

# DC49889 | 503013

## Instructions for Use

503013 is a next-generation, biodegradable lipid nanoparticle (LNP) engineered for highly efficient and targeted siRNA delivery. Designed through rational structure-activity criteria—including optimal tail length (O13), tertiary amines, and a surface pKa  $\geq 5.5$ —this single-component LNP achieves unparalleled gene silencing with an ultra-low EC50 of 0.01 mg/kg in preclinical models. 503013 outperforms non-degradable counterparts (e.g., C12-200) with improved toxicity profiles—no hepatic necrosis or pancreatic inflammation—while maintaining rapid blood clearance (t1/2: 6 min) and organ-specific accumulation (liver/spleen).

## Product information

|                    |                                                                                                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAS No.            | Not available                                                                                                                                                       |
| Chemical Name      | 503013                                                                                                                                                              |
| Formula            | C73H144N4O8                                                                                                                                                         |
| M.Wt               | 1,205.95                                                                                                                                                            |
| Purity             | ELSD-HPLC >95%                                                                                                                                                      |
| 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: 1205.95 g/mol. Volumes are final solution volumes.

| Mass   | 1 mM       | 5 mM      | 10 mM     |
|--------|------------|-----------|-----------|
| 10 mg  | 8.292 mL   | 1.658 mL  | 0.829 mL  |
| 25 mg  | 20.731 mL  | 4.146 mL  | 2.073 mL  |
| 50 mg  | 41.461 mL  | 8.292 mL  | 4.146 mL  |
| 100 mg | 82.922 mL  | 16.584 mL | 8.292 mL  |
| 250 mg | 207.305 mL | 41.461 mL | 20.731 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

Whitehead, K., Dorkin, J., Vegas, A. et al. Degradable lipid nanoparticles with predictable in vivo siRNA delivery activity. Nat Commun 5, 4277 (2014).