



# Product Insert

## α-Select Chemically Competent Cells

**Product:**  
α-Select Chemically Competent Cells

**Catalogue Numbers:**  
 BIO-85025 ≥10<sup>7</sup> cfu/μg of pUC19 (Bronze Efficiency)  
 BIO-85026 ≥10<sup>8</sup> cfu/μg of pUC19 (Silver Efficiency)  
 BIO-85027 ≥10<sup>9</sup> cfu/μg of pUC19 (Gold Efficiency)

- Features**
- Chemically Competent or Electroporation Grade
  - Variety of efficiencies: ≥10<sup>7</sup>, ≥10<sup>8</sup>, or ≥10<sup>9</sup> cfu/μg of pUC19
  - Accommodates larger plasmids

- Applications**
- Transformation of cloned DNA into bacterial cells
  - Ideal for subcloning and generating cDNA libraries
  - Blue/white color screening

**Description**  
 α-Select Competent Cells contain a *lacZ* marker that provides α-complementation of the β-galactosidase gene for blue/white color screening. The cells are ideal for generating cDNA libraries and subcloning. α-Select Competent Cells also provide *recA1* and *endA1* markers to minimize recombination and enhance the quality of the plasmid DNA. pUC19 DNA is also provided as a positive control.

**Product Specifications**

Efficiency	Pack Size	Control DNA
Bronze	2ml (10 x 200μl)	pUC19 (100pg/μl)
Silver	2ml (10 x 200μl)	pUC19 (10pg/μl)
Gold	1ml (20 x 50μl)	pUC19 (10pg/μl)

**Genotype:**  
 F *deoR endA1 recA1 relA1 gyrA96 hsdR17(r<sub>k</sub><sup>-</sup>, m<sub>k</sub><sup>+</sup>) supE44 thi-1 phoA Δ(lacZYA argF)U169 Φ80lacZΔM15λ*

**Storage Conditions:**  
 α-Select Competent Cells should be stored for 6 months at -80°C.

**Shipping Conditions:**  
 On Dry Ice

**Associated Products:**

Product Name	Pack Size	Cat No
T4 DNA Ligase	500 Units	BIO-27026
Quick-Stick Ligase	50 Reactions	BIO-27027
IPTG	5g	BIO-37036
X-GAL	1g	BIO-37035
T4 DNA Polymerase	500 Units	BIO-27035

**Suggested Transformation Procedure for Optimal Results:**

- 1) Remove cells from -70°C and let thaw on wet ice.
- 2) Gently mix cells by lightly flicking tube. Aliquot ~50-100μl of cells into chilled, 17 x 100mm polypropylene tube(s), e.g., Falcon 2059. Unused cells may be refrozen, but a small drop in efficiency may result. For optimal recovery, refreeze cells in a dry ice/ ethanol bath prior to -70°C storage.
- 3) Add DNA solution (≤5μl per 50μl cells) to cell suspension and gently swirl tube(s) for a few seconds to mix. If a control is desired, repeat this step with 2μl of the provided pUC19 in a separate tube.
- 4) Incubate on ice for 30 minutes.
- 5) Place tube(s) in 42°C water bath for ~30 to 45 seconds without shaking. For 50μl aliquots in Falcon 2059 tubes, 30 seconds is recommended for maximum efficiency.
- 6) Replace tube(s) on ice for ~2 minutes.
- 7) Dilute transformation reaction(s) to 1ml by addition of 900-950μl SOC. SOC Medium: 2% Tryptone, 0.5% Yeast Extract, 0.4% glucose, 10mM NaCl, 2.5mM KCl, 10mM MgCl<sub>2</sub> & 10mM MgSO<sub>4</sub>.
- 8) Shake tube(s) ~200 rpm for 60 minutes at 37°C.
- 9) Plate by spreading 5-200μl of cell transformation mixture on LB agar plates containing appropriate antibiotic and incubate overnight at 37°C.

When performing the pUC19 control transformation, plate 5μl of the transformation mixture on a LB agar plate containing 100μg/ml ampicillin. To facilitate cell spreading, place a pool of SOC (100μl) onto surface of plate prior to addition of transformation mixture.

**Transformation Efficiency Calculation for Control DNA**

$$\text{Transformation Efficiency (cfu/μg pUC19 DNA)} = \frac{\# \text{ colonies}}{\text{pg pUC19 transformed}} \times \frac{10^6 \text{ pg}}{\mu\text{g}} \times \frac{\text{Final volume (μl) of transformation mix}}{\text{Volume plated (μl)}}$$

**For example:**  
 If 40 colonies were obtained after transforming 20pg of pUC19 and plating 5μl of the final 1ml transformation mixture, the calculated transformation efficiency would be:

$$\frac{40 \text{ cfu}}{20 \text{ pg pUC19}} \times \frac{10^6 \text{ pg}}{\mu\text{g}} \times \frac{1000 \mu\text{l}}{5 \mu\text{l}} = 4 \times 10^8 \text{ cfu/μg pUC19}$$

- Notes**
1. This product insert is a declaration of analysis at the time of manufacture.
  2. Research Use Only.

<p><b>UK</b>            Bioline            16 The Edge Business Centre            Humber Road            London, NW2 6EW            U.K.</p> <p>Tel: +44 (0)20 8830 5300            Fax: +44 (0)20 8452 2822</p> <p>email: <a href="mailto:info@bioline.com">info@bioline.com</a>            website: <a href="http://www.bioline.com">www.bioline.com</a></p>	<p><b>USA</b>            Bioline USA Inc.            305 Constitution Dr.            Taunton            MA 02780            USA</p> <p>Toll Free: 888 257 5155            Tel: 508 880 8990            Fax: 508 880 8993</p>	<p><b>Germany</b>            Bioline GmbH            Im Biotechnologiepark TGZ 2            D-14943 Luckenwalde            Germany</p> <p>Tel: +49 (0)33 7168 1229            Fax: +49 (0)33 7168 1244</p>	<p><b>Australia</b>            Bioline (Aust) Pty Ltd            PO Box 122            Alexandria NSW 1435            Australia</p> <p>Tel: +61 (0)2 9209 4180            Fax: +61 (0)2 9209 4763</p>
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