CREATIVE BIOMART®
Chromatography

# SOURCE 15S

## Product Information

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| **Cat#No#** | SO-459C |

**Product Overview**

Source 15S is a polymeric, strong cation exchanger designed for polishing steps in in both research and industrial applications.

**Description**

SOURCE 15S is a synthetic high performance, preparative, chromatography resin, based on a 15 µm monosized, rigid polystyrene/divinyl benzene polymer matrix. It is modified with sulphonate (S) strong cation exchange groups. SOURCE resins have excellent physical and chemical characteristics, allowing high flow rates and consistent performance.

**Characteristic**

Mono-sized 15 um rigid beads gives low back pressure and high flow rates allowing for high productivity.
Strong cation exchanger designed for high resolution polishing purification of proteins, peptides and oligonucleotides.
High chemical stability allowing for wide range of working conditions with good resistance to cleaning conditions at high pH.

**Maximum operating pressure**

400 cm/h, 1000 kPa, FineLine 100 column.

**Ligand Coupling Method**

long, hydrophilic spacer arms

**Packing Column**

1. Pour the resin slurry into the column in one continuous motion. Pouring down a glass rod held against the wall of the column helps prevent the introduction of air bubbles. Immediately fill the remainder of the column and reservoir with 20% ethanol. Attach the lid on the packing reservoir and connect it to the pump.
2. Open the column outlet and start the packing by pumping 20% ethanol with 0.2 M NaAc through the column at a flow velocity of approximately 1900 cm/ h for Tricorn 10/100. (This should generate a pressure of

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25 bar.) Switch off and disconnect the pump. Close the column outlet.
3. Take the column from the stand and remove the packing reservoir over a sink. Remount the column vertically and fill to the top with 20% ethanol with 0.2 M NaAc.
4. Wet the column adapter by submerging the plunger end in 20% ethanol with 0.2 M NaAc and drawing through with a syringe. Make sure that all bubbles have been removed. Insert the adapter into the top of the column, taking care not to trap air under the net.
5. With the adapter outlet open, push the adapter into the column and down approximately 2 mm into the resin bed, allowing the ethanol to displace any air remaining in the tubing.
6. Lock the adapter in position, connect it to the pump, open the column outlet and continue packing for a further 15 min. Reposition the adapter on the resin surface if necessary.

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| **Matrix** |
| Polystyrene/divinylbenzene |
| **Ionic Exchanger Type** |
| Strong cation exchanger |
| **Particle Size** |
| 15 μm-15 μm |
| **Average particle size** |
| ~15 μm |
| **Ligand** |
| Sulphonate group |
| **Dynamic binding capacity** |
| ~ 80 mg lysozyme/mL resin |
| **Recommended flow rate** |
| 150 to 900 cm/h |
| **Recommended column height** |
| 10 cm |

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| **Chemical stability** |
| Stable in common ion exchange buffers. |
| **pH working range** |
| 2–13 |
| **CIP stability** |
| 1–14 |
| **Temperature stability** |
| 4˚C to 40˚C |
| **Autoclavable** |
| 20 min at 121°C in H2O, pH 7, 1 cycle. |
| **Storage** |
| 4 to 30°C, 20% Ethanol + 0.2 M Sodium Acetate. |
| **Shipping** |
| 0.2 M sodium acetate in 20% ethanol, 4˚C to 30˚C. |
| **Binding** |
| The most common procedure is to let the molecules of interest bind to the ion exchanger and separate them by developing a salt gradient. This is particularly useful if one of the aims is to concentrate the product of interest from a large volume of diluted sample. In some cases, it is useful to choose conditions where a particular contaminant is bound and the product of interest flows through.<br>For efficient adsorption, it is critical to choose a buffer at an appropriate pH (at least 1 pH unit above for Q, or 1 pH unit below for S, the pI of the molecule of interest when binding is desired) and with buffering capacity at that pH. |
| **Equilibration** |
| Before starting a run, the ion exchanger has to be charged with counter-ions and then equilibrated with the starting buffer to be used during sample application. Pump one column volume of a high ionic strength buffer followed by 5 to 10 column volumes of starting buffer (low ionic strength buffer) through the column until the |

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conductivity and/or pH of the effluent is the same as that of the ingoing eluent.

**Elution**

Although simplicity suggests that buffering ions that bind to the exchanger had better be avoided, in large-scale applications, economic considerations often limit the choice to acetate, citrate, phosphate, or other inexpensive components even for anion exchange. Chloride is the most commonly used counter-ion for elution. A suggested gradient is 0 to 0.5 M NaCl over 20 column volumes. Increase the anion concentration if the substance of interest is not eluted in the gradient.

**Regeneration**

Normally a separation is followed by washing with high ionic strength salt (e.g., 1 to 2 M NaCl) and/or changing pH, followed by reequilibration in starting buffer.

**Cleaning-in-place**

Remove ionically bound proteins by washing the column with 0.5 bed volumes of a 2 M NaCl solution at a flow velocity of approximately 90 cm/h, contact time 10 to15 minutes, reversed flow direction.
Remove precipitated proteins, hydrophobically bound proteins and lipoproteins by washing the column with 1.0 M NaOH solution at a flow velocity of approximately 40 cm/h, contact time 1 to 2 hours, reversed flow direction.
Remove strongly hydrophobically bound proteins, lipoproteins, and lipids by washing the column with four bed volumes of 70% ethanol or 30% isopropanol at 10 cm/h, reversed flow direction. Apply increasing gradients to avoid air bubble formation when using high concentrations of organic solvents. Alternatively, wash the column with two bed volumes of 0.1 to 0.5% nonionic detergent in a basic or acidic solution. After treatment with detergent always remove residual detergent by washing with five bed volumes of 70% ethanol.

**Sanitization**

Sanitization reduces microbial contamination of the bed to a minimum. Wash the column with 0.5 to 1.0 M NaOH at a flow velocity of approximately 40 cm/h, contact time 30 to 60 minutes, reversed flow direction.

**Pack size**

10 mL

**BioProcess resin**

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| Yes |
| **Maximum flow velocity** |
| 1800 cm/h |
| **Dimensions** |
| 4.6 × 100 mm |
| **Column volume** |
| 1.7 mL |
| **Functional group** |
| –O–CH2–CHOH–CH2–O–CH2– CHOH–CH2–SO3- |

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