



TANBead® Nucleic Acid Extraction Kit

Plant DNA Auto Tube

(For use with the Maelstrom 8 series and Maelstrom 4800 series)

RUO

M613S46

(For Research Use Only) V4

1. Intended Use

TANBead® Nucleic Acid Extraction Kit (M613S46) is suitable for isolating nucleic acids from plant samples. Automated nucleic acids extraction can be performed by Maelstrom 8 series and Maelstrom 4800 series. Extracted nucleic acids can be analyzed by downstream applications, such as real-time PCR, next-generation sequencing.

2. Purpose

TANBead® Nucleic Acid Extraction Kit (M613S46) is suitable for a variety of samples, including plants, mushrooms, etc. This kit, with Maelstrom 8 series and Maelstrom 4800 series, simplifies nucleic acids extraction. With simple treatment of samples, it does not need repetitive centrifugations, reducing time for manual processing, and lowering the risk of cross contamination.

3. The basic principle

The silicon dioxide layer coated on the magnetic beads can adsorb the negatively charged molecules to purify nucleic acids from samples.

4. Specification

Starting Materials	50 – 100 mg plant sample
Elution Volume	90-130 µL
Typical DNA yield	Up to 5 µg
Typical A260/A280	≥ 1.7

5. Component Supplied with the Kit



Auto Tube	8 trays	Auto Tube with reagent buffers
Lysis Buffer	90 mL x 1	Guanidine salt, Tris buffer, surfactants
Elution Buffer	1.5 mL x 1	Nuclease-Free Water
Base	2	A rack for 8 Auto Tubes
Spin tips	48 tips x 2 boxes	Spin tip assembled box
Protocol	1	Instruction guide for user

6. Auto Tube Content

Well	Buffer	Volume (µL)
1 / 7	-	-
2 / 8	Washing Buffer 1	800
3 / 9	Magnetic Beads	800
4 / 10	Washing Buffer 2	800
5 / 11	Washing Buffer 2	800
6 / 12	Elution Buffer	130

7. Kit Storage and Shelf Life

- Components under room temperature (15 - 35°C) can be stored until the expiration date labeled on the box.

8. Precautions

- For research use only.
- Avoid using expired reagents.
- When the temperature is below 20°C, place the Auto tubes in an oven (preheated 42 - 60°C) 5 to 10 minutes.
- Avoid vigorous shaking, in order to avoid excessive formation of foam.
- Carefully remove aluminum foil to avoid splashing.
- Do not expose the opened reagents or Auto Tubes to air. The evaporation would lead to pH change, or effect on the extraction effectiveness.
- Please check the integrity of the Auto Tubes and remember to mount the spin tips into the appropriate position of the suitable instrument before operating them.
- Please wear a mask and disposable gloves when handling.
- Use sterile consumables to avoid nuclease contamination.
- Reagent solution contains guanidine salt, avoid using bleach containing detergent.
- Avoid eyes, skin, and clothing contact with reagents. In case of any contact, flush with flowing water.

- If any serious incident occurs, please report to the manufacturer and the competent authority of the member state in which the user and/or the patient is established.

- The reagents are all colorless and transparent. Colored reagents indicate contamination, please replace it with a fresh tube before proceeding.

9. Materials required, Not Supplied

- TANBead® Nucleic Acid Extraction System
Model: Maelstrom 8 series, Maelstrom 4800 series (non-sterile)
- Disposable gloves
- Scissors, utility knives
- Micropipette, disposable tips (10 µL / 200 µL / 1000 µL)
- 1.5 mL microcentrifuge tube
- 15 mL / 50 mL conical tube
- IPA: Isopropanol for molecular biology
- CTAB buffer: 2% CTAB, 100 mM Tris pH8.0, 20 mM EDTA, 1.4 M NaCl
- Liquid nitrogen (Optional)

10. Sample Collection, Transportation, and Storage

■ Sample collection and storage

- Plant samples can be stored at
 - RT for 24 hours
 - 2 - 8°C up to 7 days

■ Sample transportation

The transportation of plant samples should follow specific plant transportation related law. Plant sample should be kept between 2 - 25°C during transportation.

11. Nucleic Acids Extraction Protocol

Sample preparation

- Add **800 µL Lysis Buffer** to the plant sample and grind it by using the grinder or disposable pestle.

Note: If the sample is hard to grind, it could be ground with **liquid nitrogen**. Then add **800 µL Lysis Buffer** and mix well.

- Incubate at room temperature for **10 min**.
- Centrifuge at **5000 – 8000 RPM** for **5 min**.

Sample preparation (with high silicon content)

- Add **appropriate volume of CTAB Buffer** to the sample and then grind it by using the grinder or disposable pestle.

Note: The optimal volume of CTAB buffer may be varied according to different sample types. In general, **use 4 mL CTAB buffer for 1g plant sample**.

- Incubate at **65°C for 0.5 - 1 hour** and then centrifuged at **4000 – 6000 RPM for 5 minutes**.
- Transfer the supernatant to a new tube and add **ice-cold IPA (0.6–1x volume of the supernatant)** and gently invert for 5–10 times.
- Centrifuge at **6000 – 10000 RPM for 5 minutes**.
- Discard the supernatant.
- Add **800 µL Lysis Buffer** and mix well.

Automatic process

- Prepare the Assembled Auto Tubes by inserting Auto Tubes into the Base completely.
- Carefully remove the aluminum foil from Auto Tubes.
- Use micropipette to load **800 µL lysate** into wells of column **#1/ #7** of Auto Tube.
- Set up spin tips.

Maelstrom 8 series: Handle to mount tips and make sure that there is no gap between the neck of the spin tips and the spin shaft.

Maelstrom 4800 series: Go to Tip page and press the mount tips region.

- Push Assembled Auto Tubes completely to the bottom of the plate rack. Make sure that the chamfer of the Auto Tube is at the lower left.
- Close the door panel.
- Select the program:

Maelstrom 8 series: Press "613-1" or "613-7" for input samples at wells of column #1 or column #7, respectively.

Maelstrom 4800 series: Press "613".

The parameters are given in following section.

- 8) Once the program has ended, buzzer shall alarm. Take out Auto Tube carefully.
- 9) Use micropipette to transfer the purified nucleic acids from wells of column #6/ #12 of Auto Tube to a clean tube.
- 10) Discard the used Auto Tube and spin tips into the waste recycling bin.

12. Program

■ Maelstrom 8 series

Program Name: 613-1/7						
Well	1 / 7	2 / 8	3 / 9	4 / 10	5 / 11	6 / 12
Volume	800 (μL)	800 (μL)	800 (μL)	800 (μL)	800 (μL)	150 (μL)

Step	Well	Action	RPM	Time (Second)	CW/CCW (Second)	Temp.	Temp. Control
1	3/9	Mixing	3000	60	0	55	YES
2	3/9	Collection	0	30	0	55	YES
3	2/8	Mixing	3000	60	0	55	YES
4	2/8	Collection	0	30	0	55	YES
5	1/7	Mixing	3000	600	0	55	YES
6	1/7	Collection	0	30	0	55	YES
7	2/8	Mixing	3000	120	0	45	YES
8	2/8	Collection	0	30	0	45	YES
9	3/9	Mixing	3000	120	0	45	YES
10	3/9	Collection	0	30	0	45	YES
11	4/10	Mixing	3000	120	0	45	YES
12	4/10	Collection	0	30	0	45	YES
13	5/11	Mixing	3000	120	0	45	YES
14	5/11	Collection	0	30	0	45	YES
15	5/11	Vapor	0	300	0	45	YES
16	6/12	Mixing	2700	600	0	45	YES
17	6/12	Collection	0	60	0	45	YES
18	6/12	Collection	0	60	0	45	YES
19	5/11	Mixing	3000	60	0	0	NO

■ Maelstrom 4800 series

Program Name: 613				Model: Maelstrom 4800 series			
Temp1	Temp2						
45	40						
Well	Name	Volume	Action	Mixing	Collect		
1 / 7	LB	800	For.	Low	Low		
2 / 8	WB1	800	For.	Low	Low		
3 / 9	MB	800	For.	Low	Low		
4 / 10	WB2	800	For.	Low	Low		
5 / 11	WB2	800	For.	Low	Low		
6 / 12	EB	150	For.	Low	Low		
Step	Well	Temp (°C)	Mixing (M)	Mixing Speed (RPM)	Collect (M)	Vapor (M)	Pause
1	3		0.5	2500	0.5	0	Off
2	2		0.5	2500	0.5	0	Off
3	1	55	10	3000	0.5	0	Off
4	2		2	2500	0.5	0	Off

5	3		1	2500	0.5	0	Off
6	4		1	2500	0.5	0	Off
7	5		1	2500	0.5	10	Off
8	6	45	5	2500	1	0	Off
9	3		0.5	2500	0	0	Off

13. Reagent performance

■ Repeatability

Under repeatability conditions where nucleic acids are extracted with the same reagent kit on the same source samples by the same operator. The coefficient of variation of nucleic acids extraction concentration is less than 5%.

■ Reproducibility

A five-day reproducibility test was carried out with the same source samples for 5 consecutive days with the same reagent kit by different operators. The coefficient of variation of nucleic acid extraction concentration is less than 5%.

■ The stability of extracted DNA

Storage Conditions	DNA stability
-80°C	Over 90 days
-20°C	28 days
4°C	14 days
25°C	2 days
Freeze-thaw	10 times

14. Explanation of Symbols

	Manufacturer		Consult instructions for use
	Temperature limit		Contains sufficient for test
	Catalogue number		Caution
	Batch code		Non-sterile
	Do not re-use		Protect from heat and radioactive sources
	Date of manufacture		Use-by date
	For research use only		