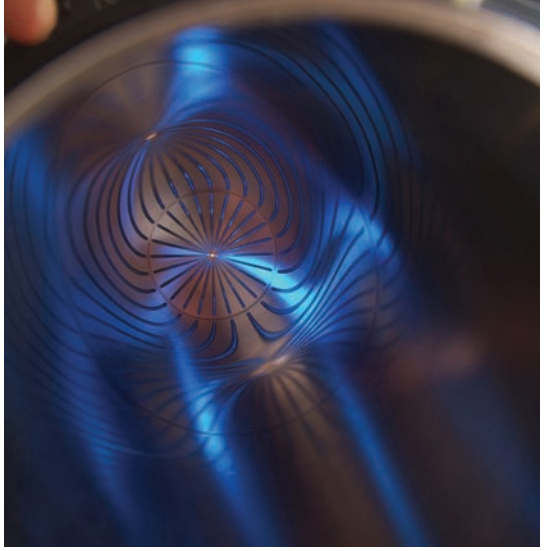
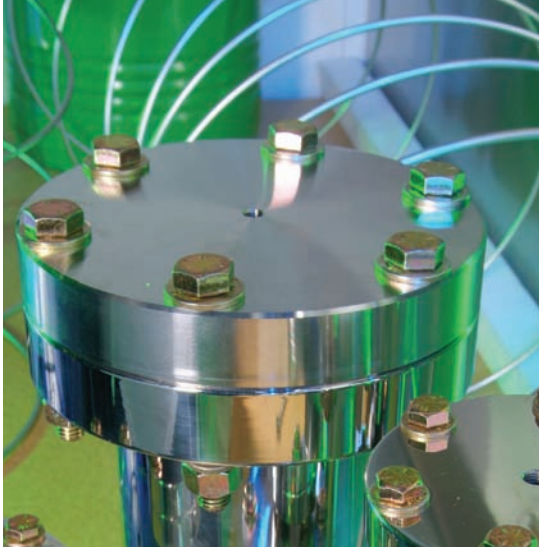
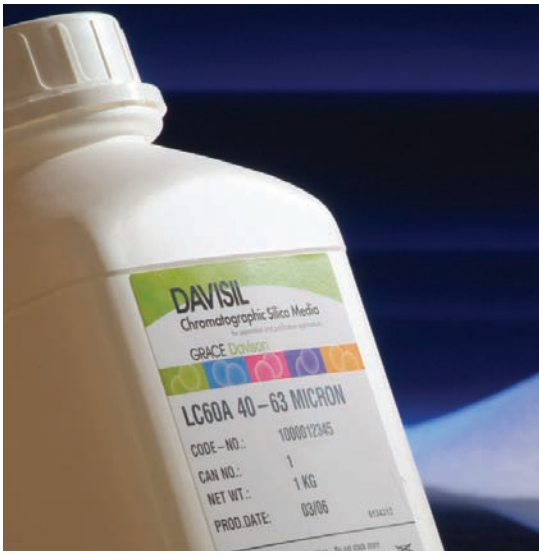






DAVISIL® Chromatographic Silica

Product Selection Guide

- Higher Performance
- Unmatched Technical Support
- Greater Selection
- Predictable Scale-Up
- Exceptional Product Reliability

GRACE

The DAVISIL® Silica Advantage

Higher Performance

Davisil® silica's chemical and structural properties are optimized for chromatographic performance. Tight control of these properties from raw material to finished product distinguishes Davisil® silica.*

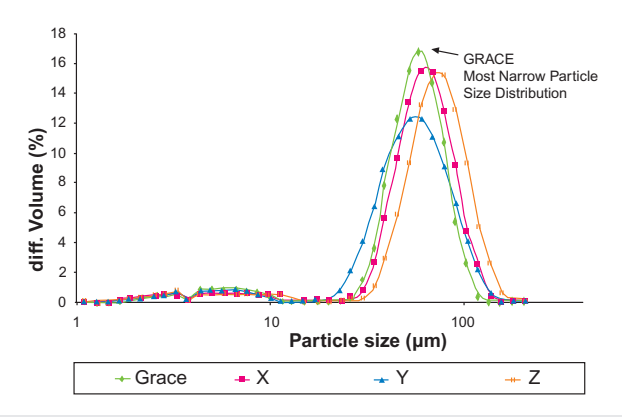
High surface area increases loading capacity.

Company	Surface Area	Bulk Density	Surface Area of 1L Column
Grace	550m²/g	420g/l	231,000m²/L
X	515m²/g	430g/l	221,450m²/L
Y	460m²/g	430g/l	197,800m²/L
Z	450m²/g	450g/l	189,000m²/L

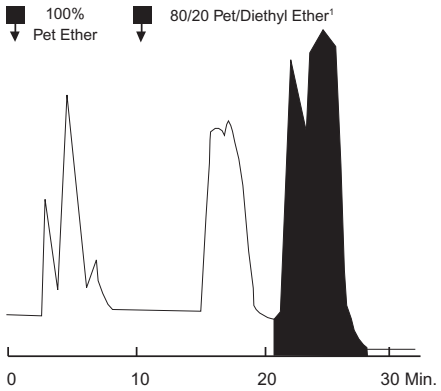
High purity silica reduces unwanted interactions and contamination that cause poor reproducibility.

Company	Mg	Ca
Grace	25ppm	19ppm
X	27ppm	207ppm
Y	119ppm	793ppm
Z	212ppm	1775ppm

Tight particle size distribution to optimize efficiency and pressure drop.



Synthetic Intermediate Purification



Sample: 1g reaction products
Column: 50 x 500mm
Column Packing: Davisil® LC60Å 20-45µm silica
Mobile Phase: See chromatogram
Flow Rate: 175ml/min (535cm/hr)
Detection: OD 254nm

Davisil® silica purification of a schiff base from a crude reaction mixture containing aldehyde, amine and other by-products. The good separation and loading capacity shown at the pilot scale **allowed scale-up to a 300mm diameter column** producing over 90g of purified product per run.

*All comparative data generated on chromatographic silica labeled 60Å, 40-63µm.

Unmatched Technical Support

To assist customers, Grace is prepared to provide advice, assistance or laboratory trials for intended process-scale use. Our field representatives can arrange for such support when required, as well as discuss our ability to customize grades tailored to your requirements.

Contact your office or distributor for pricing.

Greater Selection

A wide range of Davisil® silica grades are available from 1kg to multi-ton quantities to meet your performance and economic requirements. The newly developed 35Å Davisil® silica shows improved surface area leading to up to 50% higher loading capacity combined with 50% less solvent use for pharmaceutical small molecule (<350 MW) purification. The 4500Å Davisil® silica grade is especially designed to purify large molecules commonly purified in bioseparations.

- Available in both normal phase bare silica and various bonding chemistries (C18, Amino, Diol, Cyano) for alternative selectivity.
- Wide selection of distinct pore diameters (30Å – 4500Å) for separation of various MW sizes.
- Available from 1kg to multi-ton quantities.

DAVISIL® Silica

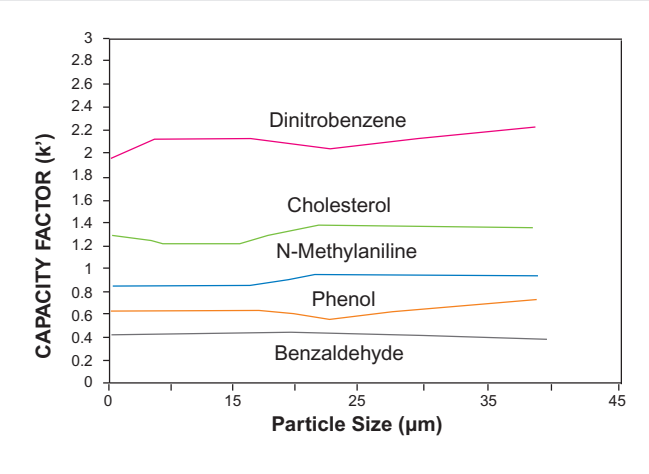
Look for this icon on products from Grace using Davisil® silica, such as TLC plates and SPE/ Flash cartridges, to experience the same great performance.

Davisil® normal phase silica functions through hydrophilic interactions, with **more polar compounds** generally retained longer. This makes it ideally suited for purification of:

- **Chemical Synthesis Intermediates**
- **Oils and Fats**
- **Natural Products** (vitamins, flavors, fragrances, etc.)

Predictable Scale-Up

Today we manufacture hundreds of tons of Davisil® chromatographic silica per year in multi-ton lots. Our manufacturing is at scale, so your manufacturing can be at scale. In scaling up, you can be confident that Davisil® chromatographic silica will yield consistent performance as particle size is increased.

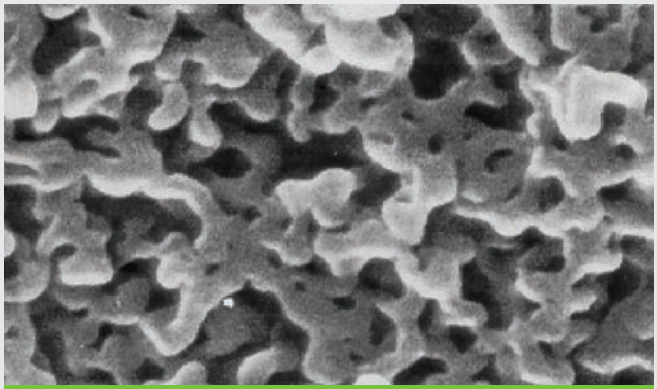


Uniform capacity (k') and selectivity (k') factors across all particle sizes for predictable scale-up

Exceptional Product Reliability

Manufactured for over 25 years, Davisil® chromatographic silica is one of the world's most widely used chromatography sorbents.

Produced at two ISO-9001 certified facilities under strict QC controls from raw material to finished product helps ensure high lot-to-lot reproducibility.



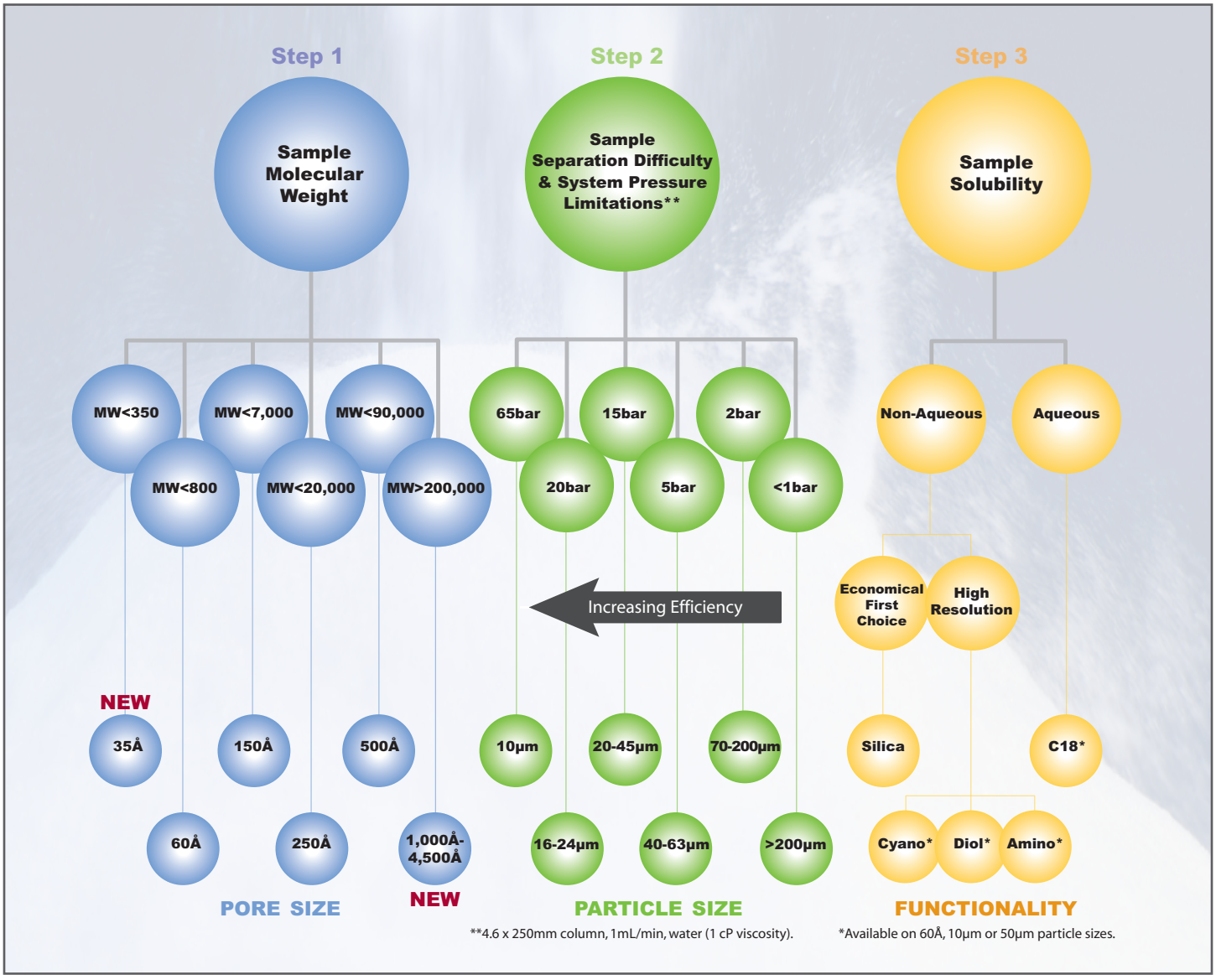
XWP Silica 1:50,000

Surface Area & Pore Volume: +/- 10% lot to lot

DAVISIL® Silica Selection Guide

Many types of column packings are suitable for a given application. The diagram below is intended for general guidance to the chromatographer. By following each of the three paths in sequence, the proper packing medium is selected.

It should be noted that Grace offers other media to complement the Davisil® media packings in many of these applications.



Data based on 50% pore accessibility for linear polymers. Values for proteins would increase by x 2 to 3

Typical Physical and Chemical Characteristics

	Nominal Pore Size								
Characteristic	**35Å**	**60Å**	**150Å**	**250Å**	**500Å**	**1000Å**	**1500Å**	**2500Å**	**4500Å**
Surface Area (m^2/g)	700	550	330	285	80	40	25	17	10
Pore Volume (ml/g)	0.6	0.9	1.2	1.8	1.1	1.1	1.1	1.1	1.1
pH (5% suspension)	5.7	7.3	7.3	7.5	8.0	9.0	9.0	9.0	9.5
H_2O (weight %)†	<6%	<6%	<6%	<6%	<6%	<6%	<6%	<6%	<6%
Bulk Density (kg/m^3)	720	530	350	210	370	370	370	370	370

†Moisture content (% H_20) can be tailored (increased or decreased) to meet customer requirements.

DAVISIL® Product Portfolio

Ordering Information

Davisil® Silica Unbonded Grades

Pore Size (Å)	Particle Size (µm)	Description	Package Weight (kg)	Drum Part No.	Small Pack Part No. 1 kg	2.5 kg	5 kg
30	50-100	**Grace 921 110 LB/Drum**	50	**5140213**			
30	75-150	**923 100-200 Mesh 55 LB/Drum[1]**	25	**5138973**			
30	1000-3000	**Davisil® LC30Å 1000-3000µm silica**	150	**5016637**			
35	10-14	**Davisil® LC35Å 10-14µm silica**	25	**Available upon request**	**1 kg Available upon request**		
35	40-63	**Davisil® LC35Å 40-63µm silica**	25	**5156563**	**5159092**		
60	10-14	**Davisil® Grade 710NW silica**	20	**5136220**	**5153530**		
60	20-45	**Davisil® LC60Å 20-45µm silica**	25	**5055349**	**5143588**		**5094230**
60	40-63	**Davisil® LC60Å 40-63µm silica**	25	**5054993**	**5134312**		**5098468**
60	35-70	**Davisil® LC60Å 35-70µm silica**	25	**5037849**	**5152540**		
60	70-200	**Davisil® LC60Å 70-200µm silica**	25	**5029213**	**5149540**		
60	90-130	**Davisil® LC60Å 90-130µm silica**	80	**5032927**			
60	200-500	**Davisil® LC60Å 200-500µm silica**	25	**5022298**			
60	1000-3000	**Davisil® LC60Å 1000-3000µm silica**	30	**5058299**			
150	16-24	**Davisil® LC150Å 16-24µm silica**	20	**5018962**			
150	35-70	**Davisil® LC150Å 35-70µm silica**	25	**5057993**	**5134299**		
150	70-200	**Davisil® LC150Å 70-200µm silica**	25	**5076059**	**5152610**		
150	90-130	**Davisil® LC150Å 90-130µm silica**	20		**5152503**		
150	100-300	**Davisil® LC150Å 100-300µm silica**	70	**5054067**			
150	315-500	**Davisil® LC150Å 315-500µm silica**	25	**5037727**			
250	40-63	**Davisil® LC250Å 40-63µm silica**	15	**5134301**		**5134292**	
250	70-200	**Davisil® LC250Å 70-200µm silica**	15	**5153368**		**5153450**	
250	90-130	**Davisil® LC250Å 90-130µm silica**	15	**5143160**			
500	35-70	**Davisil® XWP500Å 35-70µm silica**	20	**5030057**	**5143587**		
500	90-130	**Davisil® XWP500Å 90-130µm silica**	20	**5058842**	**5152541**		
500	100-300	**Davisil® XWP500Å 100-300µm silica**	20	**5057050**			
1000	16-24	**Davisil® XWP1000Å 16-24µm silica**	20	**5134302**	**5143585**		
1000	35-70	**Davisil® XWP1000Å 35-70µm silica**	20	**5034754**	**5143586**		
1000	90-130	**Davisil® XWP1000Å 90-130µm silica**	20	**5093501**	**5152504**		
1500	16-24	**Davisil® XWP1500Å 16-24µm silica**	18	**5070159**			
1500	90-130	**Davisil® XWP1500Å 90-130µm silica**	18	**5045916**	**5143584**		
2500	90-130	**Davisil® XWP2500Å 90-130µm silica**	20	**Available upon request**	**5143590**		
4500	100-300	**Davisil® XWP4500Å 100-300µm silica**	5	**5154492**			

[1]Grade 923
ASTM D1319: Petroleum Products by FIA
ASTM D2549; Aromatics/Non-Aromatics from Oils
EPA Method 1664: N-Hexane Extraction Method

Bonded Silica

APS (Å)	Bonded Phase	Particle (µm)	Davisil® Silica Grade	Pkg Size	Part No.
60	C18	10-14	710NC18E	250g	**5135418**
				1kg	**5135305**
		35-70	633NC18E	250g	**5135414**
				1kg	**5134095**
	Cyano	10-14	710NCNE	250g	**5135419**
				1kg	**5134223**
		35-70	633NCNE	250g	**5135415**
				1kg	**5134224**
	Diol	10-14	710N2OH	250g	**5135417**
				1kg	**5135303**
		35-70	633N2OH	250g	**5135413**
				1kg	**5135302**
	Amino	10-14	710NNH2	250g	**5135420**
				1kg	**5134682**
		35-70	633NNH2	250g	**5135416**
				1kg	**5134096**

Davisil® Silica TLC Plates

Description	Layer Thickness	Qty.	Part No.
Hard Layer, Organic Binder, Fluorescent Indicator, 254nm			
Scored, 4, 5x20cm Sections			
20x20cm	250µm	25	**8617580**
Scored, 8, 2.5x10cm Sections			
10x20cm	250µm	25	**8617610**

Matching Davisil® Silica TLC plates for easy method development.

Contact your office or distributor for pricing.

Spring® Columns and Multipacker® Packing Station

Perfect Companions for Davisil® Media

Davisil® silica delivers excellent chromatographic results and is a more cost effective solution compared to spherical silica, especially in bulk quantities. To maximize performance, use Davisil® silica packed in Spring® columns to extend column life. For even further cost reduction in high-volume use, pack your own Spring® columns with the Multipacker® packing station.

MODcol® Spring® Columns

- **Improve Chromatographic Performance**
- **Extend Column Lifetimes**
- **Truly Mobile DAC Column**

The Spring® column system has a unique portable design with patented internal dynamic axial compression (DAC) technology that gives DAC performance independently from the external packing device. DAC eliminates voids and increases peak symmetry, column lifetime, reproducibility, and overall efficiency. Spring® columns packed with Davisil® media can provide a highly effective purification solution.

Multipacker® Packing Station

- **Easy and Safe Use**
- **Pack Multiple Columns with One Unit**
- **Unprecedented Safety Features**

Whether using Davisil®, Vydac® or any other media, the combined benefits of the MultiPacker® packing station and Spring® columns can deliver improved performance. Unlike competitive systems, the column can be removed from the MultiPacker® packing station and the DAC mechanism remains contained within the column. This allows more flexibility for column operation in the lab and the ability to pack multiple columns with a single MultiPacker® packing station.

Its hydraulic packing mechanism with pulsation damping makes it safe for use with even the most fragile media. Since the system does not require electrical power, it is safe to use with many volatile solvents and in hazardous environments.

The MultiPacker® packing station incorporates several safety features with redundant back-up to give users maximum confidence and peace of mind to perform in-house packing.

Additional Products for Process Manufacturing

synthesis | purification | formulation

Synthesis Intermediates

- Custom Chiral Intermediates
- Peptide Building Blocks and Fragments
- Low Temperature Chemistry
- Grams to Tons Capacity

Purification Technologies

- Vydac® Protein and Peptide Purification Media
- ModCol® DAC Prep Columns
- Chromatography Experience
- World's Largest Manufacturer of Silica Gel

Formulation Excipients

- Syloid® FP Silica
- Micronized Silicon Dioxide
- Unique Pore Structure and Adsorptive Capacity
- Industry Leading Quality Standards (IPEA GMP)

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