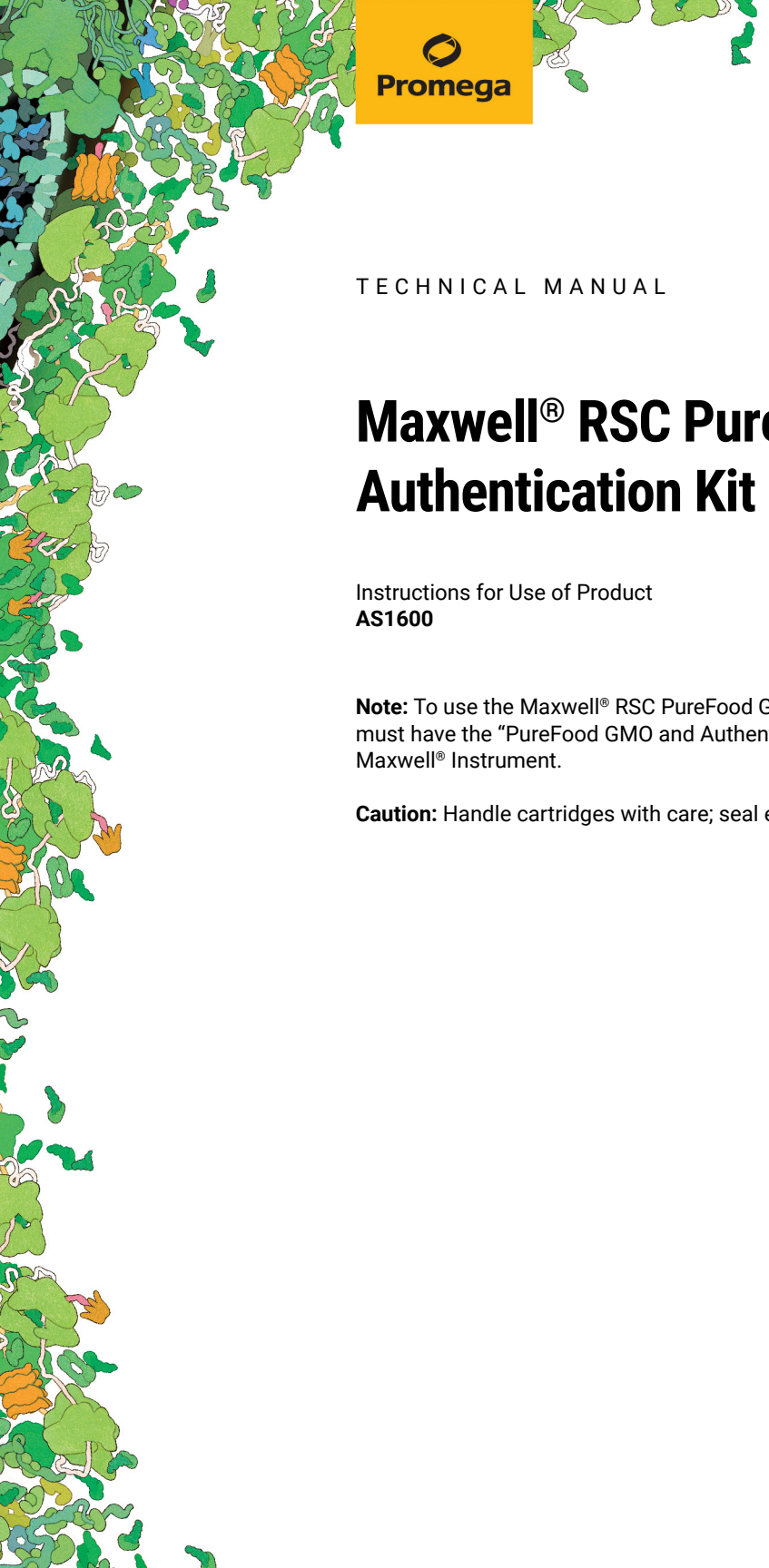

TECHNICAL MANUAL

Maxwell® RSC PureFood GMO and Authentication Kit

Instructions for Use of Product
AS1600

Note: To use the Maxwell® RSC PureFood GMO and Authentication Kit, you must have the "PureFood GMO and Authentication" method loaded on the Maxwell® Instrument.

Caution: Handle cartridges with care; seal edges may be sharp.

Revised 3/25
TM473

Promega

Maxwell® RSC PureFood GMO and Authentication Kit

All technical literature is available at: www.promega.com/protocols/
Visit the website to verify that you are using the most current version of this Technical Manual.
Email Promega Technical Services if you have questions on use of this system: techserv@promega.com

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1. Description

Molecular tests, and in particular real-time PCR-based assays, continue to gain more widespread use in food safety testing. PCR-based assays are significantly faster and more reliable than traditional methods and also can detect more specific genetic targets. The Maxwell® RSC PureFood GMO and Authentication Kit, used with the Maxwell® and Maxprep® Instruments (see Table 1), is designed to provide an easy and automated method for efficient purification of DNA used in PCR-based testing for Genetically Modified Organism (GMO) DNA sequences and PCR-based food and ingredient authentication.

Table 1. Supported Instruments.

Instrument	Cat.#	Technical Manual
Maxwell® RSC	AS4500	TM411
Maxwell® RSC 48	AS8500	TM510
Maxwell® FSC	AS4600	TM462
Maxwell® CSC RUO Mode	AS6000	TM573
Maxwell® CSC 48 RUO Mode	AS8000	TM628
Maxprep® Liquid Handler	AS9100, AS9101, AS9105, AS9200, AS9201, AS9205	TM509

Maxwell® Instruments are designed for use with predispensed reagent cartridges and preprogrammed purification procedures, maximizing simplicity and convenience. The methods for the Maxwell® RSC PureFood GMO and Authentication Kit can process from one to the maximum number of food samples, including corn, soybean, canola, ground pork, ground beef, pork gelatin, breaded fish, tortillas, corn chips and rice cakes, in approximately 40 minutes.

Maxwell® Instruments are magnetic particle-handling instruments that efficiently bind DNA to the paramagnetic particles in the first well of a prefilled cartridge and move the sample through the wells of the cartridge, mixing during processing. This magnetic capture approach avoids common problems experienced with other automated systems such as clogged tips or partial reagent transfers that result in suboptimal purification processing.

Prior to extraction, samples can be preprocessed manually or using the Maxprep® Liquid Handler. The Maxprep® Liquid Handler will add cleared sample lysate and lysis buffer to Maxwell® RSC cartridges, transfer plungers to cartridges, dispense elution buffer to elution tubes and optionally add RNase A to cartridges. Follow the instructions specific to the preprocessing option used.

2. Product Components and Storage Conditions

PRODUCT	SIZE	CAT.#
Maxwell® RSC PureFood GMO and Authentication Kit	**48 preps**	**AS1600**

Not for medical diagnostic use. Sufficient for 48 automated isolations from food lysate samples. Includes:

- 100ml CTAB Buffer
- 2 × 1ml Proteinase K (PK) Solution
- 2 × 1ml RNase A Solution
- 20ml Lysis Buffer
- 48 Maxwell® RSC Cartridges (RSCI)
- 1 Maxwell® RSC Plunger Pack (48 plungers)
- 50 Elution Tubes (0.5ml)
- 20ml Elution Buffer

Storage Conditions: Store the Maxwell® RSC PureFood GMO and Authentication Kit at +15°C to +30°C.

Safety Information: The reagent cartridges contain ethanol and isopropanol, which are flammable. Guanidine hydrochloride (a component of the Lysis Buffer) should be considered harmful and an irritant. Wear gloves and follow standard safety procedures while working with these substances. Refer to the SDS for detailed safety information.

Caution: Handle cartridges with care; seal edges may be sharp.

For Preprocessing with the Maxprep® Liquid Handler

PRODUCT	SIZE	CAT.#
Maxprep® 1000µl Conductive Disposable Tips, Filtered	**40/box**	**AS9303**
Maxprep® 300µl Conductive Disposable Tips, Filtered	**60/box**	**AS9302**
Maxprep® Reagent Reservoir, 50ml	**28/pack**	**AS9304**
Maxwell® RSC Plunger Pack	**1 each**	**AS1670**
Maxprep® Plunger Holder	**1 each**	**AS9408**
Maxprep® 3-Position Reagent Tube Holder	**1 each**	**AS9409**

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3. Sample Preprocessing Protocols

3.A. Sample Processing Notes

The Maxwell® RSC PureFood GMO and Authentication Kit can process up to 200mg of food or seed samples per DNA isolation with the standard protocol. With the purchase of additional reagents and a modified protocol, up to 2g of sample can be lysed (see Section 4.C).

The total yield and quality of genomic DNA from food or seed samples depends on the volume of material processed, the amount of genomic DNA in the type of sample, the size of the sample pieces (finely or coarsely ground) and whether the sample is cooked or raw. Each cartridge supplied in the Maxwell® RSC PureFood GMO and Authentication Kit is designed to purify genomic DNA from 300µl of lysate. Samples are lysed in a larger volume, and only a fraction of the cleared lysate is transferred to the cartridge to avoid sample inhibitors. All reagents needed to lyse samples and purify DNA are included in the kit.

Samples that are already ground (e.g., flour or ground beef) or that easily break into small pieces do not need additional grinding. However, intact samples need to be finely chopped or ground to allow the reagents to contact all the sample material for better sample disruption.

Materials to Be Supplied by the User

- microcentrifuge tubes, 1.5ml or 2.0ml
- sterile, aerosol-resistant pipette tips
- heat block
- microcentrifuge

3.B. Preparation of Samples with a Mechanical Bead-Beating Device

This preprocessing protocol requires a mechanical bead-beating device with a bead and tube combination or a bead and sealable deep-well plate combination.

1. Follow the manufacturer's recommendation for processing the sample. If liquid is needed, add the CTAB Buffer for bead beating and add the RNase A and Proteinase K (PK) Solutions before the lysis incubation in Section 4 or 5.
2. Up to 200mg sample can be transferred into a microcentrifuge tube.
3. Proceed to Section 4.A for food or seed sample lysis or Section 4.B for meat sample lysis.

3.C. Preparation of Samples with Mortar, Pestle and Liquid Nitrogen

This preprocessing protocol uses a mortar and pestle for sample grinding and liquid nitrogen to freeze the sample.

1. Place sample in mortar.
2. Add liquid nitrogen to the sample. Allow the liquid to evaporate, freezing the sample.
3. Using a pestle, grind the frozen sample against the mortar wall as thoroughly as possible.
4. Measure up to 200mg of sample and transfer into a microcentrifuge tube.

5. Proceed to Section 4.A for food or feed sample lysis or Section 4.B for meat sample lysis.

   Note: For smaller samples that are easier to grind, a microcentrifuge tube and pellet pestle may be used instead of the full-size mortar and pestle. In this case, the sample may be weighed before grinding and use all of the sample in the protocol.

4. Protocols for Lysing Food and Seed Samples

4.A. Food or Seed Sample Lysis

1. Add 1ml of CTAB Buffer to each tube containing up to 200mg of sample.
2. Add 20µl of RNase A Solution to each tube (to eliminate RNA) and 40µl of Proteinase K (PK) Solution.

   Note: If you are processing a large number of samples, combine sufficient volumes of CTAB Buffer, Proteinase K (PK) Solution and RNase A immediately before use, and add 1ml of this mixture to each sample.
3. Tap, invert and vigorously vortex tubes until the sample is resuspended. Note that the shape of a 2.0ml microcentrifuge tube may make resuspension easier.
4. Place in a heat block at 65°C for 30 minutes. For difficult samples, use a shaking heat block (e.g., Thermomixer® at 600rpm), and extend the incubation an additional 2 hours.
5. Prepare cartridges as instructed in Section 5.A during the incubation.
6. After incubation, invert or vortex tubes with lysate to mix thoroughly.
7. Place tubes with lysate into a microcentrifuge and spin at room temperature for 10 minutes at ≥16,000 × *g* to separate any oils and solids.
8. **Manual Preprocessing:** Transfer only 300µl of clear lysate sample into well #1 (the largest well) of the reagent cartridge. Avoid pipetting any solid material from the bottom of the tube or on the surface of the liquid. Also avoid oil on the surface. Transferring these materials may inhibit downstream assays. If necessary, transfer the cleared lysate to a new tube and centrifuge again to avoid oils and solids.

   Note: Some lysate will remain in the tube after transferring the 300µl aliquot to the cartridge.

   Maxprep® Preprocessing: If necessary, transfer the cleared lysate to a new tube and centrifuge again to better separate lysate from oils and solids. Proceed to Section 6 for preprocessing on the Maxprep® Liquid Handler.
9. Proceed to Section 5 for purification on the Maxwell® Instruments.

4.B. Meat Sample Lysis

1. Add 600µl of CTAB Buffer to each tube containing up to 200mg of sample.
2. Add 2µl of RNase A Solution to each tube (to eliminate RNA) and 30µl of Proteinase K (PK) Solution.

   Note: If you are processing a large number of samples, combine sufficient volumes of CTAB Buffer, Proteinase K (PK) Solution and RNase A Solution immediately before use, and add 632µl of this mixture to each sample.
3. Tap, invert and vigorously vortex tubes until the sample is resuspended. Note that the shape of a 2.0ml microcentrifuge tube may make resuspension easier.
4. Place in a heat block at 60°C for 30 minutes. For difficult samples, use a shaking heat block (e.g., Thermomixer® at 600rpm), and extend the incubation an additional 2 hours.
5. Prepare cartridges as instructed in Section 5.A during the incubation.
6. After incubation, invert or vortex tubes with lysate to mix thoroughly.
7. Place tubes with lysate into a microcentrifuge and spin at room temperature for 10 minutes at ≥16,000 × *g* to separate any oils and solids.
8. **Manual Preprocessing:** Transfer only 300µl of clear lysate sample into well #1 (the largest well) of the reagent cartridge. Avoid pipetting any solid material from the bottom of the tube or on the surface of the liquid. Also avoid oil on the surface. Transferring these materials may inhibit downstream assays. If necessary, transfer the cleared lysate to a new tube and centrifuge again to avoid oils and solids.

   Note: Some lysate will remain in the tube after transferring the 300µl aliquot to the cartridge.

   Maxprep® Preprocessing: If necessary, transfer the cleared lysate to a new tube and centrifuge again to better separate lysate from oils and solids. Proceed to Section 6 for preprocessing on the Maxprep® Liquid Handler.
9. Proceed to Section 5 for purification on the Maxwell® Instruments.

4.C. Large Sample Lysis

To analyze larger amounts of sample, up to 2g, lyse the sample in a processing tube that can support a sample lysate of ten times (10X) the volumes listed in Sections 4.A and 4.B. See Section 8 for information on ordering additional reagents.

- 10X food or seed lysis volumes: 10ml CTAB Buffer, 200µl RNase A and 400µl Proteinase K (PK) Solution
- 10X meat volumes: 6ml CTAB Buffer, 20µl RNase A and 300µl Proteinase K (PK) Solution

Vortex and incubate the samples as described in Section 4.A or 4.B using a heat block or water bath appropriate for 15ml tubes. Clear lysate using a standard centrifuge; a second centrifugation of a smaller volume of lysate in a microcentrifuge with a higher centrifugal force (≥16,000 × *g*) may be required to improve separation of oils and fats.

Manual Preprocessing: As with the standard protocol, transfer only 300µl of cleared lysate to the Maxwell® RSC cartridge. Proceed to Section 5 for purification on Maxwell® Instruments.

Maxprep® Preprocessing: Confirm that the sample is in a tube compatible with the Maxprep® Liquid Handler. Proceed to Section 6 for preprocessing on the Maxprep® Liquid Handler.

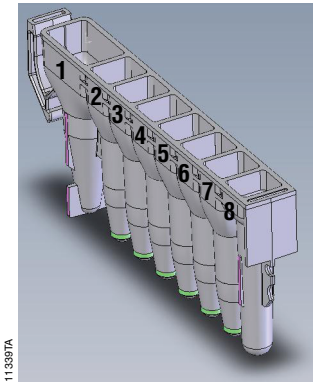
5. Preparing the Maxwell® RSC PureFood GMO and Authentication Cartridge

1. Change gloves before handling cartridges, plungers and Elution Tubes. Place the required number of cartridges in the deck tray(s). Place each cartridge in the deck tray with well #1 (the largest well) facing away from the Elution Tube position. Press down on the cartridge to snap it into position. Carefully peel back the seal so that all plastic comes off the top of the cartridge. Ensure that all sealing tape and any residual adhesive are removed before placing cartridges in the instrument.

   Note: Sample or reagent spills on any part of the deck tray should be cleaned with a detergent-water solution, followed by a bactericidal spray or wipe, then water. Do not use bleach on any instrument parts.

2. Place a Maxwell® RSC Plunger into well #8 of each cartridge. Well #8 is the well closest to the Elution Tube position. See Figures 1 and 2.

   Note: Use only the plungers provided in the Maxwell® RSC PureFood GMO and Authentication Kit.



User Adds to Wells

1. 300µl of Lysis Buffer + 300µl of cleared lysate
8. RSC Plunger

Figure 1. Maxwell® RSC Cartridge.

5. Preparing the Maxwell® RSC PureFood GMO and Authentication Cartridge (continued)

3. Place empty Elution Tubes into the elution position for each cartridge in the deck tray(s). Add 100µl of Elution Buffer to the bottom of each Elution Tube. See Figure 2.

Notes:

a. If Elution Buffer is on the side of the tube, the elution may be suboptimal.

b. Use only the 0.5ml Elution Tubes provided in the kit; other tubes may be incompatible with the Maxwell® Instrument.

Figure 2. Setup and configuration in the deck tray(s). Elution Buffer is added to the Elution Tubes as shown. Plungers are in well #8 of the cartridge.

4. Add 300µl of Lysis Buffer to well #1 (the largest well) of each cartridge.

5. Add only 300µl of sample lysate processed as instructed in Sections 4.A and 4.B, Step 8, or Section 4.C to well #1 of each cartridge. Avoid transferring any solid material from the bottom of the tube or oil from the surface of the liquid.

6. **Optional:** For samples that contain high amounts of RNA (e.g., soybean), add up to 10µl of RNase A Solution to well #4 of the cartridge.

6. Maxprep® Preprocessing

6.A. Maxprep® Cartridge Preparation

Note: Administrators must create laboratory-specific variants of the PureFood GMO and Authentication preprocessing method to specify the sample aspiration position within the tube containing sample lysate. Measure the height in millimeters from the bottom of the sample tube to approximately 2–3mm above center of the sample pellet to avoid pipetting any solids from the bottom of the tube or on the surface of the liquid (Figure 3). Enter this value into the 'Sample Aspiration Height' section of the method variant. All samples must use the same tube type and aspiration height for an individual variant method. Variant methods should be created for each unique sample type being processed with the PureFood GMO and Authentication preprocessing method.

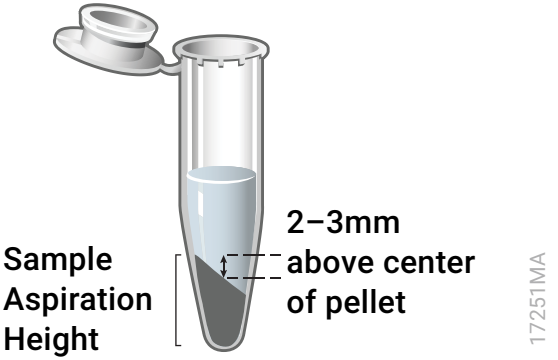


Figure 3. Schematic of aspiration height measurement. The diagram shows how to determine sample aspiration height.

1. Turn on the Maxprep® Liquid Handler and personal computer (PC). Log into the PC, and start the Maxprep® software on the PC by double-clicking the desktop icon.
2. Touch **Start** to access the 'Methods' screen.
3. On the 'Methods' screen, select a method using one of the two options below:
   a. Touch the **PureFood GMO and Authentication** preprocessing method or laboratory-specific variant of the PureFood GMO and Authentication preprocessing method.
   b. Use a bar code reader to scan the 2D bar code on the kit box to automatically select the appropriate base method. Touch the laboratory-specific variant of the PureFood GMO and Authentication preprocessing method, if desired.
6. Verify that the appropriate preprocessing method or variant method has been selected, and touch the **Proceed** button. Close the instrument door and touch the **Run** button on the method run screen to start the run.
7. Enter any method-specific variables (Sample Number, Sample Volume, Elution Volume).

6.A. Maxprep® Cartridge Preparation (continued)

8. Prior to placing Maxwell® deck tray(s) on the instrument, prepare the deck tray(s) with cartridges and elution tubes. Change gloves before handling Maxwell® RSC Cartridges, RSC Plungers and Elution Tubes (0.5ml). Place the cartridges to be used in the deck tray(s) with well #1 (the largest well in the cartridge) facing away from the elution tubes. Press down on the cartridge to snap it into position. Carefully peel back the seal so that all plastic comes off the top of the cartridge. Ensure that all sealing tape and any residual adhesive are removed before placing cartridges in the instrument. Place an empty elution tube into the elution tube position for each cartridge in the deck tray(s).

   Notes:

   a. Sample or reagent spills on any part of the deck tray should be cleaned with a detergent-water solution, followed by a bacteriocidal spray or wipe and then water. Do **not** use bleach on any instrument parts.

   b. Use only the 0.5ml Elution Tubes provided in the kit; other tubes may be incompatible with the Maxwell® Instrument.

9. Follow instrument setup instructions displayed in the method. You will be directed by the Maxprep® software where to place the following items on the instrument:
   - Maxprep® Plunger Holders with Maxwell® RSC Plunger Packs (2; one may be partially full)
   - 24-position Maxwell® Front deck tray or 16-position Maxwell® deck tray containing Maxwell® RSC cartridges with seals removed and open elution tubes
   - 24-position Maxwell® Back deck tray or 16-position Maxwell® deck tray containing Maxwell® RSC cartridges with seals removed and open elution tubes (depending on sample number)
   - Maxprep® Reagent Reservoir, 50ml with Elution Buffer
   - Maxprep® Reagent Reservoir, 50ml with Lysis Buffer
   - **Optional:** Maxprep® 3-Position Reagent Tube Holder with up to 3 tubes containing RNase A solution
   - Tube racks with sample tubes. All tubes within a carrier must be of the same type and have the same aspiration height.
   - Maxprep® 1000µl Conductive Disposable Tips, Filtered (2; one may be partially full)
   - Maxprep® 300µl Conductive Disposable Tips, Filtered (racks may be partial or full)

10. Close the instrument door and touch the **Next** button to start the automated preprocessing of samples.

6.B. Maxprep® Liquid Handler Preprocessing Protocol

The Maxprep® Liquid Handler will prepare samples prior to extraction using Maxwell® Instruments. The following steps are performed by the Maxprep® Liquid Handler:

1. Plungers are transferred to each of the cartridges in the Maxwell® deck tray(s).
2. The specified volume of Elution Buffer is transferred to the elution tubes for each position in the Maxwell® deck tray(s).
3. The system transfers 300µl of Lysis Buffer to each Maxwell® RSC cartridge.
4. The specified volume of sample lysate is aspirated at the specified aspiration height and transferred from each sample tube to its corresponding Maxwell® RSC cartridge

5. **Optional:** The system transfers the indicated volume of RNase A to each Maxwell® RSC cartridge.
6. Method is complete. Open instrument door and move the deck tray(s) to the Maxwell® Instrument for extraction. Remove primary sample tubes and used tips from the waste bin, and discard as hazardous waste following your institution's recommended guidelines. Either discard or tightly cap and store remaining reagents.

Consumables for Maxprep® preprocessing methods are designed to be used with potentially infectious substances. Use appropriate protective equipment (e.g., gloves and goggles) when handling infectious substances. Adhere to your institutional guidelines for the handling and disposal of all infectious substances when used with this system.

7. Maxwell® Instrument Setup and Run

For detailed information, refer to the Operating Manual specific to your Maxwell® Instrument. See Table 1.

1. Turn on the Maxwell® Instrument and Tablet PC. Log in to the Tablet PC and start the Maxwell® software by double-touching the icon on the desktop. The instrument will power up, proceed through a self-check and home all moving parts.
2. Touch **Start** to begin running a method.

7. Maxwell® Instrument Setup and Run (continued)

3. Depending on your Maxwell® Instrument model, use one of the following options to select a method:

   a. When running in Portal mode, scan the bar code(s) on the deck tray(s). After data has been returned from the Portal software, touch **Continue** to use the sample tracking information for the deck tray(s) or touch **New** to start a run and enter new sample tracking information.

   b. Scan or enter the 2D bar code information on the kit box to automatically select the appropriate method.

   c. Touch the **PureFood GMO and Authentication** method.

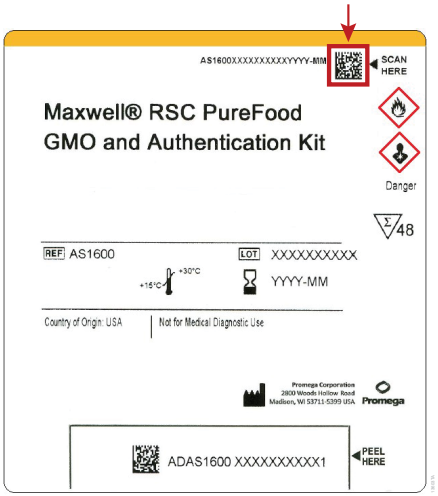


Figure 4. Kit label indicating the method bar code. The bar code to scan for starting a purification run is shown in the red box, in the upper right of the kit label.

4. If applicable to your Maxwell® Instrument model, verify that the PureFood GMO and Authentication method has been selected, and touch the **Proceed** button. If requested by the software, scan or enter any kit lot information that has been required by the Administrator.

5. On the 'Cartridge Setup' screen (if shown), touch the cartridge positions to select or deselect the positions to be used for this extraction run. Enter any required sample tracking information, and touch the **Proceed** button to continue.

   Note: When using 48-position Maxwell® Instruments, press the **Front** and **Back** buttons to select or deselect cartridge positions on each deck tray.

6. After the door has been opened, confirm that all Extraction Checklist items have been performed. Verify that cartridges are loaded on the instrument, preprocessed samples are added to well #1 of the cartridges, uncapped elution tubes are present with 100µl of Elution Buffer and plungers are present in well #8. Transfer the deck tray(s) containing the prepared cartridges onto the Maxwell® Instrument platform.

   Inserting the Maxwell® deck tray(s): Hold the deck tray by the sides to avoid dislodging cartridges from the deck tray. Ensure that the deck tray is placed in the Maxwell® Instrument with the elution tubes closest to the door. Angle the back of the deck tray downward and place into the instrument so that the back of the deck tray is against the back of the instrument platform. Press down on the front of the deck tray to firmly seat the deck tray on the instrument platform. If you have difficulty fitting the deck tray on the platform, check that the deck tray is in the correct orientation. Ensure the deck tray is level on the instrument platform and fully seated.

   Note: Check the identifier on the 24-position Maxwell® deck trays to determine whether they should be placed in the front or back of the instrument. Deck trays are keyed and will only fit in their intended positions.

7. Touch **Start** to begin the extraction run. The platform will retract, and the door will close.

   Warning: Pinch point hazard.

   Note: When using a 48-position Maxwell® Instrument, if the Vision System has been enabled, the deck trays will be scanned as the door retracts. Any errors in deck tray setup (e.g., plungers not in well #8, elution tubes not present and open) will cause the software to return to the 'Cartridge Setup' screen and problem positions will be marked with an exclamation point in a red circle. Touch the exclamation point for a description of the error and resolve all error states. Touch the **Start** button again to repeat deck tray scanning and begin the extraction run.

8. The Maxwell® Instrument will immediately begin the purification run. The screen will display information including the user who started the run, the current method step being performed and the approximate time remaining in the run.

   Notes:

   a. Touching **Abort** will abandon the run.

   b. If the run is abandoned before completion, you will be prompted to check whether plungers are still loaded on the plunger bar. If plungers are present on the plunger bar, perform Clean Up when requested. If plungers are not present on the plunger bar, you can choose to skip Clean Up when requested. In all cases, the samples will be lost.

9. When the run is complete, the user interface will display a message that the method has ended.

End of Run

10. Follow the on-screen instructions at the end of the method to open the door. Verify that the plungers are located in well #8 of the cartridge at the end of the run. If the plungers are not removed from the plunger bar, follow the instructions in the Technical Manual appropriate to your Maxwell® Instrument (see Table 1) to perform a Clean Up process to attempt to unload the plungers.

7. Maxwell® Instrument Setup and Run (continued)

11. Remove the deck tray(s) from the instrument. Remove elution tubes containing DNA, and cap the tubes. For short-term storage or frequent use of the DNA, store at 2–10°C; for long-term storage, store at –30 to –10°C. Avoid multiple freeze-thaw cycles. After the run has been completed, the extraction run report will be displayed. From the 'Report View' screen, you can print or export this report or both.

Note: Following the automated purification procedure, the deck tray(s) will be warm. It will not be too hot to touch. To remove the deck tray from the instrument platform, hold onto the sides of the deck tray.

Ensure samples are removed before performing any required UV light treatment to avoid damage to the nucleic acid.

12. Remove the cartridges and plungers from the Maxwell® deck tray(s). Discard as hazardous waste according to your institution's procedures. Do not reuse reagent cartridges, plungers or elution tubes.

8. Troubleshooting

For questions not addressed here, please contact your local Promega Branch Office or Distributor. Contact information available at: **www.promega.com**. Email: **techserv@promega.com**

Symptoms	Causes and Comments
Lower than expected A_{260} (yield)	Insufficient lysis. Consider optimization of the extraction protocol. If using a mechanical bead-beating device, consider increasing the number of strokes/minute or the amount of processing time.
	Sample is relatively low in DNA content or degraded. Use more starting material. To prevent degradation, chill samples during preparation.
	Water and ice carryover from frozen sample. Remove excess water and ice before weighing to avoid increasing sample weight that does not contain DNA.
	Inhibitors present. Avoid transfer of sample oils and solids to the cartridge. Repeat spin with cleared lysate to improve separation before transfer to cartridge. Reduce the amount of starting material used per sample. Do not exceed 200mg of sample in the standard protocol lysis
	The Maxwell® Instrument was set for the wrong method. Ensure that the PureFood GMO and Authentication method is chosen.
Higher than expected DNA concentrations in amplification	RNA in eluates and amplification primers not specific for DNA. Use less sample. Treat sample with optional RNase in the cartridge (see Section 5.A).

Symptoms	Causes and Comments
Resin fines are present in the eluate	Resin fines should not affect qPCR. However, if you prefer to remove the fines, briefly centrifuge and transfer the eluate to a clean tube.
Lower than expected absorbance (A_{260}/A_{280} or A_{260}/A_{230}) ratio	The MagnaCel™ particles may co-isolate compounds that can affect the absorbance ratio. Use an amplification-based assay to better assess the quality and suitability of the isolated DNA for downstream amplification analysis.
	Too much plant debris in cartridge. Ensure that no solid materials are pipetted into the cartridge, and do not pipet lysate from too close to the pellet. Centrifuge the lysate at higher speeds. Do not use a tissue homogenizer. Reduce the amount of starting plant material used per sample.
Precipitate in CTAB or Lysis Buffer bottle	Precipitate may form at lower temperatures. Resuspend the precipitated solution by warming the bottle at room temperature, and shake.

9. Composition of Buffer

Elution Buffer

10mM Tris (pH 8.0)
0.1mM EDTA (pH 8.0)

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10. Related Products

Instruments and Accessories

Product	Size	Cat.#
Maxwell® RSC Instrument	1 each	AS4500
Maxwell® RSC 48 Instrument	1 each	AS8500
Maxwell® RSC/CSC Deck Tray	1 each	SP6019
Maxwell® RSC/CSC 48 Front Deck Tray	1 each	AS8401
Maxwell® RSC/CSC 48 Back Deck Tray	1 each	AS8402
Maxwell® RSC Plunger Pack	1 each	AS1670
Maxwell® FSC Instrument	1 each	AS4600
Maxwell® FSC Deck Tray	1 each	AS4016
Maxwell® CSC Instrument	1 each	AS6000
Maxwell® CSC 48 Instrument	1 each	AS8000
Maxprep® Carrier, Maxwell® RSC	1 each	AS9402
Maxprep® Carrier, Maxwell® RSC 48 Front	1 each	AS9403
Maxprep® Carrier, Maxwell® RSC 48 Back	1 each	AS9404
Maxprep® Liquid Handler, RSC Carriers	1 each	AS9105
Maxprep® Liquid Handler, RSC 48 Carriers	1 each	AS9205
Maxprep® 1000µl Conductive Disposable Tips, Filtered	40/box	AS9303
Maxprep® 300µl Conductive Disposable Tips, Filtered	60/box	AS9302
Maxprep® Reagent Reservoir, 50ml	28/pack	AS9304
Maxprep® Waste Bags, Clear	100/Box	AS9305
Maxprep® Plunger Holder	1 each	AS9408
Maxprep® 3-Position Reagent Tube Holder	1 each	AS9409
Maxprep® Tube Rack Stabilizer	1 each	AS1910

Solutions and Buffers

Product	Size	Cat.#
RNase A Solution (4mg/ml)	1ml	A7973
	5ml	A7974
Proteinase K (PK) Solution (20mg/ml)	4ml	MC5005
	16ml	MC5008
CTAB Buffer	100ml	MC1411

11. Summary of Changes

The following changes were made to the 3/25 revision of this document:

1. Updated Table 1 and Section 10, Related Products.
2. Updated Maxprep to a registered trademark.
3. Edited Section 7 for consistency with other Maxwell® RSC manuals.
4. Updated the cover page and document font.