

Technical Bulletin

Sephadex® G-50

BioReagent, for molecular biology, DNA grade, Medium

S6022

Product Description

Sephadex® G-50, Medium is a gel filtration chromatography product for desalting and buffer exchange of very large molecules. Sephadex® is prepared by crosslinking dextran with epichlorohydrin. Sephadex® products differ in their degree of cross-linking, and thus in their degree of swelling and their molecular fractionation range. On the general term "Sephadex" and other aspects of Sephadex® products:

- "Se" refers to "separation", and "dex" to dextran.¹
- "G" refers to "Gel".¹
- The G-number in a given Sephadex® listing refers to the water regain of the gel multiplied by 10, where water regain is defined as the maximum amount of grams of water taken up by 1 g of "dry xerogel".¹

The designation "Medium" indicates a large particle size for use in large-scale group separations where high flow rates and low operating pressures are required.

Several dissertations have cited use of this product in their research protocols.²⁻⁴

Storage/Stability

Store this product, as sold in lyophilized form, at room temperature.

The swollen resin may be stored at 2-8 °C for up to 1 month. For longer-term storage, it is suggested to include an anti-bacterial agent, such as 20% ethanol, in the resuspension buffer.⁵

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Product Summary

Bed volume⁵: 9-11 mL/g dry Sephadex®

DNA exclusion limit⁵: 20 bp

Oligonucleotide exclusion limit⁵: 20 bp

Recommended pH range⁵: 2-10

Swelling time⁵:

- 72 hours at 20 °C
- 5 hours at 90 °C

DNase and RNase: None detected

Details on nuclease testing

The nuclease tests below use supernatant that has been isolated after centrifuging a resuspension of the Sephadex® beads in water at 30 mg beads per 1 mL of water, with overnight incubation at 2-8 °C. Small aliquots of the Sephadex® supernatant are used for the assays. In the course of the nuclease tests, degradation of DNA or RNA was not detected.

Endonuclease-Exonuclease

One µg of λ Hind III fragments was incubated in an aliquot of the Sephadex® supernatant for 16-18 hours at 37 °C in a 50 µL reaction mixture containing 30 mM Tris-HCl (pH 7.8), 50 mM NaCl and 10 mM MgCl₂. No degradation of the DNA fragments was detected by agarose gel electrophoresis.

Endonuclease (Nickase)

One µg of pBR322 DNA was incubated in an aliquot of the Sephadex® supernatant for 16-18 hours at 37 °C in a 50 µL reaction mixture containing 30 mM Tris-HCl (pH 7.8), 50 mM NaCl and 10 mM MgCl₂. No conversion of the covalently closed circular DNA to the nicked or linear form was observed by agarose gel electrophoresis.

RNase

Two µg of transfer RNA were incubated in an aliquot of the Sephadex® supernatant for 16-18 hours at 37 °C in a 50 µL reaction mixture containing 30 mM Tris-HCl (pH 7.8), 50 mM NaCl and 10 mM MgCl₂. No degradation of the tRNA was detected by polyacrylamide gel electrophoresis.

References

1. Janson, J.-C., *Chromatographia*, **23(5)**, 361-369 (1987).
2. Vogel, Laura Sanders, "The decline of Fowler's Toad (*Bufo fowleri*) in southern Louisiana: molecular genetics, field experiments and landscape studies". University of New Orleans, Ph.D. dissertation, p. 46 (2006).
3. Pauly, Gregory Blair, "Phylogenetic Systematics, Historical Biogeography, and the Evolution of Vocalizations in Nearctic Toads (*Bufo*)". University of Texas at Austin, Ph.D., dissertation, p. 7 (2012).
4. Ryan, Siobhan, "An Investigation into the Biochemical Effects of Heavy Metal Exposure on Seaweeds". Waterford Institute of Technology, Ph.D. dissertation, p. 335 (October 2010).
5. Supplier information.

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