

E-Shot™ Standard Electroporation Cuvettes

Catalog no.

P510-50

P520-50

Size:

50 × 0.1-cm cuvettes

50 × 0.2-cm cuvettes

Description

E-Shot™ Standard Electroporation Cuvettes are single-use polycarbonate cuvettes for use with cells that can be transformed by electroporation. The deep-well cuvette chamber is designed to easily accommodate 100 µl of cells plus 1 ml of media, and works with electroporators from all major manufacturers, including BTX and Bio-Rad.

Cuvette Volume

Each cuvette can contain up to 100 µl of cells plus 1 ml of media.

General Electroporation Conditions

0.1-cm cuvettes: 1.8–2.0 kV, 200 Ω, 25 µF *or*
2.1–2.5 kV, 100 Ω, 25 µF

0.2-cm cuvettes: 2.0–2.5 kV, 200 Ω, 25 µF

Recommended Strains

The following *E. coli* strains are recommended for use with these cuvettes. Other strains may also be compatible.

- ElectroMAX™ DH10B™-T1^R cells
- ElectroMAX™ DH10B™ cells
- ElectroMAX™ DH5α-E™ cells

Part no. P51050.pps

Rev. date: 12 Jun 2006

General Transformation Procedure

Use experimental DNA that is free of phenol, ethanol, salts, protein, and detergents to obtain maximum transformation efficiency. To check transformation efficiency, we recommend using pUC19 control DNA (not included).

Use the following general procedure as a starting point:

1. Place the cuvette on wet ice to chill. In a separate tube, add cells.
2. For ligation reactions, precipitate the DNA with ethanol and resuspend in 0.5X TE Buffer (5 mM Tris HCl, pH 7.5; 0.5 mM EDTA) to a concentration not exceeding 100 ng/ μ l. Add 1 μ l of DNA to the cells in the tube (see **Note 1**).
 - To determine transformation efficiency, dilute the control DNA 1:1 with nuclease-free, deionized, sterile water, and add 1 μ l (5 pg) to the cells in the tube.
3. Transfer the cells and DNA from the tube to the cuvette. Replace the cap and gently tap the cuvette to mix the contents and remove any air bubbles. **Make sure that all of the DNA and cells are in the well. Do not invert the cuvette.**
4. Place the cuvette in the cuvette holder and electroporate your samples. If you are using a BTX[®] ECM[®] 630 or Bio-Rad GenePulser[®] II electroporator, we recommend the following electroporation conditions (see **Note 2**):
 - 0.1-cm cuvettes: 1.8–2.0 kV, 200 Ω , 25 μ F *or*
2.1–2.5 kV, 100 Ω , 25 μ F
 - 0.2-cm cuvettes: 2.0–2.5 kV, 200 Ω , 25 μ F

Procedure continued on next page

5. Immediately after electroporation, remove the cap and add 500 μ l to 1 ml of recovery medium (*e.g.*, S.O.C.) to the cells in the cuvette and mix by gently pipetting up and down. Rinse the sides of the electrodes with the recovery medium. Replace the cap.
6. Place the cuvette in an appropriate receptacle (standing up) and shake at 225 rpm (37°C) for 1 hour. **Do not lay the cuvette on its side.** Alternatively, transfer the transformed cells to a 15-ml snap-cap tube (*e.g.*, Falcon™ tube) and shake as directed.
7. After shaking, mix the cells by gently pipetting up and down 3–4 times. Dilute experimental reactions as necessary and spread 100–200 μ l on selective plates. For cells transformed with pUC19 DNA, dilute 1:200 with recovery medium and spread 100 μ l of the dilution on prewarmed LB plates containing 100 μ g/ml ampicillin.
8. Incubate plates overnight at 37°C.

Notes

1. Transformation efficiencies will be 10- to 100-fold lower for ligation mixtures and cDNA than for intact control plasmids such as pUC19. **Salts and buffers severely inhibit electroporation.** Ligation reactions can be diluted 5-fold, and 1 μ l added to the cells in a cuvette. For optimal results, precipitate ligation mixtures with ethanol prior to transformation. Use 1 to 2 μ l of resuspended DNA per cuvette. Adding undiluted ligation mixtures or too high a volume of DNA decreases transformation efficiency and increases the risk of arcing.
2. If you are using an electroporator other than a BTX® ECM® 630 or Bio-Rad GenePulser® II electroporator, you may need to vary the settings to achieve optimal transformation efficiency.
3. Discard cuvette after use. **Do not re-use.**

Calculating Transformation Efficiency

Transformation efficiency (CFU/ μ g):

$$\frac{\text{CFU on control plate}}{\text{pg pUC19 DNA}} \times \frac{1 \times 10^6 \text{ pg}}{\mu\text{g}} \times \frac{\text{volume of transformants}}{\text{volume plated}} \times \text{dilution factor}$$

For example, if 5 pg of pUC19 yields 50 colonies when 100 μ l of a 1:200 dilution is plated, then:

$$\text{CFU}/\mu\text{g} = \frac{50 \text{ CFU}}{5 \text{ pg}} \times \frac{1 \times 10^6 \text{ pg}}{\mu\text{g}} \times \frac{500 \mu\text{l}}{100 \mu\text{l plated}} \times 2 \times 10^2 = 1.0 \times 10^{10}$$

Additional Products

<u>Product</u>	<u>Catalog no.</u>
E-Shot™ DH10B™-T1 ^R Electrocomp™ Cells	C5100-03
ElectroMAX™ DH10B™-T1 ^R Cells	12033-015
ElectroMAX™ DH10B™ Cells	18290-015
ElectroMAX™ DH5 α -E™ Cells	11319-019
LB Broth, 500 ml	10855-021
SELECT Agar®, powder, 500 g	30391-023
Kanamycin Sulfate (100x), 100 ml	15160-054
Ampicillin Sodium Salt, lyophilized, 200 mg	11593-019

Quality Control

Cuvettes are filled with ice-cold deionized water and tested for arcing under standard electroporation conditions.

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