

ACE Preparative HPLC Columns

- Ultra high purity base deactivated silica
- 5, 10 and 15µm particle sizes available
- Fully validated columns
- Exceptional reproducibility
- Excellent efficiencies
- High sample recovery
- Excellent column lifetime
- 100Å and 300Å pore sizes



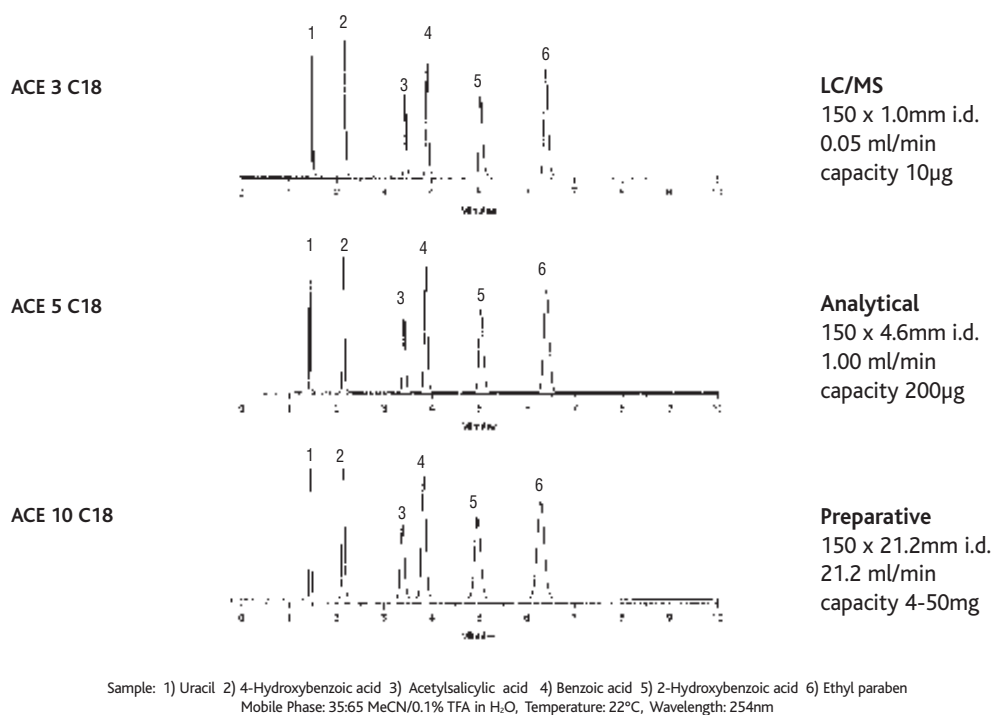
Achieve Reproducible High Performance Preparative Separations

Chromatographers with experience in preparative HPLC know that resolution and loadability are of the utmost importance. The greater the resolution, the higher the sample load and the faster pure compound is obtained. The ability to optimize resolution at the preparative scale means starting with high performance separations at the analytical scale. The same features that make ACE ultra-inert base deactivated analytical columns the choice of method development chemists also make them the ideal choice for scale-up and process methods.

ACE preparative HPLC columns offer the following benefits:

- **Loadability** – high surface area and carbon load for maximum sample capacity
- **Selectivity** – available in 8 surface chemistries to optimize sample capacity
- **Rugged** – reliable, long-term performance
- **Guaranteed reproducibility** – complete column/batch validation as for ACE analytical columns
- **Guard cartridges** – available for maximum column protection

Figure 32. Reproducible Scale-Up with ACE C18 Columns



Select the Optimum Bonded Phase

ACE high performance preparative columns are available in 8 surface chemistries including AQ and C18-HL (Hi-Load),

making it possible to optimize your preparative resolution and in doing so, increase loadability. See Table 33a for specifications.

Get High Purity Product Fast

ACE preparative HPLC columns are available in a wide range of column dimensions and particle sizes (see pages 14-17 and 24-26) for complete optimization of preparative assays.

For maximum loadability, 30mm or 50mm i.d. columns are recommended. Use a 50mm length 'combinatorial' column with a 5µm particle size to maximize the speed of your analysis. To maximize resolution, choose a 250mm length column with a 5µm particle size. See Table 33b for loading specifications.

Figure 33c demonstrates a typical preparative method development strategy. Since ACE columns are shown to give reproducible scale-up and are available in the widest range of column dimensions, loading studies may be performed at an analytical level with complete confidence that this can be fully transferred to preparative scale columns.

Table 33a. Specifications for ACE high performance preparative HPLC columns

PHASE	PARTICLE SIZE (µm)	PORE SIZE (Å)	SURFACE AREA (m ² /g)	CARBON LOAD (%)
C18	5, 10	100	300	15.5
C8	5, 10	100	300	9.0
C4	5, 10	100	300	5.5
CN	5, 10	100	300	5.5
Ph	5, 10	100	300	9.5
AQ	5, 10	100	300	14.0
SIL	5, 10	100	300	-
C18-HL	5, 10, 15	90	400	20.0
C18-300	5, 10	300	100	9.0
C8-300	5, 10	300	100	5.0
C4-300	5, 10	300	100	2.6
CN-300	5, 10	300	100	2.6
Ph-300	5, 10	300	100	5.3

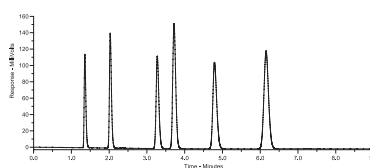
Table 33b. Typical sample capacities (loadability) for 25cm length columns

COLUMN SIZE	COLUMN I.D. (mm)	RELATIVE FLOW RATE (ml/min)	WEIGHT OF PHASE (g)	TYPICAL INJECTION VOLUME	SAMPLE CAPACITY PER INJECTION	
					OPTIMUM	OVERLOAD
Analytical	4.6	1.0	2.5	10µl	2mg	85mg
Semi-Preparative	7.75	2.8	7	30µl	6mg	240mg
Semi-Preparative	10	4.7	12	50µl	10mg	400mg
Preparative	21.2	21	53	200µl	45mg	1.8g
Preparative	30	42.5	106	400µl	90mg	3.6g
Process	50	118	295	1200µl	250mg	10g
Process	100	473	1182	4800µl	1g	40g

Figure 33c. Scale-Up Strategy

Analytical Injection

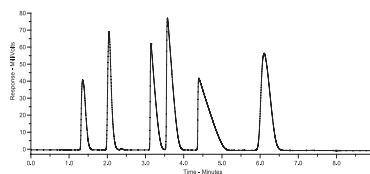
x40 loading



ACE 5 C18
150 x 4.6mm i.d.
1.0ml/min

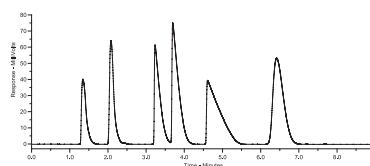
Analytical Overload

x20 loading (scale up)



ACE 5 C18
150 x 4.6mm i.d.
1.0ml/min

Preparative Overload



ACE 5 C18
150 x 21.2mm i.d.
21.2ml/min

Sample: 1) Uracil 2) 4-Hydroxybenzoic acid 3) Acetylsalicylic acid 4) Benzoic acid 5) 2-Hydroxybenzoic acid 6) Ethyl paraben
Mobile Phase: 35:65 MeCN/0.1% TFA in H₂O, Temperature: 22°C, Wavelength: 254nm

ACE columns allow reproducible scale-up from analytical (middle chromatogram) to preparative dimensions (bottom chromatogram) without compromising resolution.

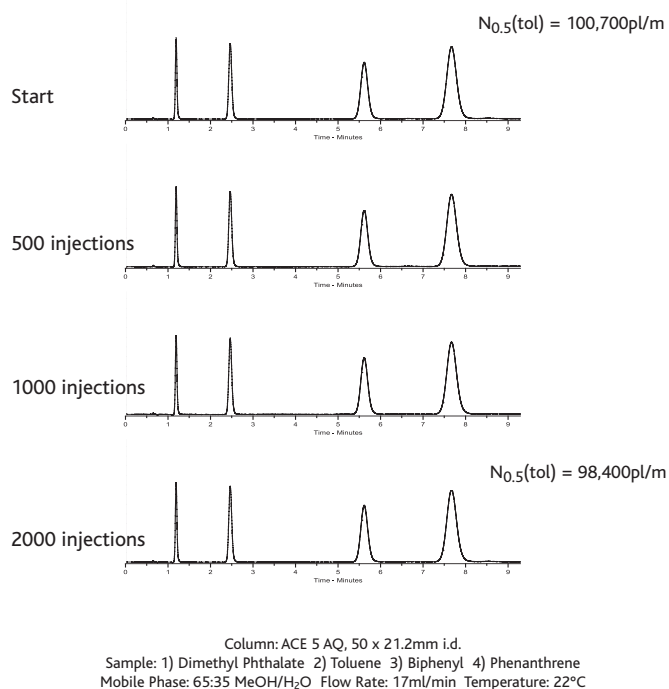
Increased Preparative Column Lifetimes

A fundamental requirement for successful preparative applications is a robust, rugged column. ACE materials have previously been shown to have excellent chemical stability under highly acidic (p.8) and highly basic (p. 9) conditions.

The high mechanical stability of the ultra-inert ACE silica and the unique preparative packing methods employed result in a high efficiency, extremely stable packed silica bed – leading to increased preparative column lifetimes.

Figure 34a demonstrates the excellent column performance maintained with a 50 x 21.2mm ACE 5 AQ column over an extended test period.

Figure 34a. ACE Preparative Column Robustness



Combinatorial Chemistry Columns

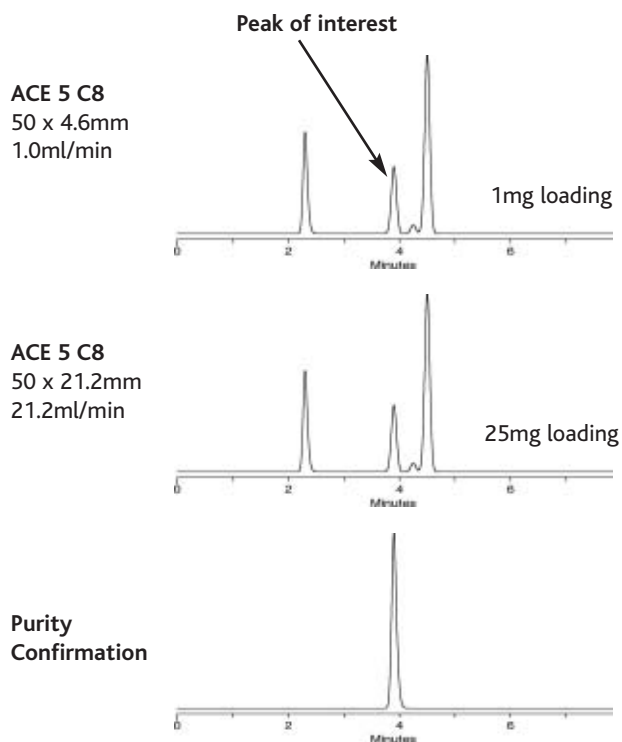
- High throughput preparative applications
- Identical scale-up from analytical columns
- Full range of ACE phases available
- High efficiency, long lifetime and guaranteed reproducibility

A combinatorial chemistry approach to novel drug synthesis is now widely used within the pharmaceutical industry. High throughput screening is performed at an analytical scale (typically 50 x 4.6mm columns), which is a requirement for easy one-step scale-up to preparative dimensions (typically 50 x 21.2mm columns). Figure 34b illustrates such a combinatorial chemistry approach.

ACE columns are offered in a wide range of dimensions (p. 14-17 and 24-26) for simple, reproducible scale-up.

A range of combinatorial chemistry column kits (containing matched preparative and analytical columns) are listed on page 38.

Figure 34b. Schematic Combinatorial Scale-Up and Isolation of an Active Molecule



The full range of ACE preparative columns is listed on pages 14-17 (100Å) and pages 24-26 (300Å).