



Discover our Purification Solutions



Simplify your purification, maximize your efficiency!

Santai Science Inc.

Introduction

Introduction

Welcome to “Discover Our Purification Solutions”, your comprehensive guide to Santai Science’s advanced chromatography technologies. This catalog showcases our innovative flash chromatography systems, high-performance columns, empty column solutions, bulk media, and TLC plates, all designed to enhance purification efficiency and reliability.

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Explore the Santai Science Portfolio



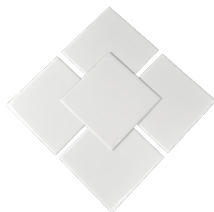
Explore the Santai Science Portfolio

At Santai Science, we take pride in offering a diverse portfolio of advanced separation and purification solutions tailored to meet the evolving needs of scientists and professionals worldwide. From innovative chromatography systems to high-performance consumables, our products are designed to deliver precision, efficiency, and reliability. Browse below to discover how our cutting-edge technologies can empower your research and applications.

SepaBean™ machines & SepaFlash™ Columns

Product Line	SepaBean™ machines	SepaFlash™ FP LT-ELSD	SepaFlash™ Columns
Picture			
Description	<p>SepaBean™ machines deliver efficient and user-friendly flash chromatography solutions for diverse applications.</p> <p>Available Models:</p> <ul style="list-style-type: none"> • SepaBean™ machine U • SepaBean™ machine T • SepaBean™ machine • SepaBean™ machine 2 • SepaBean™ machine L 	<p>The SepaFlash™ FP LT-ELSD is a low-temperature evaporative light scattering detector, ideal for non-chromophoric analytes like carbohydrates, lipids, and polymers. It ensures high sensitivity, low noise, and optimal detection of thermally unstable compounds, compatible with all SepaBean™ models.</p>	<p>SepaFlash™ columns deliver precise, durable, and efficient purification for diverse chromatography applications.</p> <p>Available Series:</p> <ul style="list-style-type: none"> • SepaFlash™ Standard • SepaFlash™ Large Size • SepaFlash™ HP, Bio & Bonded • SepaFlash™ iLOK™ & iLOK™-SL • SepaFlash™ iLOK™ Large-Size

Other SepaFlash™ Products

Product Line	SepaFlash™ Ultra-Pure Bare Silica Gels	SepaFlash™ Ultra-Pure Bonded Silica Gels	SepaFlash™ TLC Plates
Picture			
Description	<p>SepaFlash™ Ultra-Pure bare silica gels in bulk provide high-quality phases for chromatography, available in both irregular and spherical shapes.</p> <p>With particle sizes ranging from 10 µm to 200 µm and pore diameters from 50 Å to 300 Å, these silicas meet diverse application needs. They are offered in convenient 1 kg, and 25 kg containers.</p>	<p>SepaFlash™ Ultra-Pure bonded silica gels offer versatile chromatography solutions in irregular or spherical shapes, with particle sizes from 10 µm to 40 - 75 µm and pore diameters of 50 Å to 300 Å.</p> <p>Available in reversed phase, normal phase, ion-exchange, HILIC, and alumina phases.</p>	<p>SepaFlash™ TLC plates are manufactured with high-quality media to match the sorbents in SepaFlash™ flash columns. This alignment ensures greater reproducibility in method development.</p> <p>Available with aluminum and glass backings, these plates come in a wide range of sizes from 2.5 x 7.5 cm to 20 x 20 cm, supporting both analytical and preparative chromatography needs.</p>



About Santai

Discover Santai Technologies

Founded in 2004, Santai Technologies is a leading technology company dedicated to advancing separation and purification tools. With over 20 years of expertise, we have become a trusted partner for professionals and scientists across the pharmaceutical, biotechnology, fine chemicals, natural products, and petrochemical industries.

Santai is renowned worldwide for its outstanding flash chromatography instruments and consumables, setting new benchmarks for efficiency, precision, and reliability in the global market.



SANTAI

Santai: 20 Years of Innovation in Chromatography

For two decades, Santai has been a leader in chromatography innovation, providing for scientists worldwide. With our advanced SepaBean™ machines and SepaFlash™ innovation and quality, continually empowering researchers with more effective pur

Santai Technologies was founded to develop separation and chromatography solutions.



2004

2005

The SepaFlash™ HP Series has been launched, offering enhanced pressure resistance.



2009

2013

The SepaFlash™ and SepaFlash™ have been launched.



2015



The SepaFlash™ Standard Series was launched, leveraging proprietary packing technology for enhanced performance.



The SepaFlash™ iLOK™ has been launched, providing the convenience of manual assembly and flexible sample loading options.



Santai was recognized as "High-tech Enterprise".

The SepaBean™ was launched, providing advanced chromatography networking capabilities.



About Santai Science

Established in 2018 as a sister company of Santai Technologies, Santai Science is headquartered in Montreal, Canada. Its core mission centers on the commercialization of cutting-edge separation and purification tools, including product demonstrations and specialized services.

Santai Science also plays a vital role in providing customer training, delivering technical support, and managing order processing and shipment directly from its Montreal office.

Our Extensive Global Reach

Santai operates and maintains warehousing services across America, Asia, India, and Europe. This strategic global presence ensures that our products and services are readily accessible and efficiently delivered to clients around the world.

cutting-edge solutions that streamline purification processes
columns enhancing efficiency, we remain committed to
purification technologies.



Standard Size 3 kg
Bonded Series
hed.



Santai Science was founded in
Canada, alongside the
iLOK™-SL flash column with
15 % free space for solid loading.



The iLOK™ Large Size empty
columns (800 g to 7 kg) were
launched, together with new
product lines like bulk silica gels
and TLC plates.



2016

2018

2021

2022

2024-2025

ise”
an™ machine was
as a unique flash
aphy system with
ilities and built-in
intelligence.



The SepaBean™ machine L was
launched, featuring large 5 kg and
10 kg flash columns designed for
the pilot-scale market.



The 2nd generation SepaBean™
machine is launching, offering
enhanced performance.





SepaBean™ Family

Discover our flash
chromatography
machines.



Simplify your purification, maximize your efficiency!

Santai Science Inc.

SepaBean™ machines - Redefining Flash Chromatography Excellence

Tailored Solutions for Every Laboratory and Scale-Up Need

Santai Science's SepaBean™ machines are designed to provide unparalleled flexibility, reliability, and precision for all purification tasks. Whether you are developing methods in the lab or scaling up for production, these systems deliver performance and ease of use at every step.

Key Features

Flexible Flow Rate Options

Ranging from 1 mL/min to 1,000 mL/min to handle a variety of applications.

Robust Pressure Capabilities

Supporting up to 1,450 psi (99.9 bar), for even the most demanding separations.

Versatile Column Compatibility

From 4 g to 10 kg, ensuring adaptability for both small and large-scale operations.

Wireless Control

With iPad® integration and flexible wireless control, the system offers enhanced convenience and mobility, making it ideal for light-sensitive separation experiments or operations within isolators.

Comprehensive Detection Options

Including 200 - 400 or 200 - 800 nm UV, UV/Vis, and optional ELSD, to cover a wide range of compounds.

Innovation You Can Trust

With over two decades of expertise in chromatography, Santai Science delivers cutting-edge technology in every SepaBean™ machine. Designed for simplicity and efficiency, these systems empower researchers to achieve superior results while saving time and resources.



Overview Design of SepaBean™ machines

Power failure recovery



The software's power-off recovery feature minimizes losses from unexpected power failures.

Binary gradient with two or four lines with real-time monitoring of solvent level

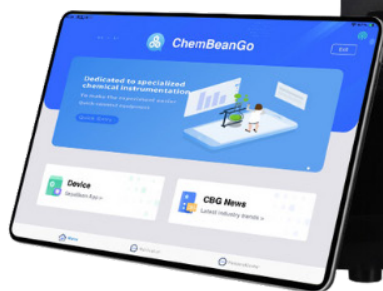
Emergency stop button for extra safety protection

Online full wavelength scanning

Built-in automatic fraction collector



Tube racks with an LCD display enable easy fraction monitoring.



Built-in feature of separation method recommendation



The software's database recommends optimal separation methods, boosting efficiency.

21-CFR Part 11 compliance



The FDA-compliant software (21-CFR Part 11) ensures suitability for pharmaceutical R&D and laboratories.

Local network data sharing



Instruments network locally for seamless data sharing and resource optimization.



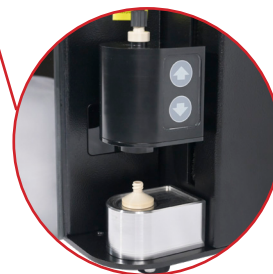
Built-in air pump to purge the residual solvents



Auxiliary column holder



Smart column holder for easy operation



The touchpad-equipped holder auto-secures flash columns for ease of use.



Simplifying Method Development

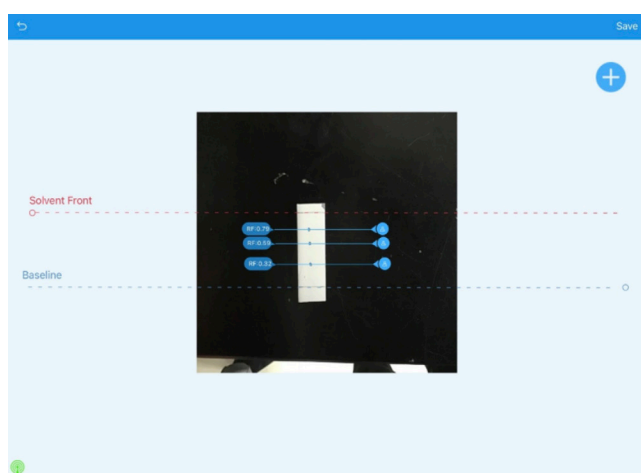
TLC-to-Gradient

The SepaBean™ machine's control software now includes a powerful TLC-to-Gradient feature, streamlining the entire sample preparation process. By simply inputting TLC data and sample loading amounts, the software automatically recommends the appropriate flash column and generates an optimized elution gradient. This innovation significantly accelerates workflows and enhances overall efficiency.

Step 1: TLC Rf Values

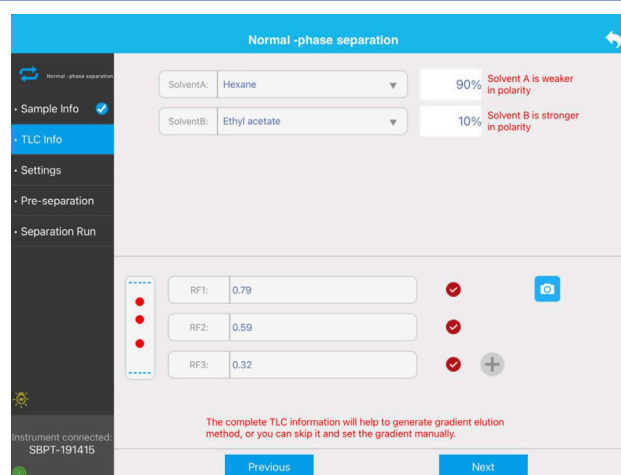
Method 1: Using a Picture of the TLC

Click the camera icon to capture or select an image for Rf values. Adjust the solvent front and baseline manually. Selecting an Rf value auto-generates a gradient curve, or configure it manually.



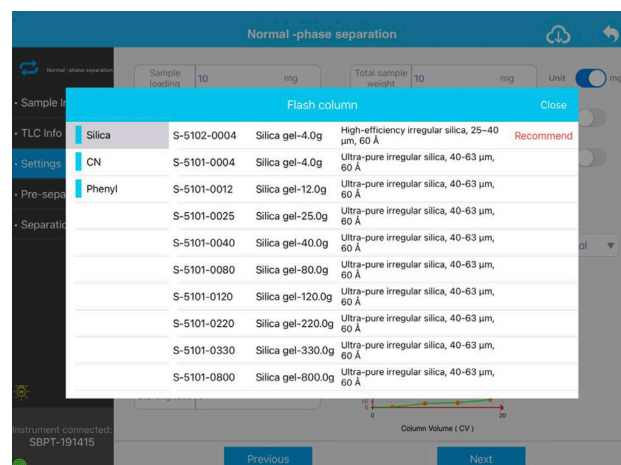
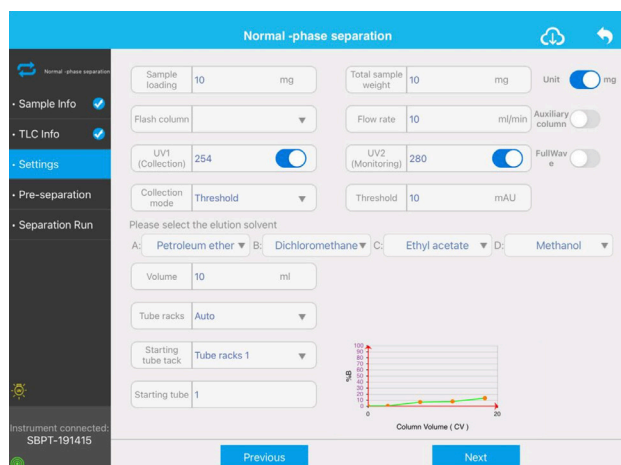
Method 2: Input Manually the Rf Values

Enter Rf values for target or impurities; the TLC graphic updates accordingly.



Step 2: Chromatography Run

In the settings tab, input key parameters for Flash method development. The software suggests a column based on sample weight or allows manual selection. Click the arrow to view recommendations and available columns.



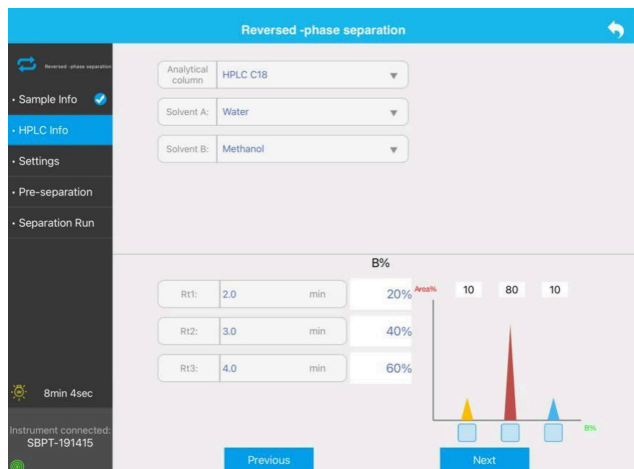
HPLC-to-Gradient

High-performance liquid chromatography (HPLC) depends on precise elution gradients for accurate separation. Modern systems now automate gradient design by leveraging HPLC analysis data to recommend an optimized flash chromatography method as a starting point.

Step 1:

Enter the Analytical HPLC Data

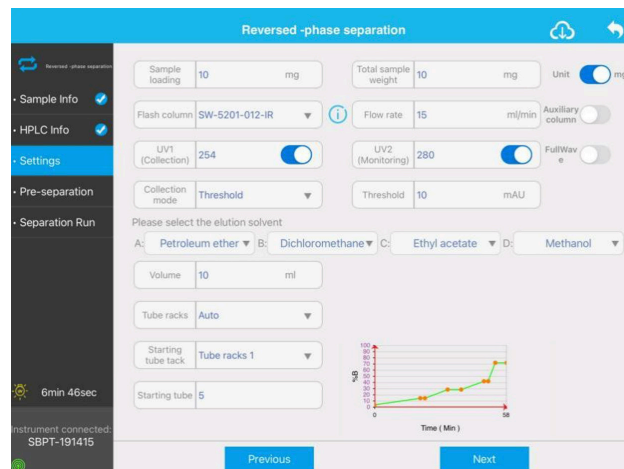
Enter the analytical HPLC data, including the sample retention time, the percentage of Solvent B at the elution point of a specific component, and the peak areas of both the target product and primary impurities.



Step 2:

Recommended Flash Chromatography Method

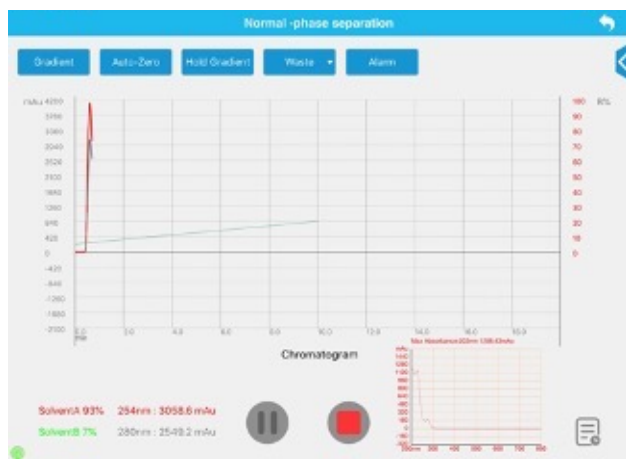
The system will automatically generate the appropriate elution gradient based on this information.



DAD Online Full-Wavelength Scanning

Enables Effortless Identification of the Optimal Detection Wavelength

The real-time display of the full wavelength spectrum helps users easily identify the optimal absorption wavelength for their sample, enhancing detection sensitivity while minimizing sample loss during analysis.



Santai Science Worry-Free Package



Our Promise

Maximize uptime, reduce costs, and enjoy peace of mind with our comprehensive **Worry-Free Package** service (service number #SSSWF01) and support plan.

Key Features

Flexibility in Enrollment

Add the **Worry-Free Package** when you purchase your SepaBean™ machine or at any point afterwards.

Choose From Two Options

A 3-year or 5-year worry-free package tailored to your needs. Plus, benefit from 4 fully covered returns per year within Canada or 2 fully covered returns per year for the USA, courtesy of Santai Science.

No-Cost Repairs or Replacements

If your equipment isn't functioning properly, send it back at our expense for a prompt repair or a free replacement.

Genuine Repairs by Experts

When you choose this option, our expert engineers will restore your equipment using 100 % original manufacturer parts, ensuring top-quality performance.

Free Unlimited Technical Support and Training

Connect with our dedicated team anytime via email or phone for expert troubleshooting, guidance, and personalized training to ensure seamless operation.

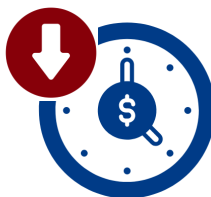


Beyond Standard Service Plans - A Dedicated Partner To Support You.



Stay on Budget

Unexpected repair costs are covered, keeping your budget intact no matter when issues arise.



Minimize Downtime

Keep your lab running seamlessly. With our **Worry-Free Package**, you can trust that repairs or replacements will be handled quickly and efficiently.



Peace of Mind

Use your machine knowing you're protected. Regardless of where your equipment is, our skilled engineers will handle the repairs.



Increase Productivity

Our service ensures minimal delays, so you can focus on your work without worrying about repair wait times.



What Sets the Santai Science Worry-Free Package Apart?

Comprehensive Benefits

❑ Cost Effective

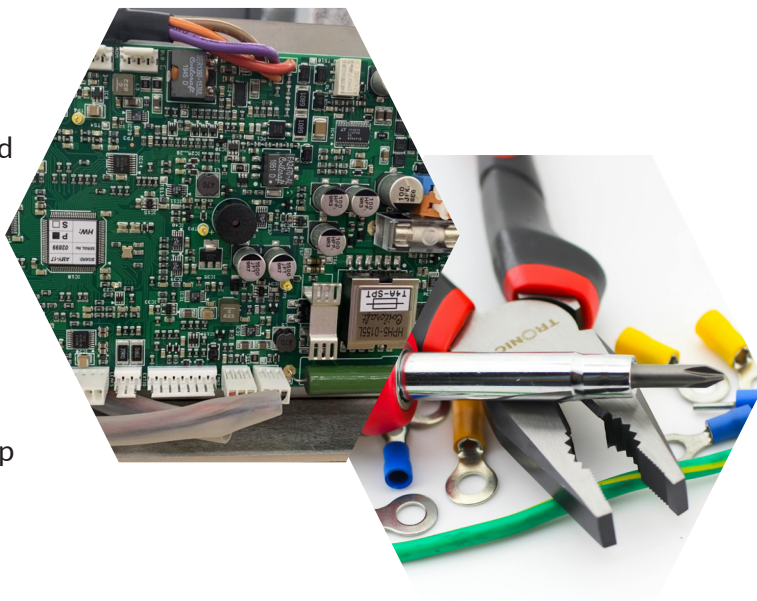
Save thousands by avoiding unexpected repair and replacement costs.

❑ Effortless Process

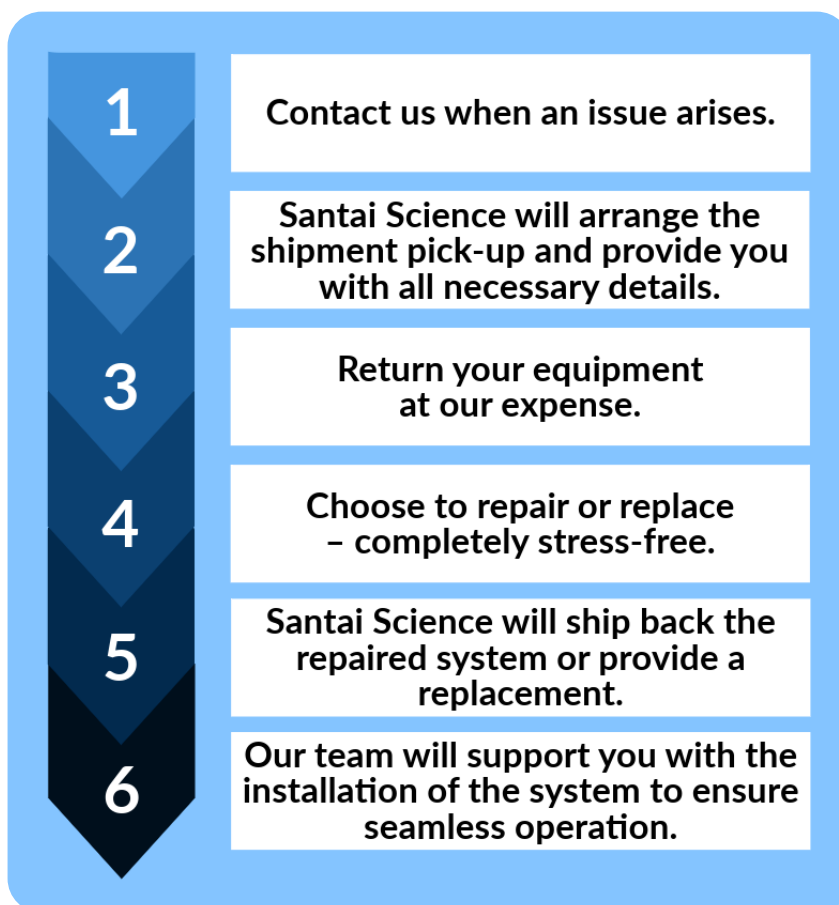
Return equipment at our expense for repairs or replacements - no logistical challenges.

❑ Reliable Support

Unlimited access to technical support ensures help is always a call away.



How It Works



**Don't Let Downtime Disrupt Your Research and
Protect Your Investment Today!**

Contact support@santaiscience.com to sign up or learn more about it.



SepaBean™ machine U

Product Overview

The SepaBean™ machine U, an entry-level model, offers an intuitive and versatile solution for chromatography with the full capabilities of SepaBean™ control software. Designed to handle everyday separation and purification tasks, this affordable system efficiently meets the demands of both normal and reversed phase separations, providing reliable performance for users of all experience levels.

Key Features




- ❑ **Cost Effective Solution**
Provides high-quality purification solutions within budget.
- ❑ **Wireless Control and Operation**
Allows remote control via mobile devices, ideal for light-sensitive or isolated experiments.
- ❑ **Easy Flash Method Development**
Optimizes and transfers separation conditions from HPLC and TLC for efficient, scalable purification.
- ❑ **Optional ELSD Detector**
Optional ELSD expands detection capabilities to cover a wider range of sample types, including non-UV-active compounds.

Equipment Specifications

Characteristics	Specifications
User Interface	4.3 inches screen (≈ 10 cm)
Control Device	Wireless operation through iPad®
Flow Rate Range	• Model U100: 1 - 100 mL/min • Model U200: 1 - 200 mL/min
Maximum Pressure	• Model U100: 100 psi (6.9 bar) • Model U200: 200 psi (13.8 bar)
Detectors	• DAD 200 - 400 nm UV Detector • DAD 200 - 800 nm UV/Vis Detector • ELSD Universal Detector (optional)
Spectral Display	Single, dual, or all-wavelengths
Pumping System	Maintenance free ceramic pump
Number of Solvents	Binary gradient, two (2) solvents
Gradient Types	Isocratic, linear, and step gradients
Column Sizes	4 g - 330 g, up to 1.6 kg with adapters
Sample Loading Capacity	4 mg - 160 g



Main Characteristics

	Model U100	Model U200
		
Maintenance Free Pump		
		
Two Solvent Lines		
	100	200
Maximum Flow Rate (mL/min) & Pressure Resistance (psi)		

Characteristics	Specifications
Air Pump Module	Included (to purge solvent residues)
Certification	CE
21-CFR Part 11 Compliance	The control software meets FDA requirements for system safety
Collection Module	LCD display for intelligent identification of test tube racks
Fraction Collection	All, waste, threshold, slope, or time
Fraction Collector	• 13, 15, 16, 18, or 25 mm tubes • French square 250 or 500 mL bottle or large collection bottle (optional)
Safety Configuration	Intelligent liquid and pressure alarm
Sample Injection	Liquid and solid sampling
Smart Column Holder	Suitable for 4 to 330 g flash columns
Dimensions (W x D x H)	44 x 46 x 54 cm (17.3 x 18.1 x 21.3 in)
Weight	30 kg (66 lbs)

SepaBean™ machine T

Product Overview

The SepaBean™ machine T, our best-selling model, offers all the features of the SepaBean™ App, including wireless control and operation. This cost-effective system features a four-line binary gradient that supports any two-solvent combination, with the option to add a third solvent as a modifier (up to 40 %). An optional ELSD detector is available to expand detection capabilities to a broader range of sample types.

Key Features

- Cost Effective Solution**
 Provides high-quality purification solutions within budget.
- Wireless Control and Operation**
 Allows remote control via mobile devices, ideal for light-sensitive or isolated experiments.
- Easy Flash Method Development**
 Optimizes and transfers separation conditions from HPLC and TLC for efficient, scalable purification.
- Optional ELSD Detector**
 Optional ELSD expands detection capabilities to cover a wider range of sample types, including non-UV-active compounds.



Main Characteristics



Maintenance Free Pump



Four Solvent Lines



200
Maximum Flow Rate (mL/min) & Pressure Resistance (psi)

Equipment Specifications

Characteristics	Specifications
User Interface	4.3 inches screen (≈ 10 cm)
Control Device	Wireless operation through iPad®
Flow Rate Range	1 - 200 mL/min
Maximum Pressure	200 psi (13.8 bar)
Detectors	<ul style="list-style-type: none"> • DAD 200 - 400 nm UV Detector • DAD 200 - 800 nm UV/Vis Detector • ELSD Universal Detector (optional)
Spectral Display	Single, dual, or all-wavelengths
Pumping System	Maintenance free ceramic pump
Number of Solvents	Four (4) solvents in binary mode with any combination of two (2) solvents, plus a third (3 rd) solvent as a modifier
Gradient Types	Isocratic, linear, and step gradients
Column Sizes	4 g - 330 g, up to 1.6 kg with adapters
Sample Loading Capacity	4 mg - 160 g

Characteristics	Specifications
Air Pump Module	Included (to purge solvent residues)
Certification	CE, cTUVus
21-CFR Part 11 Compliance	The control software meets FDA requirements for system safety
Collection Module	LCD display for intelligent identification of test tube racks
Fraction Collection	All, waste, threshold, slope, or time
Fraction Collector	<ul style="list-style-type: none"> • 13, 15, 16, 18, or 25 mm tubes • French square 250 or 500 mL bottle or large collection bottle (optional)
Safety Configuration	Intelligent liquid and pressure alarm
Sample Injection	Liquid and solid sampling
Smart Column Holder	Suitable for 4 to 330 g flash columns
Dimensions (W x D x H)	40 x 40 x 62 cm (15.7 x 15.7 x 24.4 in)
Weight	39.2 kg (86 lbs)



SepaBean™ machine 2

Product Overview

The SepaBean™ machine 2 is an advanced medium-pressure chromatography model with a higher flow rate of 300 mL/min and up to 500 psi (34.5 bar) backpressure tolerance. The system features a four-line binary gradient accommodating any two-solvent combination, with an option to add a third solvent as a modifier up to 40 %.

Key Features

- **Higher Flow Rate and Backpressure**
Achieves 300 mL/min flow rate and 500 psi (34.5 bar) for faster and tougher separations.
- **Wireless Control and Operation**
Allows remote control via mobile devices, ideal for light-sensitive or isolated experiments.
- **Easy Flash Method Development**
Optimizes and transfers separation conditions from HPLC and TLC for efficient, scalable purification.
- **Optional ELSD Detector**
Optional ELSD expands detection capabilities to cover a wider range of sample types, including non-UV-active compounds.

Equipment Specifications

Characteristics	Specifications
User Interface	4.3 inches screen (≈ 10 cm)
Control Device	Wireless operation through iPad®
Flow Rate Range	1 - 300 mL/min
Maximum Pressure	500 psi (34.5 bar)
Detectors	• DAD 200 - 400 nm UV Detector • DAD 200 - 800 nm UV/Vis Detector • ELSD Universal Detector (optional)
Spectral Display	Single, dual, or all-wavelengths
Pumping System	High accuracy dual-piston pump
Number of Solvents	Four (4) solvents binary with any combinations of two (2) solvents
Gradient Types	Isocratic, linear, and step gradients
Column Sizes	4 g - 330 g, up to 3 kg with adapters
Sample Loading Capacity	4 mg - 300 g



Main Characteristics



Dual-Piston Pump



Four Solvent Lines



Maximum Flow Rate (mL/min)



Pressure Resistance (psi)

Characteristics	Specifications
Air Pump Module	Included (to purge solvent residues)
Certification	CE
21-CFR Part 11 Compliance	The control software meets FDA requirements for system safety
Collection Module	LCD display for intelligent identification of test tube racks
Fraction Collection	All, waste, threshold, slope, or time
Fraction Collector	• 13, 15, 16, 18, or 25 mm tubes • French square 250 or 500 mL bottle or large collection bottle (optional)
Safety Configuration	Intelligent liquid and pressure alarm
Sample Injection	Liquid and solid sampling
Smart Column Holder	Suitable for 4 to 330 g flash columns
Dimensions (W x D x H)	44 x 46 x 63 cm (17.3 x 18.1 x 24.8 in)
Weight	48 kg (106 lbs)



SepaBean™ machine

Product Overview

The SepaBean™ machine, the standard version, offers all the features of the SepaBean™ App and the ChemBeanGo™ App, including wireless control and operation. This model features a four-line binary gradient that supports any two-solvent combination and enables high pressure mixing. An optional ELSD detector is available to enhance detection for a broader range of sample types.

Key Features

- **Standard Version with All Features**
Provides high-quality purification solutions with a high pressure mixing.
- **Wireless Control and Operation**
Allows remote control via mobile devices, ideal for light-sensitive or isolated experiments.
- **Easy Flash Method Development**
Optimizes and transfers separation conditions from HPLC and TLC for efficient, scalable purification.
- **Optional ELSD Detector**
Optional ELSD expands detection capabilities to cover a wider range of sample types, including non-UV-active compounds.

Equipment Specifications

Characteristics	Specifications
User Interface	4.3 inches screen (≈ 10 cm)
Control Device	Wireless operation through iPad®
Flow Rate Range	1 - 200 mL/min
Maximum Pressure	200 psi (13.8 bar)
Detectors	<ul style="list-style-type: none">• DAD 200 - 400 nm UV Detector• DAD 200 - 800 nm UV/Vis Detector• ELSD Universal Detector (optional)
Spectral Display	Single, dual, or all-wavelengths
Pumping System	Maintenance free ceramic pumps (x2)
Number of Solvents	Binary gradient, four (4) solvents with high pressure mixing
Gradient Types	Isocratic, linear, and step gradients
Column Sizes	4 g - 330 g, up to 3 kg with adapters
Sample Loading Capacity	4 mg - 300 g



Main Characteristics



Maintenance Free Pumps (x2)



Four Solvent Lines







Maximum Flow Rate (mL/min) & Pressure Resistance (psi)

Characteristics	Specifications
Air Pump Module	Included (to purge solvent residues)
Certification	CE
21-CFR Part 11 Compliance	The control software meets FDA requirements for system safety
Collection Module	LCD display for intelligent identification of test tube racks
Fraction Collection	All, waste, threshold, slope, or time
Fraction Collector	<ul style="list-style-type: none">• 13, 15, 16, 18, or 25 mm tubes• French square 250 or 500 mL bottle or large collection bottle (optional)
Safety Configuration	Intelligent liquid and pressure alarm
Sample Injection	Liquid and solid sampling
Smart Column Holder	Suitable for 4 to 330 g flash columns
Dimensions (W x D x H)	40 x 40 x 62 cm (15.7 x 15.7 x 24.4 in)
Weight	48 kg (106 lbs)



Comparison Chart of Small-Scale SepaBean™ machines

Characteristics	SepaBean™ machine U (Entry-level)	SepaBean™ machine T (Cost effective & best-seller)	SepaBean™ machine (Standard version)	SepaBean™ machine 2 (Medium pressure)
Model				
Description	Entry-level model designed to handle everyday separation and purification tasks.	Best-selling model, offering a highly cost-effective solution for efficient chromatography.	The standard version featuring a high pressure mixing.	Medium-pressure model with a flow rate up to 300 mL/min and 500 psi (34.5 bar) tolerance.
Control Device	4.3 inches screen (≈ 10 cm) with wireless operation through iPad®			
Flow Rate Range	● U100: 1 - 100 mL/min ● U200: 1 - 200 mL/min	1 - 200 mL/min		1 - 300 mL/min
Maximum Pressure	● U100: 100 psi (6.9 bar) ● U200: 200 psi (13.8 bar)	200 psi (13.8 bar)		500 psi (34.5 bar)
Detectors	● 254 nm fixed wavelength (other wavelengths in option) ● DAD 200 - 400 nm UV Detector ● DAD 200 - 800 nm UV/Vis Detector ● ELSD Universal Detector (optional)			
Spectral Display	Single, dual, or all-wavelengths (variable UV and UV-Vis)			
Pumping System	Maintenance free ceramic pump		Maintenance free ceramic pumps (2)	High accuracy dual-piston pump
Number of Solvents	Binary gradient, two (2) solvents	Four (4) solvents binary with any combinations of two (2) solvents, third (3 rd) solvent as modifier	Binary gradient, four (4) solvents with high pressure mixing	Four (4) solvents binary with any combinations of two (2) solvents, third (3 rd) solvent as modifier
Gradient Types	Isocratic, linear, and step gradients			
Column Sizes	4 g - 330 g, up to 1.6 kg with adapters		4 g - 330 g, up to 3 kg with adapters	
Sample Loading Capacity	4 mg - 160 g		4 mg - 300 g	
Air Pump Module	Included (to purge solvent residues)			
Certification	CE	CE, cTUVus	CE	
21-CFR Part 11 Compliance	The control software meets FDA requirements for system safety			
Collection Module	Two collection tube racks with LCD display for intelligent identification of tubes			
Fraction Collection	All, waste, threshold, slope, or time			
Fraction Collector	● Standard tubes (13, 15, 16, 18, or 25 mm) ● French square 250 or 500 mL bottle or large collection bottle (optional)			
Safety Configuration	Intelligent liquid and pressure alarm			
Sample Injection	Liquid and solid sampling			
Smart Column Holder	Suitable for 4 to 330 g flash columns			
Dimensions (W x D x H)	44 x 46 x 54 cm (17.3 x 18.1 x 21.3 in)	40 x 40 x 62 cm (15.7 x 15.7 x 24.4 in)	40 x 40 x 62 cm (15.7 x 15.7 x 24.4 in)	44 x 46 x 63 cm (17.3 x 18.1 x 24.8 in)
Weight	30 kg (66 lbs)	39.2 kg (86 lbs)	48 kg (106 lbs)	48 kg (106 lbs)



SepaBean™ machine L

Product Overview

The SepaBean™ machine L is an advanced system designed for large-scale purification with a high flow rate of up to 1,000 mL/min, providing effortless scalability and user-friendly operation. It allows seamless transitions from lab-scale experiments to pilot-scale production. The anti-static design ensures enhanced safety and reliability, while the optional sample loading module increases productivity by efficiently handling large sample volumes.

Key Features

- Higher Flow Rate and Loading Capacity**
 High flow rate (1,000 mL/min) model designed to handle high-volume samples of up to 1 kg in a single run.
- Wireless Control and Operation**
 Allows remote control via mobile devices, ideal for light-sensitive or isolated experiments.
- Easy Flash Method Development**
 Optimizes and transfers separation conditions from HPLC and TLC for efficient, scalable purification.
- Optional ELSD Detector**
 Optional ELSD expands detection capabilities to cover a wider range of sample types, including non-UV-active compounds.



Optional Sample Loading Module and Fraction Collector



Main Characteristics



Dual-Piston Pump



Four Solvent Lines



Maximum Flow Rate (mL/min)



Pressure Resistance (psi)

Equipment Specifications

Characteristics	Specifications
User Interface	4.3 inches screen (≈ 10 cm)
Control Device	Wireless operation through iPad®
Flow Rate Range	50 - 1,000 mL/min
Maximum Pressure	<ul style="list-style-type: none"> Model 1000LP: 150 psi (10.3 bar) Model 1000MP: 1,450 psi (99.9 bar)
Detectors	<ul style="list-style-type: none"> DAD 200 - 400 nm UV Detector DAD 200 - 800 nm UV/Vis Detector ELSD Universal Detector (optional)
Spectral Display	Single, dual, or all-wavelengths
Pumping System	High accuracy dual-piston pump
Number of Solvents	Four (4) solvents binary with any combinations of two (2) solvents
Gradient Types	Isocratic, linear, and step gradients
Column Sizes	800 g - 10 kg
Sample Loading Capacity	8 g - 1 kg

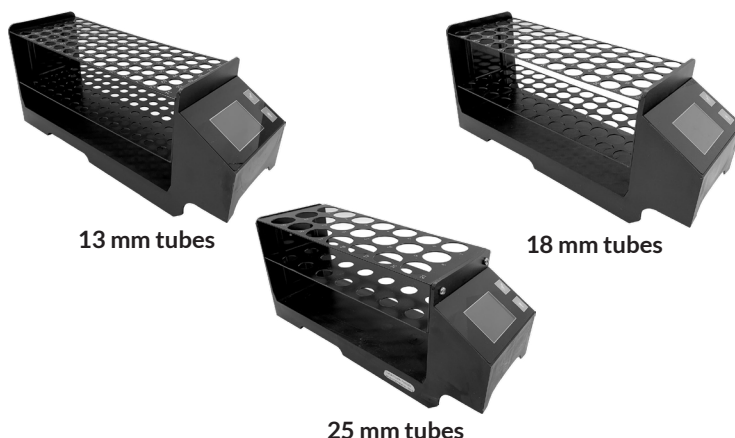
Characteristics	Specifications
Certification	CE
21-CFR Part 11 Compliance	The control software meets FDA requirements for system safety
Fraction Collection	All, waste, threshold, slope, or time
Fraction Collector	Optional collection module, with 8 collection channels
Safety Configuration	Intelligent pressure alarm
Sample Injection	Optional sample loading pump module, 100 and 200 mL/min options available
Column Holder	Suitable for 800 g to 3 kg flash columns, additional column holder for 5 and 10 kg column (optional)
Dimensions (W x D x H)	33 x 57 x 56 cm (13.0 x 22.4 x 22.0 in)
Weight	40 kg (88 lbs)



Accessories for SepaBean™ machines

Fraction Collector

All SepaBean™ machines except the L model, feature a fraction collector with tube racks and LCD displays, enabling easy tracking of collected fractions. Racks are available for 13, 15, 16, 18, and 25 mm tubes. Optional accessories include 250 mL and 500 mL French square bottles, along with larger collection bottles for added flexibility.



The optional fraction collector for SepaBean™ L is equipped with 8 built-in collection channels, designed to enhance workflow efficiency. With its precise and flexible design, it integrates seamlessly with the system, ensuring accurate fraction collection and reliable performance for various purification needs.



Fraction collector for SepaBean™ L model

Sample Loading Module for SepaBean™ L machine

The optional sample loading module for SepaBean™ L streamlines sample introduction with adjustable flow rates and loading times, enhancing efficiency. It supports various sample types and volumes, ensuring precise and consistent loading for optimal purification performance.



Large Size Column Holder for SepaBean™ L machine

The optional column holder for SepaBean™ L is designed to accommodate up to 10 kg flash columns, featuring interchangeable top plate holders installed on the equipment's sides. Each plate is engraved with size markings on the facade for easy identification, providing secure and flexible support for different column sizes during large-scale purifications.



Ordering Information

SepaBean™ machines

The table below lists product numbers for each SepaBean™ machine, available either with all yearly services included or as a standalone unit, giving you the flexibility to select the service options that suit your needs.

SepaBean™ machine Model	Fixed Wavelength (254 nm) DAD UV		200 - 400 nm DAD UV		200 - 800 nm DAD UV/Vis	
	machine & yearly services included	machine only	machine & yearly services included	machine only	machine & yearly services included	machine only
machine U100	SPBU1000100-0	SSU1254	SPBU1000100-1	SSU1400	SPBU1000100-2	SSU1800
machine U200	SPBU2000200-0	SSU2254	SPBU2000200-1	SSU2400	SPBU2000200-2	SSU2800
machine T (CE Certified)	N/A	N/A	SPBT2000200-1	SST2400	SPBT2000200-2	SST2800
machine T (cTUVus Certified)	N/A	N/A	SPBT2000200-1a	SSTA2400	SPBT2000200-2a	SSTA2800
machine (CE Certified)	N/A	N/A	SPB02000200-3	SS02400	SPB02000200-4	SS02800
machine 2	N/A	N/A	SPB05000300-1	SS25400	SPB05000300-2	SS25800
machine L 1000LP	SPBL01501000-0	SSL10254	SPBL01501000-1	SSL10400	SPBL01501000-2	SSL10800
machine L 1000MP	SPBL14501000-0	SSL10254	SPBL14501000-1	SSL10400	SPBL14501000-2	SSL10800

Services for SepaBean™ machines

The table below outlines all optional yearly services available with the purchase of any SepaBean™ machine.

Yearly Service	Service Number	Worry-Free Package	Service Number
Installation Service	SSS001	Worry-Free Package	SSSWF01
Training Service	SSS002	(See page 12 for more details)	
After-sales Service	SSS003		
Warranty Service	SSS004		

Available Accessories for SepaBean™ machines

The table below presents all the accessories available for SepaBean™ machines.

Item Number	Description
Optional Accessories for SepaBean™ machine L	
MCH-VL1-0035	Manual column holder suitable for 800 g, 1.6 kg, and 3 kg flash column, built-in valves and pipelines of sample load pump and solid sample load
SH-1	Manual column holder for 800 g up to 10 kg flash column
PL100-VL1-0037	Sample-loading module with adjustable flow rate and loading time. Maximum loading velocity is 100 mL/min
PL200-VL1-0038	Sample-loading module with adjustable flow rate and loading time. Maximum loading velocity is 200 mL/min
FC-VL1-0039	Fraction collector, built-in 8 collection channels
Accessories: Fraction Collector Tube Rack	
FCV10239	Tube rack for 13 mm diameter tubes [13 x 150 mm, 84 tubes per rack]
FCV10209	Tube rack for 15 mm diameter tubes [15 x 150 mm, 84 tubes per rack]
FCV10735	Tube rack for 16 mm diameter tubes [16 x 150 mm, 60 tubes per rack]
FCV10210	Tube rack for 18 mm diameter tubes [18 x 150 mm, 60 tubes per rack]
FCV10240	Tube rack for 25 mm diameter tubes [25 x 150 mm, 21 tubes per rack]
Accessories: French Square Bottle Rack Holding 12 Bottles	
FCV10043	250 mL square bottle tray
FCV10042	500 mL square bottle tray
Accessories: Luer Connector Kit for Large Columns (Adaptor)	
BLL-0304	Luer Connector kit for large columns (800 g, 1600 g, 3 kg, and 5 kg)



SepaFlash™ FP LT-ELSD

Low Temperature Evaporative Light Scattering Detector

Product Overview

The SepaFlash™ FP LT-ELSD is a universal low-temperature ELSD for detecting non-chromophoric analytes like carbohydrates, lipids, and polymers. Its low-temp technology ensures high sensitivity and low noise, ideal for thermally unstable compounds. Compatible with all SepaBean™ machines, it enhances complex separations.



Key Features

■ High Sensitivity and Universal Detection

The SepaFlash™ FP LT-ELSD is a mass-type, highly sensitive universal detector tailored for preparative liquid chromatography. It effectively detects a wide range of analytes, including those without chromophoric or electroactive groups, such as carbohydrates, phospholipids, amino acids, fatty acids, steroids, saponins, and polymers.

■ Low-Temperature Technology for Enhanced Performance

Incorporating advanced low-temperature technology, the detector achieves superior sensitivity with significantly reduced noise levels. This makes it ideal for analyzing thermally unstable or semi-volatile compounds.

■ Compatibility with Gradient Elution

Designed to seamlessly integrate with gradient elution methods, the SepaFlash™ FP LT-ELSD delivers consistent and reliable performance across various purification workflows.

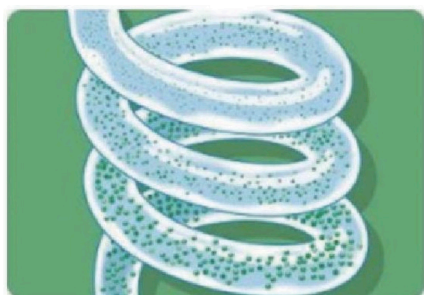
■ Simplified Operation via Remote Control

Featuring a user-friendly design, the system supports remote operation via the SepaBean™/ChemBeanGo app, enabling effortless monitoring and control for enhanced convenience.

How It Works: The Detection Principle

Step 1: Nebulization

The eluent from the column is mixed with an inert gas and passed through the narrow orifice of a nebulizer, producing a uniform mist. This fine mist consists of mobile-phase droplets containing the target compound.



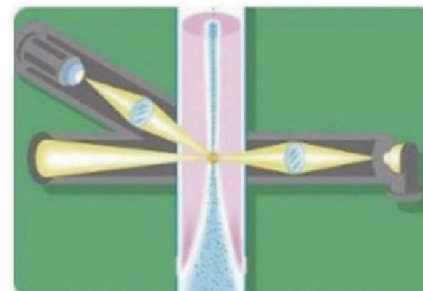
Step 2: Evaporation

The nebulized eluent passes through a heated drift tube, where the mobile phase is evaporated. The solute molecules are isolated from the mist during this process and then directed into the detector's flow cell for analysis.



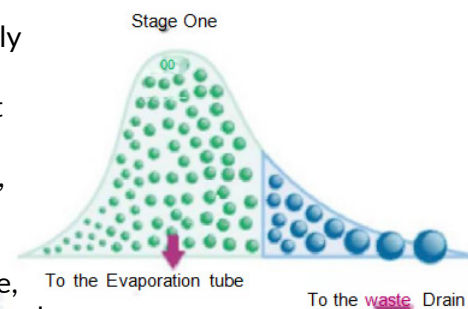
Step 3: Detection

The stream of solute particles enters a flow cell equipped with a light source and a photodiode. The emitted light interacts with the solute particles, and the scattered light is captured by the photodiode, which converts it into an electrical signal for analysis.



Low Temperature Detection

The SepaFlash™ FP LT-ELSD features a unique nebulization cell that selectively removes large droplets, which are harder to evaporate and increase noise. By discarding these droplets, the system operates at lower temperatures without compromising sensitivity (signal to noise ratio). The diagram shows how the nebulization cell filters droplets by size. Larger droplets are removed as waste, allowing only smaller ones to pass through the drift tube.



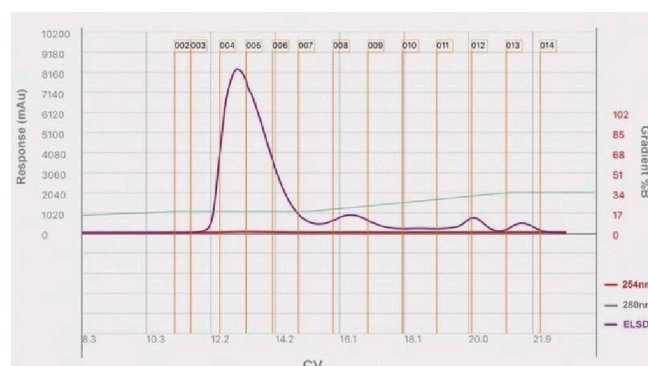
Unlike competitors' ELSDs, which require higher temperatures to reduce noise, this innovative design ensures optimal sensitivity, especially for semi-volatile and thermo-labile compounds. This droplet selection technology enables true low-temperature evaporation and superior performance across all applications.

Application Note

The chemical structure of a pharmaceutical intermediate called 2-oxaspiro[3.3]heptan-6-one is presented below. Due to its lack of UV absorption, this compound cannot be monitored in real-time using a standard UV detector during the flash separation process. However, an ELSD, as a universal detector, effectively meets this requirement.



2-oxaspiro[3.3]heptan-6-one



Parameters	Experimental Procedure	
Instrument	SepaBean™ machine T	
Flash Cartridge	12g SepaFlash™ Standard Series Flash Cartridge (irregular silica, 40 - 63 μm, 60 Å, PN: S-5101-0012)	
Detector	UV: 254 nm, 280 nm SepaFlash™ FP LT-ELSD	
Mobile Phase	Solvent A: Petroleum Ether Solvent B: Ethyl Acetate	
Flow Rate	System: 30 mL/min Split Flow for ELSD: 0.5 mL/min	
Sample Loading	600 mg	
Gradient	CV	Solvent B (%)
	0	0
	11	18
	15	18
	21	34
	24	34

Technical Specifications

Characteristics	Specifications
Detection	Photodiode
Light Source	Blue LED; Built-in Elapsed Time Counter
Temperature Range	Ambient to 100°C
Eluent Flow Rate	100 µL/min to 5 mL/min
Typical Sensitivity	100 ng
Analog Output	0 - 1 Volt
Gas Supply	Nitrogen or Air, 2.0 bar
Selection & Display	OLED Display and Keypad
System Control	Remote control by SepaBean™ & ChemBeanGo app
Dimension (W x H x D)	250 x 330 x 530 mm
Weight	15 kg (33 lbs)

Ordering Information

Item Number	Description
DMV10212	SepaFlash™ FP low temperature evaporative light scattering detector (LT-ELSD) stand alone
DMV10070	SepaFlash™ FP low temperature evaporative light scattering detector (LT-ELSD) and start kit
DMV10071	SepaFlash™ FP low temperature evaporative light scattering detector (LT-ELSD) start kit only including adapters, flow-splitter valve, and tubing
DMV10782	Nebulizer for SepaFlash™ FP LT-ELSD
DMV11433	Light Source for SepaFlash™ FP LT-ELSD
DMV10779	Glassware for SepaFlash™ FP LT-ELSD
DMV10776	Transparent plastic shield window for SepaFlash™ FP LT-ELSD
DMV11459	Drain tube assembly complete kit including fitting, seal, and tubing
DMV10780	Black plastic nuts (13 & 30 mm) kit, including seals for SepaFlash™ FP LT-ELSD





SepaFlash™ Columns Family

Enjoy precise separations; our versatile series, fully compatible with all flash chromatography instruments.



Simplify your purification, maximize your efficiency!

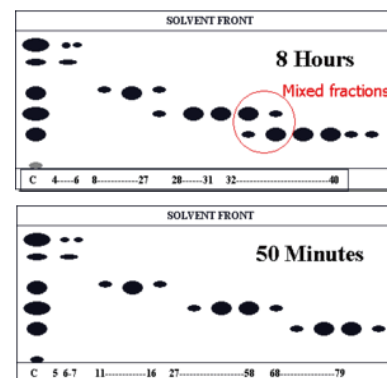
Santai Science Inc.

Why Choose SepaFlash™ Columns

Advantages of SepaFlash™ Columns

Compared to traditional manual glass column chromatography, automatic flash chromatography using SepaFlash™ column offers several key advantages such as:

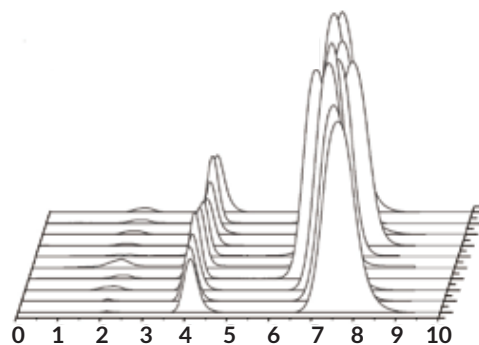
- It significantly reduces separation and purification times, as demonstrated in the following example on the right.
- Automatic flash chromatography saves time and reduces solvent consumption, making the process more efficient.
- Pre-packed SepaFlash™ flash columns minimize risks to human health and the environment, ensuring a safer and more sustainable workflow.



Key Features

■ Precision Packing and Reliable Reproducibility

Since 2004, SepaFlash™ columns have delivered consistent performance through advanced semi-automated packing technology, ensuring precision, efficiency, and robust lot-to-lot reproducibility. With low fines, these columns create a stable separation environment, minimizing contamination risks and maintaining reliability.



Experimental Conditions on SepaFlash™ Silica 120 g:
Sample: acetophenone & p-methoxyacetophenone (1.5 mL)
Mobile Phase: 80 % hexane and 20 % ethyl acetate
Flow Rate: 85 mL/min
Wavelength: 254 nm

■ Superior Quality Adsorbents

SepaFlash™ columns feature high-performance adsorbents, including silicas and aluminas, with custom packing options. Tight particle distribution prevents leaching, channeling, and tailing, while controlled water activity ensures reliability.

■ Innovative Design and Construction

These leak-free, pre-packed polypropylene cartridges ensure safety and reliability. With universal Luer-Lok® fittings, they offer seamless compatibility with various flash systems.

■ Product Versatility: a Range of Series for Every Needs

- **Standard Series:** ideal for general-purpose applications.
- **Large Size Series:** designed for high-capacity separations, meeting the needs of large-scale applications.
- **HP Series:** high-performance options for demanding separations.
- **Functionalized (Reversed Phase & Bonded) Series:** tailored for specific sorbent requirements and optimized for separating both non-polar and polar samples.
- **iLOK™ & iLOK™-SL Series:** advanced locking technology for enhanced ease of use.

By combining superior materials, innovative technology, and a diverse product range, SepaFlash™ columns deliver exceptional performance, reliability, and flexibility for a wide variety of chromatographic applications.

Tips for Using SepaFlash™ Columns

Introduction

To get the most out of your SepaFlash™ columns, it's important to follow best practices tailored to each column type and application. These tips will help ensure optimal performance, enhance column longevity, and maintain safety during use, whether working with silica, alumina, or bonded silica flash columns.

- **Silica flash columns:** while SepaFlash™ silica flash columns are designed for single use, they can be reused with proper handling without compromising performance. Ensure thorough cleaning and drying between uses to maintain efficiency.
- **Alumina flash columns:** these columns are ideal for samples that are sensitive or prone to degradation on silica gel, offering an alternative for challenging separations.
- **Bonded silica flash columns:** this series provides a wide range of sorbents to meet diverse user requirements. With correct storage and handling, these columns can be reused multiple times without performance loss.
- **Safety guidelines:** never exceed the maximum pressure indicated on the column to avoid damage or accidents.
- **Optimal eluent preparation:** to ensure the best performance, filter all eluents through a 0.45 µm filter membrane to remove impurities and prevent blockages.

By following these guidelines, you can maximize the efficiency, longevity, and safety of your SepaFlash™ columns while achieving consistent, high-quality results.

SepaFlash™ Columns Compatibility

SepaFlash™ Columns are engineered for universal compatibility with a broad range of flash chromatography systems available on the market. Equipped with Luer-Lok® end fittings, these columns guarantee a secure and leak-free connection, ensuring seamless integration regardless of the equipment brand or model.

This universal design makes SepaFlash™ columns an ideal choice for laboratories with diverse chromatography systems, eliminating the need for specialized adapters or additional fittings. Whether you are using:

- Santai Science® SepaBean™
- Biotage® Isolera® & Selekt®
- Teledyne Isco® CombiFlash®
- Advion-Interchim® puriFlash®
- Buchi® Pure®

SepaFlash™ columns deliver reliable performance without compromise.

Designed to meet the needs of modern laboratories, SepaFlash™ columns offer versatility, ease of use, and high-quality performance, as expected from Santai Science.

Note: depending on the equipment used, an adapter may be required to use the SepaFlash™ Large Size Series. Please refer to the application note for further details.



BLL-0304: Luer connector kit for large columns
(800 g, 1,600 g, 3 kg, and 5 kg)



BLL-NPT635-XXX: 10 kg cartridge adaptor
available for 1/2, 3/8, 3/16, and 1/8 inches



Comparison of SepaFlash™ Irregular Silica Columns vs Competition

SepaFlash™ columns deliver superior performance compared to competing products, attributed to their exceptional irregular silica gel (40 - 63 μm , 60 Å) quality and advanced packing technology. For a deeper understanding, examples showcasing their outstanding performance are presented below.

Better Resolution with SepaFlash™

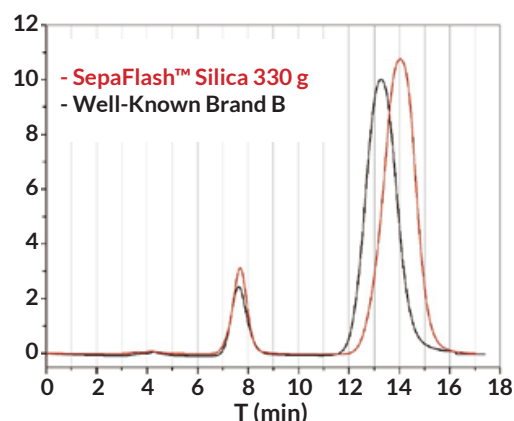
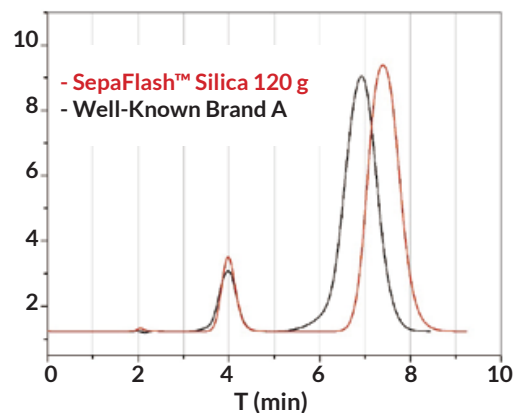
Santai conducted a performance evaluation of SepaFlash™ columns against well-known brands. The results demonstrated that SepaFlash™ columns consistently outperformed the competitors, offering superior peak-to-peak resolution.

Experimental Conditions

Experiment using SepaFlash™ Irregular Silica Columns	
Column Size	Experiment #1: 120 g Experiment #2: 330 g
Sample	Acetophenone & p-methoxyacetophenone
Mobile Phase	80 % hexane and 20 % ethyl acetate
Flow Rate	Experiment #1: 85 mL/min Experiment #2: 120 mL/min
Sample Size	Experiment #1: 1.5 mL Experiment #2: 5 mL
Wavelength	254 nm

Observed Chromatographic Parameters

Brand	t_R	N	R_s	T
Experiment #1				
SepaFlash™ 120 g	4 min	519	3.54	1.13
Brand A 120 g	4 min	408	2.73	0.92
Experiment #2				
SepaFlash™ 330 g	7.7 min	539	3.54	0.97
Brand B 340 g	7.6 min	510	3.11	1.11



Better Separation with SepaFlash™

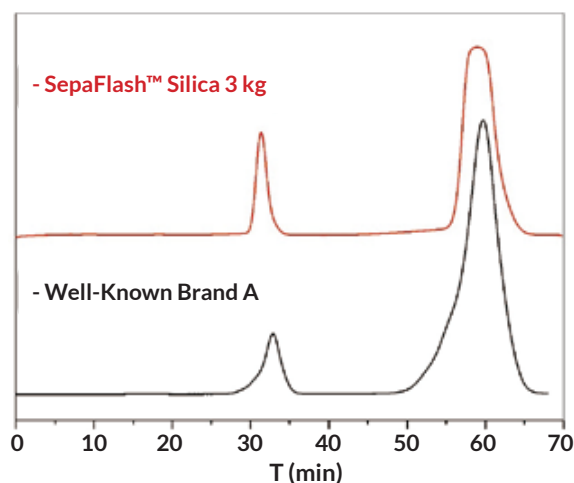
This experiment evaluates the separation performance of SepaFlash™ 3 kg columns versus a competitor's 3 kg column. The results demonstrate superior resolution and efficiency for SepaFlash™ under identical conditions.

Experimental Conditions

Experiment using SepaFlash™ Irregular Silica Columns	
Column Size	3 kg
Sample	Acetophenone & p-methoxyacetophenone
Mobile Phase	80 % hexane and 20 % ethyl acetate
Flow Rate	250 mL/min
Sample Size	40 mL
Wavelength	254 nm

Observed Chromatographic Parameters

Brand	t_R	N	R_s	T
SepaFlash™ 3 kg	31 min	890	5.13	1.20
Brand A 3 kg	33 min	743	4.00	0.80



Maximize Efficiency & Savings with SepaFlash™ Spherical Silica Columns

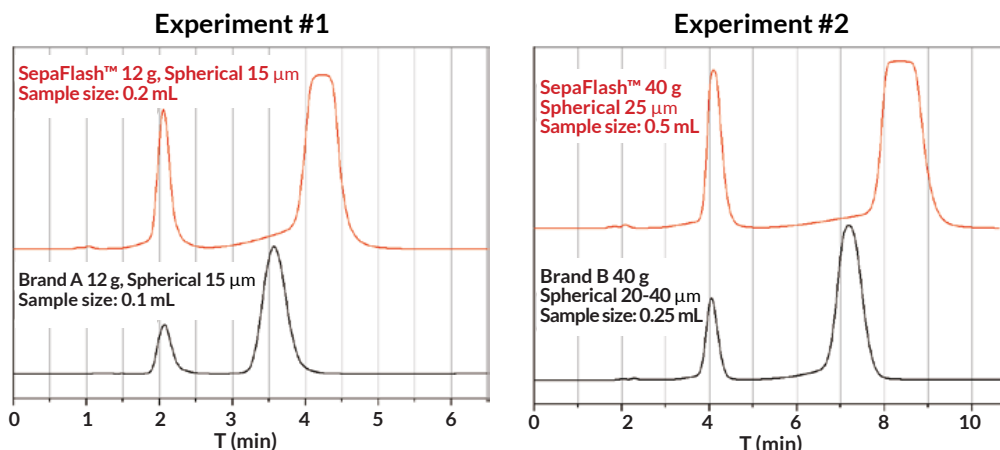
SepaFlash™ Spherical Silica Columns offer high loading capacity, allowing you to purify larger sample amounts in a single run. This efficiency translates to lower reagent costs, reduced solvent consumption, and minimized column usage, ultimately making your chromatography process more cost-effective and environmentally friendly. Experience superior performance and streamlined workflows with SepaFlash™.

Higher Loading Capacity with SepaFlash™ Spherical Silica Columns

This comparison highlights the superior performance of SepaFlash™ Spherical Silica Columns against competitor columns under the experimental conditions presented in the table below. SepaFlash™ columns offer significant advantages, including high loading capacity, superior resolution, and enhanced separation efficiency. These features not only reduce solvent consumption and minimize purification runs but also provide a cost-effective solution for optimizing your purification workflows.

Experimental Conditions

Experiment using SepaFlash™ Spherical Silica Columns	
Column Size	Experiment #1: 12 g Experiment #2: 40 g
Particle Size	Experiment #1: 15 µm Experiment #2: 25 µm
Sample	Acetophenone & p-methoxyacetophenone
Mobile Phase	80 % hexane and 20 % ethyl acetate
Wavelength	254 nm

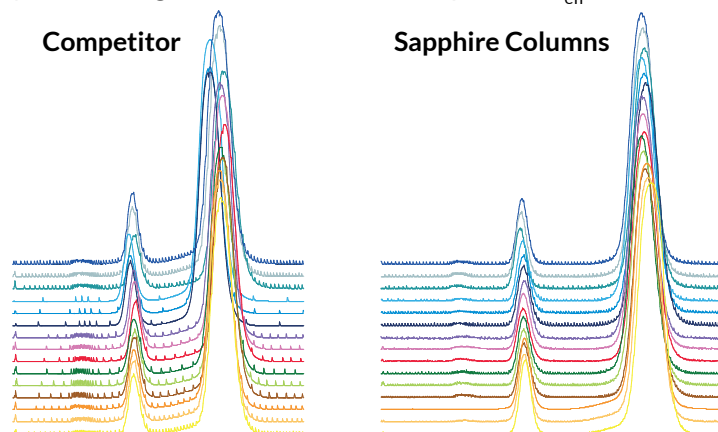


Greater Performance with SepaFlash™ Sapphire Compared to a Gold Series

This experiment compares the performance of the Sapphire series with a Gold series from a competitor. The results demonstrate that the Sapphire columns outperformed the Gold series, delivering a better resolution and more than 50 % higher column efficiency, as measured by the average number of effective plates (N_{eff}).

Experimental Conditions

Experiment using SepaFlash™ Sapphire Spherical Silica Columns	
Column Size	12 g
Sample	Acetophenone & p-methoxyacetophenone
Mobile Phase	80 % hexane and 20 % ethyl acetate
Flow Rate	20 mL/min
Sample Size	0.2 mL
Wavelength	254 nm



Average Observed Chromatographic Parameters


Parameters	Competitor	Sapphire	Sapphire Performance Conclusion
Resolution (R_s)	2.79	3.47	Much better separation
Effective Plates (N_{eff})	73	114	Significantly more efficient
Tailing Factor (T)	1.06	1.05	Slightly better peak shape



SepaFlash™ Column Available Sorbents

Irregular Bare Silica Gels & Aluminas

SepaFlash™ Standard & Large Size columns are available with both bare irregular silica and alumina, offering versatile application options. The table below outlines the sorbent specifications.


Parameters	Irregular Bare Silica Gels and Aluminas				
	5101 	5102	8601, -A*	8601, -B*	8601, -N*
Category Name	Standard	Fusion	Standard	Standard	Standard
Phase	Bare Silica	Bare	Acidic Alumina	Basic Alumina	Neutral Alumina
Particle Shape	Irregular	Irregular	Irregular	Irregular	Irregular
Particle Size	40 - 63 µm	25 - 40 µm	50 - 75 µm	50 - 75 µm	50 - 75 µm
Pore Diameter	60 Å	60 Å	55 Å	55 Å	55 Å
Typical Surface Area	500 m ² /g	500 m ² /g	155 m ² /g	155 m ² /g	155 m ² /g
pH	6.5 - 7.5	6.5 - 7.5	3.8 - 4.8	9.0 - 10.0	6.5 - 7.5
Loading Capacity	0.1 - 10 %	0.1 - 15 %	0.1 - 4 %	0.1 - 4 %	0.1 - 4 %

* Added at the end of the product number

 Most popular phases

Reversed Phase and CannFlash™ Series

The SepaFlash™ Reversed Phase and CannFlash™ Series columns provide a variety of options with both irregular and spherical functionalized silica gel. The table below presents detailed specifications for each phase, as well as the available column formats for each type of sorbent.

Parameters	Reversed Phase and CannFlash™ Series					
	8201, -IR*	5223, -SP*	8222, -SP* 	5222, -SP(THE)*	5221, -SP*	5223, -SP(AQ)*
Category Name	Reversed Phase	Reversed Phase	Reversed Phase	Reversed Phase	Reversed Phase	Reversed Phase
Phase	C18	C18	C18	C18 THE	C18	C18 Aqueous
Particle Shape	Irregular	Spherical	Spherical	Spherical	Spherical	Spherical
Particle Size	40 - 63 µm	15 µm	20 - 45 µm	20 - 45 µm	40 - 75 µm	15 µm
Pore Diameter	60 Å	100 Å	100 Å	100 Å	100 Å	100 Å
Typical Loading	17 % Carbon	17 % Carbon	17 % Carbon	18.5 % Carbon	17 % Carbon	10 % Carbon
Endcapping	Yes	Yes	Yes	Yes	Yes	Yes
Loading Capacity	0.1 - 2 %	0.1 - 2 %	0.1 - 2 %	0.1 - 2 %	0.1 - 1.5 %	0.1 - 2 %

* Added at the end of the product number

 Most popular phases

Bonded Silica Gels

Additional bonded silica gels are available in SepaFlash™ cartridges, enabling a wide range of applications.

Parameters	Bio and Bonded Series					
	BIO-5272, -SP*	BIO-5872, -SP*	BIO-5472, -SP*	5502, -SP(H)*	5501, -IR*	5922, -SP*
Category Name	Bio	Bio	Bio	Bonded	Bonded	Bonded
Phase	C18	C8	C4	Amino (NH ₂)	Amino (NH ₂)	Diol (HILIC-D)
Particle Shape	Spherical	Spherical	Spherical	Spherical	Irregular	Spherical
Particle Size	20 - 45 µm	20 - 45 µm	20 - 45 µm	20 - 30 µm	40 - 63 µm	20 - 45 µm
Pore Diameter	300 Å	300 Å	300 Å	50 Å	60 Å	100 Å
Typical Loading	6 % Carbon	3 % Carbon	2 % Carbon	1.8 mmol/g	1.3 mmol/g	5 % Carbon
Endcapping	Yes	Yes	Yes	Yes	Yes	Yes
Loading Capacity	0.1 - 1 %	0.1 - 1 %	0.1 - 1 %	0.1 - 3 %	0.1 - 2 %	0.1 - 2 %

* Added at the end of the product number




Please refer to the following pages to explore the available phases for each SepaFlash™ series! Contact us if you need for more products.

Spherical Bare Silica Gels


The SepaFlash™ Large Size Series offers a range of spherical silica gels.

For detailed specifications, please refer to the table below outlining the available silica options.

Parameters	Spherical Bare Silica Gels		
	2101, -SP*	2102, -SP*	2102, -SP(S)* 
Category Name	Platinum	Platinum	Sapphire
Phase	Bare	Bare	Bare
Particle Shape	Spherical	Spherical	Spherical
Particle Size	40 - 75 µm	20 - 45 µm	25 µm
Pore Diameter	70 Å	70 Å	100 Å
Typical Surface Area	500 m ² /g	500 m ² /g	500 m ² /g
pH	6.0 - 8.0	6.0 - 8.0	5.0 - 8.0
Loading Capacity	0.1 - 10 %	0.1 - 15 %	0.1 - 30 %

* Added at the end of the product number

 Most popular phases

Reversed Phase and CannFlash™ Series						Parameters
5222, -SP(AQ)* 	5822, -SP*	5823, -SP(AQ)*	5822, -SP(AQ)*	5422, -SP*	5CAN, -SP*	
Reversed Phase	Reversed Phase	Reversed Phase	Reversed Phase	Reversed Phase	CannFlash™	Category Name
C18 Aqueous	C8	C8 Aqueous	C8 Aqueous	C4 Aqueous	C4-8	Phase
Spherical	Spherical	Spherical	Spherical	Spherical	Spherical	Particle Shape
20 - 45 µm	20 - 45 µm	15 µm	20 - 45 µm	20 - 45 µm	20 - 45 µm	Particle Size
100 Å	100 Å	100 Å	100 Å	100 Å	100 Å	Pore Diameter
10 % Carbon	7 % Carbon	7 % Carbon	7 % Carbon	5.8 % Carbon	10 % Carbon	Typical Loading
Yes	Yes	Yes	Yes	Yes	Yes	Endcapping
0.1 - 2 %	0.1 - 2 %	0.1 - 2 %	0.1 - 2 %	0.1 - 2 %	0.1 - 6 %	Loading Capacity

Bio and Bonded Series						Parameters
5622, -SP*	5322, -SP*	5B22, -SP*	5C22, -SP*	5001, -IR*	5701, -IR*	
Bonded	Bonded	Bonded	Bonded	Bonded	Bonded	Category Name
ARG (HILIC)	Cyano (CN)	Phenyl	Phenyl-Hexyl	SAX	SCX	Phase
Spherical	Spherical	Spherical	Spherical	Irregular	Irregular	Particle Shape
20 - 45 µm	20 - 45 µm	20 - 45 µm	20 - 45 µm	40 - 63 µm	40 - 63 µm	Particle Size
100 Å	100 Å	100 Å	100 Å	60 Å	60 Å	Pore Diameter
6 % Carbon	5.5 % Carbon	10 % Carbon	10 % Carbon	1.3 mmol/g	10 % Carbon	Typical Loading
Yes	Yes	Yes	Yes	Yes	Yes	Endcapping
0.1 - 2 %	0.1 - 2 %	0.1 - 2 %	0.1 - 2 %	0.200 - 0.260 meq/g	0.307 - 0.341 meq/g	Loading Capacity



SepaFlash™ Standard & Large Size Series

Product Overview

SepaFlash™ standard and large size columns are engineered to deliver reliable, high-purity results with exceptional ease and efficiency. Whether purifying milligrams or scaling up to one kilogram, SepaFlash™ offers the ideal solution for fast, straightforward purification. The Luer-Lok™ end fittings ensure compatibility with any flash system, providing a seamless workflow and consistent performance for a smoother purification process.

Key Features

■ Highly Reproducible

SepaFlash™ standard series and large size columns deliver reliable and reproducible results with a proprietary dry packing technique that ensures a uniform sorbent bed. This minimizes channeling, offering tighter bands, better peak definition, and higher resolution for consistent, high-quality purification.

■ Versatile

SepaFlash™ standard series and large size columns offer versatility with sizes ranging from 4 g to 10 kg, enabling purification from 10 mg to 1 kg. Packed with high-efficiency silica gels, they provide outstanding performance at a cost-effective price, making them ideal for a wide range of purification needs.



SepaFlash™ Standard Series



SepaFlash™ Large Size

Fully compatible with all instruments on the market!

Column Design

The patented disbursing structure ensures superior flow distribution.

Polyethylene frits prevent media leakage while allowing efficient passage of the mobile phase.

End fittings on both sides protect the media from moisture exposure.

Luer-Lok® end fittings ensure compatibility with any flash systems.

A comprehensive label provides all essential information needed for effective column use.



The innovative one-piece column design withstands pressures up to 300 psi (20.7 bar), guaranteeing 100 % leak-free performance. It is available with a range of irregular and spherical silica gels, aluminas, and other media, all packed with precision using advanced semi-automated dry packing technology for versatile application across various needs.

Column Characteristics

The table below presents the characteristics of the SepaFlash™ Standard & Large Size Series.

Column Code	Typical Sorbent Weight*	Column ID x Length (mm)	Recommended Flow Rate (mL/min)**				Functionalized Silicas		Maximum Pressure (psi / bar)
			Bare Irregular Silica Gels	Bare Spherical Silica Gels	All Aluminas		15 µm & 20 - 30/45 µm	40 - 63/75 µm	
004	4 g	12.3 x 97.5	15 - 40	15 - 30	10 - 30				
012	12 g	21.2 x 113.3							
025	25 g	21.2 x 163.1	30 - 60	25 - 50	15 - 45				300 / 20.7
040	40 g	26.7 x 165.9	40 - 70	30 - 60	20 - 50	Available in the SepaFlash™ SW (Spin-Welded) Column Series.			
080	80 g	30.9 x 242.5	50 - 100	40 - 80	30 - 70				250 / 17.2
120	120 g	37.4 x 254.3	60 - 150	45 - 90	40 - 80				
220	220 g	59.8 x 209.3							
330	330 g	59.8 x 270.3	80 - 220	60 - 120	50 - 120				200 / 13.8
800	800 g	78.2 x 382.9	100 - 300		100 - 200				
1600	1,600 g	103.8 x 432.4		200 - 300					
3000	3 kg	127.5 x 509.5	200 - 500	300 - 400	150 - 300	40 - 80	50 - 100	100 / 6.9	
5000	5 kg	127.5 x 770.0		350 - 450					
010K	10 kg	172.5 x 850.0	300 - 1,000	400 - 500	200 - 600				

* Typical weight listed in this table is for the bare silica gel. ** Please refer to tables on page 34 & 35 for recommended flow rate per sorbent code.

Using the SepaFlash™ Column: A Step-by-Step Guide

Cartridge Installation

The SepaFlash™ Standard Series columns are designed with universal connectors, ensuring full compatibility with all flash chromatography systems available on the market.

- Securely attach the cartridge to your flash chromatography system, ensuring a proper fit with the connectors.
- Once the cartridge is installed, refer to the user guide of the system and follow the provided instructions for optimal setup and operation.

Note: Keep end caps on when not in use; remove only for installation.

Sample Loading

The solubility of the compound determines whether to use liquid or solid loading when introducing the sample onto the SepaFlash™ column.

- Liquid loading** involves dissolving the sample in the minimum amount of the weakest possible solvent. The dissolved sample is then added to the top of the SepaFlash™ column or introduced via the sample injector using a syringe.
- Solid loading** is recommended when the sample has limited solubility in weak solvents. In this case, a stronger solvent is used to fully dissolve the sample, which is then pre-adsorbed onto a small quantity of sorbent. After evaporating the solvent using a rotary evaporator, the sample-sorbent mixture is loaded into an empty SepaFlash™ iLOK™ empty solid-load cartridge, which is placed on top of the flash column or directly on the 15 % free space of the SepaFlash™ iLOK™-SL openable column (twist-cap).



Typical Column Characteristics for the Standard & Large Size Series

Bare Silica Gels & Aluminas

The table below presents the characteristics of the SepaFlash™ Standard column series.

Column Code	Sorbent	Description of the Sorbent	Sorbent Code	Typical Silica Weight	Typical Column Volume (mL)	Flow Rate (mL/min)
0004	Silica	Irregular 40 - 63 µm, 60 Å	5101	4 g	6	15 - 40
		Spherical 25 µm, 100 Å	2102-SP(S)	4 g	6	15 - 30
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	8 g	6	10 - 30
0012	Silica	Irregular 40 - 63 µm, 60 Å	5101	12 g	20	30 - 60
		Spherical 25 µm, 100 Å	2102-SP(S)	13 g	24	25 - 50
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	24 g	20	15 - 45
0025	Silica	Irregular 40 - 63 µm, 60 Å	5101	25 g	32	30 - 60
		Spherical 25 µm, 100 Å	2102-SP(S)	21 g	40	25 - 50
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	50 g	30	15 - 45
0040	Silica	Irregular 40 - 63 µm, 60 Å	5101	40 g	50	40 - 70
		Spherical 25 µm, 100 Å	2102-SP(S)	32 g	58	30 - 60
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	80 g	48	20 - 50
0080	Silica	Irregular 40 - 63 µm, 60 Å	5101	80 g	110	50 - 100
		Spherical 25 µm, 100 Å	2102-SP(S)	70 g	127	40 - 80
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	160 g	105	30 - 70
0120	Silica	Irregular 40 - 63 µm, 60 Å	5101	120 g	155	60 - 150
		Spherical 25 µm, 100 Å	2102-SP(S)	108 g	186	45 - 90
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	240 g	145	40 - 80
0220	Silica	Irregular 40 - 63 µm, 60 Å	5101	220 g	280	80 - 220
		Spherical 25 µm, 100 Å	2102-SP(S)	202 g	358	60 - 120
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	440 g	260	50 - 120
0330	Silica	Irregular 40 - 63 µm, 60 Å	5101	330 g	430	80 - 220
		Spherical 25 µm, 100 Å	2102-SP(S)	282 g	501	60 - 120
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	660 g	405	50 - 120
0800	Silica	Irregular 40 - 63 µm, 60 Å	5101	800 g	1,050	100 - 300
		Spherical 25 µm, 100 Å	2102-SP(S)	708 g	1,235	200 - 300
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	1.6 kg	860	100 - 200
1600	Silica	Irregular 40 - 63 µm, 60 Å	5101	1.6 kg	2,000	200 - 500
		Spherical 25 µm, 100 Å	2102-SP(S)	1.4 kg	2,468	200 - 300
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	3.2 kg	1,680	150 - 300
3000	Silica	Irregular 40 - 63 µm, 60 Å	5101	3.0 kg	3,850	200 - 500
		Spherical 25 µm, 100 Å	2102-SP(S)	2.6 kg	4,626	300 - 400
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	6.0 kg	3,250	150 - 300
5000	Silica	Irregular 40 - 63 µm, 60 Å	5101	5.0 kg	6,450	200 - 500
		Spherical 25 µm, 100 Å	2102-SP(S)	4.4 kg	7,709	350 - 450
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	10.0 kg	3,675	150 - 300
010K	Silica	Irregular 40 - 63 µm, 60 Å	5101	10.0 kg	13,000	300 - 1,000
		Spherical 25 µm, 100 Å	2102-SP(S)	8.8 kg	15,415	400 - 500
	Alumina	Irregular 50 - 75 µm, 55 Å	8601-A, -B & -C	20.0 kg	7,349	200 - 600



Typical Column Characteristics for the Large Size Series

Bare Silica Gels

The table below outlines the characteristics of the SepaFlash™ Large Size Series, packed with bare silica gels.

Column Code	Series	Description of Bare Silica Gels	Sorbent Code	Typical Silica Weight	Typical Column Volume (mL)	Flow Rate (mL/min)
800	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	800 g	1,207	50 - 100
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		1,034	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		1,186	
1600	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	1,600 g	2,414	
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		2,069	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		2,373	
3000	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	3 kg	4,343	
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		3,685	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		4,224	
5000	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	5 kg	7,543	
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		6,466	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		7,415	
010K	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	10 kg	15,086	
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		12,931	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		14,077	

Functionalized Silica Gels

The table below presents the characteristics of the SepaFlash™ Large Size columns packed with functionalized silica gels.

Column Code	Description of Functionalized Silica Gels	Typical Silica Weight (g)	Typical Column Volume (mL)	Flow Rate (mL/min)
800	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	840 / 850	1,086 / 1,099	50 - 100
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	840 / 755	1,159 / 976	40 - 80
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	863	1,352 / 1,222	
1600	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	1,980 / 1,660	2,458 / 2,576	50 - 100
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	1,680 / 1,748	2,317 / 2,260	40 - 80
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	1,726	2,731 / 2,444	
3000	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	3,800 / 3,188	4,717 / 4,122	50 - 100
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	3,150 / 3,268	4,345 / 4,226	40 - 80
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	3,600 / 3,323	5,241 / 4,583	
5000	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	6,300 / 5,250	7,821 / 6,789	50 - 100
	Spherical 15 µm, 100 Å	5,248	7,239	40 - 80
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4	6,300	8,690	
010K	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	12,600 / 10,490	15,641 / 13,565	50 - 100
	Spherical 15 µm, 100 Å	10,492	14,472	40 - 80
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4	12,600	17,379	



SepaFlash™ HP & Functionalized Series

Product Overview

These SepaFlash™ HP & Functionalized series (also called **SW series**) provide efficient and scalable chromatography solutions, enabling purification from milligrams to multiple kilograms. These high-performance columns, with spin-welded construction (4 g to 330 g), withstand pressures up to 400 psi, while Luer-Lok® fittings ensure easy stacking and compatibility with any flash system.

Available in irregular (Fusion series) and spherical (Platinum and Sapphire series) silica gel, they offer superior resolution and solvent savings. The Fusion Series is ideal for non-sticky, non-viscous mixtures, while the Sapphire series supports up to 30 % more sample loading. These series offer the ideal balance of performance and versatility for all chromatography needs.



SepaFlash™ HP Series



SepaFlash™ Bio Series

Key Features

High Performance

The high-purity silica gel, smaller particle sizes, and high back-pressure tolerance make these columns highly efficient, delivering superior performance even in challenging separations.

Solvent Saving

Smaller particle sizes enable faster separations and reduce solvent consumption by up to 50 %, reducing run times by half and lowering costs by 20 - 40 %, while also being environmentally friendly.



SepaFlash™ Bonded Series

Fully compatible with all instruments on the market!

Column Design

The patented disbursing structure ensures superior flow distribution.

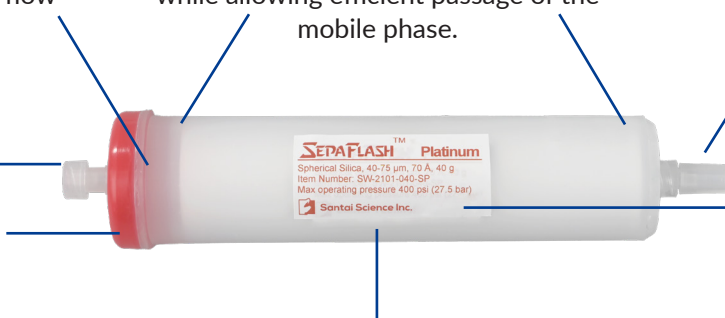
Luer-Lok® end fittings ensure compatibility with any flash systems.

Color-coded caps for quick and easy sorbent identification.

Polyethylene frits prevent media leakage while allowing efficient passage of the mobile phase.

End fittings on both sides protect the media from moisture exposure.

A comprehensive label provides all essential information needed for effective column use.



The innovative one-piece column design withstands pressures up to 400 psi (27.6 bar), guaranteeing 100 % leak-free performance. It is available with a range of irregular and spherical silica gels, aluminas, and other media, all packed with precision using advanced semi-automated dry packing technology for versatile application across various needs.



Column Characteristics

The table below presents the characteristics of the SepaFlash™ Column - HP & Functionalized series.

Column Code	Typical Sorbent Weight*	Column ID x Length (mm)	Recommended Flow Rate (mL/min)**				Maximum Pressure (psi / bar)
			Bare Silicas		Functionalized Silicas		
			25 µm, 50 µm & 20/25 - 45 µm	40 - 75 µm	15 µm & 20 - 30/45 µm	40 - 63/75 µm	
004	4 g	12.4 x 113.8	15 - 30	15 - 40	5 - 15	10 - 20	400 / 27.5
012	12 g	21.4 x 134.8	20 - 50	30 - 60	10 - 25	15 - 30	
025	25 g	21.4 x 184.0					
040	40 g	26.7 x 184.4	30 - 60	40 - 70	15 - 30	20 - 40	
080	80 g	31.2 x 257.4	40 - 80	50 - 100	20 - 50	30 - 60	350 / 24.0
120	120 g	38.6 x 261.5	45 - 90	60 - 150	30 - 60	40 - 80	300 / 20.7
220	220 g	61.4 x 223.5	60 - 120	80 - 220	40 - 80	50 - 100	
330	330 g	61.4 x 280.2					
800	800 g	78.2 x 382.9					
1600	1,600 g	103.8 x 432.4					
3000	3 kg	127.5 x 509.5	50 - 100	50 - 100			100 / 6.9
5000	5 kg	127.5 x 770.0					
010K	10 kg	172.5 x 850.0					

* Typical weight listed in this table is for the bare silica gel. ** Please refer to tables on page 38 & 39 for recommended flow rate per sorbent code.

Using the SepaFlash™ Column: A Step-by-Step Guide

Cartridge Installation

SepaFlash™ HP & Functionalized columns fit all flash systems. Keep end caps on when not in use; remove only for installation. Attach securely and follow your system's user guide for setup.

Sample Loading

The solubility of the compound determines whether to use liquid or solid loading when introducing the sample onto the SepaFlash™ column.

- **Liquid loading** involves dissolving the sample in the minimum amount of the weakest possible solvent. The dissolved sample is then added to the top of the SepaFlash™ column or introduced via the sample injector using a syringe.
- **Solid loading** is ideal for samples with low solubility in weak solvents. A strong solvent dissolves the sample, which is pre-adsorbed onto sorbent. After solvent evaporation, the mixture is loaded into a SepaFlash™ iLOK™ solid-load cartridge or the 15 % free space of an iLOK™-SL openable column

Cleaning & Storage Conditions

Proper cleaning and storage are essential for reusing SepaFlash HP & Functionalized Series columns effectively. When storing the columns for an extended period, follow these steps to ensure proper separation efficiency:

1. **Prevent drying:** after the first use, do not allow the column to dry out. Ensure the air purge on the instrument is turned off.
2. **Use intermediate solvents when necessary:** if the run solvents are immiscible with the storage solvents, rinse the column with an intermediate solvent.
3. **Remove organic solvents:** flush the column with 3 column volumes of the following solutions to remove organic modifiers or strong organic solvents:
 - For reversed phase columns: 50 % methanol or acetonitrile in water.
 - For normal phase columns: 100 % isopropanol.
4. **Store properly:** fill the column with the recommended solvent (e.g., 80 - 90 % acetonitrile, methanol, or ethanol in water), and secure both end caps.



Typical Column Characteristics for Bare Silica Gels

The table below presents the characteristics of the SepaFlash™ HP series packed with various bare silica gels.

Column Code	Series	Description of Bare Silica Gels	Sorbent Code	Typical Silica Weight	Typical Column Volume (mL)	Flow Rate (mL/min)
004	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	4 g	5	15 - 40
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP			
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		8	15 - 30
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)			
012	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	12 g	19	30 - 60
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP			
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		24	25 - 50
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)			
025	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	25 g	32	30 - 60
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP			
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		39	25 - 50
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)			
040	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	40 g	48	40 - 70
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP			
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		52	30 - 60
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)			
080	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	80 g	108	50 - 100
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP			
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		120	40 - 80
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)			
120	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	120 g	160	60 - 150
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP			
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		180	45 - 90
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)			
220	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	220 g	303	80 - 220
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP			
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		320	60 - 120
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)			
330	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	330 g	420	80 - 220
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP			
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		450	60 - 120
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)			
800	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	800 g	1,207	
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		1,034	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		1,186	
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)		1,172 / 1,207	
1600	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	1,600 g	2,414	
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		2,069	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		2,373	
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)		2,345 / 2,414	
3000	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	3 kg	4,343	50 - 100
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		3,685	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		4,224	
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)		4,521 / 4,526	
5000	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	5 kg	7,543	
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		6,466	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		7,415	
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)		7,328 / 7,392	
010K	Platinum	Spherical 40 - 75 µm, 70 Å	2101-SP	10 kg	15,086	
	Fusion	Spherical 20 - 45 µm, 70 Å	2102-SP		12,931	
	Platinum	Irregular 25 - 45 µm, 60 Å	5102		14,077	
	Sapphire	Spherical 25 µm, 100 Å	2102-SP(S)		15,071 / 15,690	



Typical Column Characteristics for Functionalized Silica Gels

The table below presents the characteristics of the SepaFlash™ spin-welded and large size columns packed with functionalized silica gels.

Column Code	Description of Functionalized Silica Gels	Typical Silica Weight (g)	Typical Column Volume (mL)	Flow Rate (mL/min)
004	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	5.9 / 4.6	3.6 / 6	10 - 20
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	4.2 / 4.5	6	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	5.4	7 / 4.3	5 - 15
	Spherical 20 - 30 µm, 50 Å (NH ₂)	5.9	9	
012	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	23 / 18	14 / 23	15 - 30
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	16	22	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	20	23 / 16	10 - 25
	Spherical 20 - 30 µm, 50 Å (NH ₂)	23	35	
025	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	38 / 30	23 / 39	15 - 30
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	27 / 26	37 / 34	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	33	43 / 26	10 - 25
	Spherical 20 - 30 µm, 50 Å (NH ₂)	38	57	
040	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	55 / 43	33 / 56	20 - 40
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	38.5 / 38	53 / 49	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	48	68 / 38	15 - 30
	Spherical 20 - 30 µm, 50 Å (NH ₂)	55	83	
080	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	122 / 95	70 / 123	30 - 60
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	86 / 82	119 / 106	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	105	141 / 83	20 - 50
	Spherical 20 - 30 µm, 50 Å (NH ₂)	122	184	
120	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	180 / 142	103 / 184	40 - 80
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	128 / 120	176 / 155	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	155	213 / 122	30 - 60
	Spherical 20 - 30 µm, 50 Å (NH ₂)	180	272	
220	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	340 / 265	195 / 343	50 - 100
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	244 / 225	337 / 291	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	300	414 / 236	40 - 80
	Spherical 20 - 30 µm, 50 Å (NH ₂)	340	513	
330	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	475 / 385	272 / 458	50 - 100
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	365 / 320	503 / 414	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	420	552 / 331	40 - 80
	Spherical 20 - 30 µm, 50 Å (NH ₂)	475	717	
800	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	840 / 850	1,086 / 1,099	50 - 100
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	840 / 755	1,159 / 976	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	863	1,352 / 1,222	40 - 80
1600	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	1,980 / 1,660	2,458 / 2,576	50 - 100
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	1,680 / 1,748	2,317 / 2,260	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	1,726	2,731 / 2,444	40 - 80
3000	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	3,800 / 3,188	4,717 / 4,122	50 - 100
	Spherical 15 µm, 100 Å / Spherical 20 - 45 µm, 300 Å (Bio series)	3,150 / 3,268	4,345 / 4,226	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4 / ARG, CN, & PHE	3,600 / 3,323	5,241 / 4,583	40 - 80
5000	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	6,300 / 5,250	7,821 / 6,789	50 - 100
	Spherical 15 µm, 100 Å	5,248	7,239	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4	6,300	8,690	40 - 80
010K	Irregular 40 - 63 µm, 60 Å / Spherical 40 - 75 µm, 70 Å	12,600 / 10,490	15,641 / 13,565	50 - 100
	Spherical 15 µm, 100 Å	10,492	14,472	
	Spherical 20 - 45 µm, 100 Å, C18, C8, & C4	12,600	17,379	40 - 80



SepaFlash™ iLOK™ & iLOK™-SL Series

Product Overview

SepaFlash™ iLOK™ cartridges offer flexible solid and liquid loading options, available pre-packed or empty with screw caps, and withstand up to 200 psi (13.8 bar).

The iLOK™-SL (Twist-Cap) version provides 15 % free space for solid loading or with an inserter for liquid injection.

SepaFlash™ iLOK™ III large-size solid-load cartridges are easy to assemble, handle high sample loads, and support demanding applications. Available in five sizes (800 g to 7 kg) with a 100 psi (6.9 bar) rating, they are compatible with most high-flow systems and adaptable to various tubing diameters.

Key Features

■ Innovative Design

The innovative patented design of SepaFlash™ iLOK™ cartridges enables easy manual assembly and offers versatility in sample loading methods, supporting both solid loading and direct liquid injection.

■ Highly Reproducible

Our exclusive, proprietary dry-packing technique ensures high resolution and reproducibility, making it ideal for routine purifications.



SepaFlash™ iLOK™
Empty Solid-Load Cartridge Series



SepaFlash™ iLOK™ & iLOK™-SL
Pre-packed Solid-Load Cartridge Series



SepaFlash™ iLOK™ III Large-Size
Empty Solid-Load Cartridge Series

Fully compatible with all instruments on the market!

iLOK™ Column Design

The patented disbursing structure ensures superior flow distribution.

Polyethylene frits prevent media leakage while allowing efficient passage of the mobile phase.

End fittings on both sides protect the media from moisture exposure.

Luer-Lok® end fittings ensure compatibility with any flash systems.

Available in two formats: empty or pre-packed with various phases.

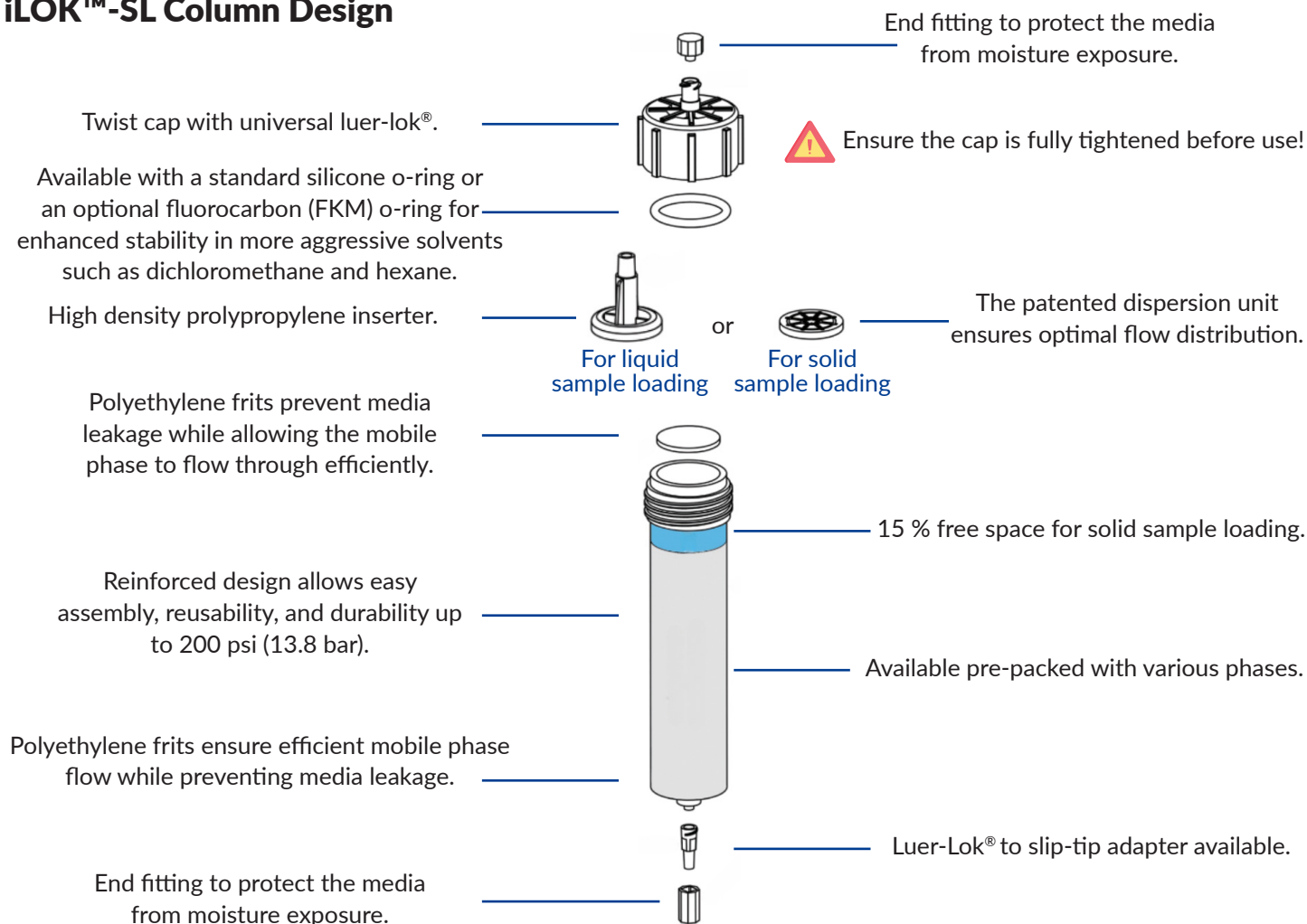


The innovative reinforced column design allows for easy manual assembly and reusability, providing durability under pressures up to 200 psi (13.8 bar). Ensure the cap is fully tightened before use.

A comprehensive label provides all essential information needed for effective column use.



iLOK™-SL Column Design



Column Characteristics

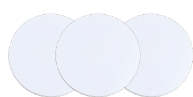
The table below presents the characteristics of the SepaFlash™ Cartridges - iLOK™ & iLOK™-SL series.

Column Code	Column Size	Column ID x Length (mm)	Sample Size (g)	Volume (mL)	Recommended Flow Rate (mL/min)	Maximum Pressure (psi / bar)
Small Size Formats (available empty and pre-packed)						
004	4 g	12.8 x 60	0.004 - 0.400	8	15 - 40	200 / 13.8
012	12 g	21.8 x 76	0.012 - 1.200	27	30 - 60	
025	25 g	21.6 x 126	0.025 - 2.500	46	40 - 70	
040	40 g	26.8 x 125	0.040 - 4.000	70	60 - 150	
060	60 g	36.6 x 99	0.060 - 6.000	104	50 - 100	
080	80 g	31.2 x 193	0.080 - 8.000	147	80 - 220	150 / 10.3
100	100 g	60.4 x 61	0.100 - 10.000	176	60 - 150	200 / 13.8
120	120 g	36.6 x 204	0.120 - 12.000	215	80 - 220	150 / 10.3
220	220 g	60.6 x 131	0.220 - 22.000	377		
330	330 g	60.6 x 187	0.330 - 33.000	539		
Large-Size Formats (Available only as empty cartridges. Sample size and flow rate are provided for reference and may require adjustments.)						
0800B-1	800 g	127 x 140	0.8 - 80.0	1,395	200 - 400	100 / 6.9
1600B-1	1,600 g	127 x 250	1.6 - 160.0	2,760		
3000B-1	3 kg	127 x 440	3.0 - 300.0	5,165		
5000B-1	5 kg	127 x 692	5.0 - 500.0	8,610	200 - 500	
7000B-1	7 kg	127 x 1,000	7.0 - 700.0	12,510		



SepaFlash™ iLOK™ Empty Cartridges: Three Application Options

The SepaFlash™ iLOK™ empty cartridges are a versatile product that can be used as a solid-load column, a chromatographic column, or in a combined application for both purposes. These products are supplied as a complete package, including a column tube, screw cap, o-ring, frits (x3), and end caps. Optional frit insertion rod and closing screw cap tools are available. We also offer pre-packed iLOK™ cartridges for those seeking a ready-to-use solution.



Polyethylene
frits



Silicone or fluorocarbon
(FKM) o-ring



Frit insertion rod tool
(various sizes available)



Cap screwing tool
(two sizes available)

Using the SepaFlash™ iLOK™ Cartridges: A Step-by-Step Guide

Step 1:

Unscrew and remove the cap from the iLOK™ empty column tube, remove the frit, and place the column tube on a support stand.



Step 2:

Fill the column tube with silica gel mixed with the sample (for solid-load), the adsorbent (for chromatographic column) or with 85 % of silica (for combined application as shown on the picture). Tap gently to settle and avoid overfilling.



Step 3:

Place the frit on the top of the column tube.



Step 4:

Use the insertion tool to press the frit into the column tube, ensuring the frit is as straight as possible.



**Complete the next two steps only for the combined application.
For solid-load or chromatographic column use, proceed directly to Step 7.**

Step 5:

Add the silica gel mixed with the sample to the top of the column (blue section), gently tap to settle and place the second frit on the column tube.



Step 6:

Use the insertion tool to press the frit into the column tube, ensuring the frit is as straight as possible.



Step 7:

Finally, securely fasten the column by fully tightening it with the cap screwing closing tool.



Step 8:

Your SepaFlash™ iLOK™ cartridge is now ready for use. It is recommended to perform a pre-equilibration step with 3 - 5 column volumes before loading your sample.



Ensure the cap is fully tightened before use!

SepaFlash™ iLOK™-SL

Each SepaFlash™ iLOK™-SL cartridge features a built-in inserter for convenient liquid injection with a syringe.

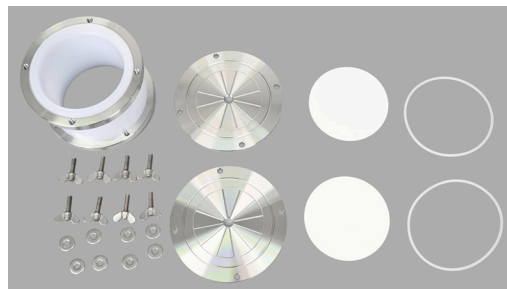
For solid loading, remove the inserter and follow steps 5 to 8 as outlined above, replacing the frit with the dispersion unit at step 6.



SepaFlash™ iLOK™ III Large-Size Empty Solid-Load Cartridges

The SepaFlash™ iLOK™ III large-size empty solid-load cartridges are designed for easy manual assembly and accommodate higher sample loads, making them ideal for demanding applications. Available in five sizes (800 g, 1,600 g, 3 kg, 5 kg, and 7 kg), these cartridges are compatible with most high-flow flash chromatography systems. Adapters are also available to accommodate tubing of various outer diameters.

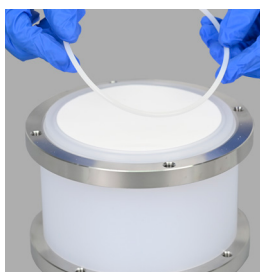
The iLOK™ III large-size empty solid-load cartridge offers a practical and cost-effective solution. The iLOK™ III empty solid-load cartridge features reusable stainless steel components (end caps (x2), retaining rings (x2), and washers & butterfly screw bolts (x8)) ensuring long-term use and cost efficiency. Disposable parts, including the column tube (x1), frits (x2), and sealing rings (x2), can be replaced as needed after contamination, offering convenience and reduced operational costs.



Using the SepaFlash™ iLOK™ III Large-Size Empty Solid-Load Cartridges: A Step-by-Step Guide

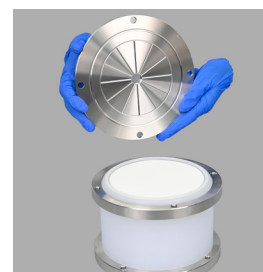
Step 1:

Put the column on a stable surface. Position the frit at the opening of the column tube, then press it into the tube in a single direction until it sits flat. Place the sealing ring in the groove of the column tube.



Step 2:

Place the end cap on the top of the sealing ring.



Step 3:

Insert the washer and the butterfly screw bolt into each of the four (4) holes.



Step 4:

Hand-tighten the four (4) butterfly bolts to firmly secure the end cover.



Step 5:

Flip the column onto the bench and fill the tube with the appropriate chromatographic media or solid sample as needed.



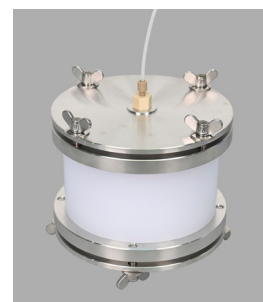
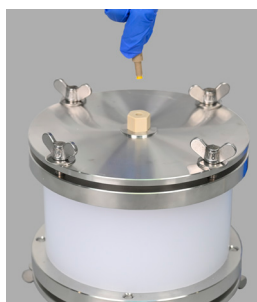
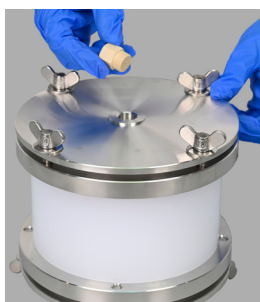
Step 6:

Place the top frit evenly on the packed media bed, ensuring it is aligned horizontally. Then repeat steps 2 through 4 precisely.



Step 7:

Connect the tubing adapters to the cartridge's inlet and outlet, selecting the appropriate size (1/8-inch, 3/16-inch, 1/4-inch, or 3/8-inch OD).



BLL-0506-XXX-2: Adapter kit for SD800 - SD7000

Where XXX is:

- 032 for 1/8-inch
- 048 for 3/16-inch
- 064 for 1/4-inch



Ordering Information

This section will guide you in building your SepaFlash™ Column product number. Each number follows the structure:

Standard & Large Size Series

S-[Phase Code]-[Column Code]



Ex: SepaFlash™ Column - Standard Series, Irregular Silica, 40 - 63 μm , 60 Å, 330 g: **S-5101-0330**
SepaFlash™ Column - Standard Series, Neutral Alumina, 50 - 75 μm , 55 Å, 40 g: **S-8601-0040-N**
SepaFlash™ Column - HP Platinum Series, 40 - 75 μm , 70 Å, 330 g: **SW-2101-0330-SP**

HP & Functionalized Series

SW-[Phase Code]-[Column Code]



Ex: SepaFlash™ Column - HP Platinum Series, Spherical Silica, 40 - 75 μm , 70 Å, 25 g: **SW-2101-0025-SP**
SepaFlash™ Column - Reversed Phase Series, Spherical C18, 20 - 45 μm , 100 Å, 4 g: **SW-8222-004-SP**

iLOK™ & iLOK™-SL Series

[SD or SL]-[Phase Code]*-[Column Code]



Ex: SepaFlash™ iLOK™ Empty Solid-Load Cartridges, 120 g (with screw cap, frits, disbursing unit, O-ring and end tips): **SD-0000-120**
SepaFlash™ iLOK™-SL Cartridges, High-Efficiency, Spherical C18, 20 - 45 μm , 100 Å, 4 g: **SL-8222-004-SP**

* Please use phase code "0000" for empty cartridges.

We take pride in being the only company that allows customers to purchase the exact number of units they need, providing flexibility tailored to your specific requirements.



Available Accessories

The table below highlights the most popular accessories for the SepaFlash™ iLOK™ and iLOK™-SL (SL) series.

Item Number	Description	Qty / Box
Top Frit (16 - 20 µm) for iLOK™ Series		
PF-113-SD-004	Top frit for 4 g iLOK™	50
PF-113-SD-012	Top frit for 12 g iLOK™	
PF-113-SD-025	Top frit for 25 g iLOK™	
PF-123-SD-040	Top frit for 40 g iLOK™	
Top Frit (20 - 25 µm) for iLOK™ Series		
PF-124-SD-060	Top frit for 60 g iLOK™	20
PF-124-SD-080	Top frit for 80 g iLOK™	
PF-134-SD-100	Top frit for 100 g iLOK™	
PF-124-SD-120	Top frit for 120 g iLOK™	
PF-134-SD-220	Top frit for 220 g iLOK™	
PF-134-SD-330	Top frit for 330 g iLOK™	
PF-034-SD-0800B-7000B	Top frit for 800 g to 7 kg iLOK™ large-size	1
PF-134-S-10KG	Top frit for 10 kg iLOK™ large-size	
Standard Silicone O-Ring for iLOK™ Series*		
OS-SD-004	O-ring for 4 g iLOK™	50
OS-SD-012	O-ring for 12 g iLOK™	
OS-SD-025	O-ring for 25 g iLOK™	
OS-SD-040	O-ring for 40 g iLOK™	
OS-SD-060	O-ring for 60 g iLOK™	20
OS-SD-080	O-ring for 80 g iLOK™	
OS-SD-100	O-ring for 100 g iLOK™	
OS-SD-120	O-ring for 120 g iLOK™	
OS-SD-220	O-ring for 220 g iLOK™	
OS-SD-330	O-ring for 330 g iLOK™	
Frit Insertion Rod Tool		
TO-PF-IR-001	Frit insertion rod tool for 4 g iLOK™	1
TO-PF-IR-002	Frit insertion rod tool for 12 g, 25 g & 40 g iLOK™	
TO-PF-IR-003	Frit insertion rod tool for 60 g, 80 g, & 120 g iLOK™	
TO-PF-IR-004	Frit insertion rod tool for 100 g, 220 g & 330 g iLOK™	
Cap Screwing Tool		
TO-SD-0104	Cap screwing tool for 60 g & 330 g iLOK™	1
TQ-001	Bench clamp for iLOK™ cartridge screwing cap	
TO-SD-0103	Cap screwing tool for for 60 g & 330 iLOK™ and bench clamp	

*Convenient Installation of O-Ring

Place the appropriate O-ring evenly inside the lid of the iLOK™ column. Then, invert and securely tighten the iLOK™ column. Installation is simple and can be completed easily after unscrewing.

Note: O-rings may deform after prolonged exposure to organic solvents but usually recover within 40 minutes. To extend their service life, unscrew the iLOK™ column, rinse with ethanol, then place in a well ventilated place or blow-dry after each experiment.

Item Number	Description	Qty / Box	
Bottom Frit (16 - 20 μm) for iLOK™ Series			
PF-213-SD-004	Bottom frit for 4 g iLOK™	50	
PF-213-SD-012	Bottom frit for 12 g iLOK™		
PF-213-SD-025	Bottom frit for 25 g iLOK™		
PF-223-SD-040	Bottom frit for 40 g iLOK™		
Bottom Frit (20 - 25 μm) for iLOK™ Series			
PF-224-SD-060	Bottom frit for 60 g iLOK™	20	
PF-224-SD-080	Bottom frit for 80 g iLOK™		
PF-234-SD-100	Bottom frit for 100 g iLOK™		
PF-224-SD-120	Bottom frit for 120 g iLOK™		
PF-234-SD-220	Bottom frit for 220 g iLOK™		
PF-234-SD-330	Bottom frit for 330 g iLOK™	1	
PF-034-SD-0800B-7000B	Bottom frit for 800 g to 7 kg iLOK™ large-size		
PF-234-S-10KG	Bottom frit for 10 kg iLOK™ large-size		
Fluorocarbon (FKM) O-Ring for iLOK™ Series*			
OS-SD-004-F	FKM O-ring for 4 g iLOK™	50	
OS-SD-012-F	FKM O-ring for 12 g iLOK™		
OS-SD-025-F	FKM O-ring for 25 g iLOK™		
OS-SD-040-F	FKM O-ring for 40 g iLOK™		
OS-SD-060-F	FKM O-ring for 60 g iLOK™	20	
OS-SD-080-F	FKM O-ring for 80 g iLOK™		
OS-SD-100-F	FKM O-ring for 100 g iLOK™		
OS-SD-120-F	FKM O-ring for 120 g iLOK™		
OS-SD-220-F	FKM O-ring for 220 g iLOK™		
OS-SD-330-F	FKM O-ring for 330 g iLOK™	1	
Disposable Parts for iLOK™ III Large-Size Series			
ET-SD0800B-1	Disposable plastic column 800 g		
ET-SD1600B-1	Disposable plastic column 1,600 g	1	
ET-SD3000B-1	Disposable plastic column 3 kg		
ET-SD5000B-1	Disposable plastic column 5 kg		
ET-SD7000B-1	Disposable plastic column 7 kg		
PF-034-SD-0800B-7000B	Disposable frit for large-size 800 g to 7 kg iLOK™ III	1	
OS-SD-0800B-7000B-1	Disposable sealing ring for large-size 800 g to 7 kg iLOK™ III		
Reusable Parts for iLOK™ III Large-Size Series			
CNTK-SD-0800B-7000B-1	Reusable assembly for large-size iLOK™ III 800 g to 7 kg, including one stainless steel cap, retaining ring, & sealing ring, and four butterfly screw bolts	1	





SepaFlash™ Bulk Silica Gels

Available in both irregular and spherical forms, with bare or bonded options.



Simplify your purification, maximize your efficiency!

Santai Science Inc.

SepaFlash™ Bulk Silica Gels

Reliable Solutions for Fast and Precise Separations!

Product Overview

SepaFlash™ Ultra-Pure silica gels offer high purity, reliability, and cost-effectiveness. Available in bare and bonded forms, they are designed for flash chromatography, preparative purification, and process-scale applications, ensuring high resolution and efficiency.

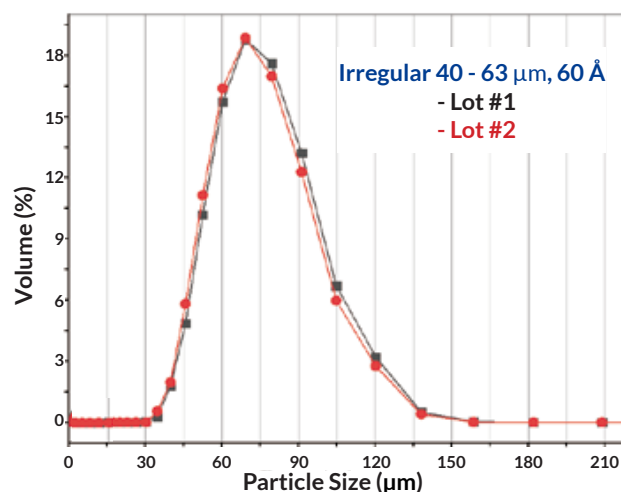
With a focus on quality and consistency, these silica gels are manufactured using advanced processes to maintain tight particle size distribution, uniform pores, and batch-to-batch reproducibility. These features support scalable, high-performance separations, enabling researchers and production chemists to achieve efficient, cost-effective purification.



SepaFlash™ Bulk Silica Gels

Key Features

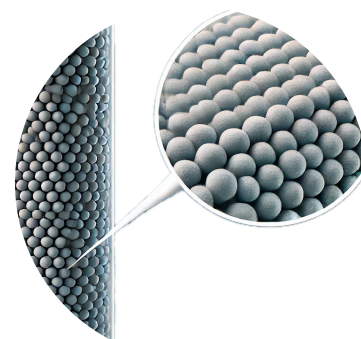
- **Ultra-High Purity**
Low trace metal content ensures peak reproducibility, superior peak shapes, and minimal interference.
- **Tight Particle Size Distribution**
Ensures uniform column packing, better flow rates, and reduced fines.
- **Enhanced Surface Area & Density**
Provides greater sample loading capacity, boosting productivity.
- **High Mechanical Stability**
Withstands high-pressure applications without degradation, ensuring durability and performance under demanding conditions.
- **Batch-to-Batch Consistency**
Each batch undergoes rigorous quality testing to ensure reliable and reproducible chromatographic performance (see graph at right).



Importance of Tight Particle Size Distribution in Chromatography

A tight particle size distribution enhances column performance by ensuring homogeneous packing which leads to:

1. **Higher resolution:** uniform particles minimize band broadening, improving separation
2. **Better reproducibility:** consistent flow dynamics lead to reliable results
3. **Optimized flow rate:** reduces backpressure variations, ensuring stable operation
4. **Improved peak shape:** uniform packing minimizes peak tailing
5. **Longer column life:** prevents channeling and void formation



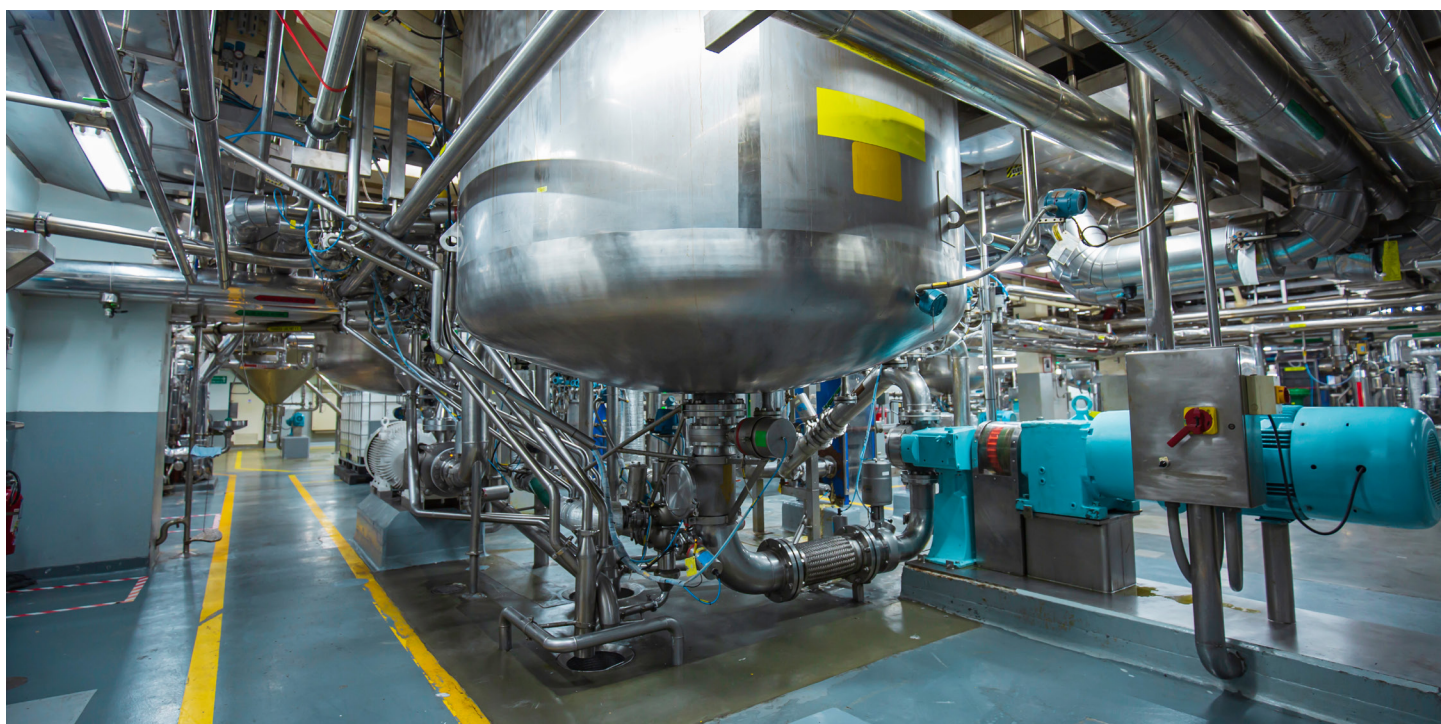
In summary, a narrow particle size distribution leads to better efficiency, precision, and longevity in chromatography.



Grafting Process of SepaFlash™ Bonded Silica Gels

The grafting process of SepaFlash™ bonded silica gel functionalizes the silica surface with organosilanes, enhancing efficiency, selectivity, and versatility for both normal-phase and reversed-phase chromatography. Our state-of-the-art bonding capabilities enable the manufacture of multi-ton scale silica, ensuring scalability for industrial applications. This process follows key steps, optimizing surface chemistry, stability, and retention properties to ensure consistent and high-performance separations.

Step	Description	Key Features
1. Surface Activation (Optional)	Prepares silica by generating reactive silanol (-Si-OH) groups, using the most suitable method to ensure optimal surface activation.	Removes impurities, increases hydroxyl group density, and prepares the silica surface for effective bonding reactions.
2. Silane Coupling	Introduces organosilanes to react with silanol groups, forming stable Si-O-Si bonds.	<p>Monomeric grafting: forms a thin, single-layer attachment with high surface coverage, ensuring faster mass transfer and sharper peaks. Provides moderate retention strength, making it ideal for rapid separations of small organic molecules under standard conditions.</p> <p>Polymeric grafting: creates a multi-layered, cross-linked network, offering enhanced durability, stronger retention, and greater stability under extreme pH and solvent conditions. Best suited for extended separations of large or highly hydrophobic analytes.</p>
3. Endcapping (Optional)	Neutralizes unreacted silanol groups using small silane molecules (e.g., TMS), reducing secondary interactions and preventing peak tailing.	<p>Full endcapping: endcaps silanol sites, minimizing interactions and peak tailing, ideal for neutral and basic analytes in reversed-phase chromatography.</p> <p>Selective endcapping: retains some silanol groups for hydrogen bonding, enhancing retention of polar compounds like peptides and proteins, commonly used in polar-embedded phases.</p> <p>Proprietary endcapping: optimized for minimal secondary interactions and high retention efficiency, ensuring maximum performance and longevity in demanding separations.</p>
4. Drying & Quality Control	Removes residual solvents and reactants, followed by thorough testing for product consistency and purity.	Drying removes residual solvents, followed by elemental analysis, surface area measurement, and chromatographic performance evaluation to ensure purity, consistency, and optimal separation efficiency.



Seamless Scale-Up: From Lab to Production

With SepaFlash™ Bare & Bonded silica gel, you can seamlessly scale from lab research to manufacturing without changing the base material or bonding chemistry. Whether using analytical HPLC, preparative HPLC, or flash chromatography, the same silica characteristics ensure reproducibility and consistency at every stage.

For example, you could start with SepaFlash™ 40 - 63 µm silica gel in the laboratory for method development and initial purification. Then, using:

- 10 µm silica gel for higher-resolution purification
- 15 µm or 20 - 45 µm silica for even larger-scale preparative chromatography
- 60 - 200 µm silica for process chromatography

This flexibility applies to both bare and bonded silica, allowing seamless method transfer from normal-phase or reversed-phase chromatography to large-scale purification. Sourcing from the same manufacturer eliminates variability, ensuring consistent retention times, selectivity, and resolution.

Whether purifying milligrams in the lab or kilograms in production, SepaFlash™ silica gel enables a smooth, reliable scale-up while minimizing risk and maximizing efficiency.



SepaFlash™ Portfolio

SepaFlash™ Bare Silica Gels

SepaFlash™ Bare Silica Gels, available in both irregular and spherical forms, deliver high-purity, efficient separations for chromatography and flash purification. For a complete list of available SepaFlash™ Bare Silica Gels, refer to the tables below or the Ordering Information section.

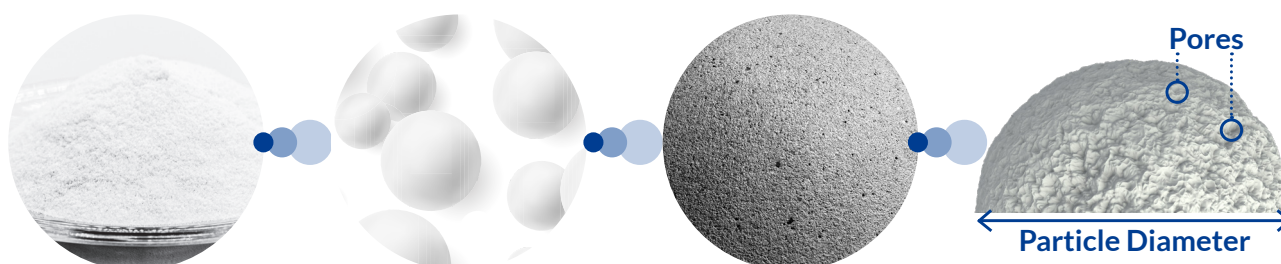
Particle Size		Pore Size	
Irregular Bare Silica Gels			
● 15 - 40 μm	● 60 - 200 μm	● 60 Å	● 150 Å
● 40 - 63 μm	● 200 - 500 μm	● 90 Å	● 300 Å

Particle Size		Pore Size	
Spherical Bare Silica Gels			
● 10 μm	● 20 - 45 μm	● 50 Å	● 100 Å
● 20 μm	● 50 μm	● 70 Å	● 300 Å
● 25 μm	● 40 - 75 μm		

Relation Between Pore Size, Pore Diameter and Surface Area

This illustration demonstrates the relationship between particle diameter and pore structure in silica gel. The particle diameter refers to the overall size of the silica particle, while the pores represent the internal cavities within the particle. The pore size of silica gel directly affects its surface area and chromatographic performance:

- **Larger pores:** lower surface area, suitable for large molecules like peptides and proteins, ensuring easy pore access
- **Smaller pores:** higher surface area, ideal for small molecules, enhancing retention through greater surface interactions



SepaFlash™ Portfolio

SepaFlash™ Bonded Silica Gels

SepaFlash™ Bonded Silica Gels provide high-performance, chemically modified silica for normal-phase, reversed-phase, ion-exchange, and HILIC applications. The various chromatography modes are outlined below.

Chromatography Mode	Stationary Phase	Separation Mechanism	Key Applications	Typical Mobiles Phases
Normal Phase Chromatography	Polar (Bare Silica, NH ₂ , Diol)	Polarity-based (polar compounds elute last)	Pharmaceuticals, polar organics, fine chemicals	Non-polar organic solvents (hexane, ethyl acetate)
Reversed Phase Chromatography	Non-polar (C18, C8, C4, CN, Phenyl, Phenyl-Hexyl)	Hydrophobic interactions (non-polar compounds elute last)	Lipids, peptides, hydrophobic molecules	Polar solvents (methanol, acetonitrile, water)
Ion-Exchange Chromatography	Charged silicas: Anion exchanger: SAX Cation exchanger: SCX	Charge-based interactions (oppositely charged analytes bind and elute with salt gradient or pH change)	Proteins, nucleotides, charged molecules	Aqueous buffer with varying ionic strength or pH
HILIC Chromatography	Polar (NH ₂ , Diol)	Hydrophilic partitioning and hydrogen bonding (polar compounds elute last)	Sugars, carbohydrates, hydrophilic compounds	Aqueous-organic mixtures (high organic content, low water content)

The stationary phase is key to separation efficiency and selectivity in chromatography. The table below compares various silica phases, their applications, and key features.

Stationary Phase	Chromatography Mode	Key Features
Octadecyl (C18)	Reversed Phase Chromatography	Highly hydrophobic phase, ideal for retaining non-polar compounds such as long-chain lipids and hydrophobic peptides
Octadecyl (C18) AQ		Specialized C18 bonded silica for high aqueous mobile phases, preventing phase collapse and enhancing polar compound separations
Octyl (C8)		Moderately hydrophobic phase, offering faster elution for mid-polarity compounds compared to C18
Butyl (C4)		Less hydrophobic than C18 and C8, providing better selectivity for large biomolecules such as proteins and peptides
Phenyl		Aromatic phase offering π - π interactions, enhancing selectivity for aromatic and conjugated compounds
Phenyl-Hexyl	Normal Phase & Reversed Phase	Combines hydrophobic and π - π interactions for improved retention of aromatic and non-polar compounds
Cyano (CN)		Moderately polar phase allowing both normal phase and reversed-phase separations
Diol		Alternative to bare silica, reducing strong silica interactions for improved selectivity and controlled retention
Amino (NH₂)	Normal Phase, Ion-Exchange & HILIC Phase	Polar phase suited for HILIC and carbohydrate separations
Strong Anion Exchange (SAX)	Ion-Exchange Chromatography	Charged phase for retaining negatively charged compounds
Strong Cation Exchange (SCX)		Charged phase for retaining positively charged compounds
ARG	HILIC Phase	ARG Silica, modified with arginine, offers strong hydrophilic affinity, high separation efficiency, and distinct selectivity

This diagram illustrates the polarity scale of various chromatographic phases, ranging from polar silica to non-polar C18.



Selecting the Right Silica for Chromatographic Applications

Choosing the right silica gel is crucial for achieving optimal separation, resolution, and efficiency. The choice of silica gel impacts:

- Separation efficiency (resolution)
- Sample loading capacity
- Flow rate and back pressure

Selecting the optimal silica gel depends on your sample characteristics and purification objectives. Refer to the following pages for detailed guidance.

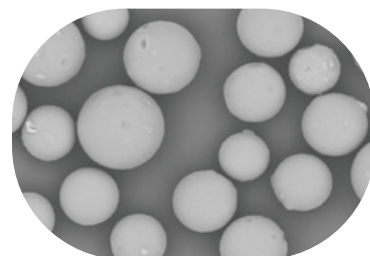
1. Spherical vs Irregular Silica: Which One to Choose?

Silica gel is available in two primary shapes: spherical and irregular. The shape of the silica significantly impacts chromatography performance, affecting factors such as packing efficiency, flow rate, column performance, and resolution.

Spherical Silica

Spherical silica particles are manufactured using advanced processes that create uniform, highly structured beads. These particles offer several advantages:

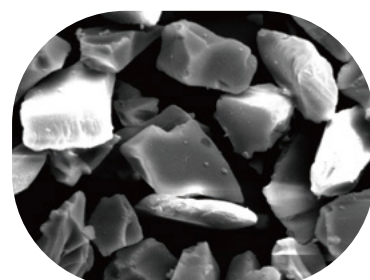
- **Efficient packing & flow:** higher packing density ensures better efficiency with lower backpressure and consistent flow rates.
- **Enhanced reproducibility & resolution:** uniform particle distribution improves batch-to-batch consistency and peak sharpness.



Irregular Silica

Irregular silica, produced through milling and classification, remains a popular choice due to its cost-effectiveness and versatility. The table below highlights its key advantages for various chromatographic applications.

- **More cost-effective:** a lower-cost option for routine applications and large-scale purifications.
- **Good for standard flash chromatography:** suitable for processes where high resolution is not required.



When to Choose Spherical vs Irregular Silica

The decision between spherical and irregular silica depends on the chromatographic application, cost considerations, and required efficiency. Use the table below as a guide:

Silica Shape	Advantages	Best For
Spherical	Better packing, lower back pressure, higher efficiency, improved resolution	Preparative chromatography, high-resolution separations
Irregular	More cost-effective, good for large-scale purification, high surface area	Standard flash chromatography, cost-sensitive applications, large-scale purifications



Tips

- Use **spherical** silica for high-resolution, high-efficiency separations with better packing, lower backpressure, and improved flow.
- Use **irregular** silica for a cost-effective choice for standard flash chromatography and bulk separations.

Selecting the right shape optimizes performance and workflow efficiency while meeting your purification needs.



Selecting the Right Silica for Chromatographic Applications (cont'd)

2. Particle Size: Balancing Resolution and Flow Rate

Selecting the right particle size is essential for balancing resolution, flow rate, and sample loading capacity, ensuring optimal separation efficiency and performance.

Particle Size	Advantages	Best For	Considerations
10 μm	Exceptional resolution & peak sharpness	Ultrahigh-resolution or very difficult separations	Very high backpressure, requires HPLC system or DAC column
15 μm	Excellent resolution with sharper peaks	High-resolution preparative separations	Higher backpressure, requires precise flow control
15 - 40 μm	Improved resolution & sharper peaks	High-resolution separations	Higher backpressure, slower flow rate
25 μm (20 - 45 μm)	Balance between resolution & speed	General-purpose and semi-preparative applications	Moderate backpressure, versatile use
50 μm (40 - 63/75 μm)	Good balance between resolution & speed	Most popular size for flash chromatography	Reasonable backpressure
60 - 200 μm	Faster flow rate & high sample loading	Large-scale flash chromatography	Lower resolution
200 - 500 μm			



Tips

- **For high-resolution & HPLC applications**, 10 to 40 μm silica provides superior separation but requires higher operating pressure.
- **For standard flash chromatography**, a 50 μm mean particle size (e.g., 40 - 63 μm or 40 - 75 μm) provides an optimal balance of resolution, speed, and ease of use.
- **For large-scale purification or viscous samples**, 60 - 200 μm silica enables faster flow rates, high sample loading, and reduced backpressure, making it ideal for bulk purification.

By carefully selecting the appropriate particle size, you can ensure optimal chromatographic performance and cost-effectiveness.

3. Pore Size: Matching to Your Target Molecules

Pore size determines the interaction between silica and your compounds. Smaller pores increase surface area, improving separation of small molecules, while larger pores accommodate larger molecules.

Pore Size	Best For	Typical Applications
50 - 70 Å	Small molecules (< 1,000 Dalton)	Pharmaceuticals, organic compounds, small drug molecules, alkaloids, and flavonoids
90 - 300 Å	Medium-sized molecules (1,000 - 10,000 Da)	Peptides, lipids, small proteins, oligonucleotides, steroids, and dye molecules
> 300 Å	Large biomolecules (> 10,000 Da)	Large proteins, antibodies, nucleotides, polysaccharides, and synthetic polymers



Tips

- **Use 50-70 Å silica** for small organic molecules and pharmaceutical compounds where high surface interaction improves separation.
- **Use 90 - 300 Å silica** for peptides, lipids, and small proteins, ensuring balanced retention and diffusion.
- **Use > 300 Å silica** for large biomolecules like proteins, nucleotides, and polymers to prevent steric hindrance and improve recovery.

Choosing the right pore size ensures optimal separation, peak resolution, and recovery. Proper selection minimizes steric hindrance and enhances retention, leading to reliable and reproducible chromatography results.



Selecting the Right Silica for Chromatographic Applications (cont'd)

4. Surface Chemistry: Bare vs. Bonded Phases

Silica gel is one of the most versatile stationary phases in chromatography, owing to its customizable surface chemistry. Depending on the chromatographic technique and the nature of the analytes, silica gel can be used in its bare (unbonded) form or chemically modified (bonded) to enhance its selectivity and performance.

Bare Silica

Bare silica provides a highly polar surface that interacts strongly with polar compounds. Its high polarity makes it ideal for normal-phase chromatography, where polar analytes are retained on the stationary phase while non-polar compounds elute more quickly. Key characteristics and advantages include:

- **Applications:** normal phase chromatography for effective separation of polar organic compounds, pharmaceuticals, and fine chemicals with high polarity differences.
- **Mobile phases:** typically used with non-polar solvents such as hexane, ethyl acetate, and dichloromethane.

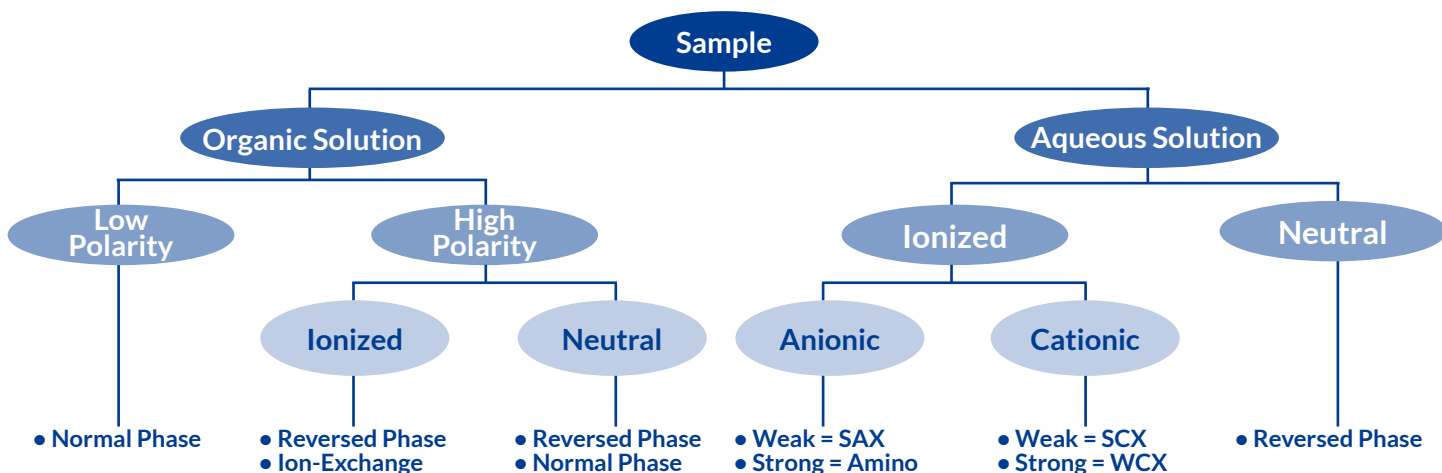
Bonded Silica

Bonded phases are designed to modify the polarity and interaction properties of silica, broadening its suitability for a wide range of chromatographic techniques. The table below summarizes the recommended silica gel types for various chromatography applications, detailing their phase types, typical uses, and compatible mobile phases.

Application	Best Silica Type	Phase Type	Examples	Typical Mobiles Phases
Normal Phase Chromatography	Bare Silica, NH ₂ , Diol	Highly polar surface; retains polar compounds	Pharmaceuticals, polar organics, fine chemicals	Hexane, Ethyl Acetate, Dichloromethane
Reversed Phase Chromatography	C18, C8, C4, CN, Phenyl, Phenyl-Hexyl	Hydrophobic (C18, C8); moderately polar (CN)	Lipids, peptides, hydrophobic molecules	Methanol, Acetonitrile, Water
HILIC Chromatography	NH ₂ , Diol	Polar; retains hydrophilic compounds	Sugars, carbohydrates, hydrophilic compounds	Acetonitrile, Water
Ion-Exchange Chromatography	SAX, SCX	Binds negatively (SAX) or positively (SCX) charged compounds	Proteins, nucleotides, charged molecules	Water, Buffered Mobile Phases
Peptide & Protein Purification	C18, C8 (Wide Pore)	Hydrophobic; optimized for large biomolecules	Biopharmaceuticals, peptide drugs	Water, Acetonitrile, TFA
Preparative Chromatography	Spherical Silica (10 - 40 µm)	High-purity compound isolation	Pharmaceuticals, specialty chemicals	Methanol, Acetonitrile, Water

Sorbent Selection Based on Solvent Nature

Sorbent selection is guided by key considerations outlined in the diagram below. These include the sample solvent type (aqueous or organic), the nature of the analyte (non-polar, polar, or ionized), and the degree of ionization (strong or weak acid/base). This structured approach provides a clear and logical framework for selecting the appropriate method.

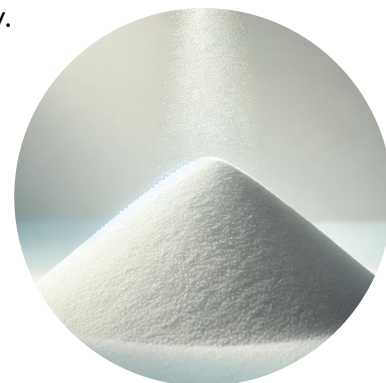


4. Surface Chemistry: Bare vs. Bonded Phases (cont'd)



Tips

- For polar compounds, use **bare silica** in normal phase chromatography.
- For hydrophobic and non-polar compounds, use **C18 / C8 / C4** in reversed phase chromatography.
- For aromatic compounds, start with a Phenyl or Phenyl-Hexyl phase, which offers enhanced selectivity through π - π interactions. If these do not provide satisfactory results, consider using an alternative reversed phase sorbent.
- For specific applications like carbohydrates or HILIC separations, use **NH₂, Diol or CN**.
- For charged compounds, use **SAX / SCX** in ion-exchange chromatography.

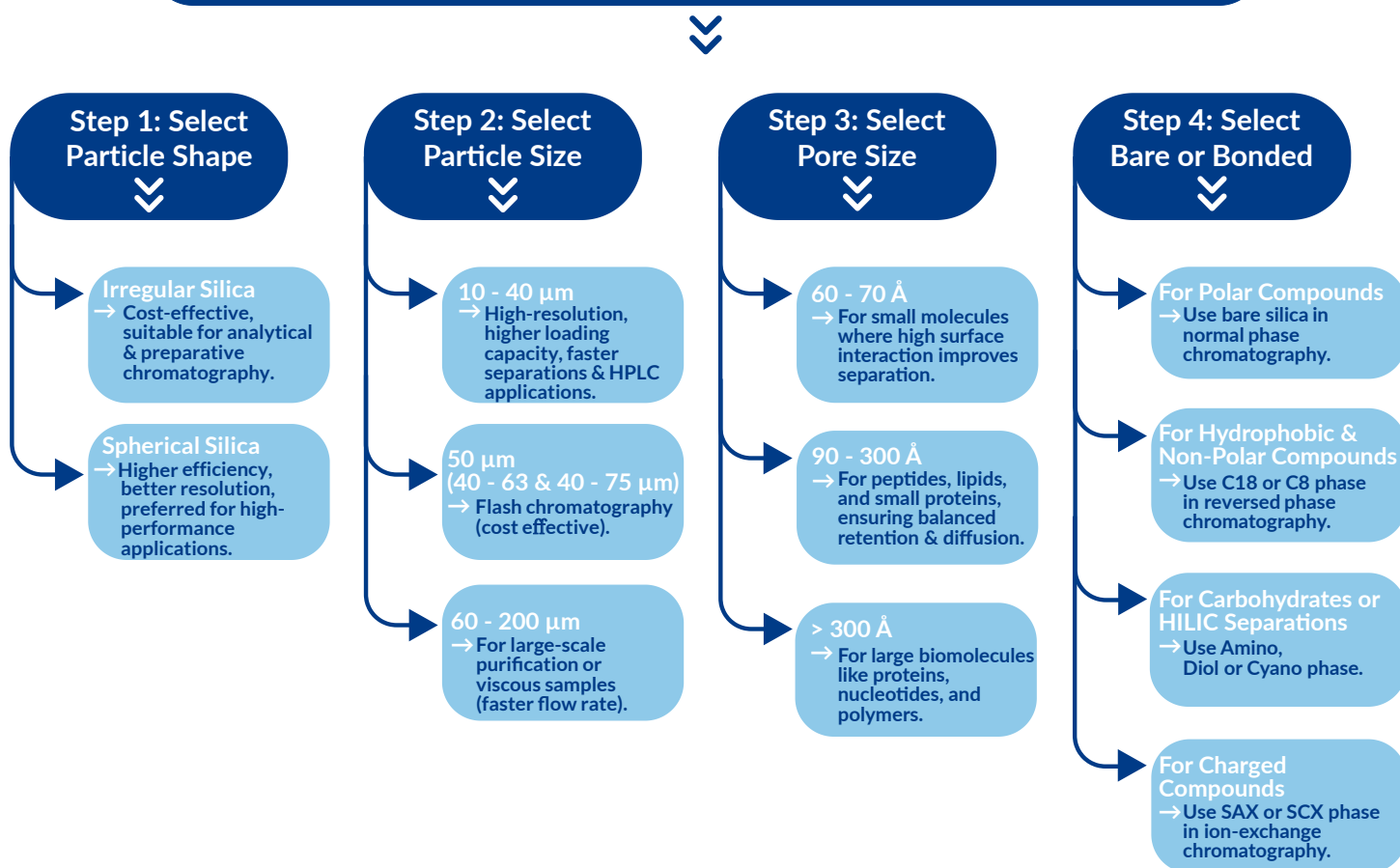


Carefully matching silica type to your application ensures maximum efficiency, reproducibility, and separation quality.

5. In summary

Selecting the right silica gel is essential for optimal separation, efficiency, and reproducibility. By considering particle size, pore size, surface chemistry, and shape, you can achieve the best chromatographic performance for your application.

How to select the right silica?



Chromatography Troubleshooting Guide



This guide highlights and resolves common challenges encountered during a chromatography experiment.

Issue	Possible Cause	Solution
Uneven Packing (Irregular Bed Formation)	Pouring the slurry too quickly	Slowly pour the slurry while maintaining a steady flow
	Uneven solvent draining	Use a gentle tapping motion on the column sides to settle the silica evenly
	Air bubbles trapped in silica bed	Degas the slurry before pouring using mild vacuum or sonication
Slow Flow Rate or No Flow	Column packed too tightly	Reduce packing pressure to allow better flow
	Clogged column frit or tubing blockage	Clean or replace clogged frits and check tubing for blockages
	Silica particle size too small	Use a larger particle size for faster flow
	Mobile phase too viscous	Modify solvent composition to lower viscosity
Channeling (Cracks or Gaps in the Silica Bed)	Uneven solvent addition	Slowly introduce solvent to prevent turbulence
	Improper packing of the column	Repack the column with a uniform slurry method
Poor Separation or Peak Resolution	Uneven silica packing affects band diffusion	Ensure uniform packing by following proper slurry preparation and pouring techniques
	Inappropriate solvent gradient	Optimize the solvent gradient by adjusting polarity changes
	Overloaded sample concentration	Dilute the sample or reduce injection volume
Silica Gel Loss During Packing	Loose packing at the column bottom	Use a frit or filter at the column base to prevent silica loss
	No proper frit or cotton support at the base	Press down a small amount of solvent-wetted silica before pouring the slurry
Air Bubbles in the Column	Insufficient degassing before pouring	Degas the slurry properly using sonication or vacuum
	Fast solvent addition causing turbulence	Add solvent gently along the column walls to prevent air entrapment
	Improper pouring of the slurry	Allow the silica to settle naturally and avoid sudden solvent drainage
Sample Sticking to the Column	Sample interaction with the stationary phase is too strong, leading to retention	<ul style="list-style-type: none"> - For reversed phase chromatography, increase the percentage of organic solvent (e.g., acetonitrile or methanol) to reduce hydrophobic interactions - For normal phase chromatography, increase the polarity of the mobile phase (e.g., adding more polar modifiers like ethyl acetate) to improve elution
	Inadequate organic modifier in the mobile phase	Adjust buffer composition or add appropriate modifiers



Ordering Information

Bare Silica Gels

Tables below lists the product numbers for both Irregular & Spherical Bare Silica Gels based on their mean particle size and nominal pore diameter. To place an order, add the desired quantity to the product number, such as "-1kg" for 1 kg or "-25kg" for 25 kg.

Mean Particle Size	Nominal Pore Diameter			
	60 Å	90 Å	150 Å	300 Å
Irregular Bare Silica Gels				
15 - 40 µm	ST5102-IR	ST5112-IR	ST5152-IR	ST5172-IR
40 - 63 µm	ST5101-IR	ST5111-IR	ST5151-IR	ST5171-IR
60 - 200 µm	ST5107-IR	ST5117-IR	ST5157-IR	ST5177-IR
200 - 500 µm	ST5109-IR	ST5119-IR	ST5159-IR	ST5179-IR

Mean Particle Size	Nominal Pore Diameter			
	50 Å	70 Å	100 Å	300 Å
Spherical Bare Silica Gels				
10 µm	-	-	ST6124-SP / ST2124-SP	-
15 µm	ST2103-SP(H)	-	ST2123-SP	-
20 µm	-	ST2105-SP	ST2125-SP	-
25 µm	ST2102-SP(H)	-	ST2102-SP(S)	-
20 - 45 µm	-	ST2102-SP	ST2122-SP	ST2172-SP
50 µm	ST2101-SP(H)	ST6101-SP	-	-
40 - 75 µm	-	ST2101-SP	ST2121-SP	ST2171-SP

Functionalized Silica Gels

This section will guide you in constructing your SepaFlash™ Bonded Silica Gels product number. Our standard bonded silica is manufactured using irregular silica gel (40 - 63 µm, 60 Å), along with select spherical silica options. Each product number follows the structure outlined below.

ST [Stationary Phase Code] [Pore Size Code] [Particle Size Code] - [Silica Shape Code] - [Quantity]

Ex: SepaFlash™ High-Quality Irregular C18 Silica, 40 - 63 µm, 60 Å, 500 g: **ST8201-IR-500g**

SepaFlash™ UltraPure Spherical C18 Silica, 40 - 75 µm, 100 Å, 1 kg: **ST5221-SP-1kg**

[Stationary Phase Code]

Stationary Phase	Code
Octadecyl (C18)	52 or 82
Octadecyl (C18) AQ	52, (AQ)*
Octyl (C8)	58
Butyl (C4)	54
Phenyl	5B
Phenyl-Hexyl	5C
Cyano (CN)	53
Diol	59
Amino (NH ₂)	55
SAX	50
SCX	57
ARG	56

* Added at the end of the product number

[Pore Size Code]

Pore Size	Code
50 Å	0
60 Å	0
70 Å	0
90 Å	1
100 Å	2
150 Å	5
300 Å	7

[Particle Size Code]*

Particle Size	Code
10 µm	4
15 µm	3
20 µm	5
25 µm	6
20 - 45 µm	2
40 - 63 µm	1
40 - 75 µm	1
50 µm	0

* Please refer to this table only for functionalized (bonded) silica gels. For part numbers related to bare silica gels, please refer to the table in the "Bare Silica Gel" section above.

[Silica Shape Code]

Silica Shape	Code
Irregular	IR
Spherical	SP



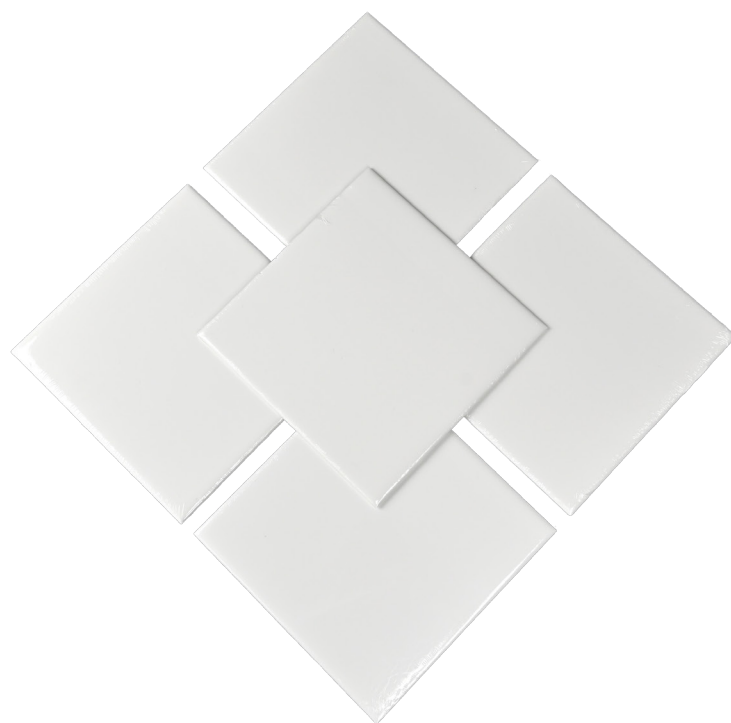
If you require a custom product, please don't hesitate to contact us.





SepaFlash™ TLC Plates

Reliable solutions
for fast and precise
separations!



Simplify your purification, maximize your efficiency!

Santai Science Inc.

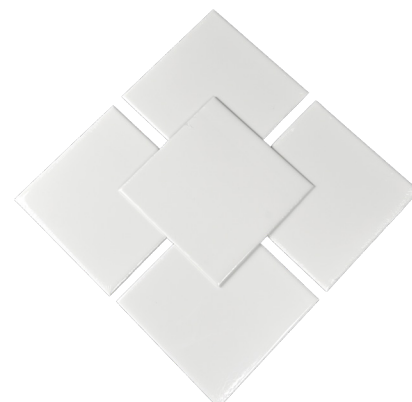
SepaFlash™ TLC Plates

Reliable Solutions for Fast and Precise Separations!

Product Overview

Thin Layer Chromatography (TLC) plates are indispensable for quick and effective compound separations. SepaFlash™ TLC Plates offer exceptional quality and reliable performance, ensuring precise analyses.

With uniform silica gel coating, high-purity materials, and customizable options, SepaFlash™ TLC Plates ensure sharp separations for both analytical and preparative applications. Available in various sizes and functionalized phases, they meet diverse research needs with consistency and efficiency.



SepaFlash™ TLC Plates

Key Features

■ High Performance and Efficiency

SepaFlash™ TLC Plates ensure high-resolution separations with optimized particle size and reduced solvent use, making them environmentally friendly.

■ Versatility and Durability

Compatible with UV, iodine vapor, and stains, these plates feature durable glass or aluminum backings for solvent compatibility and long-lasting performance.

Applications

TLC plates are indispensable tools in a variety of industries due to their versatility and reliability. Key applications include:

- **Pharmaceuticals:** used to ensure drug quality by testing purity, identifying active ingredients, and detecting impurities.
- **Food safety:** essential for detecting contaminants, verifying product quality, and ensuring compliance with regulatory standards.
- **Environmental monitoring:** aids in identifying pollutants and analyzing samples for potential environmental hazards.
- **Forensic science:** assists in analyzing crime scene evidence, including the identification of substances like drugs, toxins, or other trace materials.

Choosing the Right TLC Plate

TLC plates come in various forms and sizes to suit different needs. Here are the key factors to consider when selecting a TLC plate:

Adsorbent Material

The adsorbent layer is usually silica gel but can also include aluminum oxide, Florisil, or modified silica like reversed-phase layers (C8, C18), amino, or cyano. Your choice depends on the compound you're separating. Check past methods to guide your selection - it saves time and effort.



Choosing the Right TLC Plate (cont'd)

Plate Backing

Most plates have a glass backing for durability and compatibility with solvents. Flexible backing like aluminum is easier to cut for smaller sizes. Glass plates can also come pre-scored for convenience. The table below compares the glass and aluminum backings for TLC plates.

Properties	Glass	Aluminum
Appearance	Rigid and transparent	Flexible and opaque
Susceptible to breakage	Yes	No
Temperature stability	High	High
Weight and shelf space	High	Low
Can be cut with scissors	No	Yes
Binder stability in water	Depends on the plate type	Limited
Resistance against solvents	High	High
Resistance against mineral acids and conc. ammonia	High	Low

Layer Thickness

Thicker layers allow for sample recovery using scrapers or suction tools.

- 200 - 250 μm : standard for analytical TLC
- 100 - 200 μm : for high-performance TLC (HPTLC) with better resolution
- 500 - 2,000 μm : for preparative TLC to separate larger samples

Feature	Classical TLC	HPTLC	Preparative TLC
Application	General-purpose analytical separations	High-resolution separations for small samples	Separation and recovery of large sample quantities
Available backing	Aluminum & Glass	Glass	Glass
Cost	Cost-effective	Higher due to precision manufacturing	Higher due to large-scale applications
Layer thickness	200 μm (aluminum) 250 μm (glass)	100 - 200 μm	500 - 2,000 μm
Resolution	Moderate	High	Low to moderate
Sample size	Small	Very small	Large
Sensitivity	Standard	Higher sensitivity due to thinner layers	Lower sensitivity due to thicker layers
Special features	Pre-adsorbent zones, fluorescent indicators	Narrow particle size distribution, high uniformity	Thick layers for sample recovery
Visualization	UV visualization or other staining methods		

Plate Size

Choose a size based on the number of samples and separation distance needed. Common sizes are:

- **Large size 20 × 20 cm**: most popular size and cost-effective.
- **Smaller sizes: 10 × 10 cm, 5 × 10 cm, or 2.5 × 7.5 cm** are great for method development or fewer samples.
- **Scored plates**: glass plates can be pre-scored for easy division into smaller pieces. A single plate can be spotted and split for development in different solvents or developed first, then divided for testing with various visualization techniques.

Scored SepaFlash™ plates are available in two (2) formats:

- 20 x 20 cm scored have three (3) score marks 5 cm apart.
(can be snapped to produce four (4) 5 x 20 cm plates).
- 10 x 20 cm scored have seven (7) score marks 2.5 cm apart.
(can be snapped to produce eight (8) 2.5 x 10 cm plates).



Choosing the Right TLC Plate (cont'd)

Fluorescent Indicator

Plates with a fluorescent indicator glow under UV light, enabling visualization of compounds that are invisible to the naked eye. This method preserves your compounds, making it ideal for preparative TLC.

- **UV254 (most popular):** show dark spots where compounds absorb light at 254 nm.
- **UV366:** may be needed for samples that fluoresce or require spraying with reagents for visibility.

Binder Types

SepaFlash™ TLC plates are available with three (3) binder types, tailored for different applications:

Soft Layer (Gypsum Binder)

Calcium sulfate hemihydrate ($\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$), or gypsum, provides strong adhesion to the glass backing and cohesive particle layers. These plates are compatible with sulfuric acid charring and organic solvents but are not recommended for systems with over 20 % water due to gypsum's aqueous solubility. For higher water tolerance, hard layer plates are ideal.

Hard Layer (Organic Binder)

An organic binder enhances durability, making these plates highly abrasion-resistant and compatible with solvents containing up to 80 % water. The hard layer surface is easy to write on, providing added convenience. This binder supports faster separations (25 - 30 % faster than standard plates) and yields compact, well-resolved spots. It is ideal for most visualization methods but is not recommended for vigorous stains like potassium permanganate (KMnO_4) and p-anisaldehyde.

Hard Layer (Inorganic Binder)

These water-resistant plates are compatible with aqueous solvents, offering superior handling and sample application compared to gypsum binder plates. Their durable surface allows writing with a soft pencil. Hard layer plates with inorganic binders are ideal for applications requiring vigorous stains or avoiding organic binder interactions.

These binder options ensure versatility and reliable performance across diverse TLC applications.

Preadsorbent Zone

The non-reactive layer at the bottom of the plate compresses the sample into a narrow band before separation, enabling larger sample application, enhancing resolution, and allowing for less precise sample placement.

Channeled Plate

Channeled plates have individual sample lanes separated by gaps in the adsorbent. These plates have 9 mm wide adsorbent tracks which are separated by 1 mm wide channels (total of 19 channels) where the adsorbent layer has been removed. This design prevents cross-contamination, making them ideal for precise analyses or legal documentation.



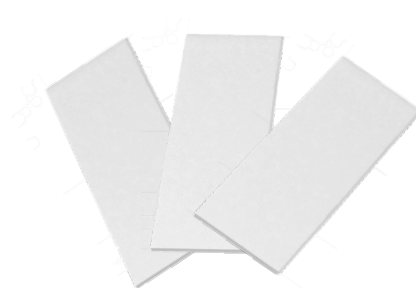
Running a TLC Plate: A Step-by-Step Guide

Running a TLC plate is a simple process that, when followed correctly, ensures precise and reliable results. Follow these detailed steps for optimal outcomes:

1. Prepare Your Materials

Before starting, ensure you have:

- A SepaFlash™ TLC Plate
- Capillary tubes for spotting samples
- A developing chamber
- Your mobile phase (solvent system)
- A UV lamp or stains for visualization



2. Prepare the TLC Plate

- Cut the TLC plate to the appropriate size or use a precut TLC plate.
- Mark the baseline: draw a light baseline 0.5 - 1 cm above the plate's bottom edge with a pencil. Ensure sample spots are above the solvent level in the elution chamber.
- Define sample spots: mark evenly spaced dots on the baseline, keeping 5 mm from the edges and between spots.

3. Prepare the Sample

- Dissolve a small amount of the compound (1 - 2 mg) in a suitable solvent.
- Dip the capillary into the sample and touch it to the baseline mark. Let it dry, repeating if needed for a more concentrated spot.

4. Prepare the Developing Chamber

- Add your chosen mobile phase (see optimizing solvent section) to the chamber. The solvent should be deep enough to cover the bottom of the chamber but below the baseline of the TLC plate.
- Place a piece of filter paper inside the chamber to saturate the atmosphere with solvent vapor.

5. Develop the Plate

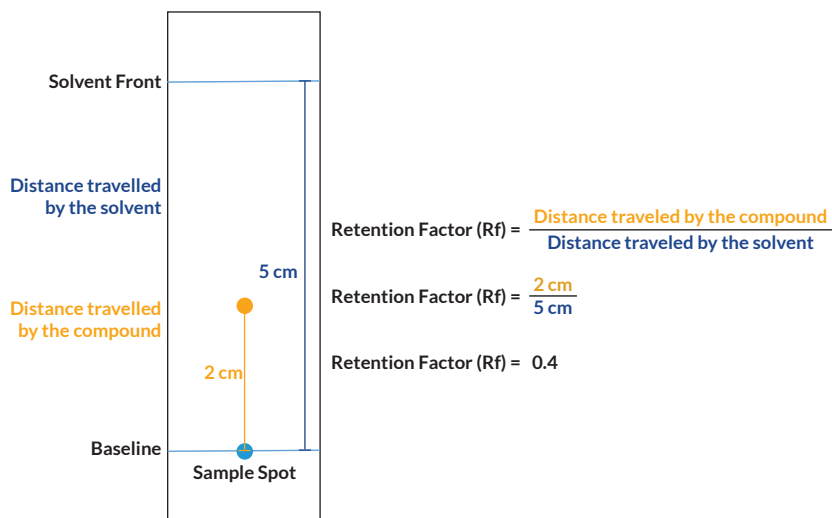
- Carefully place the TLC plate vertically into the chamber with the baseline above the solvent level.
- Cover the chamber and allow the solvent to ascend the plate until it is about 1 cm from the top edge. This is the solvent front.
- Remove the plate and immediately mark the solvent front with a pencil before it evaporates.

6. Visualize the Results

- **UV visualization:** if your plate has a UV indicator, observe under UV light to locate the separated compounds. Mark the visible spots with a pencil.
- **Chemical stains:** for compounds not visible under UV, apply a stain (see TLC stains section) and develop the plate according to the stain's instructions.

7. Analyze and Interpret the Results

- Measure the distance traveled by each spot from the baseline (compound distance) and the distance traveled by the solvent front.
- Calculate the Rf value for each spot as explained in the image at right.
- Compare the Rf values to known standards for identification.



Optimizing Mobile Phase Selection for Thin-Layer Chromatography

The choice of the mobile phase, also known as the solvent system or eluent, is critical for achieving efficient TLC separation. This selection depends on the compound's solubility in the solvent and the difference in its affinity for the mobile phase versus the stationary adsorbent (typically silica or alumina).

In normal-phase chromatography, non-polar solvents such as hexane or pentane are typically used. Under these conditions:

- **Non-polar compounds** readily migrate up the plate
- **Polar compounds** tend to remain closer to the baseline

Conversely, when polar solvents are used, polar compounds are more likely to migrate further from the origin. Compounds with highly polar groups are strongly adsorbed and elute less readily than less polar or polarizable compounds.

Adsorption strength generally follows the order of polar functional groups listed at right, but variations may occur based on each compound's overall structure.

In reversed-phase chromatography, the behavior is reversed, with polar solvents facilitating the migration of non-polar compounds.

Common developing solvents

Petroleum ether
Hexane
Toluene
Dichloromethane
Chloroform
Diethyl ether
Ethyl acetate
Acetone
Propanol
Ethanol
Methanol
Water

Low



High

Organic compounds polarity by functional group

Alkanes
Alkenes
Ethers
Halogenated hydrocarbons
Aromatic hydrocarbons
Aldehydes and ketones
Esters
Alcohols
Amines
Carboxylic acids

Guidelines for Solvent System Selection

The ideal solvent system moves all components off the baseline, achieving R_f values between 0.15 and 0.85, with optimal separation typically observed at R_f values of 0.2 to 0.6.

Starting point for most applications is ethyl acetate / hexane (1:1). Adjust the ratio to optimize R_f values. Remember that to increase R_f values, you need to increase the polarity of the mobile phase by raising the ratio of the polar solvent or selecting a more polar solvent (refer to chart above).

To **decrease** R_f values, lower the polarity of the mobile phase.

Alternative systems that can be tried are **methanol / dichloromethane** (ratios between 1:4 and 1:9) or **toluene with acetone, dichloromethane, or ethyl acetate**.

In normal phase chromatography, a typical mobile phase for:

- **Standard compounds** is 10 - 50 % ethyl acetate / hexane
- **Polar compounds** are best separated with 100 % ethyl acetate or 5 - 10 % methanol / dichloromethane
- **Non-polar compounds** perform well with 5 % ethyl acetate (or ether) / hexane or 100 % hexane
- **Basic compounds**, adding up to 2 % triethylamine or 10 % ammonia will help
- **Acidic compounds**, adding up to 2 % acetic or formic acid improves the separation

In reversed-phase chromatography, common solvent systems consist of water or aqueous buffers combined with organic solvents such as acetonitrile, methanol, or tetrahydrofuran. Additionally, solvents like ethanol and isopropanol are versatile alternatives for various applications.



Thin Layer Chromatography Stains and Recipes

Enhance the visualization of separated compounds using these popular stains.

Note: Stains highlighted in red require heat for activation.

Stain	Recipe	Used for the detection of:
UV Visualization	None required (TLC plates must contain a UV indicator).	Compounds with chromophore groups.
p-Anisaldehyde	Mix 15 mL acetic acid and 3.5 mL p-anisaldehyde into 350 mL ice-cold ethanol. Slowly add 50 mL of concentrated sulfuric acid dropwise over 60 minutes. Store at 0°C.	Allylic alcohols (green), phenols (violet), aldehydes, ketones, carbohydrates, and esters (blue/red). Alkenes, alkynes, and aromatic compounds are not detected.
Bromocresol Green	Dissolve 0.04 g bromocresol green in 100 mL ethanol. Add 0.1 M sodium hydroxide dropwise until pale blue.	Acidic groups with pKa < 5.
Cerium Molybdate (CAM or Hanessian's stain)	Dissolve 0.5 g cerium ammonium sulfate dihydrate and 24 g ammonium molybdate tetrahydrate in water. Add 28 mL of sulfuric acid and stir for 1 hour.	Universal stain. More sensitive than PMA stain.
Cerium Sulfate	Prepare an aqueous solution with 10 % cerium (IV) sulfate and 15 % sulfuric acid.	General stain; effective for alkaloids.
2,4-Dinitrophenylhydrazine (DNP)	Dissolve 12 g DNP in 60 mL of sulfuric acid, 80 mL water, and 200 mL of 95 % ethanol.	Specific for aldehydes and ketones.
Iodine Vapor	Place iodine crystals in a sealed chamber.	Good for alkanes, phosphines, and thiols.
Ninhydrin	Dissolve 0.3 g ninhydrin in 100 mL n-butanol. Add 3 mL acetic acid.	Specific stain for amino acids and primary amines. Secondary amines stain light yellow; tertiary amines do not stain.
Phosphomolybdic Acid (PMA)	Dissolve 10 g PMA in 100 mL of ethanol.	Universal stain (light-sensitive); does not detect some amines, amides, or oxidation-resistant aromatics.
Potassium Permanganate (KMnO₄)	Dissolve 1.5 g potassium permanganate, 10 g potassium carbonate, and 1.25 mL 10 % sodium hydroxide in 200 mL water.	Universal stain; detects oxidizable compounds like alcohols, ethers, esters, and alkenes (brown-yellow spots). Reductive compounds like thiols appear white.

Thin Layer Chromatography Troubleshooting Guide



This guide highlights and resolves common challenges encountered during thin layer chromatography.

Issue	Possible Cause	Solution
No spots visible	Compound is not UV-active or not retained	Use a stain to visualize
Poor separation	Incorrect solvent system or overloading	Optimize solvent polarity and reduce sample concentration
Smudged or tailing spots	Overloading or impure solvent	Reduce sample load or use high-purity solvents
Solvent front uneven	Plate not level in the chamber	Ensure the TLC plate is completely vertical
Weak UV fluorescence	Compound concentration is too low	Spot a higher concentration or use a more sensitive stain
There are multiple spots on the TLC	The compound may be degrading on the TLC plate	Perform a two-dimensional (2D) TLC to confirm. Refer to next page for the procedure



Two-Dimensional (2D) TLC: A Tool for Checking Compound Stability

2D TLC is a fast, reliable method to assess compound stability, separating compounds in two dimensions to identify degradation products and optimize purification.

Steps for Running a 2D TLC

- **Prepare a square TLC plate:** Cut a TLC plate into a square shape, approximately 7 x 7 cm.
- **Spot the sample:** Apply your sample solution to one corner of the plate, leaving a 0.5 - 1 cm margin from each edge.
- **First elution:** Place the plate in a TLC chamber with an eluent that gives an R_f value around 0.5 for your compound. Allow the solvent to rise, then remove the plate and let it dry.
- **Second elution:** Rotate the plate 90 degrees so the lane of spots is now at the bottom. Using the same solvent system, elute the plate in this new direction. Allow the plate to dry completely.

Analyze the Results

- **Stable compounds:** Appear along the diagonal of the plate.
- **Decomposing compounds:** Appear below the diagonal, indicating degradation on silica gel.

Ordering Information

Glass Backing TLC Plates

All the plates listed in the table below are having an UV indicator F254.

Part Number	Adsorbent	Binder	Dimension	Thickness	Qty / Box
TL-BS9101	Bare Silica	Soft Layer (Gypsum)	20 x 20 cm	250 µm	25
TL-BH9101	Bare Silica	Hard Layer (Organic)	20 x 20 cm	250 µm	25
TL-BH9301	Bare Silica	Hard Layer (Organic)	5 x 20 cm	250 µm	25
TL-BH9301-4	Bare Silica	Hard Layer (Organic)	5 x 20 cm	250 µm	100
TL-BS9601-4	Bare Silica	Soft Layer (Gypsum)	2.5 x 7.5 cm	250 µm	100
TL-BH9601-4	Bare Silica	Hard Layer (Organic)	2.5 x 7.5 cm	250 µm	100
TL-BS9102	Bare Silica	Soft Layer (Gypsum)	20 x 20 cm	500 µm	25
TL-BS9103	Bare Silica	Soft Layer (Gypsum)	20 x 20 cm	1,000 µm	25
TL-BS9105	Bare Silica	Soft Layer (Gypsum)	20 x 20 cm	2,000 µm	25
TL-BH9111	Bare Silica	Hard Layer (Organic)	20 x 20 cm, scored	250 µm	25
TL-BH9211	Bare Silica	Hard Layer (Organic)	10 x 20 cm, scored	250 µm	25
TL-BH9121	Bare Silica	Hard Layer (Organic)	20 x 20 cm, channeled	250 µm	25
TL-CM9101	C18	Hybrid (Gypsum / Organic)	20 x 20 cm	250 µm	25
TL-CH9107	C18	Hard Layer (Organic)	20 x 20 cm (HPTLC)	150 µm	25

Aluminum Backing TLC Plates

All the plates listed in the table below are having an UV indicator F254.


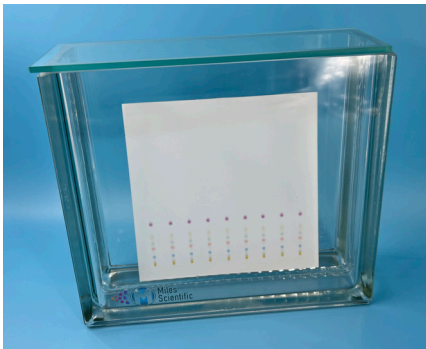
Part Number	Adsorbent	Binder	Dimension	Thickness	Qty / Box
TL-BM3101	Bare Silica	Hybrid (Gypsum / Organic)	20 x 20 cm	200 µm	25
TL-BS3601-8	Bare Silica	Soft Layer (Gypsum)	2.5 x 7.5 cm	200 µm	200
TL-CM3107	C18	Hybrid (Gypsum / Organic)	20 x 20 cm	150 µm	25

If you're looking for a product not listed in these tables, please don't hesitate to contact us.

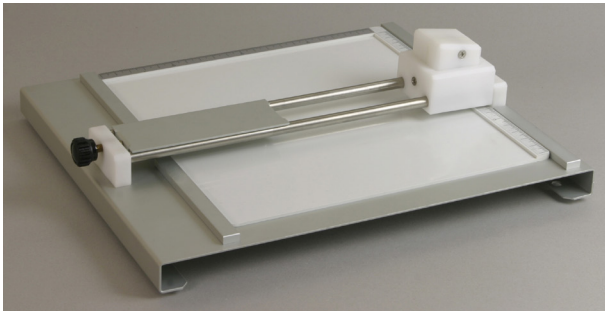



Ordering Information



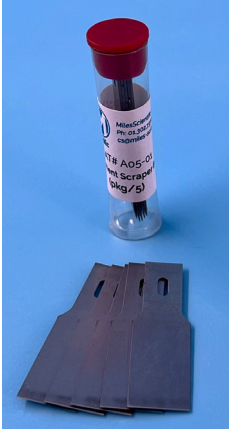

Glass Developing Chambers for TLC Plates

Parameters	Micro-Chamber for 5 x 10 cm or Smaller TLC Plates	Developing Chamber For 20 x 20 cm TLC Plates
Picture		
Part Number	MC-05-10 (each)	MC-05-10-3 (3 units)
		DZG-20-20

Glass TLC Plate Cutter

Parameters	Glass TLC Plate Cutter	Replacement Plastic Plate for Glass TLC Plate Cutter	Replacement Scriber for Glass TLC Plate Cutter
Picture			
Part Number	TSCT-001	TSCT-002	TSCT-003

Other Accessories

Parameters	6 Wheels Glass TLC Plate Cutter	TLC Plate Adsorbent Scraper	Replacement Blades for TLC Plate Adsorbent Scraper	Disposable Micropipettes ($\approx 9\mu\text{L}$)
Picture				
Part Number	TSCT-101	TSCT-102	TSCT-103	MXG-09-300 (300 per vial)





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4. Fill out all the required fields in the form, providing your contact information, selecting your preferred shipping method, and entering your payment details based on the chosen method.
5. Once all the information has been entered, click the “Pay Now” button at the bottom of the page to complete your payment.



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iLOK™ - SL Series

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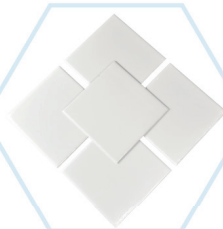
Ultra-Pure Bare Silica Gels



Ultra-Pure Bonded Silica Gels



TLC Plates



Other SepaFlash™ Products



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