Ultisil® XB-SCX Care and Use Manual

Ultisil XB-SCX is a classical strong cation exchange silica-based column, consisting of a covalently bonded aromatic sulfonic acid moiety. It is commonly used for the separation of alkaline, water-soluble compounds. Special applications include organic bases such as alkaline amino acids, anilines, medicinal salts, inorganic cations and nucleotides.

Column parameters

Bonded phase	Benzene sulfonic acid
USP listing	L9
Particle size	3μm, 5μm, 10μm
Pore size	120Å, 300 Å
Specific surface area	320m^2/g (120Å), 90m^2/g(300Å)
Carbon loading	12% (120Å), 5%(300Å)
End-capping	No
pH stability	2.0-8.0
Max. Temperature	60℃(mobile phase pH ≤6.5), 40℃ (mobile phase pH >6)
Max. Pressure	40MPa(≥5μm), 60MPa(<5μm)

Activation and Transition

Storage Solvent: methanol

	Activation		Transition	
Column ID	≤3mm	>3mm	≤3mm	>3mm
Flow rate	0.1ml/min	0.5ml/min	0.2ml/min	1ml/min
Mobile phase	80% methanol		Transition mobile phase*	
Time	4h		1h	
Temperature	30℃		30℃	
Note	No transition required for analysis mobile phases without buffer.			

*Transitional mobile phase refers to the proportion between organic phase and aqueous phase which is the same as that of analytical mobile phase, except that there is no buffer salt.

Column Daily Flushing

Back flushing recommended (reverse to the normal flow direction)

Analysis mobile phase	Without acid, alkali or salts	Containing acid, alkali or salts
Flow rate	Analysis flow rate	
Flushing mobile phase	Analysis mobile phase-10% methanol	Transition mobile phase-10% methanol
Time	Column length≤100mm, 30min each step	
	Column length>100mm, 40min each step	
Storage	Store in 10% methanol, kept in 4 ℃refrigerator.	

Notes

1. Ultisil XB-SCX is mainly used in the separation of compounds that stated in cationic condition in water solution.
2. Ultisil XB-SCX can be used with water and organic solvents. Methanol, acetonitrile and water (including buffer solution) can be used as mobile phase.
3. The retention of cationic compounds is related with pH, ion strength, ratio of organic phase and temperature. Normally higher ion strength or ratio of organic phase brings shorter retention time.
4. To improve resolution, use buffer salts like citric acid phosphate to adjust pH and ion strength. The pH range of mobile phase shall be controlled between 2.0-7.5.
5. Cationic column has longer equilibration time than C18.
6. Loss of bonded phase due to hydrolysis may occur easily for ion-exchange packing materials, causing shifts of retention time (e.g. there may be 1min difference between 2 days' retention time, excluding external causes like mobile phase and instruments). To prevent that, change the storage solvent into analysis mobile phase with half the content of buffer salts (e.g. if the storage solvent is acetonitrile:50mmol/L H_3PO4=10:90, the storage solvent shall be acetonitrile:25mmol/L H_3PO4=10:90). This way may cause salting out, please use caution.

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