



**Gel Filtration Chromatography Media**

**Cellufine<sup>®</sup> GH-25**

**DESCRIPTION**

Cellufine GH-25 provides a rapid means of salt removal and buffer exchange for protein solutions. The semi-rigid spherical cellulose beads allow high flow rates with little compression of the column bed. The separation mechanism is based on differential solute access into the chromatographic bead.

Whereas large molecules (above 3 kD) are excluded from the packing and pass quickly through the column, small molecules (salts) diffuse into the bead and are thus retained longer. GH-25 can be used to remove alcohols, salts, detergents, fluorochromes, sugar, etc., from virtually any protein solution. It is compatible with most solvents and is stable from pH 1 - 14.

**PHYSICAL-CHEMICAL CHARACTERISTICS**

	Cellufine GH-25
Support matrix	cellulose
Particle shape	spherical
Particle diameter (µm)	ca. 40 – 130
MW exclusion limit (kD)	3
pH stability range	1 - 14
Operating pressure	< 2 bar (29 psi)
Supplied	suspension in 20 % EtOH

**COLUMN PACKING**

1. Calculate volume required for the desired bed dimension.
2. Prepare a 40 – 60 % (v/v) slurry in appropriate exchange buffer.
3. With outlet closed, carefully pour the slurry into column. Depending on the volume, a filler tube may be necessary.
4. With the inlet open to release air, insert and affix the top adjuster assembly at the slurry interface.
5. Open the column outlet and begin pumping buffer at a rate 10 - 20% higher than the

operational flow rate.

6. After the bed stabilizes, close the column outlet. Then with the inlet open, reposition the end cell on top of the bed.

## **Operating Guidelines**

### **General Operation**

Equilibrate column with 2–5 volumes of exchange buffer, or until the UV baseline has stabilized.

### **Sample Preparation and Load**

Samples are typically loaded in the buffer which is to be exchanged. Filtration may be required to remove insoluble matter. The sample load is calculated as a function of column volume. Sample loads of 10% to 30% of total column volume are recommended. At higher loads, samples become less diluted. However, salt removal may not be absolute. Furthermore, volume loadability is inversely related to protein concentration.

### **Flow Rate**

The recommended linear velocity range for GH-25 is 100–300 cm/h.

### **Elution**

Elution occurs under isocratic conditions. The protein and salt/alcohol should elute at approximately 30% and 85% of the total column volume, respectively.

### **Chemical Compatibility**

Stable in:

pH 1–14

Ethanol, methanol, acetone, etc.

8 M Urea, 6 M Guanidine/HCl

0.1 M HCl

0.5 M NaOH

Most salts (NaCl, (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, etc.)

Most detergents (SDS, Tween®, Chaps, etc.)

**Autoclavable:** 121°C at 1 bar for 20 minutes

### **Regeneration**

Flush the column with 2-5 bed volumes of 0.1 - 0.5 M NaOH at a velocity of 50 –100 cm/h. Remove caustic by flushing with several bed volumes of DIW or exchange buffer. In the later case, measure the pH of the column eluate to ensure that the system has returned to



equilibrium.

**Storage**

For storage of opened containers, it is recommended that they be kept in a cold room (2 - 8 °C).  
Do not freeze.

**Shelf Life:**

5 years from date of manufacture

**Product Ordering Information**

Media type	Pack Size			
	100 ml	500 ml	5 lt	10 lt
Cellufine GH-25	670 000 327	19711	19712	670 000 335

## TERMS AND CONDITIONS OF SALE

1. **Acceptance**-Buyer's placement of this order shall create a contract subject to and expressly limited by these terms and conditions. Acceptance may only be made on the exact terms and conditions hereof and if additional or different terms are proposed by Buyer, such response shall constitute a counteroffer. **THE TERMS OF THIS CONTRACT SHALL SUPERSEDE ANY CONFLICTING TERMS CONTAINED ON BUYERS PURCHASE ORDER OR ANY DOCUMENT OR INSTRUMENT SUBMITTED BY BUYER.**

2. **Prices, Taxes and Payment** - All prices are firm unless otherwise agreed to in writing. JNC Corporation reserves the right to change the prices and specifications of its Products at any time without notice. Any tax, duty, custom or other fee of any nature imposed upon this transaction by any federal, state or local governmental authority shall be paid by Buyer in addition to the price quoted or invoiced. In the event JNC Corporation is required to prepay any such tax, Buyer will reimburse JNC Corporation. Payment terms shall be net 30 days after shipment by JNC Corporation. An interest charge equal to 1½% per month (18% per year) will be added to invoices outstanding beyond 30 days after shipment. In addition JNC Corporation reserves the right to require C.O.D. payment terms from any Buyer whose account is overdue for a period of more than 60 days or who has an unsatisfactory credit or payment record. JNC Corporation may also refuse to sell to any person until overdue accounts are paid in full.

3. **Delivery and shipment** - JNC Corporation will make every effort to ship the Products or provide the services hereunder in accordance with the requested delivery date, provided, that JNC Corporation accepts no liability for any losses or for general, special or consequential damages arising out of delays in delivery. Shipment of all Products shall be F.O.B. point of distribution by JNC Corporation; identification of the Products shall occur when they leave JNC Corporation's point of distribution, at which time title and risk of loss shall pass to Buyer. All shipment costs shall be paid by Buyer and if prepaid by JNC Corporation the amount thereof shall be reimbursed to JNC Corporation.

4. **Inspection** - Buyer shall be responsible for inspecting all Products shipped hereunder prior to acceptance, provided, that if, Buyer shall not have given JNC Corporation written notice of rejection within 30 days following shipment to Buyer, the Products shall be deemed to have been accepted by Buyer.

5. **Disclaimer of Express and Implied Warranties** - The Products shall be covered by the applicable JNC Corporation standard warranty. **NO OTHER EXPRESS OR IMPLIED WARRANTY IS MADE WITH RESPECT TO THE PRODUCTS. JNC CORPORATION EXPRESSLY EXCLUDES THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE.** Any model or sample furnished to the Buyer is merely illustrative of the general type and quality of goods and does not represent that the Products will conform to the model or sample. Buyer's remedies under JNC Corporation's warranty shall be limited to repair or replacement of the Product or component which failed to conform to JNC Corporation's warranty. **JNC Corporation shall not be liable for any consequential damages or economic loss or property damage incurred by Buyer.**

6. **Returned Goods** - No Products shipped under this contract may be returned without the express prior authorization of JNC Corporation. All returns of Products are subject to a restocking charge. No returns will be authorized after 120 days following shipment to Buyer.

7. **Technical Advice** - JNC Corporation may, at Buyer's request, furnish technical assistance, advice and information with respect to the Products if and to the extent that such advice, assistance and information is conveniently available. It is expressly agreed that there is no obligation to provide such information which is provided without charge at the Buyer's risk and which **is provided subject to the**

**disclaimers set forth in paragraph 5 above.**

8. **Agents, etc.** - No agent, employee or other representative has the right to modify or expand JNC Corporation's standard warranty applicable to the Products or to make any representations as to the Products other than those set forth in JNC Corporation's product literature and any such affirmation, representation or warranty, if made, should not be relied upon by Buyer and shall not form a part of this contract.

9. **Fair Labor Standards** - JNC Corporation represents that the Products or services provided hereunder were produced and/or performed in compliance with the requirements of all sections of the Fair Labor Standard Act of 1938, as amended.

10. **Equal Employment Opportunity** - JNC Corporation is an Equal Opportunity Employer. It does not discriminate in any phase of the employment process against any person because of race, color, creed religion, national origin, sex, age, veteran or handicapped status. The JNC Corporation Equal Opportunity Certificate, which is mailed annually to all vendors and vendees, is incorporated into this contract by reference.

11. **Modifications, Waiver, Termination** - This contract may be modified and any breach hereunder may be waived only by a writing signed by the party against whom enforcement thereof is sought.

12. **Governing Law** - This contract shall be governed by and construed in accordance with the laws (other than those relating to conflict of laws questions) of the Commonwealth of Japan.

13. **Arbitration** - Any and all disputes or controversies arising under, out of or in connection with this contract or the sale or performance of the Products shall be resolved by final and binding arbitration in Tokyo under the rules of the Japan Arbitration Association then obtaining. The arbitrators shall have no power to add to, subtract from or modify any of the terms or conditions of this contract. Any award rendered in such arbitration may be enforced by either party in either the courts of the Commonwealth of Japan District Court for the District of Japan, to whose jurisdiction for such purposes JNC Corporation and Buyer each hereby irrevocably consents and submits.