P0100601

Revised in August, 2013

Supplemental Information related to Packed Columns for Ion Chromatography

INSTRUCTION MANUAL for TSKgel® SuperIC-Cation HS Ⅱ and TSKgel® SuperIC-Anion HR

To help protect you and/or your property from potential damage and ensure personal safety, please read the main manual thoroughly before using this column.
In this supplemental information sheet, different points from the "Packed columns for Ion Chromatography" INSTRUCTION MANUAL are only shown.

3. Column Grades and their Specifications

Table 1 Analytical Column Grades and their Specifications (3)

Grade	TSKgel SuperIC-Cation HS Ⅱ	TSKgel SuperIC-Anion HR
Part No.	0022837	0022894
Dimensions	4.6 mm I.D. × 10 cm (PEEK[1])	4.6 mm I.D. × 15 cm (PEEK[1])
Base material	Polystyrene gel	Hydrophilic polymer gel
Particle size	3 µm	3.5 µm
Functional group	Carboxylic acid	Quaternary ammonium ion
Capacity	1.0 eq/L or more	ca. 60 meq/L
Counter ion	Hydrogen ion	Carbonate ion
Shipping solvent	4.0 mmol/L methanesulfonic acid ＋ 1.1 mmol/L 18-crown 6-ether	3.8 mmol/L $NaHCO_3$
Applications	Cation analysis	Anion analysis

TSKguardcolumn SuperIC-A HS can be used as the guardcolumn for TSKgel SuperIC-Anion HR.

Table 2 Guard Column Grades and their Specifications (3)

Grade	TSKguardcolumn SuperIC-C HS Ⅱ
Part No.	0022840
Dimensions	4.6 mm I.D. ×1 cm (PEEK[1])
Base material	Polystyrene gel
Particle size	3 µm
Functional group	Carboxylic acid
Capacity	1.0 eq/L or more
Counter ion	Hydrogen ion
Shipping solvent	4.0 mmol/L methanesulfonic acid＋1.1 mmol/L 18-crown 6-ether
Analytical column	TSKgel SuperIC-Cation HS Ⅱ

[1] PEEK：Poly ether ether ketone

5. Operation

Table 3 General Operating Conditions (3)

Grade	TSKgel SuperIC-Cation HS Ⅱ TSKguardcolumn SuperIC-C HS Ⅱ	TSKgel SuperIC-Anion HR
Flow rate	Up to 1.2 mL/min	Up to 1.2 mL/min
Pressure	Analytical: Up to 25.0 MPa Guard: Up to 5.0 MPa	Analytical: Up to 25.0 MPa
Temperature	25 ～ 40 °C	25 ～ 40 °C
pH range	pH 1.0 ～ 5.0	pH 2.0 ～ 12.0
Organic solvent	Not recommended	Acetonitrile, Methanol : Up to 100 %

Please note that durability of anion analytical columns depends on pH of the eluent. In general, the higher the eluent pH, the lower the column durability.

⚠ CAUTION : Column installation onto the ion chromatograph

Column: TSKgel SuperIC-Cation HS Ⅱ, TSKgel SuperIC-Anion HR
Since this column has higher pressure rating, make sure that there is no leak at each connection, especially between the pump and the column.
In the IC-2001, when column temperature is less than 40 °C, the eluent should be run at a flow rate at up to 0.3 mL/min to prevent activation of the pressure limiter sensor of the system.

⚠ CAUTION : Crown ether containing eluent

Crown ether containing eluents are used for the TSKgel SuperIC-Cation HS Ⅱ. If there is a change in the composition of the eluent containing crown ethers, it may take several minutes to equilibrate the column.

7. Storage and Disposal

7-1 Column Storage

7-1-1 Storage Solvent

・TSKgel SuperIC-Cation HS Ⅱ, TSKguardcolumn SuperIC-C HS Ⅱ
Always keep the column hydrated with eluent.

・TSKgel SuperIC-Anion HR
Keep the column in eluent buffer if it will be used again within a week.
If the column will not be used for more than a week, it should be stored in filled with 3.8 mmol/L $NaHCO_3$ (shipping solvent).

8. Column Cleanup

8-1 Removal of Polyvalent Electrolytes

Typical cleaning solvents

・TSKgel SuperIC-Cation HS Ⅱ, TSKguardcolumn SuperIC-C HS Ⅱ
10 mmol/L methanesulfonic acid＋1.0 mmol/L 18-crown 6-ether

・TSKgel SuperIC-Anion HR
20 mmol/L sodium carbonate＋20 mmol/L sodium hydrogen carbonate

8-2 Removal of Hydrophobic Compounds

⚠ CAUTION: Applicable solvent

Please note, no organic solvents can be run on the TSKgel SuperIC-Cation HS Ⅱ column. The use of a disposable pretreatment column or guardcolumn is highly recommended to prevent damages to the column.

10. Quality Specifications and Warranty

10-1 Conditions for Inspection Data

8) TSKgel SuperIC-Cation HS Ⅱ

Eluent	: 4.0 mmol/L methanesulfonic acid＋ 1.1 mmol/L 18-crown 6-ether
Flow rate	: 1.2 mL/min
Temp.	: 40 °C
Sample	: Na^+ ion（2 mg/L）
Injection vol.	: 30 µL
Suppressor gel	: TSKsuppress IC-C
Instrument	: TOSOH Ion Chromatograph IC-2010

9) TSKgel SuperIC-Anion HR

Eluent	: 2.2 mmol/L sodium hydrogen carbonate＋ 2.7 mmol/L sodium carbonate
Flow rate	: 1.0 mL/min
Temp.	: 40 °C
Sample	: SO_4^{2-} ion（5 mg/L）
Injection vol.	: 30 µL
Suppressor gel	: TSKsuppress IC-A
Instrument	: TOSOH Ion Chromatograph IC-2010

10-2 Quality Specifications

Table 4 Quality Specifications (2)

Grade	TSKgel SuperIC-Cation HS Ⅱ	TSKgel SuperIC-Anion HR
Part No.	0022837	0022894
Plates	5,000 ～ 7,500 (Na^+)	12,000 ～ 18,000 (SO_4^{2-})
Asymmetry	0.9 ～ 1.4 (Na^+), 1.6～2.4 (K^+)	0.8 ～ 1.5 (SO_4^{2-})

TOSOH CORPORATION
BIOSCIENCE DIVISION