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Analytical Solutions

Filter Vials, Empty Columns,
Collection & Filter Plates

Thomson is not affiliated with Shimadzu or their products

htslabs.com



Analytical Solutions

Filter Vials & Empty Columns

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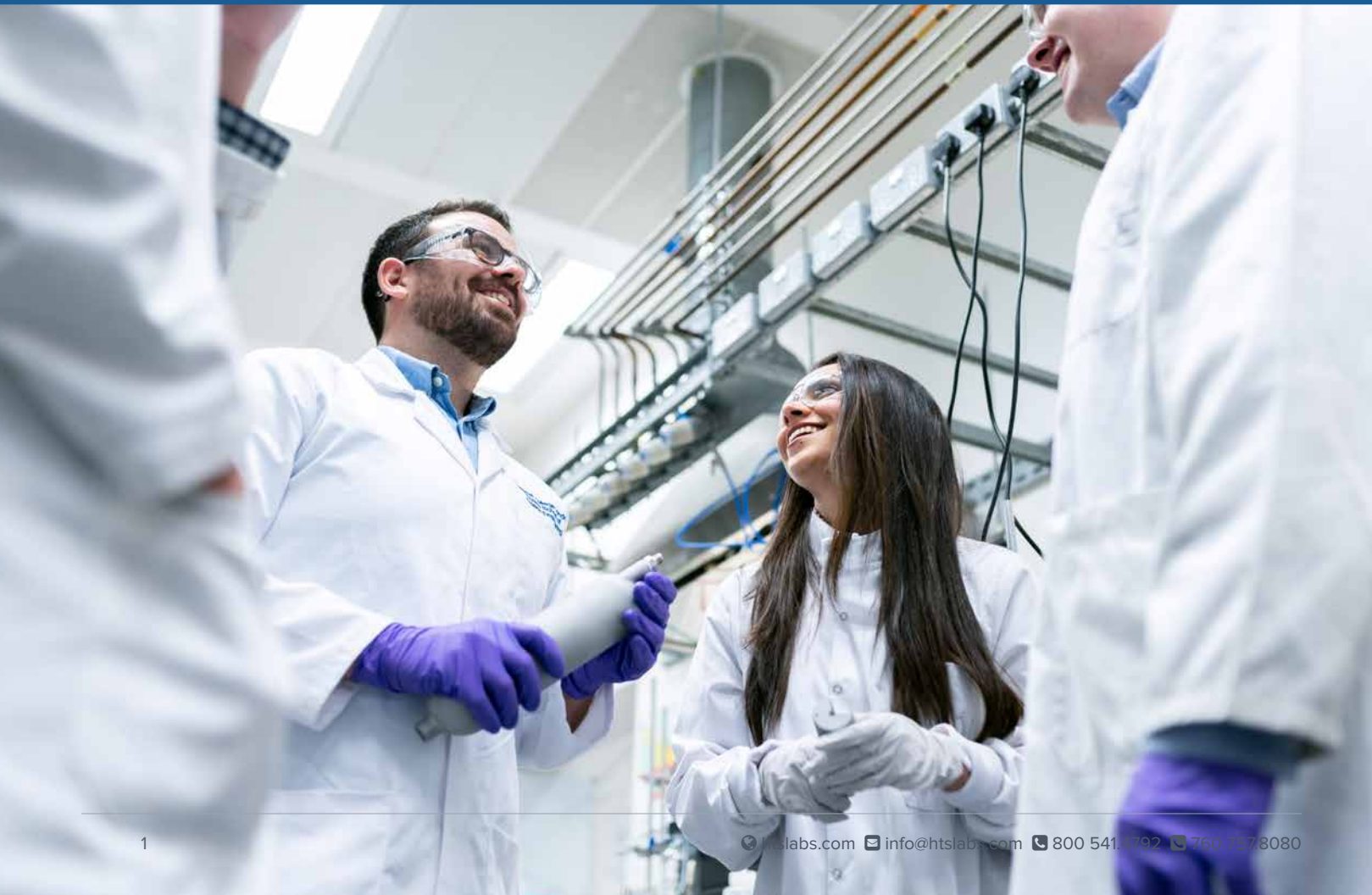
Part Numbers

- 25 Standard Filter Vials
- 25 eXtremelFV®
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A Little About Thomson

SOLUTIONS AT WORK™

Thomson sells innovative single-use Solutions At Work™, our mission is to provide technical expertise while partnering with our customers to deliver practical scientific innovations enabling scientific advancements in pharmaceutical, biotech, environmental/food, toxicology/forensics, and contract manufacturing industries.



Open to Collaboration

INNOVATIVE PRODUCT LINE

Scientists around the world are discovering new ways to use Thomson Filter Vials. Whether testing pharmaceuticals, performing toxicology, or testing for drugs of abuse Thomson Filter Vials have proven to be indispensable tools for sample prep when using HPLC, GC, LC-MS, or GC-MS, methodologies.

Thomson offers a full line of shake flasks and accessories with above-average yields and higher working volumes, designed specifically for insect/mammalian, or microbial/*E. coli* cells based on an understanding and experience of lab operations.

Our well-plate catalog continues to grow and provide the highest quality plates, ready for robotics, cell culture, synthesis, or analysis.

SINGLE StEP® Empty Columns are ready for the addition of sorbents or resins depending on the application.

If you have unique needs or need a new product please reach out to us. We look forward to collaborating with you.

An Introduction to Filter Vials

Thomson Filter Vials are a single system which replaces HPLC Vials, HPLC Caps, Syringes, & Syringe Filters for the filtration of samples. In 15 seconds, Thomson Filter Vials filter samples in an autosampler-ready vial.

Key Features

- Same Size as a standard HPLC Vial and will fit easily into any standard HPLC vial machine or tray
- PTFE, PVDF, PES and Nylon membranes are available depending on the percentage of organic solvent in the sample and the amount of protein binding
- Pore sizes of either 0.2 μ m or 0.45 μ m will provide the perfect degree of filtration needed from viscous to clarified samples
- Versatility is built into Thomson's line of Filter Vials. Whether your samples are low volume or viscous or particulate-laden or contain a high volatility organic solvent Thomson has a Filter Vial to fit your needs



Syringe Filter Built In

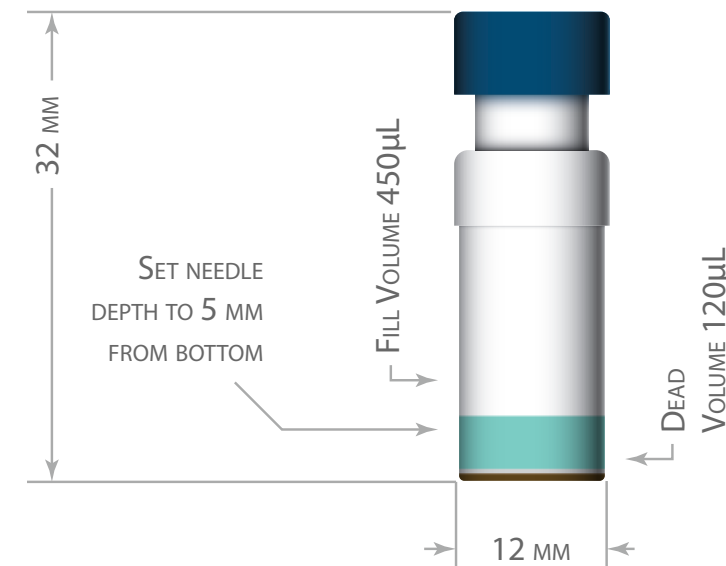
Equivalent to A Syringe Filter Built Into Your HPLC Vial

Filter Vials are equivalent to a syringe filter built into your HPLC vial. Even samples that appear clear to the eye potentially have particulates that can clog the machine, causing down time and costly maintenance. Filter Vials increase productivity by eliminating a transfer step required when using a syringe filter.

How Filter Vials Work

Similar to How A French Press Works...

Similar to how a french press (cafetière à piston) works, Filter Vials filter particulates out of the sample with similar membranes used in syringe filters. The pressing of the plunger into the shell vial forces the sample up through a filter to separate the particulates from the sample to be analyzed. Thomson has several filter membranes and pore sizes to choose from making the Filter Vial a versatile tool in the lab.



Easy As 1, 2, ... Done!

In Two Steps

1. Deposit 450 μ L of sample into shell vial
2. Insert plunger into the outer shell & press

15 Seconds

In two steps and 15 seconds you can have filtered sample for analysis. If you need to filter more than one sample, the Toggle Press (up to 5) or Multi-Use Press (up to 48) can be used.

You can prepare a particulate free sample in less time than it takes to open the syringe packaging and add a syringe filter.



DEPOSIT SAMPLE



COMPRESS FILTER VIAL



READY FOR ANALYSIS

Filter Vial Membrane

Membrane Pore Size

The recommended membrane pore size for sample filtration is based on the cell or cell debris content of the sample and the particle size of the packing material in the chromatography column used to analyze the sample. If the sample contains cells or cellular debris, then a 0.2µm pore size membrane is recommended to maintain system sterility.

Which to use?

- **0.2µm Pore Size**
 - Cells or Cell Debris in Sample
 - Chromatography Column Particle Size <3µm
- **0.45µm Pore Size**
 - Chromatography Column Particle Size >3µm

Membrane Material

The recommended membrane for sample filtration is based on the percentage of organic solvent in the sample and the amount of protein binding.

Compatibility

For chemical or compound compatibility with our Filter Vials & membranes see the Chemical Compatibility Index & Compound Compatibility Index in our Technical Library.

	Aqueous	>50% Organic	Low Protein Binding
PTFE		●	
PVDF	●		●
Nylon	●	●	
PES	●		●

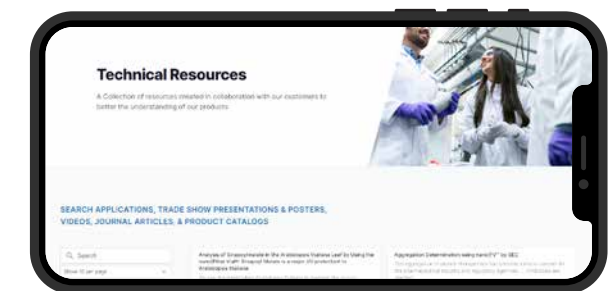
What Applications Can the Filter Vial be Used For?

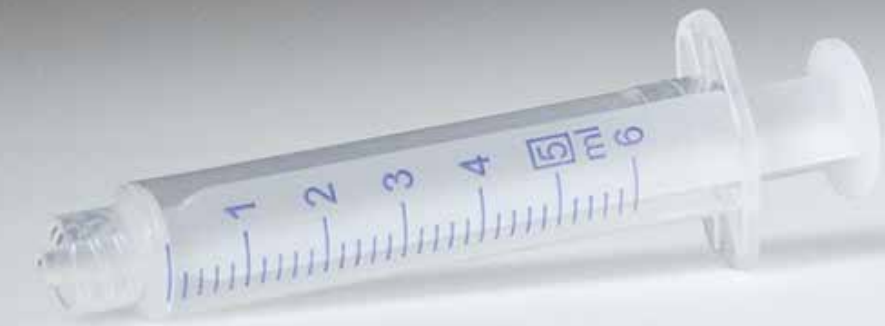
With Thomson's family of Filter Vials and membranes available to you, finding ways to replace cumbersome and expensive syringe filters in the lab is easy. Here are just some of the documented applications you can use Filter Vials for in your lab today. See our Technical Library at htslabs.com to see a full list of applications. We work hard with small and large companies to produce proven protocols and methods for our products. If you find a use for Filter Vials in your workflow we would love to hear about it.

	nanoFilter Vial®	StandardFilter Vial	Low EvapFilter Vial	eXtremeIFV®
10µL-250µL	●			
450µL		●	●	●
UPLC Compatible	●	●	●	●
GCMS Compatible	●		●	
30% Particulates				●
Viscous				●
Replacement for SPE				●
General Liquids < 10% particulates	●	●	●	●
Cell Fermentation	●			●
Particulate Removal	●	●	●	●
Automation Compatible	●	●	●	●
Small Molecules	●	●	●	●
Food & Supplements		●	●	●
Toxicology	●	●	●	●
Pesticides	●			●
Environmental	●	●	●	●

Thomson's Technical Library

You can find application notes, videos and more information on our products by visiting our website at htslabs.com.





**NO MORE
Syringes**



**NO MORE
Syringe Filters**



**NO MORE
HPLC Vials & Caps**

What do Filter Vials Replace in the Lab?

Thomson Filter Vials simplify general filtration by replacing syringes & syringe filters, microcentrifuge spin columns, and/or liquid-liquid extractions.

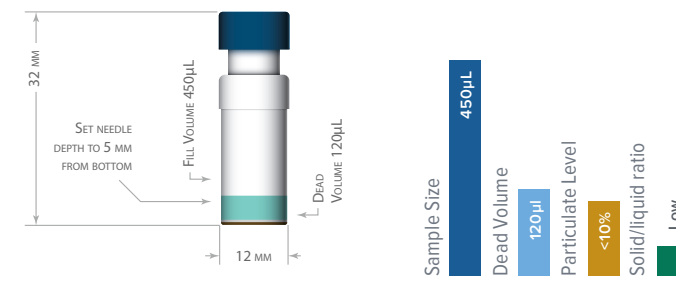
Applications for Thomson Filter Vials include all sample types to be analyzed by HPLC, UHPLC, LC-MS, and GC-MS.

A Comparison of the Filter Vial Types

Filter Vial

Standard For Most Samples

Max Fill Vol. 450µL
Dead Vol. 120µL



Key Features

- General purpose filtration
- <10% particulates
- Pre-slit septum

Replaces in the lab

- Syringe Filters
- Syringes
- HPLC Vials/Caps

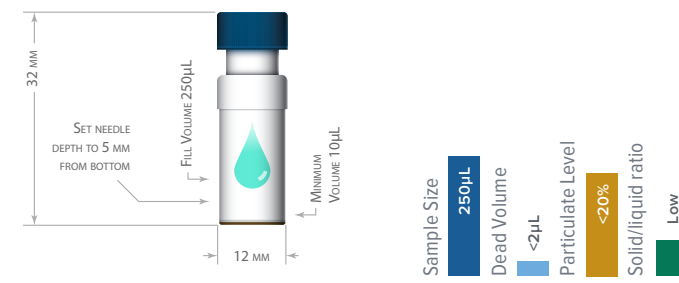
Applications

- 120µL-450µL
- General Liquids < 10% particulates
- Particulate Removal
- Automation Compatible
- Small Molecules
- Food & Supplements
- Toxicology
- Environmental

nan•Filter Vial.

When Every µL Counts

Max Fill Vol. 250µL
Min Fill Vol. 10µL (for 2µL injection)



Key Features

- 10µL sample for 2µL injection
- Available with pre-slit or non-slit septum

Replaces in the lab

- Centrifugation & Spin Filters
- Small Volume Syringe Filters
- Syringes
- High Recovery Vials/Caps
- Inserts with HPLC Vials/Caps

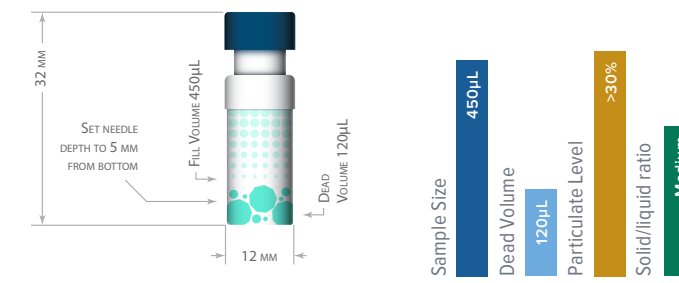
Applications

- 10µL-250µL
- General Liquids < 10% particulates
- Cell Fermentation
- Particulate Removal
- Automation Compatible
- Small Molecules
- Toxicology
- Pesticides
- Environmental

EXTREME/FV.

Multi-Layered Filtration

Max Fill Vol. 450µL
Dead Vol. 120µL



Key Features

- Used for Particulate Laden Samples
- Contains a Depth Pre-Filter
- Pre-slit septum

Replaces in the lab

- Syringe Filters
- Syringes
- HPLC Vials/Caps

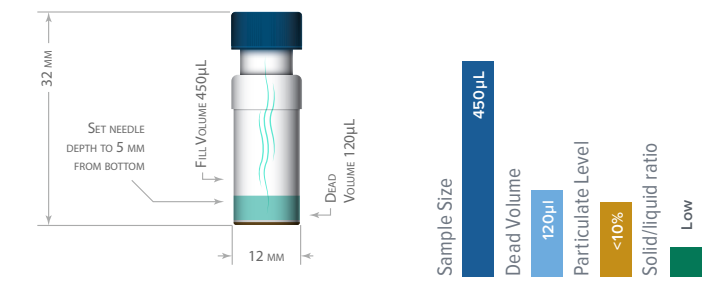
Applications

- 120µL-450µL
- ≤ 30% Particulates
- Viscous
- Replacement for SPE
- Cell Fermentation
- Particulate Removal
- Automation Compatible
- Small Molecules
- Food & Supplements
- Toxicology
- Pesticides
- Environmental

Low Evap|Filter Vial

Standard For Most Samples

Max Fill Vol. 450µL
Dead Vol. 120µL



Key Features

- General purpose filtration
- Non-split septum
- <10% particulates
- Evaporation rate <0.4% over 24-hour

Replaces in the lab

- Syringe Filters
- Syringes
- HPLC Vials/Caps

Applications

- 120µL-450µL
- General Liquids < 10% particulates
- Particulate Removal
- Automation Compatible
- Small Molecules
- Food & Supplements
- Toxicology
- Environmental

Plasticizers content in Filter Vials Compared to Syringe Filters

Testing by Takeda Pharmaceutical Company Limited® UPLC - ELSD

Introduction

Thomson Filter Vials are manufactured without the use of plasticizers or mold release agents, making them LC/MS clean. Testing with ELSD, PDA, and MS detection by Takeda Pharmaceutical showed no leaching from Thomson Standard Filter Vial with a 0.45µm, PTFE membrane compared to significant leaching from Millipore Millex-FH® Filter, 0.45µm, hydrophobic PTFE, 4mm. Method: A. Water B. ACN 45-90% with 0.05% TFA Ballistic Gradient over 1.4 minutes using Waters® Acquity® UPLC Thomson Filter Vial (patented) Part # 34440 Filter Vial 0.45µm hydrophobic PTFE, w/ Pre-Slit Cap Millipore Syringe Filter Part #:SLFHR04NL Millex-FH® Filter, 0.45µm, hydrophobic PTFE, 4mm, non-sterile.

Method:

- A. Water
- B. ACN 45-90% with 0.05% TFA

Ballistic Gradient over 1.4 minutes using Waters® Acquity® UPLC

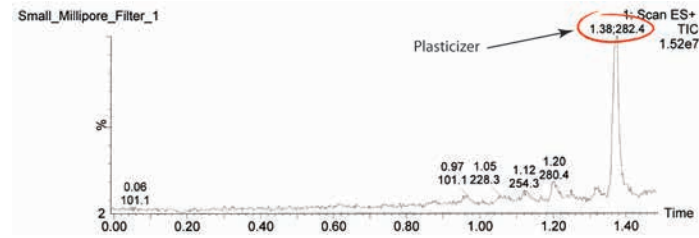
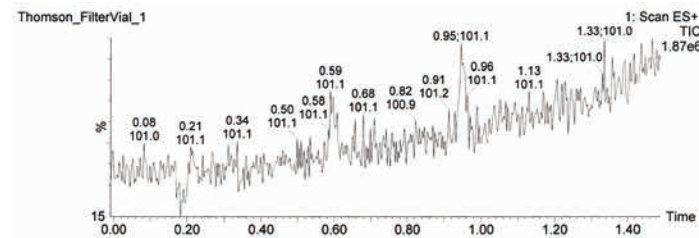
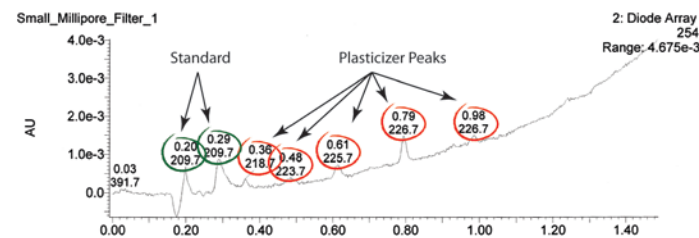
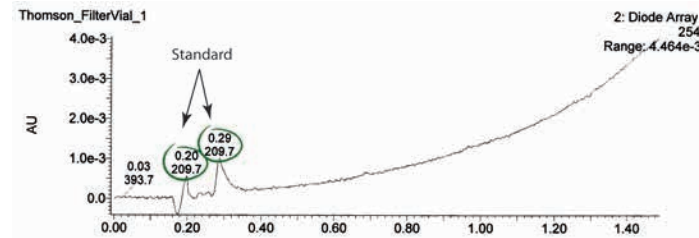
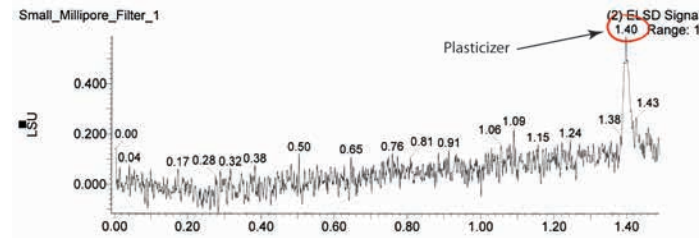
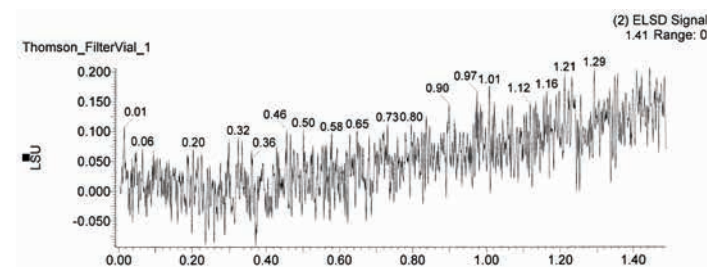
Thomson Standard Filter Vial

0.45µm hydrophobic PTFE, w/ Pre-Slit Cap
Part#: 34440

Millipore Syringe Filter

Millex-FH® Filter, 0.45µm, hydrophobic PTFE, 4mm, non-sterile.
Part #: SLFHR04NL

Plasticizers



Thomson is not affiliated with Takeda Pharmaceutical Company®, Millipore®, Waters® or their products

Increase Signal-to-Noise Ratio with eXtreme|FV® for More Targeted & Accurate Peaks

Matrix Effects & Ion Suppression:

Analytes are obscured by the matrix like the octopus in this photo is difficult to find among its surroundings.

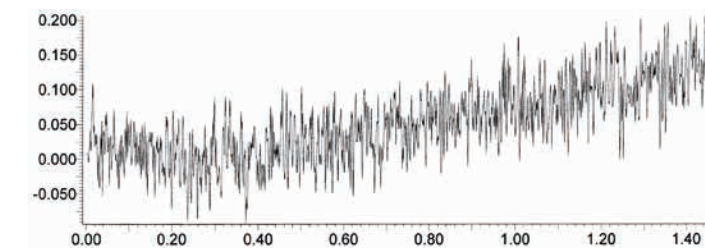
Strong Signal; Noise Lessened:

By adding compounds to the eXtreme|FV® the signal to noise ratio is increased allowing you to find the analyte with ease.



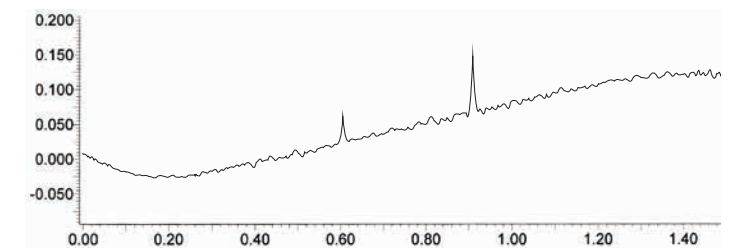
Low Signal to Noise Ratio

Difficult to find analyte in the matrix



High Signal to Noise Ratio

In this example the addition of C-18 to eXtreme|FV® with your sample binds excess compounds to C-18 and the Matrix clears up allowing you to see analyte peaks



Octopus images courtesy Jukin Video

Chemical Compatibility

	Housing Materials	Filter Membrane			
	Polypropylene	PTFE	PVDF	PES	NYLON
Acetic Acid (glacial) <i>acid, organic</i>	TST	R	R	R	NR
Acetone <i>ketone</i>	R	R	NR	GNR	R
Acetonitrile (ACN) <i>nitrile</i>	R	R	LTD	NR	R
Ammonium Hydroxide <i>caustic</i>	TST	GR	R	NR	TST
Ammonium Sulfate (saturated) <i>salt, aqueous solution</i>	R	GR	NR	ND	R
Amyl Alcohol <i>alcohol</i>	R	R	R	GR	TST
Benzene <i>HC, aromatic</i>	NR	—	—	—	—
Benzyl Alcohol <i>HC aromatic/alcohol</i>	NR	—	—	—	—
Butyl Alcohol <i>alcohol</i>	R	GR	R	GR	R
Chloroform <i>HC, halogenated</i>	NR	—	—	—	—
Cyclohexanone <i>ketone</i>	NR	—	—	—	—
Dimethyl Sulfoxide (DMSO) <i>sulfoxide</i>	R	R	NR	NR	R
Dimethylacetamide <i>amide</i>	R	GR	NR	NR	NR
Dimethylformamide <i>amide</i>	R	GR	NR	ND	R
Ethyl Acetate <i>ester</i>	TST	R	R	GNR	R
Ethyl Alcohol <i>alcohol</i>	R	R	R	GR	TST
Ethylene Glycol <i>glycol</i>	R	R	R	GR	R
Formaldehyde <i>aldehyde</i>	R	R	R	ND	R
Formic Acid, 50% <i>acid, organic</i>	R	GR	R	ND	NR
Glycerine (Glycerol) <i>glycol</i>	R	GR	R	GR	R
Hexane <i>HC, aliphatic</i>	NR	—	—	—	—
Hydrochloric Acid, 1N (HCL) <i>acid, inorganic</i>	GR	R	R	GR	GR
Hydrochloric Acid, 6N (HCL) <i>acid, inorganic</i>	TST	R	TST	GR	TST
Isobutyl Alcohol <i>alcohol</i>	R	R	R	GR	TST
Isopropyl Acetate <i>ester</i>	TST	R	R	GNR	R
Isopropyl Alcohol <i>alcohol</i>	R	R	R	GR	TST
Lactic Acid, 50% <i>acid, organic/alcohol</i>	R	GR	TST	ND	TST
Methyl Acetate <i>ester</i>	TST	R	NR	GNR	R
Methyl Alcohol <i>alcohol</i>	R	R	R	GR	TST
Methylene Chloride <i>HC, halogenated</i>	NR	—	—	—	—
Nitric Acid, 6N <i>acid, inorganic</i>	TST	R	R	R	NR
Nitrobenzene <i>HC, aromatic</i>	NR	—	—	—	—
Pentane <i>HC, aliphatic</i>	NR	—	—	—	—
Phenol (aqueous solution) <i>phenol</i>	NR	—	—	—	—
Potassium Hydroxide, 3N <i>caustic</i>	R	R	R	ND	R
Silicone Oils <i>silicone</i>	R	GR	R	ND	R
Sodium Carbonate (aqueous solution) <i>salt, aqueous solution</i>	R	R	R	ND	TST
Water (Brine) <i>salt, aqueous solution</i>	R	R	R	ND	R
Sodium Chloride (aqueous solution) <i>salt, aqueous solution</i>	R	R	R	ND	R
Sodium Dodecyl Sulfate <i>surfactant/detergent</i>	ND	ND	ND	ND	ND
Sodium Hydroxide, 3N <i>caustic</i>	R	R	R	R	R
Sulfuric Acid (concentrated) <i>acid, inorganic</i>	NR	—	—	—	—
Tetrahydrofuran (THF) <i>ether</i>	NR	—	—	—	—
Toluene <i>HC, aromatic</i>	NR	—	—	—	—
TCA (aqueous solution) <i>acid, organic</i>	R	GR	R	ND	TST
Tween® 20 (aqueous solution) <i>surfactant/detergent</i>	ND	R	TST	ND	TST

R = Recommended | GR = Generally Recommended | NR = Not Recommended | GNR = Generally Not Recommended
 LTD = Limited Recommendation | TST = Testing Recommended | ND = No Data Presently Available | — = Not Recommended, polypropylene is NR

Compound Compatibility

	Recommended Filter Membrane				
	PVDF	PES	PTFE	PES	PVDF
	0.2 µm	0.2 µm	0.2 µm	0.45 µm	0.45 µm
5-Fluorouracil			●		
(18F) Fluoromisonidazole, Misonidazole	●				
Acetylsalicylic acid		●			
Alprenolol		●			
Amiloride		●			
Atenolol		●			
Azathioprine				●	●
Azodicarbonamide		●			
Bleomycin Sulfate			●		
Caffeine		●			
Cetirizine				●	●
Chlorothiazide		●			
Chloramphenicol		●			
Cimetidine		●			
Ciprofloxacin		●			
Cyclosporine A	●				
Cytarabine			●		
Diclofenac					●
Hydrochlorothiazide		●			
Ibuprofen				●	●
isonicotinic acid			●		
Ketamine		●			
Levofloxacin				●	●
Lomefloxacin				●	●
Metoprolol		●			
Mitomycin			●		
Morphazinamide			●		
Nadolol		●			
Nicotinic acid			●		
Paclitaxel	●				
p-Aminobenzoic acid (PABA)					●
p-aminosalicylic acid			●		
Pefloxacin				●	●
Pentoxifylline (PTX)	●				
Phenytoin					●
Ranitidine		●			
Rifampicin				●	●
Sabeluzole					●
Sulfadiazine					●
Sulphasalazine		●			
Sulpiride		●			
Terbutaline		●			
Timolol		●			
Tranexamic acid		●			
Triamcinolone Acetonide		●			
Tropicamide				●	
Vinblastine Sulfate			●		

High Viscosity Presses

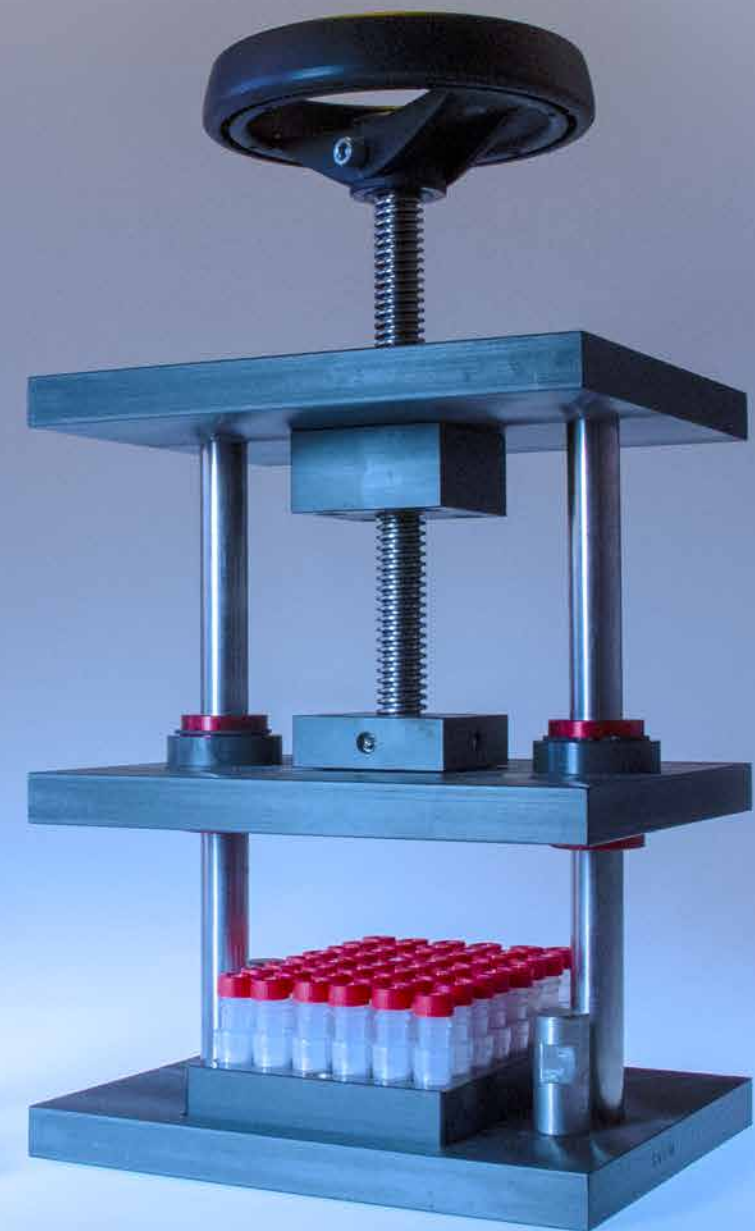
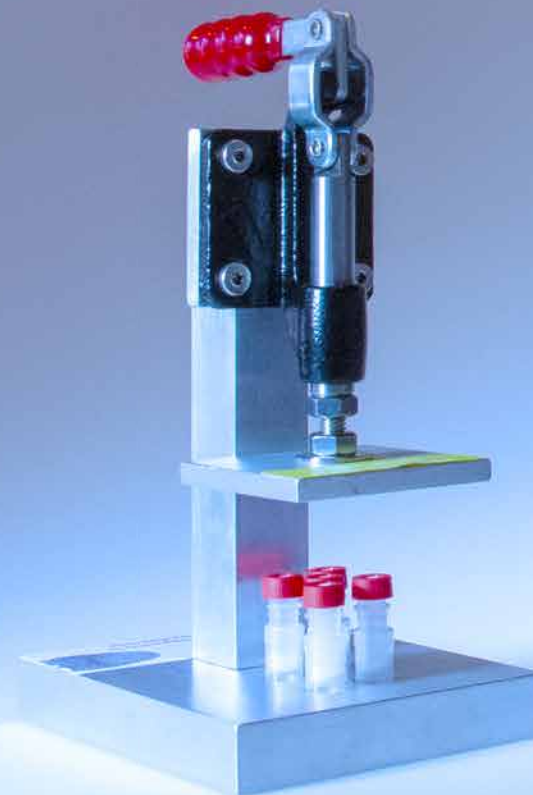
The Thomson Filter Vial Press enables high solid content and viscous liquids to be easily filtered through vials. Some fermentation cultures that reach 100OD or particulate laden samples may require the toggle press.

Toggle Press

- Press up to 5 autosampler ready Filter Vials
- Allows for consistency and ergonomic concerns
- Small footprint; sits on bench top
- Works with all Thomson Filter Vials

Multi-Use Press

- Presses up to 48 Autosampler Ready Filter Vials at a time
- Works with 48 position block; block fits some autosamplers
- 48 position block can be transferred to a robot for automation
- Easily Automate Filter Vial Pressing
- Works with all Thomson Filter Vials



SINGLE STEP

Empty Columns

Fill different sized columns with a variety of sorbents & resins for purification application.

Easy to Use

Don't be Limited with Your Column Size

At Thomson, we are aware of the need to customize available apparatus to the individual experiments. Our SINGLE StEP® Empty Columns (patented) provide you the opportunity to fill different sized columns with a variety of sorbents and resins for purification applications. The wide range in which we offer these columns means you are not limited by column size. SINGLE StEP® Empty Columns allow for the simple connection to FPLC/LPLC/MPLC systems.

Key Features

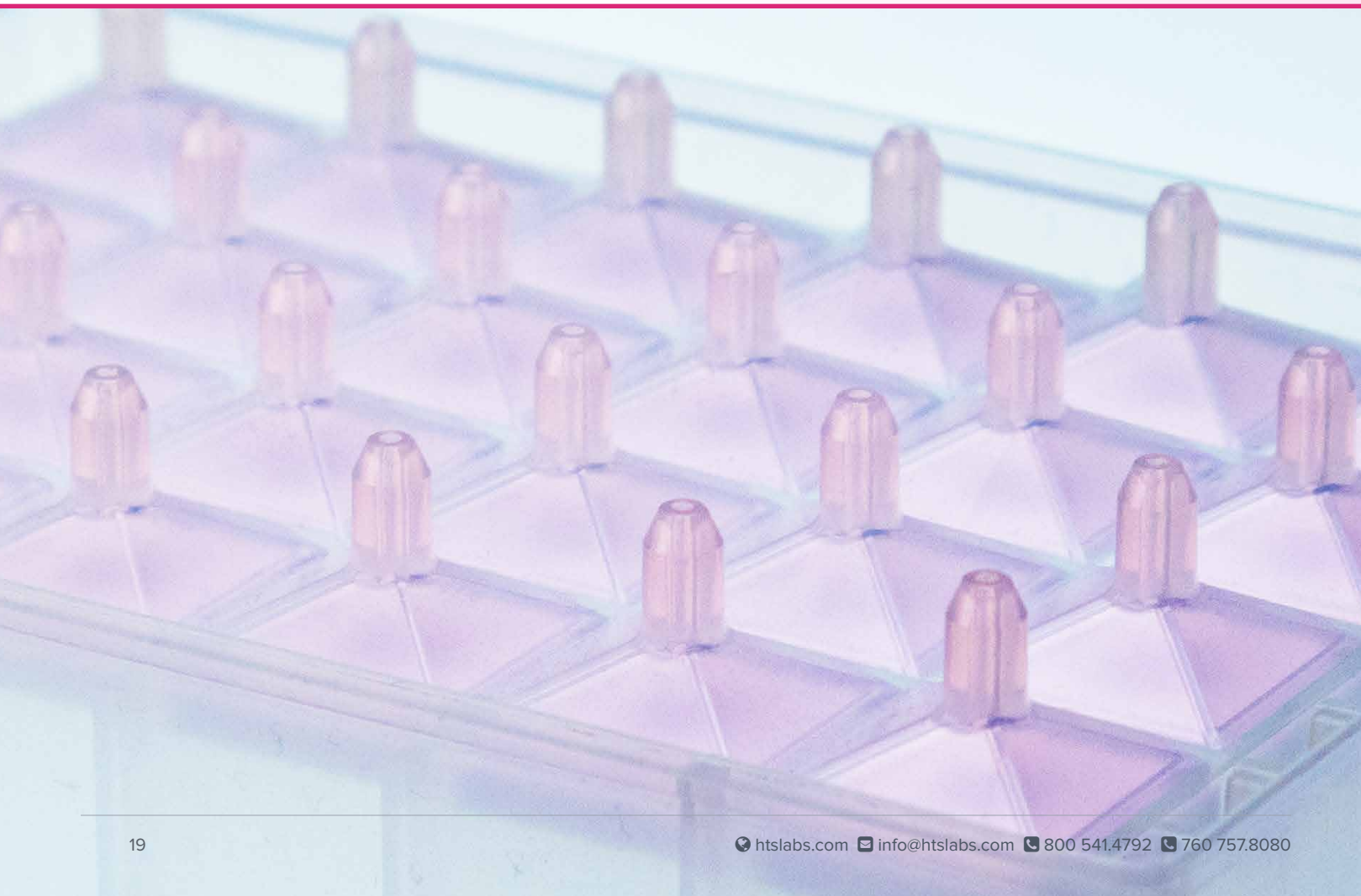
- Acceptable for use with Gravity or FPLC/LPLC/MPLC
- Multiple sizes for scales from 10mL-600mL (4g – 300g)
- Durable design for pressures up to 200psi
- Top & bottom connections are standard Luer sizing



Collection Plates

Thomson Well Plates in both 24- and 96-Well configurations are ideal for sample preparation or concentration and feature various well and well bottom shapes to suit your analytical needs. To compliment Thomson well plates we also offer various sealing options including capmats, airporous seals, foil seals and plastic lids.

- **Well Shape** – Square or Round to fit your cell type and culture condition requirements
- **Well Bottom Shape** – Pyramid, Round and V-bottom to fit your applications
- **Well Plate Orientation** – Fixed for Robotic Liquid-Handling Systems



Filter Plates

Thomson Filter Plates in both 24- and 96-Well configurations are designed for analytical sample preparation. Depending on your application we may recommend using a positive pressure manifold, centrifugation or a Thomson Vacuum Manifold.

- **Versatility** – solid phase extraction and affinity phase adsorption applications involving high throughput robotic Liquid Handling Systems
- **Solvent Compatibility** – PVDF and PTFE Filter Plates are similar in principle to Thomson Filter Vials but in a 96-well plate
- **Long funnel design** – Eliminates cross-contamination between sample collection wells by fully inserting below the top of the collection plate

96-Well Screening Protocol for Mammalian/Insect Cells

Materials:

- 96-Well Plate, 2mL, Square Well, Pyramid Bottom, Individually Wrapped with Lid | Sterile: p/n 931137



Methods:

1. Maintain cell stocks in appropriate growth medium. Split cultures the day before transfection to an appropriate density to ensure log phase growth at the time of transfection.
2. Seed cells at 500 μ L/well. The optimal seeding density will depend on the cell line, please use cell line recommended density.
3. Transfect cells according to established transfection protocol. Scale transfection reagent/DNA/feeds on a volumetric basis from what is used for larger scale cultures.
4. Seal plates with plastic lids or Airporous Seals and transfer to shaker overnight at 800rpm on a 3mm orbit at 37°C.
5. Harvest cells at the time point established for larger scale cultures. Pellet cells by centrifugation at 1000-2500g for 10-20min at 4°C.
6. Reserve either the culture media or the pellet depending on the application and proceed to downstream processing.

Notes:

- The most critical factor in cell viability is aeration. Optimal results will be achieved using shakers with 3mm orbit diameters. We do not recommend working in 96-well format using shakers with standard 25mm throws.
- Thomson filter plates are a great complimentary product for downstream purification applications.
 - 96-Well Filter Plate, 2mL, Long Drip | 25 μ m Polypropylene: p/n 931919
 - Maximum suggested centrifugation: 3000g

24-Well Screening Protocol for Mammalian/Insect Cells

Materials:

- 24-Well Plate, 10.4mL, Square Well, Round Bottom, Individually Wrapped with Lid | Sterile: p/n 931568
- 24-Well Plate, 10.8mL, Square Well, Pyramid Bottom, Individually Wrapped with Lid | Sterile: p/n 931571

Methods:

1. Maintain cell stocks in appropriate growth media. Split cultures the day before transfection to an appropriate density to ensure log phase growth at the time of transfection.
2. Seed cells at 4-5mL/well. The optimal seeding density will depend on the cell line, please use cell line recommended density.
3. Transfect cells according to established transfection protocol. Scale transfection reagent/DNA/feeds on a volumetric basis from what is used for larger scale cultures.
4. Cover plates with plastic lids and transfer to shaker overnight at 350rpm on a 12.5mm orbit at 37°C.
5. Harvest cells at the time point established for larger scale cultures. Pellet cells by centrifugation at 1000-2500g for 10-20min at 4°C.
6. Reserve either the culture media or the pellet depending on the application and proceed to downstream processing.

Notes:

- The most critical factor in cell viability is aeration. For 24-well plates optimal results will be achieved using shakers with 12.5mm. Cultures grown in shakers with standard 25mm throws, will likely need increased rotational speed or decreased culture volume.

96-Well Screening Protocol for *E. coli* and other Microbes

Methods:

1. Pipette 750 μ L of bacterial growth media containing the appropriate selective antibiotic into each well of a 96-well plate.
2. Add the selected colony to each well from either an agar plate or glycerol stock.
3. Gently triturate each well manually.
4. Seal plates with Airporous Seals and transfer to shaker overnight at 850rpm on a 3mm orbit at 37°C.
5. Harvest the plates by centrifugation @ 2500g for 20 minutes.
6. Invert the plate to discard the media.
7. Process samples according to downstream application (plasmid purification, protein extraction etc.).

Notes:

- 96-well cultures grown in Plasmid+[®] medium (p/n 446300) typically provide the appropriate biomass for MINI scale plasmid preps.
- The most critical factor in cell viability is aeration. Optimal results will be achieved using shakers with 3mm orbit diameters. We do not recommend working in 96-well format using shakers with standard 25mm or 50mm throws.
- If high levels of evaporation are encountered, the well plate & plastic lid (p/n 931134) is recommended to alleviate the issue.
- Thomson Instrument Company's filter plates are a great complimentary product for downstream purification applications. Add appropriate resin.
 - 96-Well Filter Plate, 2mL, Long Drip | 25 μ m Polypropylene: p/n 931919

24-Well Growth Protocol for *E. coli* and Other Microbes

Methods:

1. Pipette 4-5mL of bacterial growth media containing the appropriate selective antibiotic into each well of a 24-well plate.
2. Add the selected colony to each well from either an agar plate or glycerol stock.
3. Gently triturate each well manually.
4. Seal plates with Airporous Seals and transfer to shaker overnight at 350-400rpm on a 12.5mm orbit at 37°C.
5. Harvest the plates by centrifugation @ 2500g for 20 minutes.
6. Invert the plate to discard the media.
7. Process samples according to downstream application (plasmid purification, protein extraction etc.).

Notes:

- 24-well cultures grown in Plasmid+[®] medium (p/n 446300) typically provide the appropriate biomass for MIDI scale plasmid preps.
- The most critical factor in cell viability is aeration. For 24-well plates optimal results will be achieved using shakers with 12.5mm. Cultures grown on shakers with standard 25mm throws will likely need increased rotational speed or decreased culture volume.
- If high levels of evaporation are encountered, use a 24-well plate & plastic lid (p/n 931568) is recommended to alleviate the issue.

Materials:

- 96-Well Plate, 2mL, Square Well, V-Bottom, Raised Lettering | Sterile: p/n 951652C
- 96-Well Plate, 2mL, Square Well, Round Bottom | Irreversible: p/n 931130
- Airporous Seal For Growing Cultures: p/n 899410



Materials:

- 24-Well Plate, 10.4mL, Square Well, Round Bottom, Individually Wrapped | Sterile: p/n 931565-G-1X
 - Plus: Airporous Seal for Growing Cultures: p/n 899410
- 24-Well Plate, 10.8mL, Square Well, Pyramid Bottom, Individually Wrapped | Sterile: p/n 931569-G-1X
 - Plus: Airporous Seal for Growing Cultures: p/n 899410
- 24-Well Plate, 10.4mL, Square Well, Round Bottom, Individually Wrapped with Lid | Sterile: p/n 931568
- 24-Well Plate, 10.8mL, Square Well, Pyramid Bottom, Individually Wrapped with Lid | Sterile: p/n 931571

96-Well Media Clarification Protocol for Mammalian Cells:

Cell Lines Expi293 and ExpiCHO transient expressing 130kDa, IgG-type protein

Methods:

1. Maintain cell stocks in appropriate growth medium with 0.8mL of media / well. Split cultures the day before transfection to an appropriate density to ensure log phase growth at the time of transfection.
2. Seed cells at 500 μ L/well. The optimal seeding density will depend on the cell line, please use cell line recommended density.
3. Transfect cells according to established transfection protocol. Scale transfection reagent/DNA/feeds on a volumetric basis as needed.
4. Cover plates with plastic lids or airporous seals and transfer to shaker*:
 - A. Expi293 shake speed: 1000 RPM (3mm throw)
 - B. ExpiCHO shake speed: 900 RPM (3mm throw)
5. Culture cells for recommended time period.
6. Determine viable cell count. Target VCC should be approximately:
 - A. Expi293 7-9 x e6 / mL
 - B. ExpiCHO: 12-15 x e6 / mL
7. Pellet cells by centrifugation at 1000-2500 x g for 10-20min at 4°C.
8. Assemble Rapid Clear® 2 (RC2) on top of 96-well collection plate.
9. Add 400 μ L of sterile PBS to each RC2 well as rinse.
10. Pipette full culture volume, minus cell pellet, into wells of RC2 (700-800 μ L/well). Place RC2/collection plate assembly into centrifuge swinging bucket and centrifuge for 5 min at 750-1000 x g.
11. Add 600 μ L of sterile PBS flush to each RC2 well and repeat centrifugation step.
12. Disassemble RC2/collection plate assembly and, to prevent evaporation, seal collection plate with foil seal.
13. Proceed to Octet column chromatography for protein purification, expect 95% yield (70% yield w/o PBS flush).

Notes:

*The most critical factor in cell viability is aeration. Optimal results will be achieved using shakers with 3mm orbit diameters. We do not recommend working in 96-well format using shakers with standard 25mm or 50mm throws.

Materials:

- Thomson Rapid Clear® 2, 96-Well 0.2 μ m Filter Plate, Sterile | CS20 p/n 921746
- Culture plate: 96-Well Plate, 2mL, Square Well, Pyramid Bottom, Individually Wrapped w/ Lid, Sterile | CS20 p/n 931137
- Optional: Airporous Plate Seal, For Growing Cultures, Sterile | Use w/ All Plates | CS100 p/n 899410
- Collection plate: 96-Well Plate, 2mL, Square Well, Round Bottom, Irreversible, Sterile | CS20 p/n 931130
- Adhesive Foil Seal | Use w/ All 96- & 24- Well Plates | CS100 p/n 899405-1



96-Well Media Clarification Protocol for Microbial Cells:

E. coli expressing known protein

Methods:

1. Maintain cell stocks in appropriate growth medium* with 0.8mL of media/well. Split cultures the day before transfection to an appropriate density to ensure log phase growth at the time of transfection.
2. Transfect cells according to established transfection protocol. Scale transfection reagent/DNA/feeds on a volumetric basis as needed.
3. Cover plates with plastic lids or airporous seals and transfer to shaker**. Shake at 1000 RPM (3mm throw) for 24 hours.
4. Pellet cells by centrifugation at 1000-2500 x g for 10-20min at 4°C.
5. Assemble Rapid Clear® 2 (RC2) on top of 96-well collection plate.
6. Add 400 μ L of sterile PBS to each RC2 well as rinse.
7. Pipette full culture volume, minus cell pellet, into wells of RC2 (700-800 μ L). Place RC2/collection plate assembly into centrifuge swinging bucket and centrifuge for 5 min at 750-1000 x g.
8. Add 600 μ L of sterile PBS to each RC2 well and repeat centrifugation step.
9. Disassemble RC2/collection plate assembly and, to prevent evaporation, seal collection plate with foil seal.
10. Proceed to plasmid purification, expect 95% yield (70% yield w/o PBS flush).

Notes:

*24-well cultures grown in Plasmid+® medium (p/n 446300) typically provide the appropriate biomass for MIDI scale plasmid preps.

**The most critical factor in cell viability is aeration. Optimal results will be achieved using shakers with 3mm orbit diameters. We do not recommend working in 96-well format using shakers with standard 25mm or 50mm throws.

Materials:

- Thomson Rapid Clear® 2, 96-Well 0.2 μ m Filter Plate, Sterile | CS20 p/n 921746
- Culture plate: 96-Well Plate, 2mL, Square Well, Pyramid Bottom, Individually Wrapped w/ Lid, Sterile | CS20 p/n 931137
- Optional: Airporous Plate Seal, For Growing Cultures, Sterile | Use w/ All Plates | CS100 p/n 899410
- Plasmid+® Media, Sterile, 1L | CS6 p/n 446300
- Collection plate: 96-Well Plate, 2mL, Square Well, Round Bottom, Irreversible, Sterile | CS20 p/n 931130
- Adhesive Foil Seal | Use w/ All 96- & 24- Well Plates | CS100 p/n 899405-1



Part Numbers

Standard Filter Vial Snap Cap

Membrane	PTFE	PTFE	PVDF	PVDF	NYLON	NYLON	PES
Pore Size	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm
Cap Color	green	blue	red	yellow	black	pink	grey
Cap Style	snap-cap	snap-cap	snap-cap	snap-cap	snap-cap	snap-cap	snap-cap
Septum	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit
Fill Vol.	450µL	450µL	450µL	450µL	450µL	450µL	450µL
Dead Vol.	120µL	120µL	120µL	120µL	120µL	120µL	120µL
Part #	35530	35540	35531	35541	35538	35539	35535
Qty/Case	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500

Standard Filter Vial Screw Cap

Membrane	PTFE	PTFE	PVDF	PVDF	NYLON	NYLON	PES
Pore Size	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm
Cap Color	green	blue	red	yellow	black	pink	grey
Cap Style	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap
Septum	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit
Fill Vol.	450µL	450µL	450µL	450µL	450µL	450µL	450µL
Dead Vol.	120µL	120µL	120µL	120µL	120µL	120µL	120µL
Part #	34430	34440	34431	34441	34438	34439	34435
Qty/Case	100	100	100	100	100	100	100

eXtremeFV® Snap Cap

Membrane	PTFE	PTFE	PVDF	PVDF	NYLON	NYLON	PES
Pore Size	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm
Cap Color	green	blue	red	yellow	black	pink	grey
Cap Style	snap-cap	snap-cap	snap-cap	snap-cap	snap-cap	snap-cap	snap-cap
Septum	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit
Fill Vol.	450µL	450µL	450µL	450µL	450µL	450µL	450µL
Dead Vol.	120µL	120µL	120µL	120µL	120µL	120µL	120µL
Part #	85530	85540	85531	85541	85538	85539	85535
Qty/Case	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500

eXtremeFV® Screw Cap

Membrane	PTFE	PTFE	PVDF	PVDF	NYLON	NYLON	PES
Pore Size	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm
Cap Color	green	blue	red	yellow	black	pink	grey
Cap Style	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap
Septum	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit
Fill Vol.	450µL	450µL	450µL	450µL	450µL	450µL	450µL
Dead Vol.	120µL	120µL	120µL	120µL	120µL	120µL	120µL
Part #	84430	84440	84431	84441	84438	84439	84435
Qty/Case	100	100	100	100	100	100	100

Low Evap Filter Vial

Membrane	PTFE	PTFE	PVDF	PVDF	NYLON	NYLON	PES
Pore Size	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm
Cap Color	green	blue	red	yellow	black	pink	grey
Cap Style	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap	screw-cap
Septum	non-slit	non-slit	non-slit	non-slit	non-slit	non-slit	non-slit
Fill Vol.	450µL	450µL	450µL	450µL	450µL	450µL	450µL
Dead Vol.	120µL	120µL	120µL	120µL	120µL	120µL	120µL
Part #	64430	64440	64431	64441	64438	64439	64435
Qty/Case	100	100	100	100	100	100	100

nanoFilter Vial® Non-Slit

Membrane	PTFE	PTFE	PVDF	PVDF	NYLON	NYLON	PTFE	PES
Pore Size	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm	0.2µm	0.2µm	0.2µm
Cap Color	green	blue	red	yellow	black	black	green	grey
Cap Style	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap
Septum	non-slit	non-slit	non-slit	non-slit	non-slit	non-slit SIL PP	non-slit PTFE SIL PTFE	non-slit
Fill Vol.	250µL	250µL	250µL	250µL	250µL	250µL	250µL	250µL
Dead Vol.	8µL	8µL	8µL	8µL	8µL	8µL	8µL	8µL
Part #	15530	15540	15531	15541	15538	14638	14930	15535
Qty/Case	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500	100	100	200 & 500

nanoFilter Vial® Pre-Slit

Membrane	PTFE	PTFE	PVDF	PVDF	NYLON	PES
Pore Size	0.2µm	0.45µm	0.2µm	0.45µm	0.2µm	0.2µm
Cap Color	green	blue	red	yellow	black	grey
Cap Style	screw cap	screw cap	screw cap	screw cap	screw cap	screw cap
Septum	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit	pre-slit
Fill Vol.	250µL	250µL	250µL	250µL	250µL	250µL
Dead Vol.	8µL	8µL	8µL	8µL	8µL	8µL
Part #	25530	25540	25531	25541	25538	25535
Qty/Case	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500	200 & 500

High Viscosity Filter Vial Presses

Press	Description	Capacity	Qty	Part #
Toggle Press	5 Position for Autosampler Ready Filter Vials	5	1	35005
Multi-Use Press	48 Position for Autosampler Ready Filter Vials	48	1	35015

Empty Columns

Description	Case/Qty	Part #
Empty SINGLE StEP® Fritted column w/10 each size: 10mL, 25mL, 50mL, 100mL, 200mL	50	94520-10
Empty SINGLE StEP® Column 10mL or 4g Reservoir with Frit	10	9452086-10
	100	9452086-100
Empty SINGLE StEP® Column 25mL or 12g Reservoir with Frit.	10	9452088-10
	100	9452088-100
Empty SINGLE StEP® Column 50mL or 25g Reservoir with Frit.	10	9452090-10
	100	9452090-100
Empty SINGLE StEP® Column 100mL or 40g Reservoir with Frit.	10	9452092-10
	100	9452092-100
Empty SINGLE StEP® Column 200mL or 80g Reservoir with Frit.	10	9452094-10
	100	9452094-100
Empty SINGLE StEP® Column 320mL or 160g Reservoir with Frit.	10	9452099
Empty SINGLE StEP™ Column 600mL or 300g Reservoir w/5mL Bottom Resin Reservoir w/Frit	10	9452097-B

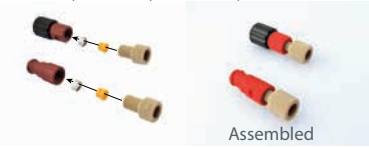

Frits

Head Space Frits for 4g SINGLE StEP® Column	100	491250
Head Space Frits for 12g SINGLE StEP® Column	100	491252
Head Space Frits for 25g SINGLE StEP® Column	100	491253
Head Space Frits for 40g SINGLE StEP® Column	100	491254
Head Space Frits for 80g or 90g SINGLE StEP® Column	100	491256
Head Space Frits for 110g or 160g SINGLE StEP® Column	100	491258
Head Space Frits for 240g or 300g SINGLE StEP® Column	100	491260

Accessories

Dual Ended PP Cap Blue	100	235008
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Accessories not sold by Thomson

Tubing Size to Adapt SINGLE StEP® Column to FPLC, AKTA	Upchurch PN#*	Cole-Parmer® PN#*
1/8th line (obsolete p/n 295821) 	LT-215 P-359 P-658 P-655	EW-02022-43 EW-02023-15 EW-02014-14 EW-02014-12
1/16th line (obsolete p/n 295823) 	P-656 P-659	P-656 P-659

Not all parts may be needed for your set up.

*Thomson Instrument Company is not affiliated with Upchurch, Cole-Parmer® or their products

Collection Plates

Vol. Well	Well Shape	Sterility (SAL)	ANSI-SLAS	Ind. Wrap	Compatible with Capmat/Seal	Case/Qty	Part#
24-Well							
10.4mL		10 ⁻⁶	Yes	Yes	899410, 899405-1, 899403, 899406	20	931565-G-1X
10.4mL		10 ⁻⁶	Yes	Yes	Lid Included	20	931568
10.8mL		10 ⁻⁶	Yes	Yes	899410, 899405-1, 899403, 899406	20	931569-G-1X
10.8mL		10 ⁻⁶	Yes	Yes	Lid Included	20	931571
96-Well							
500µL		non-sterile	*Yes	No	899410, 899403, 899406, 359747, 899405-1	50	9356045
650µL		non-sterile	Yes	No	899410, 899405-1, 899403, 899406	50	931512B
2mL		non-sterile	*Yes	No	899410, 899405-1, 899403, 899406, 359747	50	951657
2mL		10 ⁻⁶	*Yes	Yes	899410, 899405-1, 899403, 899406, 359747	20	951657-S20
2mL		non-sterile	*Yes	No	899410, 899405-1, 899403, 899406, A210100	20	931130
2mL		10 ⁻⁶	*Yes	No	899410, 899405-1, 899403, 899406, A210100	20	931130-S
2mL		10 ⁻⁶	Yes	Yes	899410, 899405-1, 899403, 899406, A210100	20	931133
2mL		10 ⁻⁶	Yes	Yes	Lid Included	20	931137

Filter Plates

Vol. Well	Well Shape	Sterility (SAL)	ANSI-SLAS	IW	Filter Membrane	Collection Plate	Case/Qty	Part#
24-Well Filter Plates								
10.8mL		non-sterile	Yes	No	25µm Polypropylene	931565-G-1X, 931568, 931569-G-1X, 931571	20	921550
~9mL		10 ⁻⁶	Yes	No	0.2µm Rapid Clear®	931565-G-1X, 931568, 931569-G-1X, 931571	20	921546
96-Well Filter Plates								
2mL		10 ⁻⁶	Yes	No	0.2µm Rapid Clear®	931130	20	921746
2mL		non-sterile	Yes	No	25µm Polypropylene	931130	25	931919
2mL		non-sterile	Yes	No	0.2µm PTFE	931130	20	921730
2mL		non-sterile	Yes	No	0.45µm PTFE	931130	20	921740
2mL		non-sterile	Yes	No	0.2µm PVDF	931130	20	921731

* Meets ANSI-SLAS plate dimensions

† Irreversible Plate

Seals & Capmats

Description	Sterile	Plate Compatibility	Case/Qty	Part#
96-Well Capmat, For Wide Round Wells	No	951657, 9356045, 951657-S20, 931512B	50	359747
96-Well Capmat, For Square Wells	No	931130, 931130-S, 931133, 931137	100	A210100
Adhesive Foil Plate Seal	No	All Plates	100	899405-1
Pierceable Foil Heat Seal PCR compatible	No	All Plates	100	899403
Long-Term Storage Foil Heat Seal	No	All Plates	100	899406
Airporous Plate Seal For Growing Cultures	Yes	All Plates	100	899410
Well Plate Lid for use with 96- & 24-Well Plates	No	All Plates	100	981945
Well Plate Lid for use with 96- & 24-Well Plates	Yes	All Plates	100	981948

Vacuum Manifold

Sterile	ANSI-SLAS	Filter Membrane	Case/Qty	Part#
No	Yes	n/a	1	981802

