

PRODUCT INFORMATION



C14-O2

Item No. 40805

CAS Registry No.: 2639634-77-6
Formal Name: 15-(2-(4-(2-(2-(2-(bis(2-hydroxytetradecyl)amino)ethoxy)ethoxy)ethyl)piperazin-1-yl)ethyl)-24-(2-hydroxytetradecyl)-18,21-dioxa-15,24-diazaoctatriacontane-3,26-diol

Synonyms: C14-2, C14-488

MF: C₈₈H₁₈₁N₅O₉

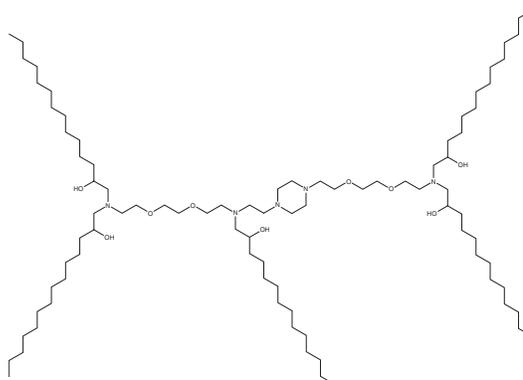
FW: 1,453.4

Purity: ≥95% (mixture of isomers)

Supplied as: A 10 mg/ml solution in ethanol

Storage: -20°C

Stability: ≥3 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

C14-O2 is supplied as a solution in ethanol. To change the solvent, simply evaporate the ethanol under a gentle stream of nitrogen and immediately add the solvent of choice. C14-O2 is sparingly soluble (1-10 mg/ml) in DMSO.

C14-O2 is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, the ethanolic solution of C14-O2 should be diluted with the aqueous buffer of choice. C14-O2 is slightly soluble (0.1-1 mg/ml) in PBS (pH 7.2). We do not recommend storing the aqueous solution for more than one day.

Description

C14-O2 is an ionizable cationic lipid (apparent $pK_a = 6.6$) that has been used in the generation of lipid nanoparticles (LNPs) for the delivery of mRNA, single-guide RNA (sgRNA), and protein *in vitro* and *in vivo*.^{1,2} LNPs containing C14-O2 and encapsulating mRNA encoding a chimeric antigen receptor (CAR) induce CAR expression and B cell aplasia in mice. LNPs containing C14-O2 and encapsulating mRNA encoding the Cas9 nuclease and sgRNA targeting the gene encoding transthyretin (TTR) induce TTR insertion and deletion (indel) formation in the lungs without inducing TTR indel formation in the liver or reducing TTR levels in the serum in mice.³ C14-O2-containing LNPs encapsulating Cas9 protein induce a higher amount of gene editing in mouse lungs than those encapsulating mRNA encoding Cas9.² LNPs containing C14-O2 and encapsulating Cas9 protein also induce chloride ion influx to a greater degree than those encapsulating Cas9 mRNA in human-derived bronchial epithelial gene-edited (16HBEge) cells containing the $\Delta F508$ cystic fibrosis transmembrane conductance regulator (CFTR) mutation.

References

1. Mukalel, A.J., Hamilton, A.G., Billingsley, M.M., *et al.* Oxidized mRNA lipid nanoparticles for in situ chimeric antigen receptor monocyte engineering. *Adv. Funct. Mater.* **34**(27), 2312038 (2024).
2. Joseph, R.A., Haley, R.M., Padilla, M.S., *et al.* Cas9 protein outperforms mRNA in lipid nanoparticle-mediated CFTR repair. *Nano Lett.* (2025).
3. Haley, R.M., Padilla, M.S., El-Mayta, R.D., *et al.* Lipid nanoparticles for *in vivo* lung delivery of CRISPR-Cas9 ribonucleoproteins allow gene editing of clinical targets. *ACS Nano* **19**(14), 13790-13804 (2025).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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