sun sri

titan

FILTRATION SYSTEMS

TITAN FILTRATION SYSTEMS

Dissolution and HPLC Syringe Filters

CONSISTENT RESULTS, CONSISTENT VALUE

Filtration is a critical and valuable strategy to ensure consistent and reliable experimental procedures. From method development investigation to validated quality control techniques, the superior quality of **TITAN Filtration Products** from *sun sri*, secures your results.

Titan2 Syringe Filters

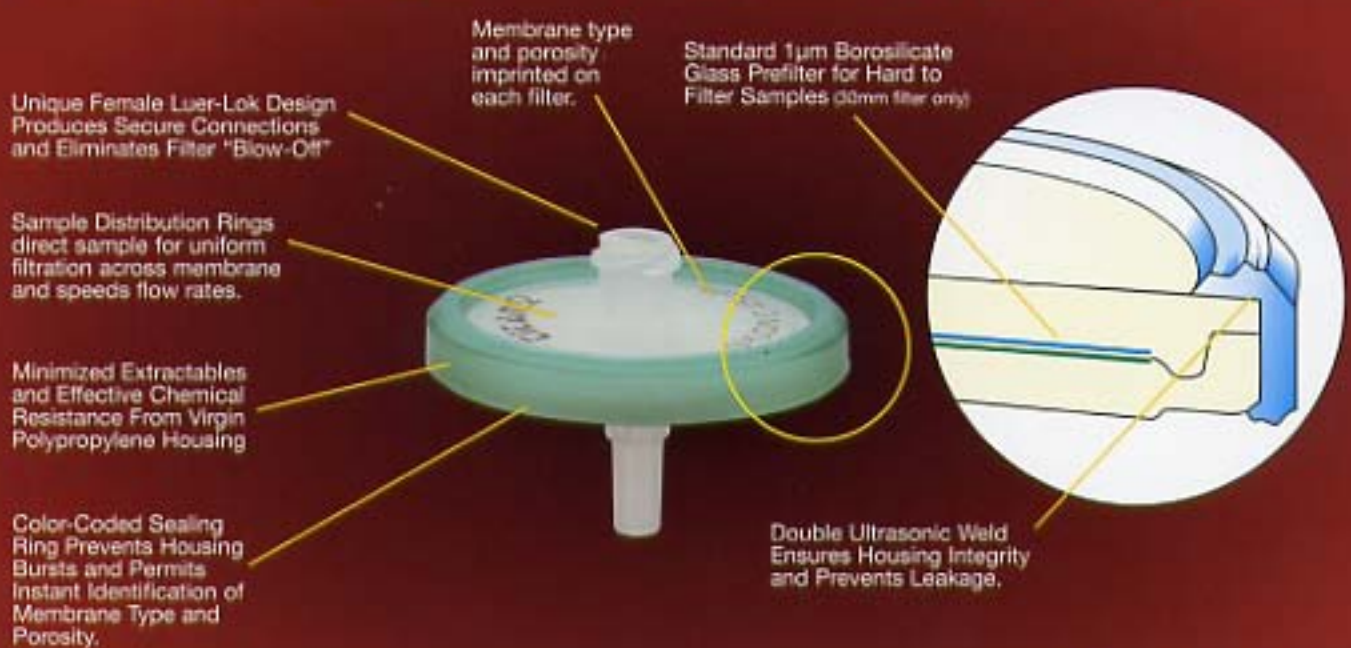
- Standard 1µm Prefilter in Our 30mm Filters Ensure Increased Sample Handling Capacity
- Sample Distribution Rings Maximize Filtration Area Uniformity and Speed
- Low Extractable Levels Generate Interference Free Data
- Unequivocal Reproducibility, Filter to Filter, Lot to Lot.

DESIGNED FOR RESULTS, ENGINEERED FOR PERFORMANCE

Not just concerned with results, *Titan2* Filters are designed and produced with exceptional features that assure un-interrupted performance. sun sri has addressed the most common problems experienced with syringe filters and not only solved these issues, but guarantees *Titan2* performance, without exception.

- Pressure Rated to 90 psi for Unsurpassed Integrity
- Sealing Ring Minimizes Bursting and Leakage
- Chemically Resistant Polypropylene Housings

TITAN2 ...The Logical Step in Obtaining Superior Results.



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titan2 SYRINGE FILTERS™

COLOR CODE ID SYSTEM

***Titan2's** color-code ID System permits easy identification of membrane type and porosity. Our unique sealing ring is coded for membrane type (i.e., Nylon, PTFE, PVDF, etc.) and porosity (i.e., 0.45µm, 0.2µm, 5.0µm, etc.) for instant visual verification. The Titan System goes beyond the filter itself and includes our re-usable, rigid, transparent, color-coded containers. Now maintain a proper inventory of the filter you need at a moments glance.*

Titan2 Dissolution Testing Syringe Filters

Regulatory requirements demand that validated methods be robust and rugged to withstand operator dependent procedures and product variability. Titan Filters assure consistency and reproducibility with the strict quality assurance production methodology of sun sri.

Titan2 FILTERS ARE QUALITY MONITORED FOR:

- Low UV Extractable for Superior Results in Spectrophotometric or HPLC Procedures
- All Critical Filter Specifications are Tested and Confirmed... Bubble Point, Burst Pressure, Membrane Retention/Exclusion, Flow Rate, UV Extractables
- Retention Samples Kept for Six Months on All Lot Production Permits sun sri to Validate and Assist in Solving YOUR Problem
- Actual HPLC Performance and Reproducibility Validation by a Standard Test Mixture Run.

Transp. Blue PTFE 0.20µm

Light Brown Reg. Cellulose 0.45µm

Dark Brown PTFE 5.0µm

Amber Glass Microfibre 0.7µm

Navy Blue PTFE 1.0µm

Royal Blue Polypropylene 0.45µm

Orange-Yellow Polysulfone 0.45µm

Opaque Med. Yellow Nylon 1.2µm

Transp. Yellow PTFE 0.45µm

Transp. Green Nylon 0.45µm

Light Green Cellulose Acetate 0.20µm

Pink Nylon 5.0µm

Light Purple Nylon 0.20µm

Dark Purple Glass Microfiber 3.1µm

Transp. Orange Cellulose Acetate 0.45µm

Orange Glass Microfiber 1.2µm

BLACK PVDF 0.2µm

Dk. Gray Polysulfone 0.20µm

Red PVDF 0.45µm

White Nylon 0.45µm no prefilter

Granite Reg. Cellulose 0.20µm

titan2
SYRINGE FILTERS

Nylon Syringe Filters

Membrane of Choice for Analytical Applications

- Naturally hydrophilic with broad chemical resistance
- Excellent flow rates and high throughput loading
- Standard 1µm prefilter (30mm) for optimal performance with particulate-laden analytes
- Certified for chromatographic performance with an actual HPLC analytical standards run

Titan2 Nylon Syringe Filters offer universal application for analytical procedures. Hydrophillic Nylon is extremely well suited for aqueous or organic sample prep and HPLC, GC or dissolution sample analysis. Due to its excellent flow characteristics and mechanical stability, Nylon offers the best combination of physical parameters to meet the most stringent analytical needs.

Specifications:

Membrane: HPLC Certified Nylon

Housing: Medical Grade, Virgin Polypropylene

Prefilter: Binder Free Glass Microfiber

Connections: Enhanced Female Luer-Lok Inlet
Male Slip Outlet

Max. Operating Temp.	100°C
Max. Operating Pressure:	4mm - 75 psi
	17mm - 115 psi
	30mm – 90 psi
Retention Volumes:	4mm - <15 µL
	17mm – <29 µL
	30mm – <137 µL

Autoclave: Sterilize by dry heat at 121°C for 15 min.

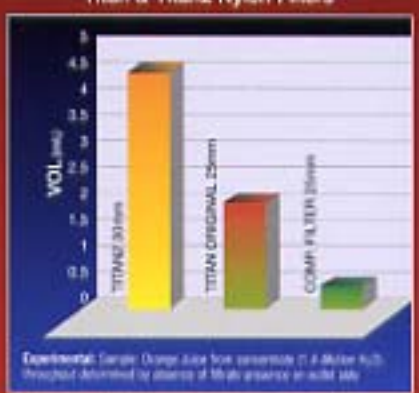
Applications:
HPLC and GC Sample Prep and clean up
Dissolution Sample Analysis
General Sample Prep prior to Analytical Analysis
Mixed sample matrix of aqueous or organic dissolved analytes.

Chemical Incompatibilities:
Acids >1N
Halogenated solvents
Proteineous Samples with high non-specific binding affinities

ORDERING INFORMATION

Identifying Color Code	Porosity	Std 1µm Prefilter	Catalog Number	Recommended Sample Vol.	Qty
4mm					
LT. PURPLE	0.20µm	N	42204-NN	<2mL	100/pkg
TRANSP. GREEN	0.45µm	N	44504-NN	<2mL	100/pkg
17mm					
LT. PURPLE	0.20µm	N	42213-NN	<30mL	200/pkg
TRANSP. GREEN	0.45µm	N	44513-NN	<30mL	200/pkg
30mm					
LT. PURPLE	0.20µm	Y	42225-NN	<150mL	100/pkg
	0.20µm	Y	42225-NC	<150mL	500/cs
TRANSP. GREEN	0.45µm	Y	44525-NN	<150mL	100/pkg
	0.45µm	Y	44525-NC	<150mL	500/cs
WHITE	0.45µm	N	44526-NN	<100mL	100/pkg
OPAQUE MED. YELLOW	1.2µm	N	41225-NN	<100mL	100/pkg
PINK	5.0µm	N	45025-NN	<100mL	100/pkg

Throughput Volume Comparison-
Titan & Titan2 Nylon Filters



Titan2 offers a considerable enhancement to throughput volume with our new filter improvements compared to our first generation Titan syringe filters. Although our original, pre-filtered Titan Syringe Filters were already an optimal choice over competitive filters, our new *Titan2* Syringe Filters bring throughput value differences to an even greater level.

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Titan2 SYRINGE FILTERS

PTFE Syringe Filters

Excellent chemical resistance for use with organic matrices

- Standard 1µm prefilter (30mm) for optimal performance with particulate-laden samples
- Naturally hydrophobic membrane provides excellent flow rates and high loading
- Certified for chromatographic performance with an actual HPLC analytical standards run
- Exceptional temperature stability provides extended sampling range over other membranes

Titan2 PTFE Syringe Filters are indicated for filtration of gaseous or organic solvent based samples. The natural hydrophobic membrane exhibits broad chemical resistance and unsurpassed temperature stability to address aggressive sample matrixes and extreme temperature situations. Due to the membranes hydrophobic nature, PTFE filters can be utilized as a moisture barrier in venting applications.

Specifications:

Membrane: HPLC Certified Certified PTFE, w/polypropylene support

Housing: Medical Grade, Virgin Polypropylene

Prefilter: Binder Free Glass Microfiber Prefilter

Connections: Enhanced Female Luer-Lok Inlet
Male Luer Slip Outlet

Max. Operating Temp.	100°C
Max. Operating Pressure:	4mm - 75 psi
	17mm - 115 psi
	30mm - 90 psi
Retention Volumes:	4mm - <15 µL
	17mm – <29 µL
	30mm – <137 µL

Autoclave: Sterilize by dry heat at 121°C for 15 min.

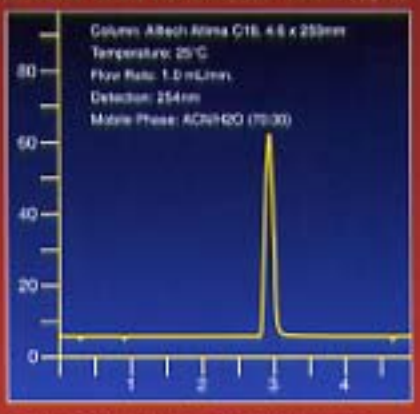
Applications:
HPLC and GC Sample Prep and clean up
Dissolution Sample Analysis-HCl media based
General Sample Prep prior to Analytical Analysis
Elevated temperature samples, caustic or acidic solutions

Chemical Incompatibilities:
Perchloric Acid
Methylene Chloride (limited exposure)
Dioxane, DMF, Formic Acid >50%
Aqueous based sample matrix (unless filter is pre-wetted with an alcohol)

ORDERING INFORMATION

Identifying Color Code	Porosity	Std 1µm Prefilter	Catalog Number	Recommended Sample Vol.	Qty
4mm					
	0.20µm	N	42204-NP	<2mL	100/pkg
	0.45µm	N	44504-NP	<2mL	100/pkg
17mm					
	0.20µm	N	42213-NP	<30mL	200/pkg
	0.45µm	N	44513-NP	<30mL	200/pkg
30mm					
	0.20µm	Y	42225-NNP	<150mL	100/pkg
	0.20µm	Y	42225-NPC	<150mL	500/cs
	0.45µm	Y	44525-NP	<150mL	100/pkg
	0.45µm	Y	44525-PC	<150mL	500/cs
ROYAL BLUE	1.0µm	N	41025-NP	<100mL	100/pkg
OX BROWN	5.0µm	N	45025-NP	<100mL	100/pkg

Validated HPLC Performance- Caffeine (4µg/mL)



Only *Titan2* Filters are validated for HPLC performance and reproducibility by an actual HPLC standards run. Each lot is quality monitored for retention time, peak area, and peak shape of our NIST traceable, caffeine standard. This assures you of outstanding performance, reproducibility and zero extractable run conditions. No other filter is scrutinized under actual run conditions like *Titan2*.

titan2
SYRINGE FILTERS

PVDF Syringe Filters

Low non-specific binding with exceptional chemical resistance

- Standard 1µm prefilter (30mm) for optimal performance with particulate-laden samples
- Hydrophilic membrane provides excellent flow rates and low binding coefficients
- Certified for chromatographic performance with an actual HPLC analytical standards run
- Compatible with a wide range of aqueous and organic based sample environments

Specifications:

Membrane: HPLC Certified PVDF
Housing: Medical Grade, Virgin Polypropylene
Prefilter: Binder-Free Glass Microfiber Prefilter

Connections: Enhanced Female Luer-Lok Inlet
Male Luer Slip Outlet

Autoclave: Sterilize by dry heat at 121°C for 15 min.

Max. Operating Temp. 100°C
Max. Operating Pressure: 4mm - 75 psi
17mm - 115 psi
30mm – 90 psi

Retention Volumes: 4mm - <15 µL
17mm – <29 µL
30mm – <137 µL

Applications:
HPLC and GC Sample Prep and clean up
Protein based samples with high non-specific binding

Chemical Incompatibilities:
DMF, DMSO, MEK, Acetone and most caustic solutions >6N

ORDERING INFORMATION

Identifying Color Code	Porosity	Std 1µm Prefilter	Catalog Number	Recommended Sample Vol.	Qty
4mm					
BLACK	0.20µm	N	42204-PV	<2mL	100/pkg
RED	0.45µm	N	44504-PV	<2mL	100/pkg
17mm					
BLACK	0.20µm	Y	42213-PV	<30mL	200/pkg
RED	0.45µm	N	44513-PV	<30mL	200/pkg
30mm					
BLACK	0.20µm	Y	42225-PV	<150mL	100/pkg
RED	0.45µm	N	44525-PV	<150mL	100/pkg

*Please go to page 11 for full information about our **All-Plastic Disposable Syringes***

Glass Microfiber (GMF) Syringe Filters

Low extractable, 100% binder-free, borosilicate glass filter for dissolution analysis

- Increased sample throughput with 1.2 µm and 3.1 µm porosity filters
- Excellent for use with viscous or particle laden samples coupled with broad range chemical compatibility

Specifications:

Membrane: Binder-free glass microfiber
Housing: Medical Grade, Virgin Polypropylene
Connections: Enhanced Female Luer-Lok Inlet
Male Luer Slip Outlet

Max. Operating Temp. 110°C
Max. Operating Pressure: 30mm - 90 psi
Retention Volumes: 30mm - <137 µL

Applications:
Viscous or particle laden samples, Dissolution testing

Chemical Incompatibilities:
Limited resistance with Ammonium, Potassium, and Sodium Hydroxide Solutions

ORDERING INFORMATION

Identifying Color Code	Porosity	Catalog Number	Recommended Sample Vol.	Qty
30mm				
AMBER	0.70µm	40725-GM	<150mL	100/pkg
ORANGE	1.20µm	41225-GM	<175mL	100/pkg
DK PURPLE	3.10µm	42725-GM	<175mL	100/pkg

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SYRINGE FILTERS

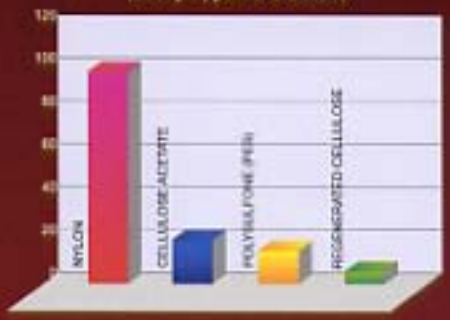
Regenerated Cellulose Syringe Filters

Superior chemical resistance optimized for biological sample recoveries

- Hydrophilic membrane provides excellent flow rates and extremely, low binding coefficients
- Superior choice for biological assays, gel capsule dissolution testing, protein sample matrixes
- Compatible with a wide range of aqueous and organic based sample environments
- Certified for chromatographic performance with an actual HPLC analytical standards run

Titan2 Regenerated Cellulose Syringe Filters are ideally suited for almost any laboratory procedure from HPLC sample prep to dissolution sample validation. Regenerated Cellulose possesses superior chemical resistance in either aqueous or organic sample environments. Its extremely low biological based binding coefficient is ideally suited for maximum sample recoveries of biological based assays. Regenerated Cellulose contains no binders, surfactants or wetting agents to assure zero extractables in analytical procedures.

BINDING CHARACTERISTICS of VARIOUS MEMBRANES
(Binding in µg/cm² of G-Globulin)



Specifications:

Membrane: HPLC Certified Regenerated Cellulose

Housing: Medical Grade, Virgin Polypropylene

Protein Binding: <5µg/cm²

Connections: Enhanced Female Luer-Lok Inlet
Male Luer Slip Outlet

Autoclave: Sterilize by dry heat at 121°C for 15 min

Max. Operating Temp.	100°C
Max. Operating Pressure:	4mm - 75 psi
	17mm - 115 psi
	30mm - 90 psi
Retention Volumes:	4mm - <15 µL
	17mm - <29 µL
	30mm - <137 µL

Applications:
HPLC and GC Sample Prep and clean up
Dissolution sample assays, especially high binding tablets or capsules
Protein based samples with high non-specific binding
Sample analysis with required maximum recoveries
Analysis requiring low non specific binding over a wide pH range

Chemical Incompatibilities:
Sulfuric Acid, Hydrochloric Acid, Phosphoric Acid or Nitric Acid >25%, DMF, Phenol

ORDERING INFORMATION

Identifying Color Code	Porosity	Std 1µm Prefilter	Catalog Number	Recommended Sample Vol.	Qty
4mm					
WHITE	0.20µm	N	52204-RC	<2mL	100/pkg
LIGHT BROWN	0.45µm	N	54504-RC	<2mL	100/pkg
17mm					
WHITE	0.20µm	Y	52213-RC	<30mL	200/pkg
LIGHT BROWN	0.45µm	N	54513-RC	<30mL	200/pkg
30mm					
WHITE	0.20µm	Y	52225-RC	<150mL	100/pkg
LIGHT BROWN	0.45µm	N	54525-RC	<150mL	100/pkg

titan2 SYRINGE FILTERS

PES Syringe Filters - Ion Chromatography Certified

Precise results in sensitive analysis of ionic analytes

- Certified for low level IC interference by ICP analysis
- Hydrophilic membrane provides excellent flow rates and low binding coefficients
- Low affinity for binding drugs; ideal dissolution testing procedures

Specifications:

Membrane: ICP Certified PES (PolyEtherSulfone)
Housing: Medical Grade, Virgin Polypropylene

Connections: Enhanced Female Luer-Lok Inlet
Male Slip Outlet

Max. Operating Temp. 100°C
Max. Operating Pressure: 4mm - 75 psi
17mm - 115 psi
30mm - 90 psi

Retention Volumes: 4mm - <15 µL
17mm - <29 µL
30mm - <137 µL

Autoclave: Sterilize by dry heat at 121°C for 15 min.

Applications:

IC (ion chromatography) sample prep & analysis
Dissolution testing
Protein based sample in aqueous solutions

Chemical Incompatibilities:

Concentrated Acids, MeCl, Chloroform, Hexane, Acetone, MEK, THF, DMSO

ORDERING INFORMATION

Identifying Color Code	Porosity	Std 1µm Prefilter	Catalog Number	Recommended Sample Vol.	Qty
17mm					
DARK GRAY	0.20µm	N	42213-PS	<2mL	200/pkg
ORANGE YELLOW	0.45µm	N	44513-PS	<2mL	200/pkg
30mm					
DARK GRAY	0.20µm	Y	42225-PS	<30mL	100/pkg
ORANGE YELLOW	0.45µm	N	44525-PS	<30mL	100/pkg

Analyte	Method Detection Limit (ppb)	Analysis Results (ppb)	
		0.2u PES	0.45u PES
Bromide	<100	< MDL	< MDL
Chloride	20	< MDL	< MDL
Fluoride	20	< MDL	< MDL
Nitrate as N	50	< MDL	< MDL
Orthophosphate as P	<100	< MDL	< MDL
Sulfate	<100	< MDL	< MDL
Barium	2	< MDL	< MDL
Calcium	10	39.9	38.9
Potassium	50	80	79
Magnesium	20	< MDL	< MDL
Sodium	20	80.6	82

Polypropylene Syringe Filters

Chemically resistive membrane with low protein binding

- Hydrophilic membrane for aqueous or organic sample matrixes
- Use with protein or peptide based assays

Specifications:

Membrane: Hydrophilic Polypropylene
Housing: Medical Grade, Virgin Polypropylene

Connections: Enhanced Female Luer-Lok Inlet
Male Slip Outlet

Max. Operating Temp. 110°C
Max. Operating Pressure: 17mm - 115 psi
30mm - 90 psi

Retention Volumes: 17mm - <29 µL
30mm - <137 µL

Applications:

Protein or peptide based assays, general HPLC analysis

Chemical Incompatibilities:

Hexane, Toluene, Benzene, limited resistance to MeCl and Chloroform

ORDERING INFORMATION

Identifying Color Code	Porosity	Catalog Number	Recommended Sample Vol.	Qty
17mm				
ROYAL BLUE	0.20µm	42213-PP	<30mL	200/pkg
WHITE	0.45µm	44513-PP	<30mL	200/pkg
30mm				
ROYAL BLUE	0.20µm	42225-PP	<150mL	100/pkg
WHITE	0.45µm	44525-PP	<150mL	100/pkg

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TITAN2
SYRINGE FILTERS

Cellulose Acetate Syringe Filters

For filtering of aqueous solutions or biological samples

- Hydrophilic membrane provides excellent flow rates and extremely low testing, protein binding coefficients
- Superior choice for biological assays, gel capsule dissolution testing, protein sample matrices
- Certified for chromatographic performance with an actual HPLC analytical standards run

Specifications:

Membrane: HPLC Certified Cellulose Acetate
Housing: Medical Grade, Virgin Polypropylene
Protein Binding: <24µg/cm²

Connections: Enhanced Female Luer-Lok Inlet
Male Luer Slip Outlet

Autoclave: Sterilize by dry heat at 121°C for 15 min.

Max. Operating Temp. 110°C
Max. Operating Pressure: 4mm - 75 psi
17mm - 115 psi
30mm – 90 psi

Retention Volumes: 4mm - <15 µL
17mm – <29 µL
30mm – <137 µL

Applications:
Protein based samples with high non-specific binding
Sample analysis with required maximum recoveries

Chemical Incompatibilities:
Acids, NaOH, Dichloromethane, Chloroform, Ketones, DMSO, THF

ORDERING INFORMATION

Identifying Color Code	Porosity	Catalog Number	Recommended Sample Vol.	Qty
4mm				
	0.20µm	42204-CA	<2mL	100/pkg
	0.45µm	44504-CA	<2mL	100/pkg
17mm				
	0.20µm	42213-CA	<30mL	200/pkg
	0.45µm	44513-CA	<30mL	200/pkg
30mm				
	0.20µm	42225-CA	<150mL	100/pkg
	0.45µm	44525-CA	<150mL	100/pkg

Titan-MSF™

Microsample, centrifuge filters for rapid particulate removal

- Filter multiple samples simultaneously
- Low extractable device with maximum sample recoveries
- Compatible with a wide range of aqueous and organic based sample environments

Titan MSF microsample filters permit rapid removal of particulates with minimized sample retention (5µL) for efficient sample prep prior to analytical techniques. Using a microcentrifuge, the Titan MSF can process volumes from 200µL to 750µL. The unit is ideal for viscous, colloidal or high solids samples. Units include sample chamber and receiver tube and will fit rotors that accept 1.5 to 2.0mL tubes.

Specifications:

Membrane: HPLC Certified Nylon & PTFE
Housing: Medical Grade, Virgin Polypropylene
Retention Volume: <5uL

Max. Operating RDF: 10,000 x g
Dimensions: 44.7mm (fully assembled w/cap)
Max Operating Temp: 80°C

Applications:
Small volume sample runs for rapid cleanup
HPLC sample prep, viscous sample matrixes
Removal of precipitates

ORDERING INFORMATION

Membrane Type	Porosity	Catalog Number	Recommended Sample Vol.	Qty
Nylon	0.20µm	62215-NN	200µL to 750µL	100/pkg
Nylon	0.45µm	64515-NN	200µL to 750µL	100/pkg
PTFE	0.20µm	62215-NP	200µL to 750µL	100/pkg
PTFE	0.45µm	64515-NP	200µL to 750µL	100/pkg

Hot Shot™ from CHROMAN

Power Filtration System

Optimized speed, power and efficiency in filtration procedures

- Applies three times greater force compared to manual filtration methods
- Samples that are difficult to filter manually are now easily processed
- Speeds filtration applications compared to manual method, perfect for processing multiple samples
- Certified for chromatographic performance with an actual HPLC analytical standards run

Laboratory tested and proven

Hot Shot has been laboratory tested by an independent engineering firm to confirm the force and speed advantage the ***Hot Shot System*** produces compared to manual filtration with a syringe. ***Hot Shot*** was found to produce the following results:

1. Force applied advantage of 3.009 over manually applied pressure
2. $P_{HotShot}$ = 87 psi vs. P_{manual} = 25 psi (5 mL syringe)
3. Elapsed time to fully empty, >6x for test solutions (10mL cartridge)

A unique system approach, but easy to operate;

The ***Hot Shot*** system is built around the permanent filter processor and utilizes disposable filter cartridges, which come preassembled with a 30mm filter attached to either a 5mL or 10mL sample reservoir. Simple to operate, the user fills the preassembled filter cartridge then applies the piston cap. The reservoir piston cap and filter are disposable to eliminate cross contamination between samples. The filled cartridge is then attached to the processor and the trigger is depressed to filter the sample. The units' built-in safety features release the cartridge before the pressure rating of the filter unit is exceeded. The result is no filter bursting or filter "blow-off". The user and lab work area are protected from contamination by sample leakage from over-pressurized filters. Multiple samples are processed quickly without causing user fatigue.

Cartridge Type and Size	Porosity	Catalog No.	Qty
Nylon			
5mL	0.20µm	52205-HN	50/pkg
5mL	0.45µm	54505-HN	50/pkg
10mL	0.20µm	52210-HN	40/pkg
10mL	0.45µm	54510-HN	40/pkg
PTFE			
5mL	0.20µm	52205-HP	50/pkg
5mL	0.45µm	54505-HP	50/pkg
10mL	0.20µm	52210-HP	40/pkg
10mL	0.45µm	54510-HP	40/pkg
Filter Processors			
For 5mL Cartridges	—	59440-HS	1 Ea
For 10mL Cartridges	—	59441-HS	1 Ea

Intro-Pac Special

Includes one package of 0.45µm Nylon and PTFE cartridges plus one Hot Shot Filter Processor

59440-HSP
5mL Hot Shot Intro Pac Kit

59441-HSP
10mL Hot Shot Intro Pac Kit