

DC67294 | Lipid B1

Instructions for Use

Lipid B1 is a next-generation ionizable lipid engineered for superior mRNA delivery, featuring a patented β -isobutylglutarate branching linker that optimizes nanoparticle assembly and intracellular release. Its unique structure combines a pH-responsive tertiary amine headgroup with twin C18 alkyl tails connected via biodegradable ester bonds, enabling precise control over lipid packing and endosomal escape. Preclinical studies demonstrate that Lipid B1-based LNPs (bLNPs) achieve **>75%** transfection efficiency in vitro at ultra-low mRNA doses (1 μ g), outperforming commercial benchmarks like SM-102. In vivo, subcutaneous administration of bLNPs delivers 10-fold higher luciferase expression^{**} than linear-chain analogs, with targeted biodistribution to lymph nodes and tumor sites. Clinically relevant data show 100% tumor prevention in prophylactic cancer vaccine models and 70% tumor regression in therapeutic settings when combined with checkpoint inhibitors. The ester-based backbone ensures rapid metabolic clearance, minimizing systemic toxicity risks (NOAEL >10 mg/kg in mice). Compatible with mRNA, siRNA, and CRISPR-Cas9 payloads, Lipid B1 is ideal for vaccines, gene therapies, and immuno-oncology. Its scalable 3-step synthesis (yield >80%) and lyophilization stability (-80°C, 12 months) make it a cost-effective solution for GMP-grade production. For advanced delivery with unmatched safety and efficacy, Lipid B1 sets a new standard in nucleic acid therapeutics.

Product information

CAS No.	Not available
Chemical Name	Lipid B1
Formula	C33H65O4N
M.Wt	539.89
Purity	>98%
Storage	Original product: up to 1 year under the storage conditions stated on the vial, kept tightly sealed. Stock solutions: aliquots at -20°C, generally up to one month.
Shipping condition	Ships from Shanghai. Pure lipid is stable during ice-pack transport.

Formulation & study context

Literature values apply to the cited study only. Administration routes describe research, not clinical instructions.

A complete product-specific formulation has not been verified. No standard ratio is substituted.

N/P ratio	Not reported in the verified record
Cargo	Not available in the verified record
Administration route	Not available in the verified record
Animal model	Not available in the verified record
Formulation process	Not available in the verified record

N/P is a nitrogen-to-phosphate molar ratio. Lipid:cargo mass ratio is a different quantity and must not be used as N/P.

Stock-solution preparation table

Calculated using product-page MW: 539.89 g/mol. Volumes are final solution volumes.

Mass	1 mM	5 mM	10 mM
10 mg	18.522 mL	3.704 mL	1.852 mL
25 mg	46.306 mL	9.261 mL	4.631 mL
50 mg	92.611 mL	18.522 mL	9.261 mL
100 mg	185.223 mL	37.045 mL	18.522 mL
250 mg	463.057 mL	92.611 mL	46.306 mL

Volume (mL) = mass (mg) × 1000 / [MW (g/mol) × concentration (mM)]. Mathematical conversions only; not measured solubility. Confirm solvent compatibility and the exact material before preparation.

Handling & storage

Provided that storage conditions are as stated on the product vial and the vial is kept tightly sealed, the product can be stored for up to 1 year.

Wherever possible, prepare and use solutions on the same day. If stock solutions must be prepared in advance, store them as aliquots in tightly sealed vials at -20°C. Generally, these will be usable for up to one month.

Before use, and prior to opening the vial, allow the product to equilibrate to room temperature for at least 1 hour.

References

Ionizable Lipids with Branched Linkers Enhance the Delivery of mRNA Vaccines-Jiwei Liu, Wenjing Sun,etc-BIOLOGICAL AND MEDICAL APPLICATIONS OF MATERIALS AND INTERFACES February 20, 2025