NeoVac

PRODUCT CATALOGUE

Novel Lipids, Formulation Kits, and Engineering Services for Efficient Ribonucleic Acid (RNA) Delivery

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Company Information

Advancing RNA Delivery Through Novel Lipid Engineering

NeoVac Ltd ("NeoVac") bridges the gap between breakthrough molecular research and clinical-grade manufacturing. Founded by globally recognized pioneers in messenger RNA (mRNA) and vaccine development, NeoVac provides the scientific expertise, novel lipid technologies, and engineering capabilities required to advance RNA therapeutic development from discovery through to manufacturing.

What We Do

NeoVac's proprietary lipid nanoparticle (LNP) technology has progressed through first-in-human Phase I/II clinical trials, with early results indicating fewer and less severe side effects than currently authorized mRNA vaccines. Beyond prophylactic vaccines, NeoVac's platform is being advanced for applications including cancer immunotherapy, bacterial and viral infectious disease (including shingles, plague, and malaria), and inflammatory and autoimmune conditions such as inflammatory bowel disease (IBD).

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Advantages of the NeoVac Lipid Portfolio

What makes NeoVac different? The advantages below apply collectively across NeoVac's ionizable lipid portfolio and describe the platform-level benefits customers can expect regardless of which individual **LipTx™** lipid or formulation kit is selected.

Uncompromised Intellectual Property

Unrivalled Freedom to Operate*

Built on a proprietary lipid technology platform, NeoVac provides a strong foundation for intellectual property independence. Partnering with NeoVac reduces the legal complexities and licensing constraints often associated with legacy RNA delivery technologies.

**For more information, refer to NeoVac's General Terms and Conditions (provided as a companion document to this catalogue).*

Advanced Safety & Tolerability Profiles

Clinically Validated Safety Profile

First-in-human Phase I/II clinical trial results demonstrate superior systemic tolerability compared to currently authorized mRNA vaccines, showcasing an exceptional safety profile with fewer and less severe side effects.

Mitigated Reactogenicity

By utilizing optimized, tailored lipid cleavability and advanced degradation profiles, NeoVac's lipids significantly reduce dose-limiting toxicity and inflammatory reactogenicity.

Polyethylene Glycol (PEG)-Alternative Architecture

NeoVac's highly versatile, modular lipid library supports the development of PEG-independent formulations, allowing customers to bypass the immunogenicity and anti-PEG antibody challenges associated with traditional PEGylated coatings where required. Standard formulation kits are supplied with a conventional conjugated lipid (PEG-lipid); customers seeking a PEG-alternative conjugated lipid option should contact NeoVac's scientific support team.

*Refer to NeoVac's General Terms and Conditions for full commercial and IP terms.

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Advantages of the NeoVac Lipid Portfolio

Precision Targeting & Dosing Versatility

Precise Organ Targeting

Engineered with high structural precision, NeoVac's customizable architecture enables strict tissue- and organ-specific biodistribution rather than systemic accumulation.

Engineered for Repeat Dosing

The combination of enhanced tolerability and optimized pharmacokinetics unlocks the potential for chronic administration and repeat dosing across complex therapeutic pipelines.

Rational Structural Tuning

NeoVac's advanced delivery platform allows for the precise customization of LNP immunogenicity profiles to match either protective vaccine or tolerant therapeutic routes of intervention.

Platform Stability & Scalability

High Load Stability

Engineered for clinical translation and commercial manufacturing, the NeoVac platform maintains consistent LNP characteristics across a broad range of RNA payloads and manufacturing scales. The platform design supports reproducible particle size, polydispersity, encapsulation efficiency, and physicochemical stability while accommodating high RNA loading without compromising formulation performance. This robust formulation architecture enables reliable process transfer, batch-to-batch consistency, scalable manufacturing, and long-term product quality from research through clinical and commercial production.

Broad Modality Versatility

This next-generation architecture efficiently accommodates diverse payloads to power advanced applications, including:

1. In vivo gene editing
2. Chimeric antigen receptor (CAR) T-cell delivery
3. Protein replacement therapies

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Shared Lipid Information

The specifications, handling requirements, applications, and quality standards below apply uniformly across the LipTx™ ionizable lipid portfolio (NV1-002, NV1-012, NV2-004, NV2-011, NV3-001, NV3-006) and the corresponding LipTx™ Formulation Kits, unless otherwise noted.

Platform & Technical Specifications

Encapsulation Efficiency

Achieves high efficiency (>90%) for complex nucleic acid cargoes, including plasmid DNA (pDNA), small interfering RNA (siRNA), mRNA, and clustered regularly interspaced short palindromic repeats (CRISPR)–CRISPR-associated protein (Cas) systems.

Mechanistic Design

Engineered to remain predominantly neutral at physiological pH 7.4, switching to a protonated state under acidic conditions to drive potent endosomal release.

Target pKa Window

The acid dissociation constant (pKa) is synchronized across the platform within the optimal physiological range of 6.4–7.0.

Purity & Appearance

95%; pale yellow, highly viscous liquid.

Solubility Matrix

Maximum 50 mg/mL in Ethanol (EtOH), Methanol (MeOH), Chloroform, Isopropanol (IPA), and Dimethyl sulfoxide (DMSO).

Thermostability

No degradation observed at following conditions: -20˚C for 1 month, 2-8 ˚C for 1 week, 25 ˚C for 24 hours and 50 ˚C for half an hour.

Handling, Storage & Shelf Life

Storage Environment

Keep at −80˚C in the original, tightly closed container. Protect from light, moisture, and oxygen. Minimize freeze-thaw cycles. (More frequent retests of assay and impurities are recommended if stored at −20˚C.)

Shelf Life

12-month initial shelf life at −80˚C from date of manufacture (extensions available upon analytical retest of assay and impurities).

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Shared Lipid Information

Regulatory Status & Standard Deliverables

Standard Deliverables: Every shipment includes a Material Safety Data Sheet (MSDS), a Certificate of Analysis (CoA), and Instructions for Use (IFU).
Regulatory Packages are available under a Confidential Disclosure Agreement (CDA).

Regulatory Status: For Research Use Only (RUO). Not intended for human use, therapeutic administration, diagnostic procedures, food, or veterinary use. NOT FOR CLINICAL USE. Clinical Good Manufacturing Practice (GMP)-Grade material is available upon request.

Availability & Lead Times

Grade	Availability
Research Use Only (RUO)	On Stock
GMP Grade Material	Available Upon Request

- Gram-scale Production: 6–8 weeks
- GMP Grade Material: 6–12 months

Global Package Pricing

25 mg
650 US Dollars (USD)

100 mg
1,950 USD

1 g
9,950 USD

Relevant Applications

LipTx™ ionizable lipids support research, process development, preclinical studies, and clinical translation of RNA medicines, including mRNA, self-amplified RNA (saRNA), circular RNA (circRNA), siRNA, microRNA (miRNA), guide RNA (gRNA), antisense oligonucleotides (ASOs), and CRISPR-Cas gene-editing payloads – across both in vitro and in vivo delivery studies, as well as formulation optimization and lipid screening studies. Suggested application screening guidance for each individual lipid is provided in the Lipid Selection Matrix below.

mRNA | saRNA | circRNA | siRNA | miRNA | gRNA | ASOs

CRISPR-Cas | in vitro | in vivo

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Shared Lipid Information

Lipid Selection Matrix

Catalog Number	Product Name	Molecular Weight (g/mol)	Suggested Application Screening	Availability
NV1002	LipTx™ NV1-002	796.32	Ionizable amino-lipid. Biodegradable ionizable lipid engineered for nucleic acid encapsulation and endosomal escape; standard tail configuration.	On Stock (RUO)
NV1012	LipTx™ NV1-012	824.37	Ionizable amino-lipid with extended variation in hydrophobic lipid tails with ester linkages. Tuned lipophilicity for enhanced membrane fusion and payload release.	On Stock (RUO)
NV2004	LipTx™ NV2-004	707.18	Ionizable amino-lipid introduced a combination of biodegradable tail and unsaturated hydrocarbon tail for enhanced mRNA delivery. Ether-linked ionizable lipid offering improved hydrolytic stability for extended shelf life.	On Stock (RUO)
NV2011	LipTx™ NV2-011	611.05	Ionizable amino-lipid introduced a combination of biodegradable tail and saturated hydrocarbon tail for rigid LNP structure. Single-chain design for rapid formulation screening.	On Stock (RUO)
NV3001	LipTx™ NV3-001	767.32	Novel ionizable lipid engineered with orthogonally oriented ionizable centres linked through biodegradable ester and unsaturated carbon tails to enhance lipid fluidity.	On Stock (RUO)
NV3006	LipTx™ NV3-006	927.58	Novel ionizable lipid engineered with orthogonally oriented ionizable centres linked to saturated carbon tails to improve the stability.	On Stock (RUO)

General Formulation Workflow

LipTx™ lipids and formulation kits are prepared into LNPs using microfluidic mixing. In brief: the ionizable lipid stock solution is prepared in absolute ethanol (≥99.5%) and, for kits, is supplied pre-blended with helper lipid, cholesterol, and conjugated lipid; the RNA cargo is prepared in 50 mM citrate buffer (pH 4.5); the two phases are combined using a microfluidic mixing device at a defined total flow rate (TFR) and flow rate ratio (FRR), typically 3:1 (aqueous buffer: ethanol); the resulting LNPs are then dialyzed or buffer-exchanged into 10 mM tris(hydroxymethyl)aminomethane (Tris) buffer (pH 7.4) to remove residual ethanol. A nitrogen-to-phosphate (N/P) ratio of 6:1 is recommended as a starting point and can be adjusted according to the specific application. Full step-by-step instructions, required equipment and consumables, and troubleshooting guidance are provided in the product-specific Instructions for Use (IFU) supplied with each shipment.

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Formulation Kits

Pre-optimized lipid mixtures that enable customers to encapsulate their own RNA cargo quickly and efficiently. Designed for ease of use and reproducibility, these kits help researchers achieve reliable formulation results without requiring specialized lipid formulation expertise. Engineered for flexibility across a wide range of research and development applications, NeoVac's kits provide a streamlined, accessible solution for RNA delivery studies and early-stage therapeutic development.

Standard Kit Component Matrix & Pricing

Every kit contains a precisely measured, high-purity blend of four critical architectural components: LipTx™ Proprietary Ionizable Lipid, Helper Lipid, Cholesterol, and Conjugated Lipid (PEG-lipid).

LNP formulation kits are available in multiple compositions optimized for different research applications. To ensure selection of the most suitable formulation, customers are encouraged to contact NeoVac's scientific support team to discuss their nucleic acid cargo, intended application, target tissue or cell type, and preferred route of administration. Based on this information, NeoVac will recommend the most appropriate formulation kit and lipid composition.

Note: All kits share the identical shelf life, storage environment, and RUO regulatory constraints as standalone lipids (see Section 3).

Standard Deliverables: Every shipment includes a Material Safety Data Sheet (MSDS), a Certificate of Analysis (CoA), and Instructions for Use (IFU). Regulatory Packages are available under a Confidential Disclosure Agreement (CDA).

Volume	Concentration	Price (USD)	Availability
2 mL	25 mM	950	On Stock (RUO)
5 mL	25 mM	1,950	On Stock (RUO)
10 mL	25 mM	2,980	On Stock (RUO)

Kit Selection Matrix

Catalog Number	Product Name	Included Core Ionizable Lipid
NV1002FK	LipTx™ NV1-002 Formulation Kit	LipTx™ NV1-002
NV1012FK	LipTx™ NV1-012 Formulation Kit	LipTx™ NV1-012
NV2004FK	LipTx™ NV2-004 Formulation Kit	LipTx™ NV2-004
NV2011FK	LipTx™ NV2-011 Formulation Kit	LipTx™ NV2-011
NV3001FK	LipTx™ NV3-001 Formulation Kit	LipTx™ NV3-001
NV3006FK	LipTx™ NV3-006 Formulation Kit	LipTx™ NV3-006

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Engineering Services

From Cargo to Clinic: Engineering RNA Delivery for Clinical Success

NeoVac provides comprehensive engineering services designed to accelerate the development of LNP formulations while reducing technical risk throughout the product lifecycle. NeoVac's development programs are built upon a proprietary LNP platform that has successfully progressed through Phase I/II clinical evaluation, demonstrating favorable tolerability while maintaining biological activity.

Core Service Offerings

Strategic Program Assessment & Custom Design

- Detailed scientific evaluation of the customer's therapeutic objective, RNA modality, target tissue, and intended route of administration.
- Establishment of a tailored Target Product Profile (TPP).
- Identification of critical quality attributes to generate customized LNP systems instead of one-size-fits-all solutions.

Formulation Development & Optimization

- Systematic tuning of lipid composition, RNA loading, N/P ratio, buffer systems, and manufacturing parameters.
- Focus areas include maximizing encapsulation efficiency, ensuring narrow particle size distribution, and achieving high physicochemical stability.
- Engineering tailored to preserve critical quality attributes throughout scale-up pipelines.

Fully Integrated Analytical Characterization

- Industry-standard evaluation of particle size, polydispersity, zeta potential, RNA encapsulation efficiency, lipid composition, purity, degradation products, and formulation stability.
- Internal development, tuning, and optimization of program-specific analytical methods to support quality control and regulatory filings.

Scalable Process Development & Tech Transfer

- Translation of laboratory-scale formulations into scalable, reproducible manufacturing workflows without compromising product quality.
- Systematic optimization of mixing conditions and process parameters.
- Scientific oversight and technical support to ensure successful technology transfer to GMP manufacturing facilities and external contract development and manufacturing organizations (CDMOs).

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Master Legal Notice & Technical Disclaimer

Application Disclaimer

All technical data, application suggestions, and product categorization tiers provided in this catalogue are for informational and screening guide purposes only. Due to the variable and highly sensitive nature of LNP formulation parameters (including but not limited to mixing methods, microfluidic configurations, cargo types, buffer conditions, and physiological targets), NeoVac makes no warranties, explicit or implied, regarding product performance or specific engineering/experimental outcomes.

Limitation of Liability

Customers and end-users assume all responsibility and risk arising from the selection, handling, formulation, and laboratory application of these materials or reliance on engineering services. NeoVac shall not be held liable for any failed formulations, experimental errors, degradation of cargo, loss of data, or any direct, indirect, incidental, or consequential damages resulting from the use of or reliance upon these suggestions or services.

For complete commercial terms – including payment, delivery, warranty, intellectual property, and liability provisions governing all purchases of NeoVac lipids, formulation kits, and engineering services – please refer to NeoVac's General Terms and Conditions, provided as a companion document to this catalogue.

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