

Mag-Bind® Plant DNA DS Kit

M1130-00	1 x 96 preps
M1130-01	4 x 96 preps

Manual Date: May 2024
Revision Number: v7.4

For Research Use Only

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Mag-Bind® Plant DNA DS Kit

Table of Contents

Introduction.....	2
Kit Contents/Storage and Stability.....	3
Preparing Reagents.....	4
Warnings and Safety Information.....	5
Mag-Bind® Plant DNA DS Kit Protocol.....	6
Troubleshooting Guide.....	10
Notices & Disclaimers.....	11

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Introduction

The Mag-Bind® Plant DNA DS Kit allows rapid and reliable isolation of high-quality genomic DNA from difficult plant species and tissues. The lysis and binding buffers are specifically designed to minimize co-purification of polysaccharides and polyphenols. Up to ninety-six 50 mg samples of wet tissue (or 15 mg dry tissue) can be processed in less than one hour. The system combines Omega Bio-tek's E.Z.N.A.® buffer chemistry with the convenience of Mag-Bind® Particles to eliminate polysaccharides, phenolic compounds, and enzyme inhibitors from plant tissue lysates. This kit is designed for manual or fully automated high throughput preparation of genomic, chloroplast, and mitochondrial DNA. Purified DNA is suitable for PCR, restriction digestion, Next Generation Sequencing, and hybridization applications. There are no organic extractions thereby reducing plastic waste and decreasing hands-on time to allow multiple samples to be processed in parallel.

New in this Edition:

May 2024

- Addition of Warnings and Safety Information.

March 2019

- SPM Wash Buffer has been renamed SPM Buffer. This is a name change only. The formulation has not changed.

July 2018

- The concentration of RNase A and incubation time has increased for better removal of RNA.

September 2017

- The optional secondary purification step has been removed. CB Buffer and Mag-Bind® Particles RQ are no longer included with the kit.

Kit Contents

Product Number	M1130-00	M1130-01
Preparations	1 x 96	4 x 96
CSPL Buffer	80 mL	2 x 150 mL
RBB Buffer	60 mL	240 mL
CSPW1 Buffer	39 mL	143 mL
CSPW2 Buffer	12 mL	44 mL
SPM Buffer	2 x 30 mL	2 x 75 mL
Elution Buffer	60 mL	250 mL
Proteinase K Solution	2.2 mL	8.8 mL
RNase A (25 mg/mL)	1.5 mL	3.2 mL
Mag-Bind® Particles HDQ	2.2 mL	9 mL
User Manual	✓	✓

Storage and Stability

All of the Mag-Bind® Plant DNA DS Kit components are guaranteed for at least 12 months from the date of purchase when stored as follows. Store Mag-Bind® Particles HDQ and RNase A at 2-8°C. Proteinase K Solution can be stored at room temperature for up to 6 months from receipt. For long-term storage (>6 months), store at 2-8°C. All other materials should be stored at room temperature and away from bright light. During shipment or storage in cool ambient conditions, precipitates may form in some buffers. Dissolve such deposits by warming the solution at 37°C and gently shaking.

Preparing Reagents

1. Dilute CSPW1 Buffer with 100% ethanol as follows and store at room temperature.

CSPW1 Buffer	100% Ethanol to be Added
M1130-00	21 mL
M1130-01	77 mL

2. Dilute CSPW2 Buffer with 100% isopropanol as follows and store at room temperature.

CSPW2 Buffer	100% Isopropanol to be Added
M1130-00	48 mL
M1130-01	176 mL

3. Dilute SPM Buffer with 100% ethanol as follows and store at room temperature.

SPM Buffer	100% Ethanol to be Added per Bottle
M1130-00	70 mL
M1130-01	175 mL

Warnings

Warnings

This kit is for research use only.

Please read all instructions carefully before using the kit.

Decontaminate and dispose of all potentially infectious materials in accordance with applicable local, state, and national regulations. Please refer to safety data sheets (SDSs) for information on disposal of different components included in this kit.

Safety Information

All chemicals and biological materials are potentially hazardous. Biological samples such as plasma, serum, tissues, body fluids, blood etc. are potentially infectious and must be treated as biohazardous materials. Conduct all work in properly equipped facilities following universal precautions and using appropriate personal safety equipment such as disposable gloves, lab coats, safety glasses etc. as required by policies and procedures outlined by your facility. Please refer to safety data sheets (SDSs) for information on safe handling, transport and disposal of different components included in this kit. SDSs are made available in PDF format on the product page at www.omegabiotek.com. Discard all waste in accordance with the local safety regulations.

Some of the buffers included in the product contain guanidine-based chaotropic agents, which can form highly reactive compounds when combined with bleach. DO NOT add bleach or acidic solutions to guanidine-containing waste. Please access the SDSs online for detailed information on the reagents.

Mag-Bind[®] Plant DNA DS Kit Protocol

Protocol for DNA Isolation from Fresh or Frozen Specimens

Materials and Equipment to be Supplied by User:

- Centrifuge capable of at least 3,000-5,000g
- Rotor adapter for 96-well deep-well plates
- Magnetic separation device for 96-well deep-well plates
- 96-well deep-well plates compatible with magnetic separation device (Recommended Alpaqua Magnum EX (Cat# A000380))
- Incubators capable of 56°C and 65°C
- Vortexer
- Equipment for disrupting plant tissue (Geno/Grinder 2010 or MM300 Mixer Mill and tungsten carbide beads)
- 8- or 12-channel pipette
- Reagent reservoirs
- Sealing film
- Sealed deep-well plate or capped microtube rack for sample disruption
- 100% ethanol
- 100% isopropanol
- Optional: nuclease-free water

Before Starting

- Prepare CSPW1 Buffer, CSW2 Buffer, and SPM Buffer according to the instructions in the Preparing Reagents section on Page 4
- Set an incubator to 56°C
- Heat Elution Buffer to 65°C

1. Grind 30–50 mg plant sample using a mechanical grinder such as Geno/Grinder.

Note: To prepare samples in 96-well plate format, place samples in a sealed 96-well deep-well plate or capped microtube rack in the presence of one or two grinding beads. Process in the MM300 Mixer Mill or Geno/Grinder Mixer Mill following the manufacturer's instructions.

2. Add 700 μ L CSPL Buffer and 20 μ L Proteinase K Solution to each well. Vortex to mix thoroughly.
3. Incubate at 56°C for 30 minutes.

Mag-Bind® Plant DNA DS Kit Protocol

4. Centrifuge at 4,000g for 10 minutes.
5. Carefully transfer 500 µL cleared lysate to a new 96-well deep-well plate, making sure not to disturb the pellet or transfer any debris.

Note: It is critical to leave the pellet undisturbed and avoid transferring debris as these can reduce yield.

6. Add 5 µL RNase A. Vortex to mix thoroughly.
7. Let sit at room temperature for 5 minutes.
8. Add 500 µL RBB Buffer and 20 µL Mag-Bind® Particles HDQ. Vortex to mix thoroughly.
9. Let sit at room temperature for 5 minutes. Vortex briefly every 90 seconds to resuspend magnetic beads.

Note: If using a liquid handler with orbital shaker, continue to shake for the entire duration of this step.

10. Place the plate on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are completely cleared from solution.
11. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles HDQ.
12. Remove the plate from the magnetic separation device.
13. Add 500 µL CSPW1 Buffer. Vortex briefly or pipet up and down to resuspend the Mag-Bind® Particles HDQ.

Note: CSPW1 Buffer must be diluted with 100% ethanol prior to use. Please see Page 4 for instructions.

Mag-Bind® Plant DNA DS Kit Protocol

14. Place the plate on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are completely cleared from solution.

15. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles HDQ.

16. Remove the plate from the magnetic separation device.

17. Add 500 µL CSPW2 Buffer. Vortex briefly or pipet up and down to resuspend the Mag-Bind® Particles HDQ.

Note: CSPW2 Buffer must be diluted with 100% isopropanol prior to use. Please see Page 4 for instructions.

18. Place the plate on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are completely cleared from solution.

19. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles HDQ.

20. Remove the plate from the magnetic separation device.

21. Add 500 µL SPM Buffer. Vortex briefly or pipet up and down to resuspend the Mag-Bind® Particles HDQ.

Note: SPM Buffer must be diluted with 100% ethanol prior to use. Please see Page 4 for instructions.

22. Place the plate on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are completely cleared from solution.

23. Aspirate and discard the cleared supernatant. Do not disturb the Mag-Bind® Particles HDQ.

Mag-Bind® Plant DNA DS Kit Protocol

24. Repeat Steps 20-23 for a second SPM Buffer wash step.
25. Leave the plate on the magnetic separation device for 10 minutes to air dry the Mag-Bind® Particles HDQ. Remove any residue liquid with a pipettor.

Alternative Ethanol Removal Step: Instead of performing Step 25, complete the step below.

- With the plate on the magnetic separation device, add 500 μ L nuclease-free water and immediately aspirate (within 60 seconds).
- Continue to Step 26 below.

26. Remove the plate from the magnetic separation device.
27. Add 100-200 μ L Elution Buffer heated to 65°C. Vortex briefly or pipet up and down to resuspend the Mag-Bind® Particles HDQ.
28. Incubate at 65°C for 5 minutes.
29. Place the plate on a magnetic separation device to magnetize the Mag-Bind® Particles HDQ. Let sit at room temperature until the Mag-Bind® Particles HDQ are completely cleared from solution.
30. Transfer the supernatant containing the eluted DNA to a clean 96-well microplate and store at -20°C.

Troubleshooting Guide

Please use this guide to troubleshoot any problems that may arise. For further assistance, please contact the technical support staff, toll free, at 1-800-832-8896.

Possible Problems and Suggestions

Problem	Cause	Solution
Low DNA yields	Incomplete disruption of starting material	For both fresh and frozen samples, make sure to grind samples completely.
	Poor lysis of tissue	Decrease amount of starting material. Increase lysis time to overnight.
	DNA lost during wash	Dilute SPM Buffer by adding appropriate volume of ethanol prior to use (Page 4). If performing water wash, step proceeded for more than 60 seconds or plate was removed from magnetic separation device.
Problem	Cause	Solution
Problems in downstream applications	Salt carryover	SPM Buffer must be at room temperature.
	Ethanol carryover	Dry the Mag-Bind® Particles HDQ completely before adding elution buffer. Perform Water Wash step instead of drying magnetic beads

Notices & Disclaimers

For European Union Use.

RBB Buffer contains Triton X-100, 2-[4-(2,4,4-trimethylpentan-2-yl)phenoxy]ethanol (CAS 9002-93-1), a substance included in the European Authorisation list (Annex XIV) of REACH Regulation (EC) No 1907/2006. Substances and mixtures used for the purpose of Scientific Research and Development (SR&D) are exempt from authorization requirements if used below 1 tonne per year in volume.

Scientific Research and Development includes experimental research or analytical activities at a laboratory scale such as synthesis and testing of applications of chemicals, release tests, etc. as well as the use of the substance in monitoring and routine quality control or in vitro diagnostics.

Notes:

For more purification solutions, visit www.omegabiotek.com

AVAILABLE FORMATS



Spin Columns



96-Well Silica Plates



Mag Beads

SAMPLE TYPES



Blood / Plasma



Plasmid



Cultured Cells



Plant & Soil



NGS Clean Up



Tissue



FFPE



Fecal Matter



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