
INSTRUCTIONS FOR USE

Sanger Sequencing Reagents

POP-7 Separation Polymer

CE Separation Polymer

Catalog No.: EV-SGR-004

Version: 1.1 | For Research Use Only

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1. Product Information

Product name	POP-7 Separation Polymer
Catalog number	EV-SGR-004
Intended use	Performance Optimized Polymer 7 formulation for high-resolution capillary electrophoresis separation of Sanger sequencing fragments on ABI 3130, 3130xl, 3730, and 3730xl Genetic Analyzers, delivering read lengths exceeding 1,000 bases on long-capillary configurations.
Storage conditions	Store at 2–8°C, protected from light. Do not freeze. Allow to reach room temperature before loading into the instrument. Shelf life: 12 months from date of manufacture.
Regulatory status	For Research Use Only (RUO). Not for diagnostic or therapeutic use.

2. Product Description

Enzovera POP-7 Separation Polymer (EV-SGR-004) is a Performance Optimized Polymer 7 formulation for capillary electrophoresis separation of Sanger sequencing fragments. The polymer is supplied as a pre-mixed, ready-to-load solution in a 28 mL bottle sized for use on ABI 3730 and 3730xl Genetic Analyzers, providing approximately seven runs per bottle on the 3730xl 96-capillary configuration. It is also compatible with ABI 3130 and 3130xl 4- and 16-capillary systems. The polymer fills the CE capillary and provides the entangled sieving matrix through which negatively charged, denatured Sanger fragments migrate under the applied electric field, achieving single-base resolution across the full read range.

POP-7 is a urea-containing entangled polymer solution whose molecular weight distribution and concentration are precisely controlled to deliver single-base resolution from approximately 20 to 1,000 bases under standard run conditions. Peak resolution is typically maintained through 900 or more bases on well-prepared templates, with read lengths exceeding 1,000 bases achievable on long-capillary (50 cm) configurations. The urea component maintains DNA denaturation throughout the separation run, preventing secondary structure reformation that would compromise peak spacing and resolution. Run-to-run consistency is maintained by the polymer's stable viscosity profile across the instrument's operating temperature range.

EV-SGR-004 is a direct replacement for Applied Biosystems POP-7 Separation Polymer. It uses identical run modules and mobility files, and no instrument re-calibration is required when switching from ABI POP-7 to Enzovera POP-7. Performance is matched in resolution, read length, and run-to-run consistency. For 3100/3500-series instruments and short-fragment analysis applications where POP-4 is the standard polymer, use POP-4 Separation Polymer (EV-SGR-005) instead.

3. General Usage Guidelines

- Store at 2–8°C at all times. Do not freeze — freezing irreversibly alters the polymer's viscosity and sieving characteristics and will render the bottle unusable.
- Allow the polymer bottle to equilibrate to room temperature (18–25°C) for a minimum of 30 minutes before installation. Do not shake or aggressively invert the bottle during equilibration — this introduces air bubbles that interfere with capillary filling and separation. Gently rock the bottle 10–15 times to restore homogeneity before use.

- Inspect the polymer visually before installation. Do not use bottles showing particulate matter, phase separation, or cloudiness. Return unused polymer to 2–8°C refrigerated storage promptly after instrument use.

4. Safety Precautions

Read the Safety Data Sheet (SDS) and follow all handling instructions before use. Wear appropriate personal protective equipment including laboratory coat, gloves, and protective eyewear when handling this product. If contact with skin or eyes occurs, wash immediately with large amounts of water and seek medical attention if irritation persists. Dispose of the product in accordance with applicable local, state, and federal regulations.

5. Usage Instructions

POP-7 Separation Polymer is loaded directly into the instrument polymer reservoir and delivered to the capillary array through the instrument's integrated pump system. The workflow below covers pre-use equilibration, running buffer preparation, and polymer installation. Detailed instrument-specific procedures (capillary conditioning, pump priming, run module selection) should be followed as specified in the ABI Genetic Analyzer instrument user guide.

Polymer equilibration: Remove the bottle from refrigerated storage and allow it to reach room temperature (18–25°C) for at least 30 minutes before use. Gently rock to homogenize. **Running buffer preparation:** Dilute 10× Running Buffer with EDTA (EV-SGR-006) 1:10 with nuclease-free deionized water to prepare 1× working buffer (e.g., 100 mL of 10× concentrate + 900 mL water). Fill cathode and anode buffer reservoirs to the recommended fill lines. Replace running buffer every 24–48 hours of instrument operation or per the instrument manufacturer's maintenance schedule.

Polymer installation: Install the equilibrated polymer bottle into the instrument polymer block holder, ensuring the pump needle fully penetrates the bottle septum. Confirm the polymer block temperature is set to 50°C for 3130/3130xl instruments or 30°C for 3730/3730xl instruments before starting the run. Select the appropriate POP-7 run module in the instrument software. The 28 mL bottle provides approximately 7 runs on a 3730xl 96-capillary configuration under standard sequencing run conditions.

6. Instrument Compatibility

POP-7 Separation Polymer is compatible with the following Applied Biosystems Genetic Analyzer platforms: ABI 3130 (4-capillary), ABI 3130xl (16-capillary), ABI 3730 (48-capillary), and ABI 3730xl (96-capillary). It is optimized for long-read Sanger sequencing (read lengths exceeding 1,000 bases) on 50 cm capillary arrays and for routine sequencing on 36 cm arrays. For ABI 3100, 3500, and 3500xl instruments, or for fragment analysis applications requiring maximum resolution below 500 bp, use POP-4 Separation Polymer (EV-SGR-005).

7. Storage and Stability

Store at 2–8°C, protected from light. Do not freeze — freezing permanently damages the polymer's sieving matrix and the bottle must be discarded if frozen. Shelf life is 12 months from the date of manufacture when stored continuously at 2–8°C. Once installed in the instrument, the polymer is stable for the duration of normal instrument operation; return the bottle to refrigerated storage between run

sessions. Allow the bottle to reach room temperature before each use. Discard any bottle showing visible particulate matter, phase separation, or unusual viscosity.

8. Troubleshooting

Observation	Possible Cause	Corrective Action
Short read lengths or poor peak resolution; reads truncating below 700 bases	Polymer not fully equilibrated to room temperature before use; degraded or expired polymer; incorrect run module selected	Allow the polymer bottle to equilibrate to room temperature for at least 30 minutes before installation. Verify expiration date. Confirm the correct POP-7 run module is selected in the instrument software.
Air bubbles in capillaries; uneven injection or failed capillary fill	Polymer bottle shaken or inverted aggressively during equilibration, introducing air; pump needle not fully seated in septum	Gently rock rather than shake the bottle to homogenize. Re-seat the bottle to ensure full needle penetration into the septum. Run a polymer fill cycle from the instrument maintenance menu to purge air from the capillaries.
Peak broadening, loss of single-base resolution, or compressed peaks in mid- to late-read range	Degraded capillary array past its rated run count; running buffer contaminated or not replaced on schedule; polymer block temperature out of specification	Check capillary array run count and replace if at or near the manufacturer's limit. Prepare fresh 1× running buffer and replace reservoir contents. Verify polymer block temperature is within specification (50°C for 3130/3130xl; 30°C for 3730/3730xl).
No signal or failed run; instrument reports pump or polymer delivery error	Polymer bottle empty or nearly empty; septum not punctured correctly; polymer viscosity too high due to cold temperature	Check remaining polymer volume and install a new bottle if depleted. Confirm the bottle is fully seated and the pump needle has penetrated the septum. Ensure the polymer has reached room temperature before installation. If the problem persists, contact techsupport@enzovera.com.

9. Technical Support

For technical assistance with Sanger Sequencing Reagents products, please contact Enzovera Life Sciences:

techsupport@enzovera.com

10. Legal Notice

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