

TLC Introduction

Thin Layer Chromatography to Preparative Chromatography

One of the first steps in scale-up of preparative liquid chromatography separations is selection of an appropriate mobile phase. Two methods are commonly used to determine the proper mobile phase composition: Thin Layer Chromatography (TLC) or High Performance Liquid Chromatography (HPLC). The use of TLC will be discussed here to deal with the successful correlation between the TLC separation to the preparative silica column.

TLC is a liquid-solid adsorption technique where the mobile phase ascends the thin layer of stationary phase coated onto a backing support such as glass by capillary action. There is a similar relationship to column chromatography where the solvent travels down through the column's adsorbent. The similar relationship allows TLC to be a rapid method for determining solvent composition for preparative separations.

Steps for Method Development

Choose Stationary Phase

Choose a scalable TLC plate, preferably that has an identical media as the preparative column. Choose between normal and reverse phase based on sample polarity and solubility.

Choose a Mobile Phase

Criteria for Choosing a Preparative Solvent

- Solubility
- Affinity
- Resolution

1. Solubility

Many solvent systems provide the minimal solubility for the sample, but to elute a sample from a column the mobile phase must have a greater solubility for the sample, as the sample concentration is usually very high. When possible, it is best to dissolve the sample in the mobile phase. The first step in solvent selection is determination of the solubility of the sample. The desired mobile phase would provide the greatest solubility, while providing affinity for the sample on the stationary phase.

Solvent Solubility Screening Table

Water	↑ Increasing Polarity
Methanol	
Ethanol	
Acetone	
Diethyl Ether	
Ethyl Acetate	
Dichloromethane	
Toluene	
Chloroform	
Cyclohexane	
Petroleum Ether	
Hexane	

2. Affinity

To achieve a separation, the sample must have a relatively equal affinity for the solvent and the packing material. If the sample has a higher affinity for the stationary phase than the solvent, the sample will remain at the origin (R_f value will be too low).

3. Resolution

Resolution is improved by optimizing the affinity between sample, solvent, and support. The optimum solvent for separating two or more compounds will maximize the difference in the compounds. Most TLC and preparative mobile phase systems contain a polar solvent and a chromatographically dissimilar less-polar solvent. As a guide for method development, a substitution in the polar solvent often results in a change in resolution, while a change in the less-polar solvent results primarily in a change in R_f of the sample components. The table below shows some common tendencies of various functional groups to adsorb onto the silica.

Affinity of Functional Groups for Silica Gel

-NH ₂	Amine	↑ Increasing Affinity
-COOH	Carboxylic Acid	
-COH	Alcohol	
-CONH ₂	Amide	
-C=O	Carbonyl	
-C-CO ₂ R	Ester	
-C-O-C	Ether	
-C1	Halocarbons	
-CC-	Hydrocarbons	

Select Visualization Technique

Once a mobile phase is selected, visualization techniques will need to be determined. Common techniques include SWUV, I₂/SWUV, I₂/KI for Nitrogen containing compounds, H₂SO₄/LWUV, H₂SO₄/PMA for non-nitrogen containing compounds.

Perform TLC Analysis

Look up the affinity for the type of compound as well as the solvent strengths to find a starting point for method development or look up a reference from a similar structure, then adjust the mobile phase composition to adjust the R_f . It is common to try 3–6 solvent systems for the first round of method development. Review the results after visualization and adjust the R_f if necessary, increase the separation and evaluate visualization techniques to make sure you are seeing all necessary compounds.

Optimizing TLC Separations for Preparative Separations

The optimum separation of compounds by TLC is usually achieved when R_f values are between 0.3–0.5.

$$R_f = \frac{\text{Distance from origin to center of spot}}{\text{Distance from origin to solvent front}}$$

Generally, adjusting the compound's R_f between 0.3–0.5 is done first for a TLC separation. For scale-up to preparative separations, the TLC solvent system's polarity must be decreased to lower the R_f between 0.15–0.35. This R_f range is optimal for a preparative separation, in terms of sample load, resolution, residence time, and solvent usage.

Determination of Column Volumes (C.V.)

The equation $C.V. = 1/R_f$ relates the TLC values and the preparative LC column volumes to elute each component. This equation is only a guideline and the relationship between the R_f values and the column volume will vary in use. Generally, the LC column volumes will be equal to or less than the calculated values. The elution volume will also be dependent upon the sample load and solvent used to solubilize the sample.

TLC Plates

Davisil® Silica TLC Plates

- Made with the same Davisil® silica as sold in bulk for easy method development
- Scored to customize to your plate size preference



Davisil® Silica TLC Plates

Description	Layer Thickness	Qty.	Part No.
<i>Hard Layer, Organic Binder, Fluorescent Indicator, 254nm</i>			
<i>Scored, 4, 5 x 20cm Sections</i>			
20 x 20cm	250µm	25	8617580
<i>Scored, 8, 2.5 x 10cm Sections</i>			
10 x 20cm	250µm	25	8617610

GraceResolv™ Silica TLC Plates

- Made with the same high-purity Davisil® silica as used in the GraceResolv™ flash cartridges for easy method development
- Scored to customize to your plate size preference

GraceResolv™ Silica TLC Plates

Description	Layer Thickness	Qty.	Part No.
<i>Hard Layer, Organic Binder, Fluorescent Indicator, 254nm</i>			
<i>Scored, 4, 5 x 20cm Sections</i>			
20 x 20cm	250µm	25	8618900



3179

Grace has a large selection of TLC plates to suit your separation needs.

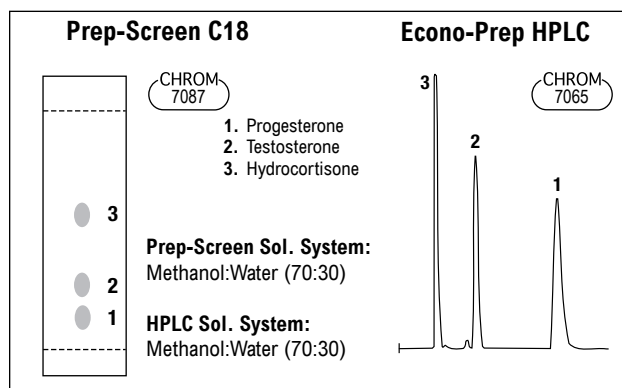


5369

Alltech® Prep-Screen TLC Plates

- Made with the 10–12µm spherical silica gel used for Alltech® prep-HPLC cartridge columns
- Available in both Econosphere™ silica gel and C18 (reversed-phase) bonded versions

Prep-Screen HPTLC Plates help to optimize sample separation parameters for use in preparative HPLC. These plates allow a quick, inexpensive preview of sample traits in various mobile phase systems prior to HPLC analysis. The adsorbent is the same Econosphere™ silica or C18 used in Alltech packed HPLC columns.



Prep Screen HPTLC Plates

Description	Qty.	Part No.
<i>Prep-Screen HPTLC Plates, 10 x 10cm, 200µm Layer</i>		
Silica Gel, 10µm Spherical Adsorbent	10	16328
C18, 10µm Spherical Adsorbent	10	16332

technical assistance

Contact Tech Support: Phone: 1.800.255.8324 (North America)
Email: contact.alltech@grace.com
Online: www.discoverysciences.com

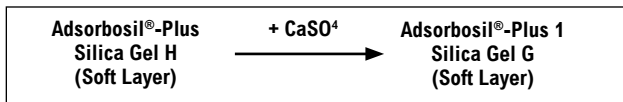
related products

See pages 194–198 for tanks, sprayers, applicators, and other TLC accessories.

TLC Plates

Alltech® Prekotes

- High purity silica gel for increased sensitivity
- Controlled particle size for faster separations and improved resolution (>80% in 6–15µm range)
- Precoated plates provide convenience and superior layer quality



Soft Layer

- Contains no organic binders
- Sample zones are easy to remove for further analysis

Soft Layer Adsorbosil® Prekotes

Description	Qty.	Part No.
<i>Soft Layer Prekotes, Glass-Backed</i>		
Conventional, 250µm Layer Thickness, 20 x 20cm		
Adsorbosil®-Plus	25	16384
Adsorbosil®-Plus P*	25	16376
Adsorbosil®-Plus 1	25	16330
Adsorbosil®-Plus 1 P*	25	16322

*P = With Fluorescent Indicator, 254 wavelength.

Hard Layer

- Contains a proprietary inorganic binder to add abrasion resistance to layer
- Use when strong charring is required for visualization
- Write on layer with pencil or felt pen
- Sample zones can be removed for further analysis

Hard Layer Adsorbosil® Prekotes

Description	Qty.	Part No.
<i>Hard Layer Prekotes, Glass-Backed</i>		
Conventional, 250µm Layer Thickness, 20 x 20cm		
Adsorbosil®-Plus 1	25	16324
Adsorbosil®-Plus 1 P*	25	16326

*P = With Fluorescent Indicator, 254 wavelength.

Adsorbosil® HPTLC Plates

- 150µm layer thickness for fast, high resolution separations
- Smooth surface for noise-free densitometry

HPTLC with Inorganic Binder

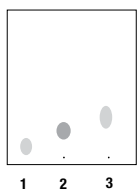
- Allows use of 100% water in the solvent system
- Use when strong charring is required

High-Performance TLC Plates

Description	Qty.	Part No.
<i>Adsorbosil®-Plus 1 Plates with Inorganic Binder, 10 x 10cm</i>		
Adsorbosil®-Plus 1P HPTLC, with F254 UV Indicator	25	16401

Reversed-Phase HPTLC Plates

- Coated with non-polar, C18 chemically bonded support
- Cross-linked organic polymer binder makes an abrasion resistant layer and a smooth surface
- Use to separate mixtures of lipophilic components, hydrocarbons, fats and waxes, fat soluble vitamins or steroids



Fatty Acid Separation

1. Methyl Oleate
2. Methyl Linoleate
3. Methyl Linolenate

CHROM
7088

TLC Plate: Adsorbosil® RP HPTLC (Part No. **16314**)

Sol. System: Acetonitrile:Acetic Acid:Water (70:10:1)

Development Time: 25min

Visualization: Iodine Vapor

High-Performance TLC Plates

Description	Qty.	Part No.
<i>Reversed-Phase C18 HPTLC, 150µm Layer Thickness</i>		
Adsorbosil® RP HPTLC, 10 x 10cm	25	16314
Adsorbosil® RP HPTLC Plates with F254, 10 x 10cm	25	16315
Adsorbosil® RP HPTLC Plates, Prescored, 10 x 20cm	25	16318
Adsorbosil® RP HPTLC Plates, Prescored, with F254, 10 x 20cm	25	16319

TLC Plates

Macherey-Nagel

Silica Gel Plates

- 60Å pore size
- Particle size, 5 to 17µm
- Binder is organic, stable in most organic solvents and aggressive detection reagents

Glass-Backed Macherey-Nagel TLC Plates

Description	Size	Layer	Qty.	Part No.
<i>Silica Gel Plates, Glass-Backed</i>				
Conventional Layers, Silica Gel 60				
SIL G-25	5 x 10cm	250µm	50	809017
SIL G-25	5 x 20cm	250µm	100	809011
SIL G-25	20 x 20cm	250µm	25	809013
SIL G-25 UV254	5 x 20cm	250µm	100	809021
SIL G-25 UV254	20 x 20cm	250µm	25	809023
SIL G-25 UV254+366	20 x 20cm	250µm	25	809123
Preparative Layers				
SIL G-100 UV254	20 x 20cm	1000µm	15	809063
SIL G-200 UV254	20 x 20cm	2000µm	12	809083

Specialty Plates

- **Silica Gel and Cellulose**—Specific for separation of food preservatives
- **Silica Gel**—Specific for aflatoxin analysis

Specialty Plates

Description	Size	Layer	Qty.	Part No.
<i>Specialty Plates, Glass-Backed</i>				
Silica Gel and Cellulose — Mixed Layer				
SILCEL-Mix-25 UV254	20 x 20cm	250µm	25	810043
Silica Gel Highly Purified with Gypsum				
SIL G-25 HR	20 x 20cm	250µm	25	809033
SIL G-25 HR UV254	20 x 20cm	250µm	25	809043

related products

Performing flash separations?

See GraceResolv™ flash consumable product line on pages 184–187.

Nano-Series HPTLC Plates

- Particle size, 2–10µm
- Higher speed
- Better resolution and sensitivity than regular TLC plates

Nano-SIL HPTLC Plates

Description	Size	Layer	Qty.	Part No.
<i>Nano-Series HPTLC Plates, Glass-Backed</i>				
Silica Gel 60				
Nano-SIL-20	10 x 20cm	200µm	50	811013
Nano-SIL-20/UV254	10 x 20cm	200µm	50	811023
<i>Nano-Series HPTLC Plates, Aluminum-Backed*</i>				
Silica Gel 60				
Nano-SIL G	20 x 20cm	200µm	25	818141
Nano-SIL G/UV254	20 x 20cm	200µm	25	818143

*Do not use with mineral acids or concentrated ammonia.

technical assistance

Contact Tech Support: Phone: 1.800.255.8324 (North America)
 Email: contact.alltech@grace.com
 Online: www.discoverysciences.com

TLC Plates

Macherey-Nagel Polygram® Series

Silica Gel 60

- SIL G and SIL N layers have different binders and show different separation characteristics

Cellulose, Avicel-Microcrystalline

Cellulose MN 300—Native Fibrous Cellulose

- Fibers are 2–20µm in length

Cellulose, Ion-Exchanger

- DEAE carries positive charges at neutral and acidic pH
- Use DEAE to separate proteins, enzymes, and hormones
- Use PEI to analyze nucleic acids

Polyamide 6

- Specific for separation of dansyl and DNP amino acids

Hybrid Plates

- “Wettable” RP plate
- For both reversed- and normal-phase chromatography
- Determine polarity by eluent selection
- Activate layer at 110–115°C prior to use
- Particle size of 2–10µm for improved separations

Hybrid TLC Plates

Description	Layer	Qty.	Part No.
<i>Silica Gel RP18/UV254s* Plates, Aluminum-Backed</i>			
4 x 8cm	150µm	50	818144
5 x 20cm	150µm	50	818145
20 x 20cm	150µm	25	818146

*Acid-resistant fluorescent indicator.

Polygram® Flexible-Backed TLC Plates

Description	Size	Layer	Qty.	Part No.
<i>Polyester-Backed TLC Plates</i>				
<i>Silica Gel 60</i>				
SIL G	20 x 20cm	250µm	25	805013
SIL G/UV254	4 x 8cm	250µm	50	805021
SIL G/UV 254	20 x 20cm	250µm	25	805023
SIL N-HR/UV254	20 x 20cm	200µm	25	804023
<i>Cellulose Plates</i>				
<i>Cellulose MN 400, Avicel-Microcrystalline Cellulose</i>				
CEL 400	20 x 20cm	100µm	25	801113
CEL 400 UV254	20 x 20cm	100µm	25	801123
<i>Cellulose MN 300</i>				
CEL 300	20 x 20cm	100µm	25	801013
CEL 300 UV254	20 x 20cm	100µm	25	801023
<i>Cellulose, Ion-Exchanger</i>				
CEL 300 DEAE	20 x 20cm	100µm	25	801073
CEL 300 PEI*	20 x 20cm	100µm	25	801053
CEL 300 PEI/UV254	20 x 20cm	100µm	25	801063
<i>Specialty Polyester-Backed Plates</i>				
<i>Polyamide 6</i>				
POLYAMIDE 6	20 x 20cm	100µm	25	803013
POLYAMIDE 6 UV254	20 x 20cm	100µm	25	803023

*PEI plates must be refrigerated.

technical assistance

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 Online: www.discoverysciences.com

Analtech TLC Plates

Silica Gel H and HF Uniplates™

- Soft Layer
 - Contains no organic binder
 - Contains no calcium sulfate binder
- Hard Layer
 - Contains an organic binder
 - 80% water resistant
 - Visualization by charring up to 150°C

Silica Gel H and HF Uniplates™

Description	Layer Thickness	Qty.	H Part No.	HF* Part No.
<i>Soft Layer, No Binders</i>				
Conventional				
20 x 20cm	250µm	25	710011	720011
10 x 20cm	250µm	25	710021	7200210
<i>Hard Layer, Organic Binder</i>				
Conventional				
20 x 20cm	250µm	25	746011	747011
10 x 20cm	250µm	25	746021	747021
Scored, Four 5 x 20cm Sections or Eight, 2.5 x 10cm Sections				
20 x 20cm	250µm	25	—	747511
10 x 20cm	250µm	25	—	747521

*F-Fluorescent Indicator, 254nm.

HPTLC Uniplates™

- Smooth surface gives a high signal-to-noise ratio for increased sensitivity and precision
- High resolution separations in five minutes
- Ideal for densitometric scanning

HPTLC Uniplates™

Description	Layer Thickness	Qty.	Part No.
<i>HPTLC Silica Gel with Inorganic Binder</i>			
10 x 10cm, HP-GHL	150µm	25	756077
10 x 10cm, HP-GHLF*	150µm	25	757077
<i>Reversed-Phase HPTLC Unibond™**</i>			
10 x 10cm, HP-RP18F	150µm	25	763077

*F-Fluorescent Indicator, 254nm.

**Due to the extreme hydrophobic nature of the RP18 adsorbent, aqueous wettability is limited to approximately 60% water in the mobile phase. (see www.analtech.com)

Silica Gel G and GF Uniplates™

- Calcium Sulfate Binder
- Soft Layer
 - Contains no organic binder
- Hard Layer
 - Contains an inorganic binder
 - 100% water resistant
 - Visualization with strong charring reagents
 - Abrasion resistant

Silica Gel G Uniplates™

Description	Layer Thickness	Qty.	G Part No.	GF* Part No.
<i>Soft Layer, No Binders</i>				
Conventional				
20 x 20cm	250µm	25	701011	702011
10 x 20cm	250µm	25	701021	702021
Preadsorbent				
20 x 20cm	250µm	25	731011	732011
<i>Preparative Uniplates™, Soft Layer</i>				
Conventional Prep				
20 x 20cm	500µm	25	—	702012
20 x 20cm	1000µm	25	—	702013
20 x 20cm	1500µm	25	—	702014
20 x 20cm	2000µm	25	—	702015
<i>Hard Layer, Inorganic Binder</i>				
Conventional				
20 x 20cm	250µm	25	711011	721011
10 x 20cm	250µm	25	711021	721021

*F-Fluorescent Indicator, 254nm.

related products

Looking for a fast and easy way to score your own TLC plates?

See our TLC plate cutter on page 196.



3923

tlc

TLC Tanks and Storage

best seller

Cylindrical TLC Tanks

- Requires minimal solvent usage
- Glass cylindrical tanks with press-on lids



5341

Cylindrical TLC Tanks

Description	Part No.
Cylindrical TLC Tanks for 5 x 10mm and 4 x 8cm Plates, 2.5" o.d., 5" Height	17108
Cylindrical TLC Tanks for 5 x 20cm Plates, 2.5" o.d., 9" Height	17107
Cylindrical TLC Tanks for 10 x 20cm Plates, 5" o.d., 9" Height	17002

Latch-Lid TLC Chromatotank™

- Unique latching device assures tight seal between lid and tank
- No messy "grease" seals



5350

The unique latching device holds the matching ground glass surfaces of the lid and tank firmly in place to maintain an optimal equilibration atmosphere. The metal components of the Latch-Lid mechanism are made of stainless steel.

Latch-Lid Chromatotank™

Description	Part No.
Standard Latch-Lid Tank/Lid Unit, 10 x 10cm Plates	7542
Latch-Lid Tank/Lid Unit, 20 x 20cm Plates	7536

Multiple Plate Development Rack

- Saves time and money
- Choice of anodized aluminum or PTFE resin-coated rack
- Sizes available to hold six 20 x 20cm or six 10 x 10cm plates



5349

Multiple Plate Development Rack

Description	Part No.
Anodized Aluminum Rack for 20 x 20cm Plates	17051
Anodized Aluminum Rack for 10 x 10cm Plates	17053

Rectangular TLC Tanks

- Unique beveled lip to eliminate sharp edges
- Uniform flat top for maximum lid seal



5346

This Rectangular TLC Tank is a heavy wall, clear glass block with flat surface walls. Lids are polished glass in sizes to match the tank dimensions.

Rectangular TLC Tanks

Description	Part No.
<i>Rectangular Tanks, All Supplied with Glass Lid</i>	
Thinline Tank for 10 x 10cm Plates, (12cm x 11.5cm x 6.4cm), (4.75" x 4.5" x 2.5")	7581
Standard Tank for 10 x 10cm Plates, (12cm x 11.5cm x 8.6cm), (4.75" x 4.5" x 3.37")	7550
Standard Tank for 20 x 20cm Plates, (27cm x 24cm x 7cm), (10.5" x 10" x 3")	7645
Standard Tank for 10 x 20cm Plates, (27cm x 13cm x 7cm), (10.5" x 5" x 3")	7582
Standard Tank for 5 x 5cm Plates, (17cm x 15cm x 8cm), (7" x 6" x 3")	7580

TLC Tank Pads

- Medium weight lint-free pads for TLC tank liners



5345

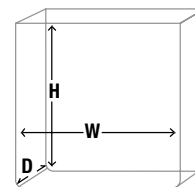
TLC Pads

Description	Part No.
20 x 20cm, Medium Weight, 100/pk	7630

tech tip

Rectangular TLC Tank Dimensions

- All are inside dimensions
- Listed as height x width x depth



0571

Sprayers

Compressed Gas Sprayer

- Replaceable pressure unit
- Refillable sprayer
- Reusable glass or plastic container

Compressed Gas Sprayers provide a constant pressure and uniform distribution of fine mist on your TLC plate. The pressure unit contains difluoroethane. Unit sprays up to 16oz of liquid. Caution: Wetted parts are made of polypropylene or nylon. Do not store with dip tube immersed in reagent.



5329

Compressed Gas Sprayer

Description	Qty.	Part No.
Complete Spray Unit with Glass Jar	3	14654
Replacement Glass Jar with Lid	6	14655
Replacement Compressed Gas Unit	6	14657

Safety Top Screw Cap Sprayer

- Made of borosilicate glass
- Autoclavable

Safety Top Sprayers adjust the mist by covering the rear vent hole with a thumb. The atomizer tops are attached to the reservoir flasks with a screw top and o-ring. The screw top delivers a positive seal between sprayer head and reservoir, eliminating the possibility of “blow back”. Remove the screw cap and o-ring prior to autoclaving. Operation of the unit is by low air pressure (5lb).



5332

Safety Top Sprayer with Screw Cap

Description	Qty.	Part No.
50mL	ea	14545
125mL	ea	14550
250mL	ea	14555

Spraying Accessories

Disposable Spray Box

- Opens easily into 14"L x 14"W x 14"H (35.56cm) unit
- Unique design for spill containment
- Heavy duty cardboard with disposal bag provided



5367

Polypropylene Spray Stand

- Front edge to hold plate for spraying
- Ideal for use in fume hood



5370

TLC Spray Supports

Description	Qty.	Part No.
Disposable Spray Box	5	16408
Polypropylene Spray Stand	ea	7636

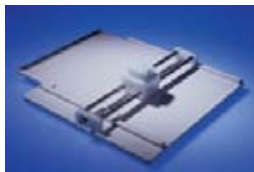


tlc

TLC Accessories

TLC Plate Cutter

- Scores coated glass plates at any position
- Compact, portable, and easy to operate



The TLC Plate Cutter has a high-quality carbide scribe mounted into a movable plastic head. It is designed to produce optimal scoring on the glass surface of 20 x 20cm TLC plates with a total thickness (glass + coating) of 2mm. A smaller template is included with the unit for ease in cutting 10 x 10cm plates.

TLC Plate Cutter

Description	Qty.	Part No.
TLC Plate Cutter	ea	7535
Replacement Scribes	1	7565
	3	7575

tech tip

Note About Sample Applications

Thorough drying of samples is a step that is often ignored but can result in development errors. If a small amount of solute is left on the plate it can interact with the development system and affect the separation.

Many analysts assume the plate is dry when the solvent is no longer visible on the plate (5–10 minutes). However, depending on the volatility of the solvent and the quantity of sample applied, the drying time can be considerably longer. Generally, R_f values decrease as drying time increases until the dry state (stable R_f) is reached.

Plates can absorb moisture from the atmosphere during storage, so prior to sample application, all TLC plates should be heated at 120–130°C for about 30–40 minutes and allowed to cool in a desiccator. This ensures reproducible R_f values.

TLC Accessories

Sample Applicators

Drummond® Microcaps

- Accuracy of $\pm 1\%$

The Drummond® Microcap is a precision bore glass capillary tube that holds a known volume when filled by capillary action. The tube is emptied completely by squeezing the dispenser bulb. (Bulb is included with the unit.)



5338

Drummond® Sample Applicators

Description/Capacity	Qty.	Part No.
<i>Drummond® Microcaps</i>		
0.5µL	100	3808
1.0µL	100	3809
2.0µL	100	3810
5.0µL	100	3814
10.0µL	100	3820
20.0µL	100	3822
<i>Drummond® Microcap Accessories</i>		
Microcap Bulbs	6	3940

Drummond® Wiretrol® Micropipettes

- Combines the accuracy of a microsyringe with the ease and economy of a disposable pipette
- Accuracy of $\pm 1\%$
- Color-coded with a permanent calibration line



5286

These unique pipetting devices feature one-handed operation. Each unit contains a vial of 100 micropipettes, dispenser cap, handle, and one stainless steel plunger.

Drummond® Sample Applicators

Description/Capacity	Qty.	Part No.
<i>Drummond® Wiretrol® Micropipettes</i>		
1.0 to 5.0µL (Calibrated)	100	3842
5.0µL	100	3844
10.0µL	100	3845
20.0µL	100	3846
25.0µL	100	3847

Uncalibrated Disposable Micropipettes

Uncalibrated disposable glass micropipettes are intended for rapid qualitative sample application on TLC plates. Thick walls make these pipettes strong and easy to handle. Overall length is about three inches. Capacity is approximately 2–8µL.



5340

Uncalibrated Disposable Micropipettes

Description	Qty.	Part No.
Glass Micropipettes	300	7616
	1440	17203

technical assistance

Contact Tech Support: Phone: 1.800.255.8324 (North America)
 Email: contact.alltech@grace.com
 Online: www.discoverysciences.com

TLC Accessories

UV Viewing Cabinet

- Fixed eyepiece with UV shielded window
- Uses 4- and 6-watt E-series lamps



5352

The UV Viewing Cabinet measures 6.5" H x 9" W x 12" L (16.5cm H x 22.9cm W x 30.5cm L). This cabinet cannot be used for photo systems because of the fixed eyepiece.

UV Viewing Cabinet, Supplied Without Lamps

Description	Part No.
UV Viewing Cabinet, Model CM-10	80305

E-Series Ultraviolet Lamps

- Easy to operate
- Choice of intensity, wavelengths, and sizes



5353

The Spectroline® E-Series Lamps can be used as portable units, with UV viewing cabinets, or in photo darkroom cabinets. Lamps with a filter assembly provide maximum fluorescent contrast with the least white light transmission.

E-Series Lamps

Description	Part No.
<i>8-Watt Combo Lamp</i>	
LW, SW, and Filter Assembly, 115V	80240
LW, SW, and Filter Assembly, 230V	80245
<i>8-Watt Replacement Parts</i>	
LW Replacement Tube	80242
SW Replacement Tube	80244
Combo Light Replacement Filter	80246
<i>6-Watt Combo Lamp</i>	
LW, SW, and Filter Assembly, 115V	80250
LW, SW, and Filter Assembly, 230V	80255
<i>6-Watt Replacement Parts</i>	
LW Tube Replacement	80252
SW Tube Replacement	80254
Combo Light Filter Replacement	80256
<i>Lamp Accessories</i>	
UV Lamp Stand	80218
UV Lamp Handle (not shown)	80219