Bead Type (NaI)
Gel Extraction Kits

NucleoGen
BIOTECHNOLOGY

Contents

Kit Contents

Catalog No.	1232	1234	1236
Number of preparations	200	400	600
NaI Solution*	+	+	+
TBE Modifier	+	+	+
Glass Bead	+	+	+
Wash C Solution (concentrate)	+	+	+
Elution Buffer	+	+	+

* NaI Solution contain chaotropic salts which are irritants and not compatible with disinfecting agents containing bleach. Take appropriate laboratory safety measures and wear gloves when handling.

Principle

The Bead Type (NaI) Gel Extraction Kit is optimized for efficient recovery of DNA and removal of contaminants. DNA adsorbs to the Glass Bead in the presence of high chaotropic salt. Impurities are efficiently washed away, and the pure DNA is eluted with Elution Buffer or water.

Adsorption to Glass Bead — salt & temperature dependence

The Glass Bead is uniquely adapted to isolate DNA from both aqueous solutions and agarose gels.
The NaI Solution in Bead Type (NaI) Gel Extraction Kits provide the correct chaotropic salt concentration for adsorption of DNA to the Glass Bead. The adsorption of nucleic acids to Glass Bead surfaces occurs only in the presence of a high concentration of chaotropic salts and low temperature, which modify the structure of water.

Washing

During the DNA adsorption step, unwanted primers and impurities, such as salts, enzymes, unincorporated nucleotides, agarose, dyes, ethidium bromide, oils, and detergents (e.g., DMSO, Tween® 20) do not bind to the Glass Bead. Salts are quantitatively washed away by the ethanol-containing Wash C Solution.

Elution in low-salt solutions

Elution efficiency is strongly dependent on the salt concentration and pH of the Elution Buffer. Contrary to adsorption, elution is most efficient under basic conditions and low salt concentrations. DNA is eluted with 10 ul of the provided Elution Buffer (10 mM Tris-Cl, pH 8.5), or Water at 50°C. The maximum elution efficiency is achieved between pH 7.0 and 8.5.
When using water to elute, make sure that the pH is within this range. In addition, DNA must be stored at –20°C when eluted with water since DNA may degrade in the absence of a buffering agent. Elution with TE (10 mM Tris·Cl, 1 mM EDTA, pH 8.0) is possible, but not recommended because EDTA may inhibit subsequent enzymatic reactions.

Important Notes

Please read the following notes before starting any of the Nucleogen Bead Type (NaI) Gel Extraction procedures.

Before equipment

- **Add ethanol (96-100%) to Wash C Solution** before use (see bottle label for volume).
- Heating block or water bath ot 37-50°C are required.
- Ice required.
- All centrifugation steps are carried out at 12,000 x g in a conventional microcentrifuge.

Bead Type (NaI) Gel Extraction Kit Protocol

Please read "Important Notes" on pages 3 before starting.

This protocol is designed to extract and purify DNA of 70 bp to 10 kb from standard or Low-melt agarose gels in TAE or TBE buffer.
This kit can also be used for DNA cleanup from enzymatic reactions.

1. **Excise the DNA fragment from the agarose gel with a clean, sharp scalpel.**
   Minimize the size of the gel slice by removing extra agarose.
2. **Weigh the gel slice in a colorless tube.**
   For TAE gels, add 3 volumes of NaI Solution to 1 volume of gel (100 mg ~ 100 ul).
   For TBE gels, add 0.5 volumes of TBE Modifier and 4.5 volumes of NaI Solution to 1 volume of gel.
3. **Incubate at 37-50°C, mixing frequently until the agarose gel slice has completely dissolved.**
4. **Mix the Glass Bead well and add 1 ul of the Glass Bead per microgram of DNA.**
   Incubate on ice for 5-10 minutes, mixing occasionally.
5. **Spin 12,000 x g for 5-10 seconds in a microcentrifuge. Discard the supernatant.**
   (The supernatant may be saved to avoid losing DNA).
6. **Wash the Glass Bead with 250 ul of NaI solution** (or 10-times the volume of the glass pellet, if it is larger).
7. **Spin and wash the pellet 2-3 times with the same volume of Wash C Solution.**
   Dry the pellet well, removing all residual liquid.
   (This may be done using air, carefully wiping with a Kimwipe, or a vacuum drying apparatus).
8. **Resuspend the pellet in at least 10 ul of Elution Buffer (10 mM Tris·Cl, ph 8.5) or H_2O and incubate at 50°C for 5-10 minutes.**
9. **Centrifuge for 1 min at 12,000 x g in microcentrifuge and collect the eluted DNA in the supernatant.**

Is now ready for ligation, restriction enzyme digestion, radiolabelling, etc. DNA binds to the glass at high salt and low temperature, and elutes at low salt and high temperature.

Troubleshooting Guide

This troubleshooting guide may be helpful in solving any problems that may arise.

	Comments and suggestions
Low or no yield	
a) Wash C Solution did not Contain ethanol	Ethanol must be added to Wash C Solution (concentrate) before use. Repeat procedure with correctly prepared Wash C Solution.
b) Inappropriate elution buffer	DNA will only be eluted efficiently in the presence of low-salt buffer (e.g., Elution Buffer: 10 mM Tris·Cl, pH 8.5) or water.
c) Elution Buffer Incorrectly dispensed	Add Elution Buffer to the center of the membrane to ensure that the buffer completely covers the membrane. This is particularly important when using small elution volumes (10 ul).
d) Gel slice incompletely solubilized	After addition of NaI Solution to the gel slice, mix by vortexing the tube every 2-3 minutes during the 50°C incubation. DNA will remain in any undissolved agarose.

Ordering Information

Products		Contents	Cat. No.
RNA Stabilization Reagent		Tube (50 x 1.5 ml)	3502
		Tube (20 x 5 ml)	3205
		100 ml	3100
		250 ml	3250
Plasmid Purification Mini Kit			
	(200) for negative strain	200 preps	5112
	(200) for positive strain	200 preps	7112
Plasmid Purification Midi Kit	(10)	10 preps	6101
	(50)	50 preps	6105
	(100)	100 preps	6110
Plasmid Purification Maxi Kit	(6)	6 preps	7106
	(24)	24 preps	7124
	(50)	50 preps	7150
Gel Extraction Kit	(50)	50 preps	5215
	(200)	200 preps	5212
Highcon Gel Extraction Kit	(50)	50 preps	2215
	(200)	200 preps	2212
Bead Type (NaI) Gel Extraction Kit	(200)	200 preps	1232
	(400)	400 preps	1234
	(600)	600 preps	1236
PCR Purification Kits	(50)	50 preps	5315
	(200)	200 preps	5312
Highcon PCR Purification Kit	(50)	50 preps	2315
	(200)	200 preps	2312
DNA Clean-up Kits	(50)	50 preps	1415
	(200)	200 preps	1412
Genomic Blood Spin Mini Kit	(50)	50 preps	1515
	(200)	200 preps	1512
Genomic Blood Spin Midi Kit	(20)	20 preps	6520
	(50)	50 preps	6550
	(100)	100 preps	6500
Genomic Blood Spin Maxi Kit	(6)	6 preps	7506
	(24)	24 preps	7524
	(50)	50 preps	7550

Ordering Information

Products		Contents	Cat. No.
Genomic Cell / Tissue Spin Mini Kit	(50)	50 preps	1545
	(200)	200 preps	1542
Genomic Cell / Tissue Spin Midi Kit	(20)	20 preps	
	(50)	50 preps	
	(100)	100 preps	
Genomic DNA Isolation, Flexible		100 Isolation	1521
		500 Isolation	1525
		10 ml x 100 Isolation	
Apoptotic DNA Ladder Kit		50 preps	2505
96 PCR Purification Kit			
4 x 96 plates(binding, elution), buffer, tape			4304
25 x 96 plates(binding, elution), buffer, tape			4325
50 x 96 plates(binding, elution), buffer, tape			2 x 4325
96 Plasmid Purification Kit			
4 x 96 plates(clarification, binding, elution), buffer, tape			4104
25 x 96 plates(clarification, binding, elution), buffer, tape			4125
96 Genomic Blood Spin Kit			
4 x 96 plates(binding, elution), buffer, tape			
25 x 96 plates(binding, elution), buffer, tape			
96 Genomic Cell / Tissue Spin Kit			
4 x 96 plates(binding, elution), buffer, tape			
25 x 96 plates(binding, elution), buffer, tape			
50 x 96 plates(binding, elution), buffer, tape			2 x

www.nucleogen.com
Tel) 080-484-2007
031-315-6644
Fax) 031-312-2008