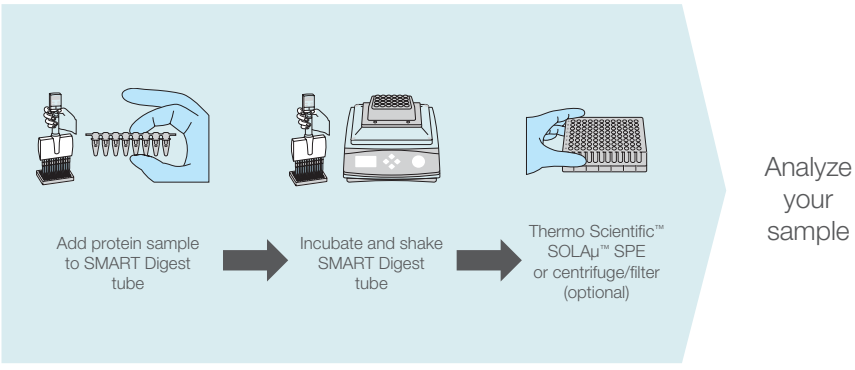
Current sample preparation protocols for the digestion of proteins are multifaceted and laborious. Due to this, errors are far more likely to occur. Therefore, the overall protocol is subject to irreproducibility and significant sample processing time.

The SMART Digest kit overcomes these barriers by providing a simple to implement, integrated process (see the diagram below), which provides high data confidence and significantly increased reproducibility. The entire protocol can be easily automated for high throughput processing.

Standard digest kit



SMART Digest kit



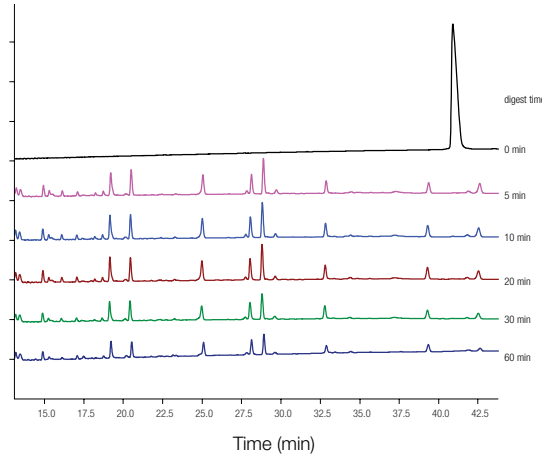
SMART Digest kits
Continued

Fast digestion

The SMART Digest process is not only simple, but significantly reduces the time from sample preparation to analysis. Typically it takes less than 60 minutes, dependent on sample complexity, to achieve full digestion. In the example below, we can see that carbonic anhydrase undergoes complete digestion in less than 5 minutes, as the intact protein peak at around 41 minutes is no longer present, whilst in later chromatograms, no further peaks appear following longer digestion times. The optimized digestion times of some common proteins are shown in the table adjacent.

Carbonic anhydrase, 29 KDa

Time course experiment for digestion optimization



Typical digestion times

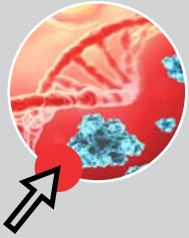
Protein	Digest time (min)
Insulin	4
BSA	< 5
Carbonic anhydrase	< 5
Lysozyme	< 5
Apo-B	30
IgG	45
IgG in 50 µL plasma*	75
Ribonuclease A	150
Thyroglobulin	240
C-reactive protein	240

200 µL protein solution (100 µg/mL) at 70 °C
*IgG in plasma (17.5 mg/mL total protein) at 70 °C

Automation

Due to their simple workflow, SMART Digest and SMART Digest IA kits are easy to automate with platforms such as the Thermo Scientific™ KingFisher™ Duo Prime purification system.

KingFisher Duo Prime purification system



Brochure:
Your samples, powered by KingFisher instruments. Automated sample preparation for DNA, RNA, protein, or cells.

Application note:
High-precision, automated peptide mapping of proteins

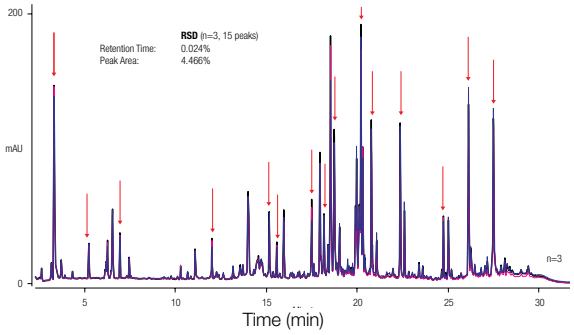
SMART Digest kits

Continued

Reproducibility of digestion

The SMART Digest kit provides significant improvements in reproducibility over existing protocols, which results in fewer sample failures, higher throughput and the ability to more easily interrogate data.

This allows for reproducible results user-to-user, day-to-day and lab-to-lab. The ultra-violet (UV) chromatogram on the right shows overlays from three separate SMART digestions from the same monoclonal antibody (mAb), conducted by three individual operators, with retention time RSD of 0.024%.

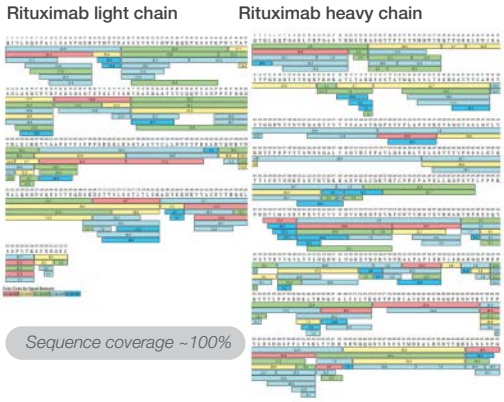


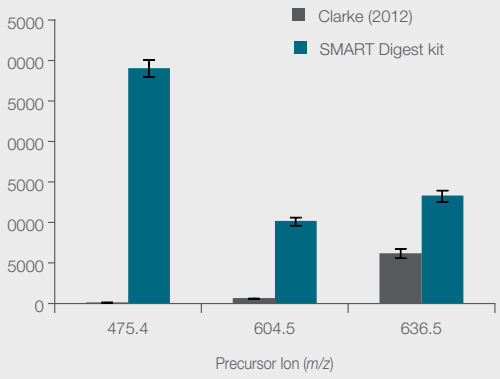
Mass spectrometry

Thermo Scientific™ Orbitrap Exploris™ 240 and 480 Mass Spectrometers add superior denatured and native mass spectrometry (MS) intact analysis and subunit top/middle-down analysis capabilities to one of the most powerful benchtop peptide mapping instruments available. When combined with Thermo Scientific™ BioPharma Finder™ Software it provides a complete integrated hardware and software solution for biotherapeutic characterization.

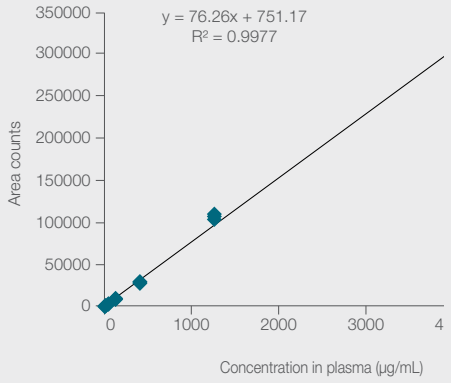
Quantitation

The SMART Digest kit allows confident detection of biomarkers with high sensitivity within a wide dynamic range, as can be seen below with the example of thyroglobulin. Greater sensitivity is achieved in 3.5 hours compared to an in-solution digest protocol taking 20 hours to complete.





Measurement of serum thyroglobulin after tryptic digestion of serum samples.
■ SMART Digest kit: 25% plasma, 3.5 h digestion
■ In-solution digest: 20% plasma, R/A, 4 + 16 h digestion
Clarke et al. (2012), J. Investigative Medicine, 60(8)



Calibration curve for thyroglobulin signature peptide in murine plasma (4–4000 µg/mL).

SMART Digest kits
Continued

SMART Digest kits for peptide mapping

Description	Part number
SMART Digest trypsin kit with collection plate	60109-101
SMART Digest trypsin kit, bulk resin option	60109-101-B
SMART Digest trypsin kit, magnetic bulk resin option	60109-101-MB
SMART Digest trypsin kit with filter/collection plate	60109-102
SMART Digest trypsin kit, bulk resin option with filter/collection plate	60109-102-B
SMART Digest trypsin kit, magnetic bulk resin option with filter/collection plate	60109-102-MB
SMART Digest trypsin kit with SOLAμ/collection plate	60109-103
SMART Digest trypsin kit, bulk resin option with SOLAμ/collection plate	60109-103-B
SMART Digest trypsin kit, magnetic bulk resin option with SOLAμ/collection plate	60109-103-MB
SMART Digest Soluble trypsin kit	60113-101
SMART Digest Chymotrypsin kit with collection plate	60109-104
SMART Digest Chymotrypsin kit, bulk resin option	60109-104-B
SMART Digest Chymotrypsin kit, magnetic bulk resin option	60109-104-MB
SMART Digest Chymotrypsin kit with filter/collection plate	60109-105
SMART Digest Chymotrypsin kit, bulk resin option with filter/collection plate	60109-105-B
SMART Digest Chymotrypsin kit, magnetic bulk resin option with filter/collection plate	60109-105-MB
SMART Digest Chymotrypsin kit with SOLAμ/collection plate	60109-106
SMART Digest Chymotrypsin kit, bulk resin option with SOLAμ/collection plate	60109-106-B
SMART Digest Chymotrypsin kit, magnetic bulk resin option with SOLAμ/collection plate	60109-106-MB
SMART Digest proteinase K kit with collection plate	60109-107
SMART Digest proteinase K kit, bulk resin option	60109-107-B
SMART Digest proteinase K kit, magnetic bulk resin option	60109-107-MB
SMART Digest proteinase K kit with filter/collection plate	60109-108
SMART Digest proteinase K kit, bulk resin option with filter/collection plate	60109-108-B
SMART Digest proteinase K kit, magnetic bulk resin option with filter/collection plate	60109-108-MB
SMART Digest proteinase K kit with SOLAμ/collection plate	60109-109
SMART Digest proteinase K kit, bulk resin option with SOLAμ/collection plate	60109-109-B
SMART Digest proteinase K kit, magnetic bulk resin option with SOLAμ/collection plate	60109-109-MB
SMART Digest Pepsin kit with collection plate	60109-110
SMART Digest Pepsin kit, bulk resin (no collection plate)	60109-110-B
SMART Digest Pepsin kit with magnetic bead, bulk option (no collection plate)	60109-110-MB
SMART Digest Pepsin kit with filter and collection plate	60109-111
SMART Digest Pepsin kit with SOLAμ collection plate	60109-112

SMART Digest low pH kits for MAM

Description	Part number
SMART Digest low pH kit trypsin	60109-101-LPH
SMART Digest low pH kit trypsin magnetic beads	60109-101-MB-LPH
SMART Digest kit Chymotrypsin magnetic bulk low pH buffer	60109-104-MB-LPH
SMART Digest low pH kit trypsin magnetic beads	60109-101-MB-LPH
SMART Digest kit Chymotrypsin magnetic bulk low pH buffer	60109-104-MB-LPH

SMART Digest ImmunoAffinity kits

Additional reading

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

A step change in protein affinity capture and digestion

SMART Digest and SMART Digest IA kits provide a significant change in protein sample preparation, by delivering workflows that are:

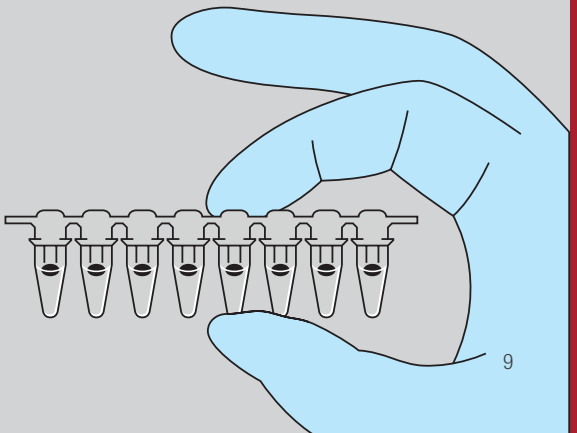
- Significantly faster
- Easier to use
- Highly reproducible
- Sensitive
- Compatible with automation

SMART Digest IA kits have all the advantages previously outlined for fast, easy and reproducible protein digestion for quantitation and characterization applications with the added advantage of combining an immunocapture and digestion process into a single well.

This has significant benefits for quantitation studies where immunoaffinity capture is typically employed to increase sensitivity by purifying low-level proteins from complex biological matrices. This step is then followed by protein digestion.

SMART Digest IA kits achieve this due to their unique design where the immunoaffinity moiety (either streptavidin, protein A or protein G) and heat activated thermally stable trypsin are co-immobilized onto a single bead. Following the binding of a capture reagent to the bead, and enrichment of the target, the enzyme is activated at elevated temperatures for accelerated digestion under protein denaturing conditions. The resulting workflow is as easy as enrich, wash and digest. Magnetic and non-magnetic versions of the beads are available.

Brochure:
Protein digestion for peptide mapping and quantitation



SMART Digest ImmunoAffinity kits

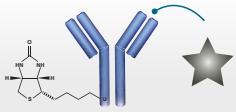
Continued

How does the SMART Digest IA kit work?

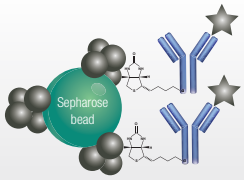
Conventional protein enrichment and digestion

Protein enrichment and digestion using the SMART Digest IA kit

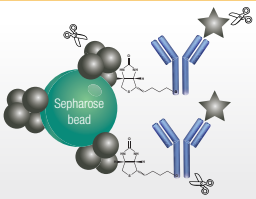
Expose biotinylated capture antibody to biological sample



Incubate with affinity capture resin

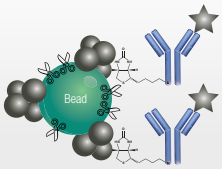


Conventional tryptic digest
Reduction, TCEP: 60 °C, 30–60 min
Alkylation, IAA: RT, 30 min
Quenching, ACC: RT, 15 min
Digestion: 37 °C, 12–16 h

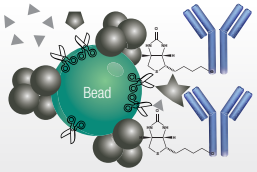


Total time 15–24 hours

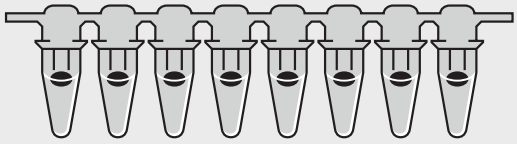
Use SMART Digest IA resin for affinity capture. Incubate at room temperature.

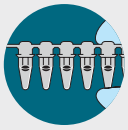


Digestion with SMART Digest IA resin 70 °C, 1 h



Total time 3–4 hours





SMART Digest ImmunoAffinity kits

Continued

SMART Digest IA and bulk fractionation kits for peptide quantitation

Description	Part number
SMART Digest IA kit, streptavidin non-magnetic	60110-101
SMART Digest IA kit, streptavidin non-magnetic with SOLAμ SPE and collection plate	60110-102
SMART Digest IA kit, streptavidin magnetic with SOLAμ SPE and collection plate	60110-103
SMART Digest IA kit, streptavidin magnetic	60110-104
SMART Digest IA kit, protein A non-magnetic	60111-101
SMART Digest IA kit, protein A non-magnetic with SOLAμ SPE and collection plate	60111-102
SMART Digest IA kit, protein A magnetic with SOLAμ SPE and collection plate	60111-103
SMART Digest IA kit, protein A magnetic	60111-104
SMART Digest IA kit, protein G non-magnetic	60112-101
SMART Digest IA kit, protein G non-magnetic with SOLAμ SPE and collection plate	60112-102
SMART Digest IA kit, protein G magnetic with SOLAμ SPE and collection plate	60112-103
SMART Digest IA kit, protein G magnetic	60112-104
SMART Digest bulk protein A fractionation kit, non-magnetic, soluble trypsin	60114-101
SMART Digest bulk protein A fractionation kit, non-magnetic, with SOLAμ collection plate, soluble trypsin	60114-102
SMART Digest bulk protein A fractionation kit, magnetic, with SOLAμ collection plate, soluble trypsin	60114-103
SMART Digest bulk protein A fractionation kit, magnetic, soluble trypsin	60114-104
SMART Digest bulk protein A fractionation kit, magnetic, standalone	60116-101
SMART Digest bulk fractionation kit, protein G, non-magnetic, soluble trypsin	60115-101
SMART Digest bulk fractionation kit, protein G, non-magnetic, with SOLAμ collection plate, soluble trypsin	60115-102
SMART Digest bulk fractionation kit, protein G, magnetic, with SOLAμ collection plate, soluble trypsin	60115-103
SMART Digest bulk fractionation kit, protein G, magnetic, soluble trypsin	60115-104
SMART Digest bulk fractionation kit, protein G, magnetic, standalone	60117-101
SMART Digest bulk fractionation kit, streptavidin, magnetic, without soluble trypsin	60118-101
SMART Digest bulk fractionation kit, streptavidin, magnetic, SOLAμ collection plate, with soluble trypsin	60119-103
SMART Digest bulk fractionation kit, streptavidin, magnetic, with soluble trypsin	60119-104

Complimentary products

Description	Part number
Thermo Scientific™ HyperSep™ vacuum manifold for HyperSep 96-well plates	60103-351
Thermo Scientific™ HyperSep™ glass block vacuum manifold pump, North American version	60104-243
Thermo Scientific™ HyperSep™ glass block vacuum manifold pump, European version	60104-241
Thermo Scientific™ SOLAμ™ HRP SPE plate	60209-001
KingFisher Duo Prime purification system	5400110
Thermo Scientific™ KingFisher™ Flex purification system	5400630

SOLA SPE products
Delivering consistent excellence for bioanalysis

SOLA SPE products are designed for bioanalytical and clinical research analysts who are tasked with providing high quality analytical results from complex biological samples in a high throughput environment, while complying with strict legislation. These demands are compounded by the continued push to higher efficacy drugs and long acting formulations which continue to drive sensitivity requirements to lower levels to enable accurate quantification.

In order to meet these demands, bioanalytical methods must provide:

- Robustness – low analytical failure rates
- Ability to process low sample volumes
- High sensitivity
- High reproducibility
- Ease-of-use
- High throughput processing
- Efficient and fast processes

SOLA SPE products

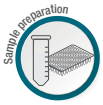
Additional reading

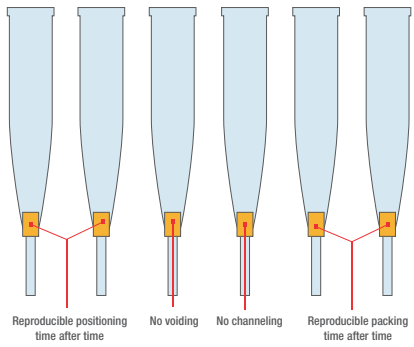
Learn more at thermofisher.com/solaspe

Compendium:
SOLA Solid-Phase extraction (SPE) application note compendium. Prevent sample failures in bioanalytical workflows

Flyers and posters:
SOLA SPE method development flyers and posters

Brochure:
Consistent excellence for bioanalysis. SOLA Solid-Phase extraction products





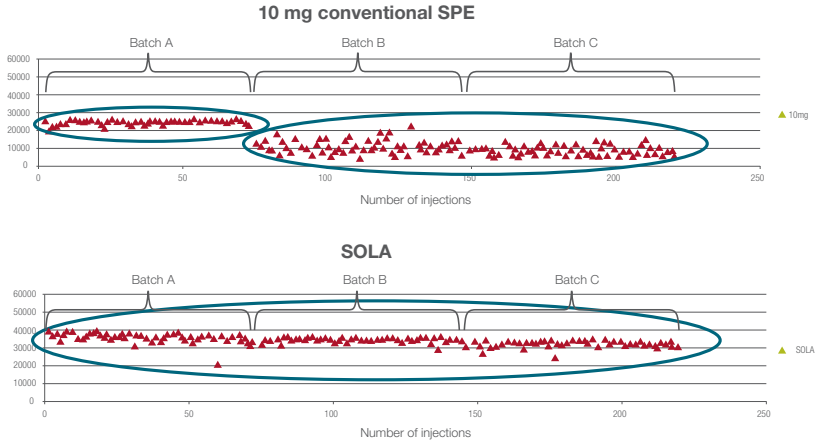
SOLA and SOLAμ SPE fritless design – limiting issues associated with conventional SPE formats

SOLA SPE products
Continued

Unique and innovative technology

The SOLA SPE range is designed to meet these demands with the unique and innovative fritless SPE technology, which eliminates the issues with traditional loose-packed SPE formats. The combination of the support material and active media components into a solid, uniform sorbent bed delivers stable and controllable flow-through characteristics and provides an added advantage when dealing with viscous biological samples – it reduces blocking and enables high throughput processing.

The manufacturing process also allows for high levels of reproducibility, not only from cartridge-to-cartridge or well-to-well but also batch-to-batch.

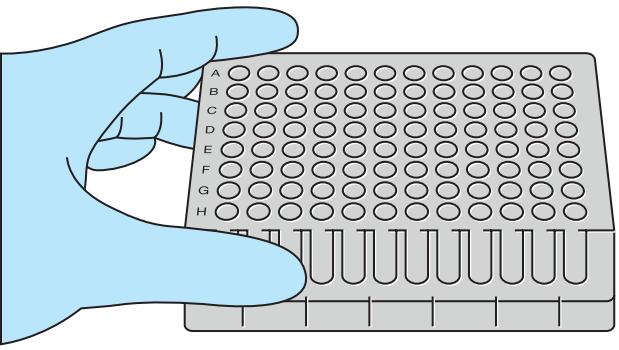


Batch-to-batch reproducibility of SOLA product compared to a conventional SPE product

SOLA 10 mg SPE products are the flexible, go-to option for many applications, while SOLA 30 mg has increased loading capacities to handle large volumes of sample at low concentrations.

The SOLAμ SPE range has the added benefit of being able to provide:

- Up to a 20 fold increase in sensitivity
- Ability to process samples restricted in volume
- Increased workflow efficiency and sample integrity



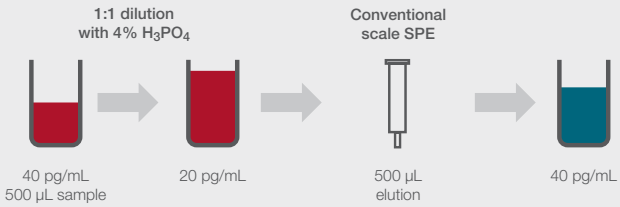
SOLA SPE products
Continued

Increase your MS sensitivity

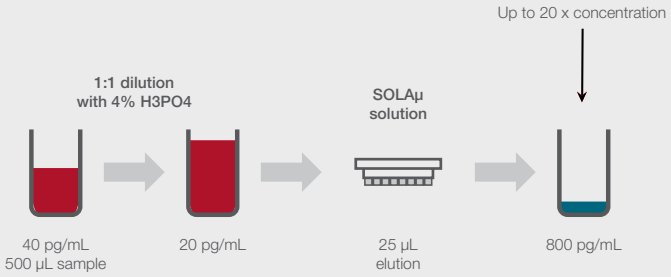
Sensitivity can be increased by loading a large volume of sample and eluting in a low volume.

In the following example, 500 µL of human plasma was loaded onto the SOLAµ plate for the analysis of niflumic acid. The compound was eluted in 25 µL, delivering up to 20 times increase in concentration whilst maintaining excellent precision.

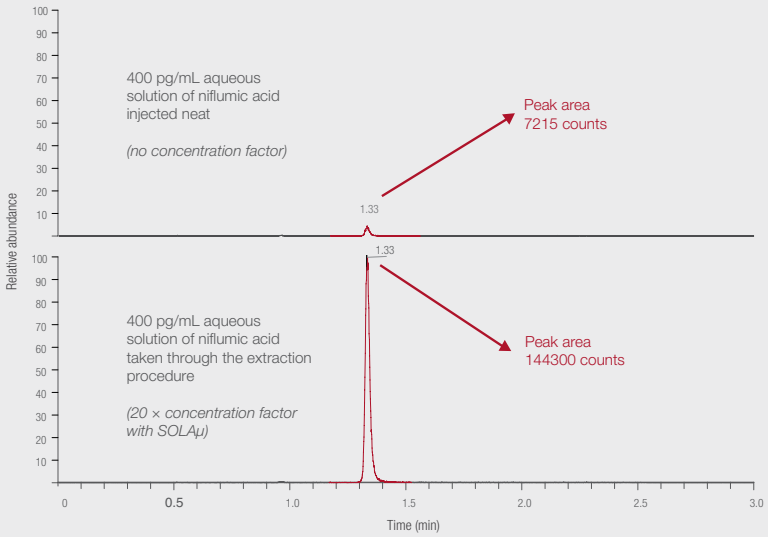
The problem:
Improvement in assay sensitivity required



The SOLAµ product solution:
Delivers up to 20 times increase in concentration of sample without changes to workflow



	Precision data for niflumic acid peak area ratio (%RSD) n = 18	Recovery of niflumic acid (%)	Matrix effects (%)
QC low (0.4 ng/mL)	1.31	89.9	8.63
QC high (30 ng/mL)	1.06	94.0	3.21



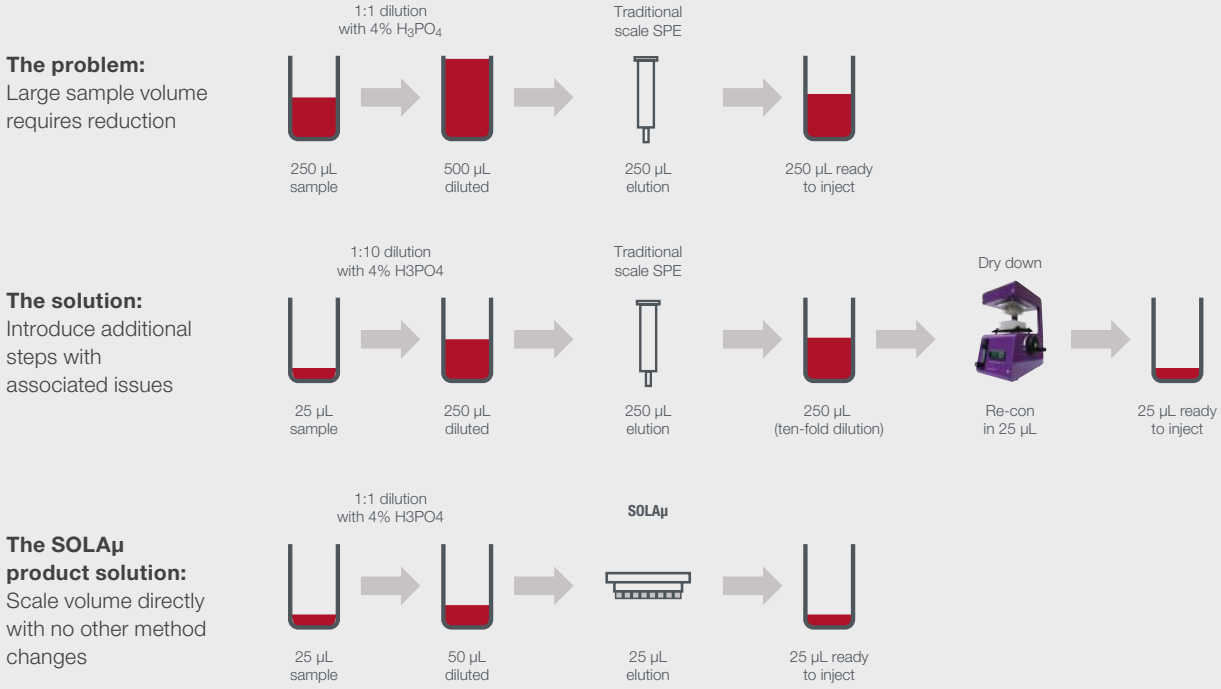
Batch to batch reproducibility of SOLA compared to a conventional SPE product

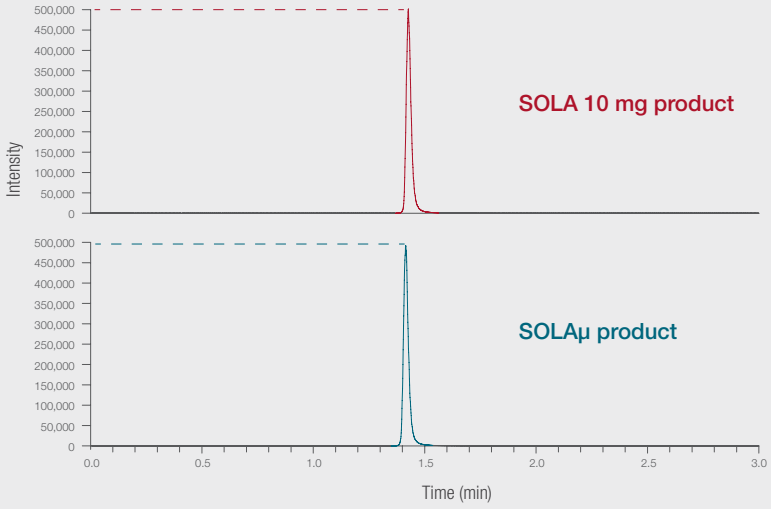
SOLA SPE products
Continued

Sample limited assays

SOLAμ allows you to directly scale down the volumes used in analytical methods, allowing for a reduction in sample usage and eliminating issues caused by evaporation, without compromising the sensitivity of your assay. This is also an important consideration when sample volumes are limited.

The following example shows that by loading 25 µL of niflumic acid sample onto the SOLAμ plate and eluting in a total volume of 25 µL, a ten-fold decrease in sample volume was achieved when compared to a traditional scale higher bed weight product. Equivalent method performance and high levels of reproducibility provided by SOLA technology were still maintained.





Precision data for niflumic acid		
	Analyte peak area (%RSD)	Peak area ratio (%RSD)
Low QC	7.32	0.356
High QC	5.33	0.195

Equivalent peak response achieved for niflumic acid with SOLAμ using 25 µL of sample compared with 250 µL of sample with a 10 mg SOLA SPE product

SOLA SPE products
Continued

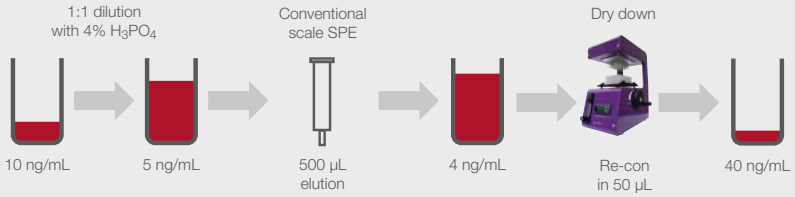
Increased workflow efficiency

With traditional SPE the eluted sample is typically dried down to increase the concentration of the sample and thus improve the sensitivity. This can cause an issue for certain compound types which can be lost during this step, resulting in reduced sensitivity.

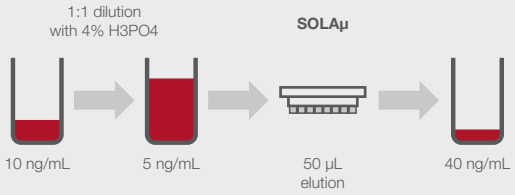
SOLAμ products allow the sample to be extracted without the need for dry down and reconstitution. Not only does this maximize recovery of the analytes, it also improves workflow efficiency and increases productivity.

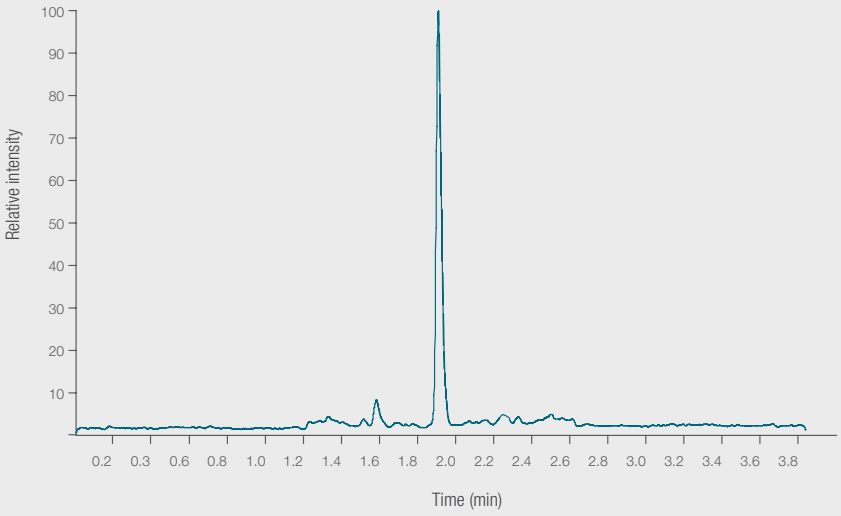
In the case of extraction of ibuprofen, a four-fold pre-concentration was achieved without the need for dry down by loading 200 µL of sample onto the SOLAμ plate and eluting in a total of 50 µL. The results demonstrate that even with this low elution volume, excellent reproducibility was achieved.

The problem:
Workflow requires dry down to achieve sensitivity



The SOLAμ product solution:
Low elution volume allows removal of dry down





Peak response for ibuprofen

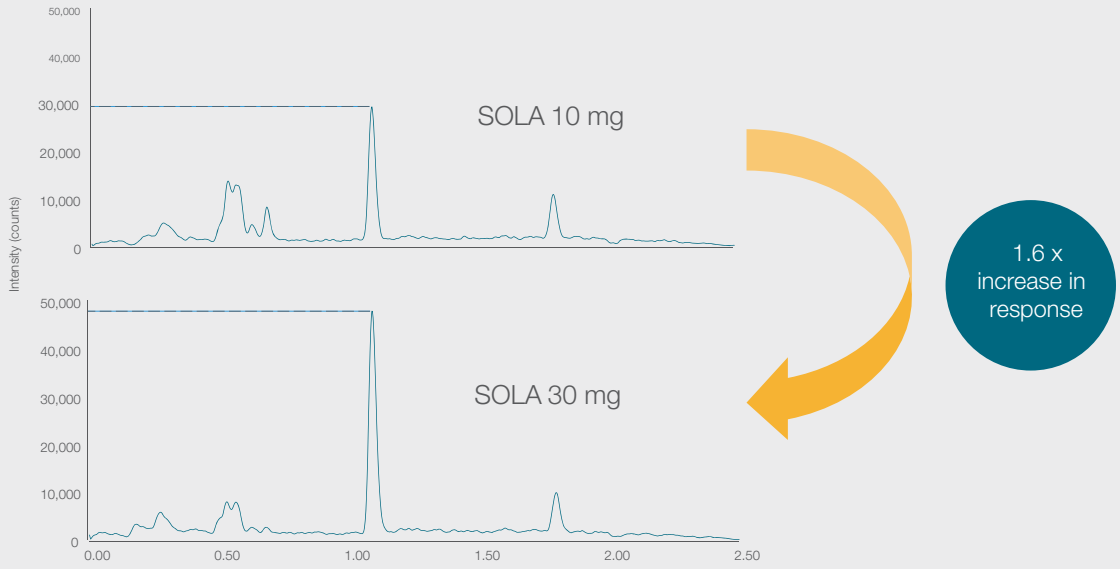
	Ibuprofen (%RSD) n=18	Ibuprofen recovery (%)
Low QC (25 ng/mL)	4.00	90
High QC (750 ng/mL)	1.70	95

SOLA SPE products
Continued

Method scaling for SOLA 30 mg: concentrating large sample volumes to achieve low quantitation limits

Another simple way to increase the sensitivity of your assay from the very beginning of the workflow is to increase your sample loading volumes during SPE. Using larger sample volumes means more analyte is available to be retained by the SPE sorbent, and this in turn can boost the analyte signal response during later analysis. Boosts in signal response are particularly useful when trying to quantify low concentrations, and by combining large sample volumes with lower elution volumes, the final sample can be even more concentrated.

In order to increase loading volumes, an SPE bed weight with a high loading capacity should be used. SOLA 30 mg products are ideal for this purpose, as they have higher loading capacities than the equivalently sized silica-based products. They can be used for large sample volumes with low concentrations of analytes, as is often the case with many urine analyses. Additionally, high bed weight, polymeric SPE devices such as SOLA 30 mg are ideal compounds that are difficult to retain with smaller bed weights or when experiencing analyte breakthrough.



The high loading capacity of SOLA HRP 30 mg improves signal response when compared to smaller bed weights. The chromatograms above show an improved signal response of OH-Vit D_3 (150 ng/mL) when using SOLA HRP 30 mg to load 1 mL spiked human plasma compared to a 10 mg sorbent.

SOLA SPE products
Continued

SOLA SPE cartridges

Description	HRP	SCX	SAX	WCX	WAX
10 mg/1 mL (100/pk)	60109-001	60109-002	60109-003	60109-004	60109-005
30 mg/3 mL (50/pk)	60409-001	60409-002	60409-003	60409-004	60409-005

SOLA SPE 96-well plates

Description	HRP	SCX	SAX	WCX	WAX
2 mg/1 mL (SOLAμ format) (1/pk)	60209-001	60209-002	60209-003	60209-004	60209-005
10 mg/2 mL (1/pk)	60309-001	60309-002	60309-003	60309-004	60309-005
30 mg/2 mL (1/pk)	60509-001	60509-002	60509-003	60509-004	60509-005

Complementary products

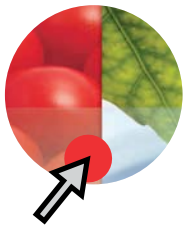
Description	Part number
HyperSep vacuum manifold for HyperSep 96-well plates	60103-351
HyperSep glass block vacuum manifold pump, North American version	60104-243
HyperSep glass block vacuum manifold pump, European version	60104-241

HyperSep SPE products

Removing uncertainty by applying science to SPE

A diverse range of polymer- and silica-based SPE phases with a large variety of chemistries to suit any application area.

HyperSep SLE cartridges and plates



Compendium:
Removing uncertainty by applying science to SPE

HyperSep SLE cartridges and plates

Comments
Solid supported liquid/liquid extraction (SLE) is a fast and effective sample preparation technique that provides considerable benefits over liquid-liquid extraction (LLE) protocols for removal of phospholipids from biological samples. SLE offers the following advantages: Greater reproducibility and recoveries compared to LLE techniques • Prevents emulsification often associated with LLE • Reduces solvent requirements compared to LLE • Can be completely automated unlike LLE • Improves cleanliness of sample extract compared to protein precipitation techniques • Improves sensitivity compared to protein precipitation techniques
Learn more at **thermofisher.com/hypersep**

HyperSep SLE cartridges and plates
Continued

HyperSep SLE cartridges

Special treated diatomite SLE	Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
pH 7	200	3	50	60109-200-3-7
	500			60109-500-3-7
		6	30	60109-500-6-7
	1,000			60109-1000-6-7
	2,000	12	20	60109-2000-12-7
	4,000	25	15	60109-4000-25-7
	20,000	60	10	60109-20000-60-7
pH 9	200	3	50	60109-200-3-9
	500			60109-500-3-9
		6	30	60109-500-6-9
	1,000			60109-1000-6-9
	2,000	12	20	60109-2000-12-9
	4,000	25	15	60109-4000-25-9
	20,000	60	10	60109-20000-60-9
HyperSep SLE 96-well plates				
pH 7	200	2	1	60109-200-2-7W
	300			60109-300-2-7W
	400			60109-400-2-7W
	500			60109-500-2-7W
pH 9	200			60109-200-2-9W
	400			60109-400-2-9W
	500			60109-500-2-9W

Order now!

HyperSep protein precipitation plates

Comments

Provides a quick and effective approach for removal of proteins from biological compounds using the protein crash technique. In combination with SPE and SLE, the protein precipitation late offers a comprehensive range of options for sample preparation of biological based compounds. The 96-well plate format provides a high throughput functionality which lends itself to full automation.

- Dual frit design
- Hydrophobic/oleophobic frits to enable only precipitation of proteins
- Pore size optimized for ideal flow rate
- Specially selected polypropylene for low extractables

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

HyperSep protein precipitation plates

Description	Quantity	Part number
Protein precipitation plate	1 each	60304-201

Order now!

Compendium:
Removing uncertainty by applying science to SPE

Microscale SPE plates and tips

HyperSep lab plates plates

Comments
For the purification and sample preparation of proteins, DNA, RNA, and other biomolecules • Sample concentration of small-scale samples • Available in a range of chromatographic materials • 96-well plate format with media embedded at the bottom of the plate • Can be processed manually or by using a liquid-handling robot • Not suitable for use with a vacuum
Applications • Tissue culture and separation of products • Sample concentration • Sample clean-up • Collection of sample after chromatography
Learn more at **thermofisher.com/hypersep**

HyperSep lab plates

Description	Quantity (pack)	Polystyrene	Polypropylene
C18	5	60110-201	60110-301
Zirconium dioxide		60110-206	—
Titanium dioxide		60110-207	60110-307
SAX		60110-209	—

Order now!

HyperSep filter plates

Comments
For effective clean-up of small-scale samples • 96-well plate for the purification and separation of proteins, peptides, DNA, RNA, and other biomolecules • Clean up of microgram-level samples • Available in a range of chromatographic materials • Can be used under vacuum
Learn more at **thermofisher.com/hypersep**

HyperSep filter plates

Description	Quantity (pack)	5-7 µL bed volume	40 µL bed volume
C18	1	60110-401	60110-501
C8		—	60110-502
C4		—	60110-503
Hypercarb		—	60110-504
Hypercarb and C18 (mixed-mode)		—	60110-505
Zirconium dioxide		60110-406	—
Titanium dioxide		60110-407	—
SCX		—	60110-508
SAX		—	60110-509

Order now!

HyperSep tip microscale SPE extraction tips

Comments

Revolutionary micropipette tip for sample preparation

- Faster sample preparation with minimal sample loss
- Patented micropipette tip in which the chromatographic material is directly attached to its inner surface
- No contamination from the supporting matrix
- Separation in volumes as low as 100 nL
- Applications include mass spectrometry, desalting, protein purification, and electrophoresis

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

HyperSep tip microscale SPE extraction tips

Description	Quantity (pack)	1-10 µL capacity	10-200 µL capacity
BioBasic 18	96	60109-201	60109-209
BioBasic 8		60109-202	60109-210
BioBasic 4		60109-203	60109-211
Hypercarb		60109-204	60109-212
Hypercarb and C18 (mixed-mode)		60109-205	60109-213
HILIC		60109-206	60109-214
Trypsin		60109-207	60109-215
Titanium dioxide		60109-208	60109-216
Zirconium dioxide		60109-217	60109-218

Order now!

HyperSep SpinTip microscale SPE extraction tips

Comments

Revolutionary micropipette tip for sample preparation

- Pipette tips with a 1 to 2 µm wide slit at the bottom that permits the liquid to pass through but retains the chromatographic material (20 to 30 µm)
- Faster sample preparation with minimal sample loss
- No contamination from the supporting matrix
- Separation in volumes as low as 100 nL

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

HyperSep SpinTip microscale SPE extraction tips

Description	Quantity (pack)	1-10 µL capacity	10-200 µL capacity
C18	96	60109-401	60109-412
C8		60109-402	60109-413
C4		60109-403	60109-414
Hypercarb		60109-404	60109-415
Hypercarb and C18 (mixed-mode)		60109-405	60109-416
HILIC		60109-406	60109-417
Trypsin		60109-407	60109-418
POROS Weak Anion Exchanger		60109-408	60109-419
POROS Strong Anion Exchanger		60109-409	60109-420
POROS Strong Cation Exchanger		60109-410	60109-421
Titanium dioxide		60109-411	60109-422
Zirconium dioxide		60109-424	60109-425

Order now!

HyperSep Retain SPE cartridges and plates

Comments
Versatile polymeric materials for retention of polar, non-polar, basic, and acidic drugs • Exceptional recoveries for polar and non-polar analytes • High and consistent recoveries • High capacity, high purity, highly porous polystyrene DVB material modified with functional groups — PEP (Urea for polar and non-polar analytes) — CX (Mixed-mode sulfonic acid for basic analytes) — AX (Mixed-mode quaternary amine for acidic analytes) • Fast and easy sample preparation and method development • pH stable 0 to 14
Retain PEP applications • Drugs and metabolites in biological fluids • Peptides in serum, plasma or biological fluids • Environmental samples **Retain CX applications** • Analysis of a wide range of drugs of abuse including basic and neutral drugs **Retain AX applications** • Analysis of THC and its metabolites
Learn more at **thermofisher.com/hypersep**

Compendium:
Removing uncertainty by applying science to SPE

HyperSep SPE cartridges and plates
Continued

HyperSep Retain PEP/CX/AX SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Retain PEP	Retain CX	Retain AX
30	1	100	60107-201	60107-301	60107-401
	3	50	60107-202	60107-302	60107-402
60			60107-203	60107-303	60107-403
	6	30	60107-208	60107-308	60107-408
100	3	50	60107-217	—	60107-417
150	6	30	60107-211	60107-311	60107-411
200	3	50	60107-204	60107-304	60107-404
	6	30	60107-212	60107-314	60107-412
500	3	50	60107-205	60107-305	60107-405
	6	30	60107-206	60107-306	60107-406
	15	20	—	—	60107-419
1,000	25		60107-215	60107-315	60107-415
	6	30	60107-218	—	—
2,000	25	20	60107-214	60107-312	60107-414
HyperSep Retain PEP/CX/AX 96 fixed well plates					
30	1	1	60306-207	60306-303	60306-403
60			60306-208	60306-304	60306-404
HyperSep Retain PEP/CX/AX 96 removable well plate					
30	1	1	60303-207	60303-307	60303-407

Order now!

HyperSep Hypercarb SPE cartridges and plates

Comments

Unique material for retention of highly polar compounds

- HyperSep and Hypercarb™ SPE contains flat,100% porous graphitic carbon (PGC) with selectivity for structurally similar compounds, offering separation of compounds with simple solvents
- pH stable 0 to 14
- High batch-to-batch reproducibility
- Strong retention properties allow use of low bed weights for concentrated extracts
- Interaction mechanism with polar molecules

Applications

- Provides total pH stability retention and separation of highly polar species especially in environmental samples
- Ideal for problem analytes in SPE applications

Learn more at thermofisher.com/hypersep

HyperSep Hypercarb SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
25	1	50	60106-304
50			60106-303
100	3	30	60106-302
200			60106-301
500	6	20	60106-402
1,000		10	60106-403
2,000	15		60106-404
HyperSep Hypercarb 96 removable well plates			
10	1	1	60302-606
25			60302-607
50			60302-608

HyperSep SPE cartridges and plates
Continued

HyperSep C18 SPE cartridges and plates

Comments
Features a highly retentive alkyl-bonded phase for extraction of non-polar to moderately polar compounds
Applications • Retentive for non-polar compounds • Retains most organic analytes from aqueous matrices
Learn more at **thermofisher.com/hypersep**

HyperSep C18 SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
25	1	100	60108-376
50			60108-390
100			60108-302
	3	50	60108-765
200			60108-303
500			60108-304
	6	30	60108-305
	10	50	60108-786
1,000	6	30	60108-301
	15	20	60108-776
2,000	15		60108-701
	25		60108-780
5,000			60108-702
10,000	75	10	60108-703
HyperSep C18 96 fixed/removable well plates			
10	1	1	60300-425
25			60300-426
50			60300-427
100			60300-428

HyperSep C8 SPE cartridges and plates

Comments
Less retentive alternative to C18 for polar and non-polar compounds
Applications • Drugs and their metabolites in biological samples • Peptides in biological samples
Learn more at thermofisher.com/hypersep

HyperSep C8 SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-391
100			60108-392
200	3	50	60108-393
500			60108-309
1,000	6	30	60108-394
			60108-427
2,000	15	20	60108-704
5,000	25		60108-705
10,000	75	10	60108-706

HyperSep C8 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Fixed part number	Removable part number
10	1	60307-211	60300-445
25		60307-212	60300-446
50		60307-213	60300-447
100		—	60300-448

Order now!

HyperSep SPE cartridges and plates
Continued

HyperSep Silica SPE cartridges and plates

Comments

A polar sorbent primarily used to retain analytes in non-polar matrices

Applications

- Extraction of polar compounds including aldehydes, amines, drugs, pesticides and herbicides
- Extraction of carotenoids, fat-soluble vitamins, aflatoxins in food matrices
- Extraction of fatty acids and phospholipids

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

HyperSep Silica SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity	Part number
50	1	100 pack	60108-409
100			60108-317
200	3	50 pack	60108-410
500			60108-315
	6	30 pack	60108-411
	10	50 pack	60108-793
1,000	6	30 pack	60108-426
2,000	15	20 pack	60108-710
5,000	25		60108-711
10,000			60108-853
	75	10 pack	60108-712
50,000	150		60108-850
20,000	75		60108-851
70,000	150	10 pack	60108-852

HyperSep Silica 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	60307-231	60300-485
25			60307-232	60300-486
50			60307-233	60300-487
100			60307-234	60300-488

HyperSep Acid Wash Silica SPE cartridges and plates

Comments
A hydrophilic sorbent for extraction of polar compounds
Applications • Extraction of polar compounds from ground, waste and drinking water • Extraction of polar compounds from food and beverages
Learn more at thermofisher.com/hypersep

HyperSep Acid Wash Silica SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-901
100	1	100	60108-902
100	10	50	60108-903
200	3	50	60108-904
200	10	50	60108-905
500	3	50	60108-906
500	6	30	60108-907
500	10	50	60108-908
1,000	6	30	60108-909
2,000	15	20	60108-910
5,000	25	20	60108-911
10,000	75	10	60108-912

HyperSep Acid Wash Silica 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	60307-321	60300-831
25	1	1 each	60307-322	60300-832
50	1	1 each	60307-323	60300-833
100	1	1 each	60307-324	60300-834

HyperSep SPE cartridges and plates
Continued

HyperSep Phenyl SPE cartridges and plates

Comments
Offers alternative selectivity for retention of basic compounds
Applications • Extraction of aromatic compounds • Extraction of basic analytes
Learn more at **thermofisher.com/hypersep**

HyperSep Phenyl SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-516
100			60108-386
200	3	50	60108-387
500			60108-388
1,000	6	30	60108-389
			60108-517
2,000	15	20	60108-707
5,000	25		60108-708
10,000	75	10	60108-709

Order now!

HyperSep Diol SPE cartridges and plates

Comments
Ideal for the extraction of polar compounds
Applications • Normal phase extraction of polar compounds • Purification of polar compounds
Learn more at thermofisher.com/hypersep

HyperSep Diol SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-571
100			60108-572
200	3	50	60108-573
500			60108-574
500	6	30	60108-575
1,000			60108-576
2,000	15	20	60108-755
5,000	25		60108-756
10,000	75	10	60108-757

HyperSep Diol 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	60307-311	60300-630
25			60307-312	60300-631
50			—	60300-632
100			—	60300-633

Order now!

HyperSep SPE cartridges and plates
Continued

HyperSep Verify CX SPE cartridges and plates

Comments
Mixed-mode SPE features non-polar and ionic characteristics for improved analysis of drugs of abuse
Applications • Analysis of a wide range of drugs of abuse from biological matrices, including basic and neutral drugs
Learn more at **thermofisher.com/hypersep**

HyperSep Verify CX SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-741
130	1	100	60108-719
130	10	50	60108-769
200	3	50	60108-777
200	6	50	60108-722
200	10	50	60108-742
300	3	50	60108-720
500	3	50	60108-721
500	6	30	60108-723
1,000	6	30	60108-724

HyperSep Verify CX 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number
25	1	1 each	60307-262
50	1	1 each	60307-263
100	1	1 each	60307-264

HyperSep Verify AX SPE cartridges and plates

Comments
Mixed-mode SPE features non-polar and ionic characteristics for improved analysis of acidic drugs and metabolites
Applications • Analysis of acidic and neutral drug e.g. THC and its metabolites
Learn more at **thermofisher.com/hypersep**

HyperSep Verify AX SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
130	1	100	60108-727
	10	50	60108-767
200	3	30	60108-768
	6	50	60108-730
	10		60108-764
300	3		60108-728
500			60108-729
500	6	30	60108-731
1,000			60108-732

HyperSep Verify AX 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number
25	1	1 each	60307-272
50			60307-273

Order now!

HyperSep Strong Cation Exchanger (SCX) SPE cartridges and plates

Comments

A strong cation exchange sorbent for extraction of charged basic compounds

Applications

- Isolation of cationic compounds from complex samples
- Removal of basic drugs
- Organic bases
- Nucleic acid bases, nucleotides and surfactants

Learn more at thermofisher.com/hypersep

HyperSep Strong Cation Exchanger (SCX) SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-420
100			60108-421
200	3	50	60108-422
500			60108-423
500	6	30	60108-520
1,000			60108-433
2,000	15	20	60108-716
5,000	25		60108-717
10,000	75	10 pack	60108-718
20,000			60108-857
50,000	150		60108-858

HyperSep Strong Cation Exchanger (SCX) 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	—	60300-585
25			60307-252	—
50			60307-253	60300-587
100			—	60300-588

HyperSep Strong Anion Exchanger (SAX) SPE

Comments
Strong anion exchange sorbent for extraction of weak acids
Applications • Isolation of anionic compounds from complex samples • Removal of acidic food pigments • Isolation of phenolic compounds • Nucleic acids, nucleotides and surfactants
Learn more at thermofisher.com/hypersep

HyperSep Strong Anion Exchanger (SAX) SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-417
100		100	60108-418
200	3	50	60108-419
500		50	60108-521
	6	30	60108-360
1,000		30	60108-434
2,000	15	20	60108-713
5,000	25	20	60108-714
10,000	75	10	60108-715

HyperSep Strong Anion Exchanger (SAX) 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	—	60300-565
25			60307-242	60300-566
50			60307-243	60300-567
100			—	60300-568

HyperSep Carboxylic Acid (WCX) SPE cartridges and plates

Comments
Weak cation exchange sorbent for extraction of strong bases
Applications • Drugs and metabolites in biological fluids • Peptides in serum, plasma or biological fluids • Pesticides in water, food and beverages • Nucleic acids, nucleotides and surfactants
Learn more at **thermofisher.com/hypersep**

HyperSep Carboxylic Acid (WCX) SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	**60108-201**
100	1	100	**60108-202**
200	3	50	**60108-203**
	10	50	**60108-207**
500	3	50	**60108-204**
	6	30	**60108-205**
1,000	6	30	**60108-206**
2,000	15	20	**60108-208**
5,000	25	20 pack	60108-209

HyperSep Carboxylic Acid (WCX) 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	**60307-331**	**60300-841**
25			**60307-332**	**60300-842**
50			**60307-333**	**60300-843**
100			**60307-334**	**60300-844**

HyperSep Aminopropyl (WAX) SPE cartridges and plates

Comments
Weak anion exchange sorbent for extraction of strong acids
Applications • Separation of structural isomers • Drugs and metabolites in biological fluids • Separation of saccharides, phenols and petroleum products
Learn more at thermofisher.com/hypersep

HyperSep Aminopropyl (WAX) SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-424
	3	50	60108-429
100	1	100	60108-364
200	3	50	60108-425
500			60108-518
	6	30	60108-519
1,000			60108-432
2,000	15	20	60108-738
5,000	25		60108-739
10,000	75	10	60108-740

HyperSep Aminopropyl (WAX) 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	60307-291	60300-505
25			60307-292	60300-506
50			60307-293	60300-507
100			60307-294	—

HyperSep SPE cartridges and plates
Continued

HyperSep Florisil SPE cartridges and plates

Comments
Ideal for the isolation of polar compounds from non-polar matrices

Applications

- Extraction of pesticides using official methods
- Polychlorinated biphenyls in transformer oil
- Alcohol, aldehydes, amines and drugs

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

HyperSep Florisil SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-402
100			60108-403
200	3	50	60108-404
500			60108-405
500	6	30	60108-500
1,000			60108-431
2,000	15	20	60108-735
5,000	25		60108-736
10,000	75	10	60108-737

Compendium:
Removing uncertainty by applying science to SPE

HyperSep Cyano SPE cartridges and plates

Comments
Optimized for the retention of moderately polar compounds from non-polar matrices
Applications
• Retaining polar compounds from hexane and oils • Reversed phase extraction of moderately polar compounds
Learn more at thermofisher.com/hypersep

HyperSep Cyano SPE cartridges

Bed weight (mg)	Column volume (mL)	Quantity (pack)	Part number
50	1	100	60108-746
100		100	60108-745
200	3	50	60108-747
500		50	60108-748
	6	30	60108-749
1,000		30	60108-750
2,000	15	20	60108-751
5,000	25	20	60108-752
10,000	75	10	60108-753

HyperSep Cyano 96 fixed/removable well plates

Bed weight (mg)	Well volume (mL)	Quantity	Fixed part number	Removable part number
10	1	1 each	—	60300-821
25			—	60300-822
50			—	60300-823
100			60307-304	60300-824

Order now!

SPE manifolds and accessories

Improving your sample preparation workflow with a comprehensive range of accessories

HyperSep manifolds and accessories

HyperSep Positive pressure manifold

Comments
Improve productivity of SPE sample preparation by simultaneously processing up to 48 samples. The Thermo Scientific™ HyperSep™ Positive pressure manifold can hold 48 SPE cartridges of various sizes: 1, 3, 6, 10 and 15 mL.
Learn more at **thermofisher.com/spemanifolds**

Description	Part number
Positive pressure manifold with 13 mm collection rack	60104-236
Positive pressure manifold with 16 mm collection rack	60104-274
Adaptor plate for 1 mL cartridges for PP manifold	60104-265
Adaptor plate for 3 mL cartridges for PP manifold	60104-266
Adaptor plate for 6 mL cartridges for PP manifold	60104-267
Adaptor plate for 10 mL/15 mL cartridges for PP manifold	60104-271
Collection rack for 13 mm tubes	60104-268
Collection rack for 16 mm tubes	60104-269
Pre-drilled waste container	60104-270
Installation kit	60104-272
In line air filter	60104-273

HyperSep Universal vacuum manifold

Comments

Process your samples in SPE cartridges or 96-well plates by using the flexible Thermo Scientific™ HyperSep™ Universal vacuum manifold. The manifold is supplied with a base and vacuum gauge, flask and stopper tubing and spigots.

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

Description	Part number
Universal vacuum manifold	60104-230
Glass block vacuum manifold pump, European version	60104-241
Glass block vacuum manifold pump, North American version	60104-243
24-well extraction plate	60104-284
48-well extraction plate	60104-289
24-position extraction plate plugs	60104-234
48-position extraction plate plugs	60104-235

Order now!

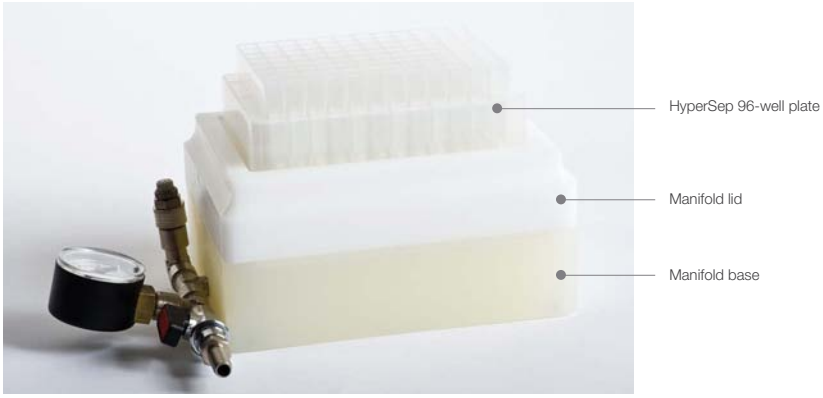
HyperSep vacuum manifold for HyperSep 96-well plates

Comments

Thermo Scientific™ HyperSep™ vacuum manifolds are designed for use with HyperSep SPE columns and the HyperSep 96-well plates. The HyperSep 96-well plate is not included and available for purchase separately. Included with system:

- Base
- Lid
- Waste collection tray

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



Description	Part number
Vacuum manifold for HyperSep 96-well plates	60103-351
Glass block vacuum manifold pump, European version	60104-241
Glass block vacuum manifold pump, North American version	60104-243
Glass block vacuum manifold pump, UK version	60104-441

Order now!

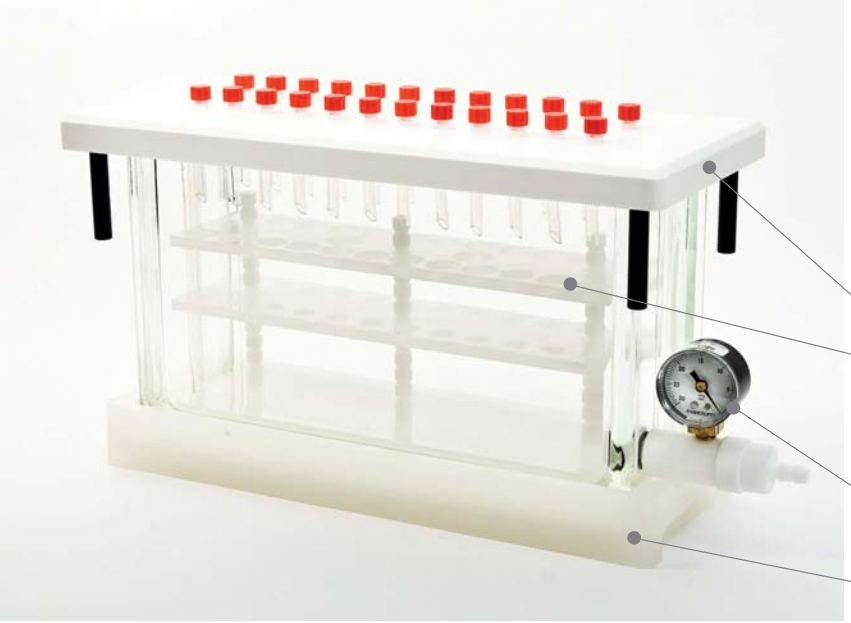
HyperSep glass block vacuum manifold

Comments

Thermo Scientific™ HyperSep™ glass block vacuum manifolds offer a simple way to quickly process multiple samples. The manifold's rigid lid resists warping, and permits samples to elute directly into disposable test tubes. The design allows visible inspection of the extraction process and facilitates cleaning.

Glass block, manifold lid, cover gasket, vacuum gauge and valve assembly, 24 tips, adjustable collection rack, bulkhead luer fittings, 24 plugs and manifold safety tray.

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



Luer-Lock plugs
(60104-258)

Retaining clips for collection rack
(60104-255)

Bulkhead Luer fittings
(60104-256)

Collection rack
(60104-251 (16 port),
60104-252 (24 port))

Vacuum gauge
(60104-240)

Valve assembly
(60104-261)

Tips
(60104-245)

Manifold lid legs
(60104-257)

HyperSep manifolds and accessories
Continued

Description	Part number
16-port vacuum manifold	60104-232
24-port vacuum manifold	60104-233
Glass block vacuum pump, European version	60104-241
Glass block vacuum pump, North American version	60104-243
Replacement parts	
Vacuum gauge	60104-240
Stopcocks for 16-port glass block vacuum manifold	60104-242
Stopcocks for 24-port glass block vacuum manifold	60104-244
Teflon tips for glass block vacuum manifold	60104-245
Lid for 24-port glass block manifold	60104-248
Gasket for 16-port glass block vacuum manifold	60104-249
Gasket for 24-port glass block vacuum manifold	60104-250
Collection rack for 16-port glass block vacuum manifold	60104-251
Collection rack for 24-port glass block vacuum manifold	60104-252
Glass block for 16-port vacuum manifold	60104-253
Glass block for 24-port vacuum manifold	60104-254
Retaining clips for collection rack	60104-255
Bulkhead Luer fittings	60104-256
Manifold lid legs	60104-257
Luer-Lock plugs	60104-258
Column adaptors	60104-259
Manifold safety tray	60104-260
Vacuum gauge and valve assembly	60104-261
Collection rack posts	60104-264

TurboFlow and online SPE products

Enabling your automated online sample preparation, and effectively removing large molecules

Thermo Scientific™ TurboFlow™ columns enable automated online sample preparation in conjunction with Thermo Scientific™ Aria™, Transcend™ TLX, and Prelude™ LC-MS systems. Turboflow columns allow users to inject complex matrices such as food, plasma, urine and (other biological matrices) directly into the mass spectrometer – without prior sample pre-treatment.

- Minimize sample preparation – simplifies complex sample preparation protocols
- Simplify method development – uses the same method for different matrices
- Save time – injects samples directly into the LC-MS system

Turboflow columns effectively remove large molecules, which are the primary interference in biological matricies. These columns are highly efficient at removing proteins based on their size, resulting in high quality data and can be used with Aria, Transcend TLX, and Prelude LC-MS systems.

TURBOFLOW columns

Comments

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

TurboFlow columns compatible with Aria, Transcend TLX, and Prelude LC-MS systems

Description	1.0 x 50 mm	0.5 x 50 mm
TurboFlow Cyclone column	CH-952434	CH-953288
TurboFlow Cyclone-P column	CH-95260	CH-953289
TurboFlow Cyclone MAX column	CH-952979	CH-953286
TurboFlow Cyclone MCX column	CH-952813	CH-953287
TurboFlow Cyclone MCX-2 column	CH-953456	CH-953457
TurboFlow Cyclone C18 column	CH-953244	CH-953280
TurboFlow Cyclone C18-P column	CH-953275	CH-953281
TurboFlow Cyclone C8 column	CH-953276	CH-953282
TurboFlow Cyclone C2 column	CH-953279	CH-953285
TurboFlow Cyclone Fluoro column	CH-953277	CH-953283

HyperSep online SPE products

Comments

Retain specific analytes in a sample matrix when used with an appropriate HPLC column

- Effective removal of contaminants such as proteins from samples
- Compatible with conventional HPLC systems
- Fast and effective clean-up and concentration of target compounds

Learn more at thermofisher.com/spemanifolds

HyperSep Javelin direct-connect online SPE columns

ID (mm)	Length (mm)	Retain PEP	Retain CX	Retain AX	Hypercarb
2.1	10	60310-201	60310-301	60310-401	60310-501
3.0		60310-202	60310-302	60310-402	60310-502

HyperSep UniGuard direct-connect online SPE cartridges

ID (mm)	Length (mm)	Retain PEP	Retain CX	Retain AX	Hypercarb
2.1	10	60311-201	60311-301	60311-401	60311-501
3.0		60311-202	60311-302	60311-402	60311-502

HyperSep HPLC columns for online SPE products

ID (mm)	Length (mm)	Retain PEP	Retain CX	Retain AX	Hypercarb
2.1	20	60312-201	60312-301	60312-401	60312-501
3.0		60312-202	60312-302	60312-402	60312-502

Order now!

QuEChERS products
Simple, proven, sample extraction and clean-up

Fast, easy, and cost-effective, QuEChERS is a robust, reproducible approach for extracting and cleaning up pesticides and other low-level contaminants in complex matrices. It is often used as a sample preparation step prior to GC-MS or LC-MS analysis, and can be automated for higher throughput.

QuEChERS products

Originally developed in 2003 for the determination of multiple pesticide residues in food, QuEChERS applications have evolved to include:

- Pesticide residues
- Veterinary drug residues
- Pharmaceutical residues
- Environmental contaminants
- Mycotoxins
- Drugs of abuse
- Traditional Chinese medicines
- Forensic analysis

QuEChERS products
Continued

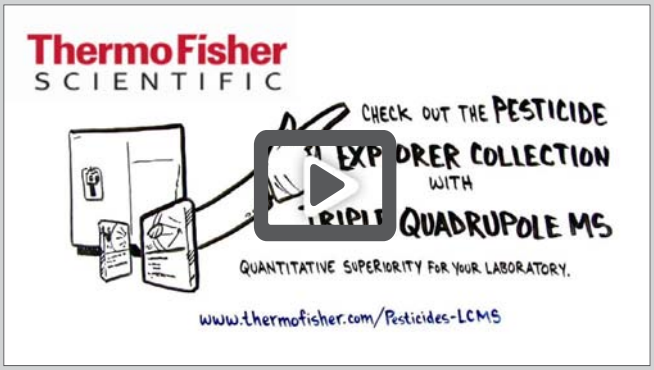
Pre-packaged, ready-weighed kits make QuEChERS easier and more convenient

Thermo Scientific™ QuEChERS kits give you reproducible results and excellent recoveries for a wide variety of analytes, and save time and money, too. Pre-packaged, ready-weighed salts, solid-phase extraction (SPE) sorbents and buffers streamline your workflow, and minimize the potential for error.

Kits are available in several formats to meet all your application requirements. Depending on your analytes of interest, your sample matrix, and your preferred method—Original, AOAC, or EN—you can choose the appropriate volume option, and select the right combination of salts, sorbents, and consumables.

Comments

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



Video:
An introduction to the pesticide explorer collection

Brochure:
QuEChERS solutions in all your favorite flavors

QuEChERS products
Continued

Three flavors of QuEChERS
Kits and products to support them all

Whichever QuEChERS method you're using, we've got you covered

Original
(Anastassiades et al, 2003):
developed for non-base-sensitive compounds, using sodium chloride to reduce polar interferences and enhance extraction

AOAC
(AOAC 2007.01):
uses sodium acetate as a buffer instead of sodium chloride and is compatible with base-sensitive compounds

European
(EN 15662):
similar to the AOAC method, but uses sodium chloride to minimize polar interferences, and sodium citrate dihydrate and disodium citrate sesquihydrate instead of sodium acetate

QuEChERS products
Continued

QuEChERS workflow

Sample

1. HOMOGENIZE/GRIND

Grinding

10–15 g subsample

2. EXTRACT

Spike with pesticides

Add solvent; mix/vortex for 30 seconds

Add salts

Shake

Add internal standard

Centrifuge

Aliquot of supernatant

3. CLEAN-UP

Add sorbents and salt

Shake

Centrifuge

Aliquot of supernatant

4. ANALYZE

Injection (GC-MS or LC-MS)

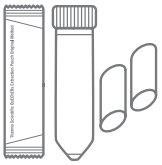
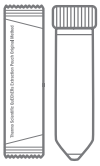
Analytical report

The QuEChERS workflow is typically a four-step process: sample homogenization, extraction with salts, followed by SPE clean-up, and analysis by GC-MS or LC-MS. While the basic procedure is more or less standardized, there are an increasing number of chemistry variations to meet different application requirements.

Original method kits

Comments
Application note: Validated method for the analysis of lipophilic marine biotoxins in bivalves by liquid chromatography
Application note: Rapid analysis of fipronil and fipronil sulfone in eggs by liquid chromatography and triple quadrupole mass spectrometry
Application note: Determination of multiple mycotoxins in grain using a QuEChERS sample preparation approach and LC-MS/MS detection
Learn more at **thermofisher.com/quechers**

Original method extraction kits*

		Description	Capacity	Quantity	Part number
Extract		Original extraction kit • Extraction salts (in pouch): 4 g $MgSO_4$, 1 g NaCl • 50 mL tubes (empty) • Ceramic homogenizers	10 g samples	50/PK	S1-10-ORIG-CH-KIT
		Original extraction kit • Extraction salts (in pouch): 4 g $MgSO_4$, 1 g NaCl • 50 mL tubes (empty)	10 g samples	50/PK	S1-10-ORIG-KIT
		Original extraction kit • Extraction salts (in pouch): 4 g $MgSO_4$, 1 g NaCl	10 g samples	50/PK	S1-10-ORIG-POT

*Original method extraction kits are also available in 15 g sample capacity.

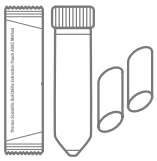
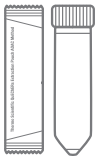
Bulk ceramic homogenizers — all methods

		Description	Quantity	Part number
Homogenize/Grind		Ceramic homogenizers for 2 mL tubes	100/PK	60106-CH-2
		Ceramic homogenizers for 15 mL tubes	100/PK	60106-CH-15
		Ceramic homogenizers for 50 mL tubes	100/PK	60106-CH-50

AOAC method kits

Comments
Application note: Trace-level quantitation of pesticide residues in red chili powder using LC-(HESI)-MS/MS
Application note: Trace level quantitation of pesticide residues in fresh fruits using LC-MS/MS
Learn more at **thermofisher.com/quechers**

AOAC method extraction kits

		Description	Capacity	Quantity	Part number
Extract		AOAC extraction kit • Extraction salts (in pouches): 6 g $MgSO_4$, 1.5 g NaOAc • 50 mL tubes (empty) • Ceramic homogenizers	15 g samples	50/PK	S1-15-AOAC-CH-KIT
		AOAC extraction kit • Extraction salts (in pouches): 6 g $MgSO_4$, 1.5 g NaOAc • 50 mL tubes (empty)	15 g samples	50/PK	S1-15-AOAC-KIT
		AOAC extraction kit • Extraction salts (in pouches): 6 g $MgSO_4$, 1.5 g NaOAc	15 g samples	50/PK	S1-15-AOAC-POT

Order now!

AOAC method kits
Continued

AOAC method clean-up kits

Clean-up

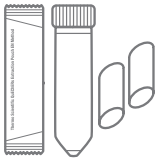
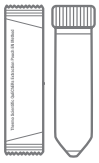
Description	Quantity	Part number
General fruits and vegetables		
AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 150 mg $MgSO_4$	100/PK	S2-2-GFV-AOAC-KIT
AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 1200 mg $MgSO_4$	50/PK	S2-15-GFV-AOAC-KIT
Pigmented fruits and vegetables		
AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 50 mg GCB, 150 mg $MgSO_4$	100/PK	S2-2-P-AOAC-KIT
AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 400 mg C18, 1200 mg $MgSO_4$	50/PK	S2-15-P-AOAC-KIT
Fruits and vegetables with fats and waxes		
AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 50 mg C18, 150 mg $MgSO_4$	100/PK	S2-2-FW-AOAC-KIT
AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 400 mg C18, 1200 mg $MgSO_4$	50/PK	S2-15-FW-AOAC-KIT
Fruits and vegetables with pigments and fats		
AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 50 mg C18, 50 mg GCB, 150 mg $MgSO_4$	100/PK	S2-2-PF-AOAC-KIT
AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 400 mg C18, 400 mg GCB, 1200 mg $MgSO_4$	50/PK	S2-15-PF-AOAC-KIT
All food types		
AOAC clean-up kit, prefilled 2 mL tubes with 50 mg PSA, 50 mg C18, 7.5 mg GCB, 150 mg $MgSO_4$	100/PK	S2-2-ALL-AOAC-KIT
AOAC clean-up kit, prefilled 15 mL tubes with 400 mg PSA, 400 mg C18, 45 mg GCB, 1200 mg $MgSO_4$	50/PK	S2-15-ALL-AOAC-KIT
Other foods		
AOAC clean-up kit, prefilled 2 mL tubes with 25 mg C18, 150 mg $MgSO_4$	100/PK	S2-2-OTH-AOAC-KIT
AOAC clean-up kit, prefilled 15 mL tubes with 150 mg C18, 900 mg $MgSO_4$	50/PK	S2-15-OTH-AOAC-KIT

Order now!

EN method kits

Comments
Application note: Simultaneous screening and quantification of pesticide residues in potatoe using GC-Orbitrap MS
Application note: Pesticide residues screening and quantitation analysis in olive oil using an Orbitrap Exploris 240 HRMS
Application note: Large-scale screening and quantitation of pesticide residues in milk using GC-(EI)-MS/MS
Learn more at **thermofisher.com/quechers**

EN method extraction kits

		Description	Capacity	Quantity	Part number
Extract		EN extraction kit • Extraction salts (in pouches): 4 g $MgSO_4$, 1 g NaCl, 0.5 g disodium hydrogencitrate sesquihydrate, 1 g trisodium citrate dihydrate • 50 mL tubes (empty) • Ceramic homogenizers	10 g samples	50/PK	S1-10-EN-CH-KIT
		EN extraction kit • Extraction salts (in pouches): 4 g $MgSO_4$, 1 g NaCl, 0.5 g disodium hydrogencitrate sesquihydrate, 1 g trisodium citrate dihydrate • 50 mL tubes (empty)	10 g samples	50/PK	S1-10-EN-KIT
		EN extraction kit • Extraction salts (in pouches): 4 g $MgSO_4$, 1 g NaCl, 0.5 g disodium hydrogencitrate sesquihydrate, 1 g trisodium citrate dihydrate	10 g samples	50/PK	S1-10-EN-POT

EN method kits
Continued

EN method clean-up kits

	Description	Quantity	Part number
Clean-up	**General fruits and vegetables**		
	EN clean-up kit, prefilled 2 mL tubes with 150 mg $MgSO_4$, 25 mg PSA	100/PK	S2-2-GFV-EN-KIT
	EN clean-up kit, prefilled 15 mL tubes with 900 mg $MgSO_4$, 150 mg PSA	50/PK	S2-15-GFV-EN-KIT
	Pigmented fruits and vegetables		
	EN clean-up kit, prefilled 2 mL tubes with 150 mg $MgSO_4$, 25 mg PSA, 2.5 mg GCB	100/PK	S2-2-P-EN-KIT
	EN clean-up kit, prefilled 15 mL tubes with 900 mg $MgSO_4$, 150 mg PSA, 15 mg GCB	50/PK	S2-15-P-EN-KIT
	Highly pigmented fruits and vegetables		
	EN clean-up kit, prefilled 2 mL tubes with 150 mg $MgSO_4$, 25 mg PSA, 7.5 mg GCB	100/PK	S2-2-HP-EN-KIT
	EN clean-up kit, prefilled 15 mL tubes with 900 mg $MgSO_4$, 150 mg PSA, 45 mg GCB	50/PK	S2-15-HP-EN-KIT
	Fruits and vegetables with fats and waxes		
	EN clean-up kit, prefilled 2 mL tubes with 150 mg $MgSO_4$, 25 mg PSA, 25 mg C18	100/PK	S2-2-FW-EN-KIT
	EN clean-up kit, prefilled 15 mL tubes with 900 mg $MgSO_4$, 150 mg PSA, 150 mg C18	50/PK	S2-15-FW-EN-KIT

What is the purpose of the chemicals?

- **$MgSO_4$:** removes residual water, and induces phase separation between water content in sample and acetonitrile layer
- **NaCl:** removes residual water, and induces phase separation between water content in sample and acetonitrile layer
- **NaOAc:** buffers the sample to stabilize pH
- **Disodium hydrogencitrate sesquihydrate:** buffers the sample to stabilize pH
- **Trisodium citrate dihydrate:** buffers the sample to stabilize pH
- **PSA:** removes free fatty acids and other acidic co-extractives
- **C18:** removes fats, sterols, and other non-polar interferences from sample
- **GCB:** removes pigment (not recommended for use with planar pesticides)

Order now!

Automated micro Solid-Phase extraction (µSPE) products

Achieve reliable and high-throughput analysis by automating cleanup of QuEChERS extracts using the cartridge based Thermo Scientific™ micro Solid-Phase extraction (µSPE) products. The QuEChERS sample preparation method is used to extract pesticides and organic contaminants from food matrices with subsequent analysis by GC or liquid chromatography-mass spectrometry (LC-MS). This µSPE capability, which is available for the Thermo Scientific™ TriPlus™ RSH Autosampler and LC systems.

µSPE QuEChERS blend

Comments

- Replaces the manual dispersive SPE (dSPE) procedure
- Enables reliable and high-throughput extract cleanup
- Is suitable for a wide variety of food matrices, even those with high lipid contents
- Offers a unified method for GC or LC-MS analysis of hundreds of pesticides and organic contaminants
- Enables scale down of sample volume and solvent usage

Application note: Multi-pesticide residues analyses of QuEChERS extracts using an automated online µSPE clean-up coupled to LC-MS/MS

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

For GC and LC-MS analysis

Description	Material	Unit size	Part number
GC µSPE Cartridge	µSPE QuEChERS Blend for GC, 45 mg ($MgSO_4$, PSA, C18EC, Carbon)	108	60101-45GC
LC µSPE Cartridge	µSPE QuEChERS Blend for LC, 30 mg (C18, Z-Sep, CarbonX)		60101-30LC

Webinar:
Automated online µSPE cartridge clean-up of QuEChERS extracts before LC–MS/MS and GC–MS/MS analysis of pesticides in foods

Syringes and syringe filters
Providing high quality filtration solutions

Choose from a variety of syringe filter sizes, membranes and housings for a wide range of laboratory applications.

High quality filtration
Low extractable membranes and solvent-resistant housing

Titan3 color coded ring
For easy selection of correct membrane and pore size

High burst pressures
For enhanced robustness in sample processing

Syringes and syringe filters

Thermo Scientific™ Titan3™ syringe filters

Comments
High performance HPLC syringe filters • Low extractable membranes and housing • HPLC performance tested • Color coding for easy selection of the correct membrane and pore size • Enhanced Luer Lock inlet which prevents leakage • Most 30 mm devices are provided with a 1mm boro-silicate glass pre-filter. This is of benefit for high solids samples with larger size particulates • Integral ring provides greater strength to the housing preventing leakage and bursting • 30 mm products pressure rated to 120 psi • Packed in reusable rigid transparent color coded containers
Learn more at **thermofisher.com/syringefilters**

Titan3 syringe filters

Continued

Titan3 nylon syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2	No	100	42204-NN	• HPLC and organic solvent sample preparation and clean up • Dissolution sample analysis • General sample preparation prior to analytical analysis • Mixed sample matrix of aqueous or organic dissolved analytes
	0.45			44504-NN	
17	0.2		200	42213-NN	
	0.45			44513-NN	
30	0.2	Yes	100	42225-NN	
	0.45			44525-NN	
		No		44526-NN	
	1.5			41225-NN	
	5			45025-NN	
Titan3 PTFE (hydrophobic) syringe filters					
4	0.2	No	100	42204-NP	• Filtration of aggressive organic, highly basic or hot solutions, transducer protectors • Filter aqueous solutions after prewetting with an alcohol Note: PTFE hydrophobic membranes require pre-treatment with alcohol before being suitable for aqueous or high aqueous/organic samples. Do not use directly with aqueous solutions.
	0.45			44504-NP	
17	0.2		200	42213-NP	
	0.45			44513-NP	
30	0.2	Yes	100	42225-NP	
	0.45			44525-NP	
	1.0	No		41025-NP	
Titan3 PTFE (hydrophilic) syringe filters					
17	0.2	No	200	42213-NPL	• Filtration of aggressive organic, highly basic or hot solutions, without the need pre-wet membrane • Filter aqueous solutions without prewetting with an alcohol
	0.45			44513-NPL	
30	0.2		100	42225-NPL	
Titan3 PVDF syringe filters					
4	0.2	No	100	42204-PV	• General biological filtration • Filtration of samples where high protein recovery is desired
	0.45			44504-PV	
17	0.2	Yes	200	42213-PV	
	0.45	No		44513-PV	
30	0.2	Yes	1000	42225-PV	
	0.45	No		44525-PV	

Titan3 syringe filters
Continued

Titan3 regenerated cellulose syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2	No	100	52204-RC	• Low non-specific binding applications • Tissue culture media filtration and general biological sample filtratio
	0.45			54504-RC	
17	0.2	Yes	200	52213-RC	
	0.45	No		54513-RC	
30	0.2	Yes	100	52225-RC	
	0.45	No		54525-RC	
Titan3 PES (polyethersulfone) syringe filters					
17	0.2	No	200	42213-PS	• Ion chromatography • Tissue culture filtration, filtration of proteins and nucleic acids • High-temperature liquids
	0.45			44513-PS	
30	0.2	Yes	100	42225-PS	
	0.45	No		44525-PS	
Titan3 GMF (glass MicroFiber) syringe filters					
30	0.7	No	100	40725-GM	• Dissolution testing • General filtration
	1.2			41225-GM	
	3.1			42725-GM	
Titan3 polypropylene syringe filters					
17	0.2	No	200	42213-PP	• Filtration of biological samples • Filtration of aggressive organic solutions
	0.45			44513-PP	
30	0.2		100	42225-PP	
	0.45			44525-PP	
Titan3 cellulose acetate syringe filters					
4	0.2	No	100	42204-CA	• Tissue culture media filtration, sensitive biological samples
17	0.2			42213-CA	
	0.45			44513-CA	
30	0.2			42225-CA	
	0.45			44525-CA	

Order now!

Syringes and syringe filters
Continued

Thermo Scientific™ Titan2™ syringe filters

Comments

HPLC perforce syringe filters

- Low extractable membranes and housing
- HPLC performance tested
- Plain polypropylene housing
- 30 mm products pressure rated to 100psi
- Enhanced Luer Lock inlet which prevents leakage

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

Target2 nylon syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2	No	100	F2504-2	• General laboratory filtration • Filtration for most HPLC samples
	0.45			F2504-1	
17	0.2			F2513-2	
	0.45			F2513-1	
30	0.2	No		F2500-2	
		Yes		F2502-2	
	0.45	No		F2500-1	
		Yes		F2502-1	
	1.5	No		F2500-12	
	5.0			F2500-50	

Target2 PTFE (hydrophobic) syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2	No	100	F2504-4	• Filtration of aggressive organic, highly basic or hot solutions, transducer protectors • Filter aqueous solutions after prewetting with an alcohol Note: PTFE hydrophobic membranes require pre-treatment with alcohol before being suitable for aqueous or high aqueous/organic samples. Do not use directly with aqueous solutions
	0.45			F2504-3	
17	0.2			F2513-4	
	0.45			F2513-3	
30	0.2			F2500-4	
	0.45			F2500-3	
		Yes		F2502-3	
	1.0	No		F2500-13	

Target2 PVDF syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2	No	100	F2504-6	• General biological filtration • Filtration of samples where high protein recovery is desired
	0.45			F2504-5	
17	0.2			F2513-6	
	0.45			F2513-5	
30	0.2			F2500-6	
	0.45			F2500-5	

Titan2™ syringe filters
Continued

Target2 regenerated cellulose syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number	Applications
4	0.2	No	100 pack	F2504-8	• Low non-specific binding applications • Tissue culture media filtration and general biological sample filtration
	0.45			F2504-7	
17	0.2			F2513-8	
	0.45			F2513-7	
30	0.2			F2500-8	
	0.45			F2500-7	

Target2 PES (polyethersulfone) syringe filters

17	0.2	No	100 pack	F2513-17	• Ion chromatography • Tissue culture filtration, filtration of proteins and nucleic acids • High-temperature liquids
	0.45			F2513-14	
30	0.2			F2500-17	
	0.45			F2500-14	

Target2 GMF (glass MicroFiber) syringe filters

30	0.7	No	100 pack	F2500-18	• Dissolution testing • General filtration
	1.2			F2500-19	
	3.1			F2500-20	

Target2 polypropylene syringe filters

4	0.2	No	100 pack	F2504-10	• Filtration of biological samples • Filtration of aggressive organic solutions
	0.45			F2504-9	
17	0.2			F2513-10	
	0.45			F2513-9	
30	0.2			F2500-10	
	0.45			F2500-9	
		Yes		F2502-9	

Target2 cellulose acetate syringe filters

4	0.2	No	100	F2504-16	• Tissue culture media filtration, sensitive biological samples
	0.45			F2504-15	
17	0.2			F2513-16	
	0.45			F2513-15	
30	0.2			F2500-16	
	0.45			F2500-15	

Thermo Scientific™ Choice syringe filters

Comments
Economic, high-quality filtration products • Use to remove particles and microorganisms in the sample preparation process, enabling to provide consistent and reliable experimental results • Available in a range of membrane types, pore sizes and dimensions to meet application requirements • Use in combination with Thermo Scientific™ all-plastic disposable syringes
Applications HPLC and organic solvent sample preparation and clean up • Dissolution sample analysis • General sample preparation prior to analytical analysis • Mixed sample matrix of aqueous or organic dissolved analytes
Learn more at **thermofisher.com/syringefilters**

Choice nylon syringe filters

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity	Part number
13	0.2	No	100 pack	CH2213-NN
	0.45			CH2225-NN
25	0.2			CH4513-NN
	0.45			CH4525-NN
Choice PTFE (hydrophilic) syringe filters				
13	0.2	No	100 pack	CH2213-NPL
	0.45			CH4513-NPL
25	0.2			CH2225-NPL
	0.45			CH4525-NPL
Choice PTFE (hydrophobic) syringe filters				
13	0.2	No	100 pack	CH2213-NP
	0.45			CH4513-NP
25	0.2			CH2225-NP
	0.45			CH4525-NP

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Choice syringe filters
Continued

Diameter (mm)	Pore size (µm)	Pre-filter	Quantity (pack)	Part number
Choice regenerated cellulose syringe filters				
13	0.2	No	100	CH2213-RC
	0.45			CH4513-RC
25	0.2			CH2225-RC
	0.45			CH4525-RC
Choice polypropylene (PP) syringe filters				
13	0.2	No	100	CH2213-PP
	0.45			CH4513-PP
25	0.2			CH2225-PP
	0.45			CH4525-PP
Choice PVDF (hydrophilic) syringe filters				
13	0.2	No	100	CH2213-PV
	0.45			CH4513-PV
25	0.2			CH2225-PV
	0.45			CH4525-PV
Choice PVDF (hydrophobic) syringe filters				
13	0.2	No	100	CH2213-PVH
	0.45			CH4513-PVH
25	0.2			CH2225-PVH
	0.45			CH4525-PVH
Choice cellulose acetate (CA) syringe filters				
13	0.2	No	100	CH2213-CA
	0.45			CH4513-CA
25	0.2			CH2225-CA
	0.45			CH4525-CA
Choice PES (polyethersulfone) syringe filters				
13	0.2	No	100	CH2213-PES
	0.45			CH4513-PES
25	0.2			CH2225-PES
	0.45			CH4525-PES

All-plastic disposable syringes

Comments

Disposable syringes with polyethylene barrels and polypropylene plungers; use for all syringe filter applications

- Two-part, all-plastic construction eliminates the need for rubber or synthetic plunger gaskets
- No silicone or oil lubricant is required in the barrel
- Choose Luer-Slip or Luer Lock syringes, in capacities ranging from 1 to 50 mL

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

Luer-slip syringes

Capacity (mL)	Quantity (pack)	Part number
1	100	S7510-1
3		S7510-3
5		S7510-5
10		S7510-10
20		S7510-20
Luer-lock syringes		
3	100	S7515-3
5		S7515-5
10		S7515-10
20		S7515-20

Order now!

750 µL micro-centrifugal filters, non-sterile

Comments

- Filter volumes as low as 50 µL up to 750 µL with low hold-up volume
- Use with any laboratory microcentrifuge
- Virgin polypropylene filter housing with tapered 2 mL, capped receiver tube
- 10,000 x G maximum centrifugal force

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

750 µL micro-centrifugal filters, non-sterile

Material	Pore size (µm)	Quantity (pack)	Part number
Cellulose acetate	0.2	100	F2517-1
Cellulose acetate	0.45		F2517-2
Nylon	0.2		F2517-3
Nylon	0.45		F2517-4
PVDF	0.2		F2517-5
PVDF	0.45		F2517-6
Regenerated cellulose	0.2		F2517-7
Regenerated cellulose	0.45		F2517-8
PTFE	0.2		F2517-9
PTFE	0.45		F2517-10

Order now!

2 mL centrifugal filters, non-sterile

Comments

- Filter sample volumes up to 2 mL
- Virgin polypropylene filter housing with tapered 5 mL, capped receiver tube
- Use with benchtop or floor model centrifuges
- 5,000 x G maximum centrifugal force

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

2 mL centrifugal filters, non-sterile

Material	Pore size (µm)	Quantity (pack)	Part number
Cellulose acetate	0.2	25	F2520-1
Cellulose acetate	0.45		F2520-2
Nylon	0.2		F2520-3
Nylon	0.45		F2520-4
PVDF	0.2		F2520-5
PVDF	0.45		F2520-6
PTFE	0.2		F2520-7
PTFE	0.45		F2520-8

Order now!

25 mL centrifugal filters, non-sterile

Comments

- Filter sample volumes up to 25 mL
- Virgin polypropylene filter housing with conical receiver
- Use with benchtop or floor model centrifuges
- 2,500 x G maximum centrifugal force

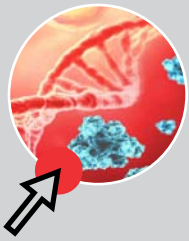
Learn more at **thermofisher.com/syringefilters**

25 mL centrifugal filters, non-sterile

Material	Pore size (µm)	Quantity (pack)	Part number
Cellulose acetate	0.2	50	F2519-1
Cellulose acetate	0.45		F2519-2
Nylon	0.2		F2519-3
Nylon	0.45		F2519-4
PVDF	0.2		F2519-5
PVDF	0.45		F2519-6

Compendium:
SMART Digest peptide mapping and quantitation

SMART Digest webinar series
In this webinar series, four new technologies will be demonstrated that dramatically improve upon established mapping workflows and help increase confidence in biopharma peptide mapping.



Brochure:
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Application note:
High-precision, automated peptide mapping of proteins

Brochure:
Protein digestion for peptide mapping and quantitation

Compendium:
Removing uncertainty by applying science to SPE

Webinar:
Automated online µSPE cartridge clean-up of QuEChERS extracts before LC–MS/MS and GC–MS/MS analysis of pesticides in foods

Brochure:
QuEChERS solutions in all your favorite flavors