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Smartdex G-25

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1. Product Description

Smardex G-25 is a gel filtration medium prepared by cross-linked dextran. Size exclusion chromatography (SEC), also called Gel filtration (GF), separates molecules on the basis of differences in size as they pass through a SEC medium packed in a column. SEC media consists of spherical particles with pores of different sizes where molecules small enough to enter the pores are retarded as compared to larger molecules. Samples are eluted by single buffer. Buffer conditions can be varied to suit the sample type or the requirements for the next purification, analysis, or storage step.

Smartdex G-25 is well established gel filtration medium for desalting, removing contaminants and buffer exchange in industrial applications.

Table 1. Characteristics of **Smardex G-25**

Item	Smartdex G-25 Coarse	Smartdex G-25 Medium	Smartdex G-25 Fine
Average particle size D50 (μm)	200-250 μm	120-140 μm	70-90 μm
Fractionation range[Mr] Dextran	1×10^2-5×10^3	1×10^2-5×10^3	1×10^2-5×10^3
Fractionation range[Mr] Globular Proteins	1×10^3-5×10^3	1×10^3-5×10^3	1×10^3-5×10^3
pH stability, operational	2-13	2-13	2-13
Swelling factor	4-6 ml/g dry beads	4-6 ml/g dry beads	4-6 ml/g dry beads
Maxi flow velocity	480 cm/h	150 cm/h	50 cm/h

Storage: Dry **Smartdex G-25** should be stored at 4℃ to 30℃.

Packed columns and used gel should be stored in 0.02% NaN_3 at 4℃.

2. Packing Column

2.1 Preparing the medium suspension

Smartdex G-25 Medium is supplied as a dry powder and must be swollen before use. During swelling excessive stirring should be avoided as it may break the beads. Do not use magnetic stirrers.

Swell the medium in excess buffer, at room temperature for 3 hours, or in a water bath at 90 °C for 1 hour. The eluent buffer should not contain agents which significantly increase the viscosity. The column may be equilibrated with viscous buffers at reduced flow rates after packing is completed.

Prepare a media slurry in a ratio of 75% settled gel to 25% buffer and degas under vacuum, if the gel was swollen at room temperature.

2.2 Packing the column

These instructions are for packing **Smartdex G-25 Medium** in the recommended SXK column. Flow rates are given in specific volumetric values, with reference to the linear flow rate.

1) Remove air from the column dead spaces by flushing the end-piece and adapter with packing buffer. Make sure no air has been trapped under the column net.

2) Close the column outlet leaving the net covered with packing buffer.

3) Resuspend the beads and pour the slurry down a glass rod held against the column wall will minimize the introduction of air bubbles.

If using a packing reservoir, immediately fill the remainder of the column and reservoir with packing buffer. Mount the adapter or lid of the packing reservoir and connect the column to a pump. Avoid trapping air bubbles under the adapter or in the inlet tubing.

4) Open the bottom outlet of the column and set the pump to run at the desired flow velocity 150cm/h. If the recommended flow velocity can not be obtained, use the maximum flow velocity the pump can deliver. This should also give a reasonable well-packed bed. Do not exceed 75% of the packing flow velocity in subsequent chromatographic procedures.

5) When the bed has stabilized, stop the pump and close the bottom outlet.
If using a packing reservoir, disconnect the reservoir and fit the adapter to the column. If using packing column, remove the packing column and then the connector.
6) Fill the column with packing buffer carefully. Use a syringe to wet the adaptor by drawing packing buffer through it. With the adapter inlet disconnected, push the adapter down at an angle to the top of the gel, while making sure that no air is under the net. Seal the adaptor.
7) Connect the adapter to the pump using drop to drop connection, and make sure there is no air in the system. Open the bottom outlet and continue packing. The bed will be further compressed at this point and a space will be formed between the bed surface and the adapter.
8) Close the bottom outlet. Disconnect the column inlet and lower the adapter approximately 2 mm into the bed. Connect the pump. The column is now ready to use.

3. Operate Procedure

3.1 Equilibration

Equilibrate the column with 2 column volumes of binding buffer. Enlarge the volume if detergent buffer is used.
Buffer composition does not directly influence the resolution which can be obtained in gel filtration chromatography and buffers can be chosen to match the requirements of the sample.
However, an ionic strength equivalent to 0.15 M NaCl or greater is recommended to avoid ionic interactions with the gel matrix.
To ensure long column life, all buffers should be centrifuged or filtered (0.45 µm) before use.

3.2 Samples

The sample volume can be up to 30% of the total bed volume for desalting and buffer exchange. Larger sample volumes can be applied, but resolution will be reduced. To ensure long column life, samples should be centrifuged or filtered (0.45 µm) before use.

3.3 Elution

The recommended flow rate range for an SXK 16 column packed with **Smartdex G-25 Medium** is 5 ml/min (150 cm/h) .Gel filtration is a non-interactive technique, and all sample substances should elute in a volume equivalent to the volume of the column. Re-equilibration is not needed between runs with the same eluent.

4. Clean-In-Place（CIP）

In some applications, substances such as denatured proteins or lipids do not elute in the regeneration procedure. These can be removed by the cleaning procedure described below. The need for column cleaning may be indicated by:
- Increased back-pressure
- Colour changed at the top of the column
- Reduced resolution
- A space between the upper adaptor and the gel surface

To remove precipitated material, wash the column in the reversed flow direction with one column volume of 0.2 M NaOH or a solution of a non-ionic detergent at a flow rate at 0.6 ml/min (18 cm/hour).
The total contact time with the cleaning solution should be 1–2 hours. After washing, always re-equilibrate the column before re-use.

5. Related Products

Product	Cat. No.	Size
Smartdex G-25 Coarse	SEC001S2	25 G
	SEC0011	100 G
	SEC0015	500 G
	SEC0016	1 Kg
	SEC0017	10 Kg

Smartdex G-25 Medium	SEC003S2	25 G
	SEC0031	100 G
	SEC0035	500 G
	SEC0036	1 Kg
	SEC0037	10 Kg
Smartdex G-25 Fine	SEC005S2	25 G
	SEC0051	100 G
	SEC0055	500 G
	SEC0056	1 Kg
	SEC0057	10 Kg
Smartdex G-50 Medium	SEC017S2	25 G
	SEC0171	100 G
	SEC0175	500 G
	SEC0176	1 Kg
	SEC0177	10 Kg
Smartdex G-50 Fine	SEC021S2	25 G
	SEC0211	100 G
	SEC0212	500 G
	SEC0213	1 Kg
	SEC0214	10 Kg
Smartdex G-75	SEC012S2	25 G
	SEC0121	100 G
	SEC0125	500 G
	SEC0126	1 Kg
	SEC0127	10 Kg
Smartdex G-15	SEC013S2	25 G
	SEC0131	100 G
	SEC0135	500 G
	SEC0136	1 Kg
	SEC0137	10 Kg
Smartdex G-10	SEC014S2	25 G
	SEC0141	100 G
	SEC0145	500 G
	SEC0146	1 Kg
	SEC0147	10 Kg
Smartdex G-100	SEC015S2	25 G
	SEC0151	100 G
	SEC0155	500 G
	SEC0156	1 Kg
	SEC0157	10 Kg