A solution of
The Lipocoat Group

TECHNOLOGY BROCHURE

LipoCoat®

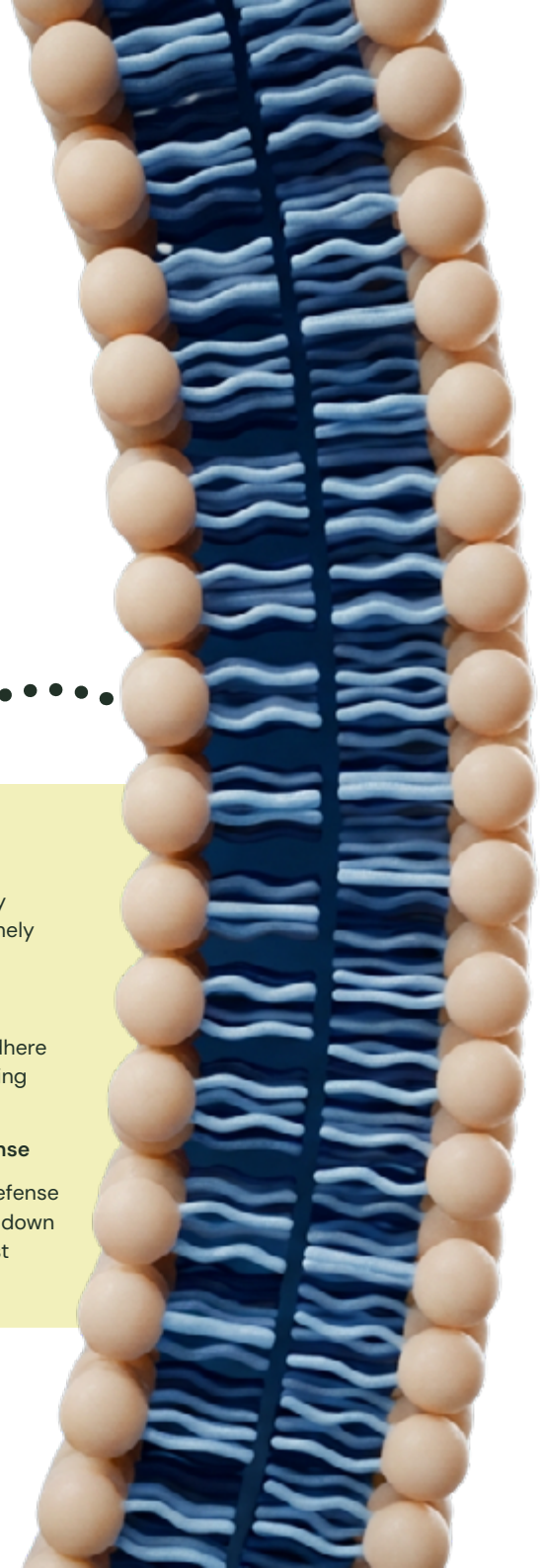
The world's first bio-inspired coating delivering high performance without API's, PFAS and Si.

Bio-inspired medical coatings

OUR TECHNOLOGY

World's first bio-inspired medical device coating.

LipoCoat® has developed a groundbreaking nanoscale medical coating inspired by nature. Our technology replaces persistent chemicals and active drugs with a passive, biocompatible barrier, creating a more durable coating that effectively prevents pathogen adhesion and biofilm growth. This innovation sets a new benchmark for medical device coatings.



Hydrophilic shield

The phospholipid heads actively attracts H_2O, creating an extremely smooth hydrophilic layer.

Anti-fouling

Bacteria and proteins cannot adhere to the slippery surface, preventing biofouling.

Mitigating foreign body response

By mimicking the body's own defense mechanisms, the coating slows down the biological reaction from host rejection.

Setting a new standard in medical device coatings.

Bio-inspired

LipoCoat® is the world's first bio-inspired medical coating engineered to mimic the human cell membrane. Our coating creates an ultra-smooth hydration layer on your medical instrument. This works like a shield, preventing pathogens from adhering to the surface.

Tailored to your specific product needs

Whether you need a thinner, smoother finish, or enhanced wettability and lubricity, we understand that every application has unique requirements. Thanks to the LipoCoat® platform technology, we can tailor our coatings to your exact specifications without altering the device's underlying mechanical properties or dimensions.

Effortless integration

LipoCoat® can be integrated on top of your existing product portfolio without the lengthy pharmaceutical classification processes. Furthermore, the coating requires no specialized handling, utilization, or disposal protocols, facilitating seamless integration into existing manufacturing workflows.

Free of PFAS and Si

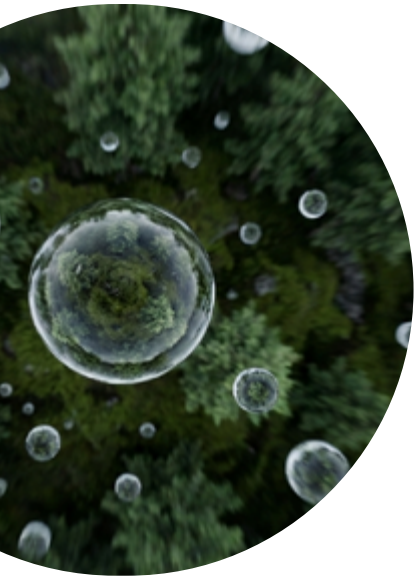
We refuse to rely on persistent chemicals. Instead, we help you future-proof your portfolio with a bio-inspired coating that delivers the same performance, but without the risk of regulatory bans.

Minimizing flaking risks

Conventional hydrophilic coatings can flake off, potentially causing serious clinical complications. Our platform technology is designed to fundamentally address this challenge by choosing natural lipids instead of synthetic hydrogels.

No active chemicals

Active coatings may kill bacteria today, but they accelerate the development of resistant strains tomorrow. This creates a growing regulatory and reputational risk. LipoCoat® offers a fundamentally different approach. Instead of actively killing bacteria, it provides a passive barrier that prevents bacterial adhesion, without relying on active or synthetic chemicals. This means no contribution to antimicrobial resistance, and no exposure to the regulatory uncertainty that comes with it.



We do things differently

We believe that bio-based coatings will ultimately adapt better to the human immune system than synthetic chemicals. By combining cell biology with nanotechnology, we developed the world's first bio-inspired coating that is completely free of toxic or synthetic chemicals.
Smooth, thin, safe, and durable.

How does a bio-inspired approach outperform traditional medical coatings?

To understand the impact of LipoCoat® platform technology, it is essential to compare its mechanical and biological properties with existing industry standards. Discover how our coating compares to traditional solutions across key performance indicators below.

	• Active coatings	• Synthetic coatings	• LipoCoat® coating
Material composition	Antimicrobial agents (e.g., silver ions/ nanoparticles, chlorhexidine, API conjugates)	Synthetic hydrophilic polymers or fluoropolymers (e.g., PVP, Polyacrylamide, PTFE)	Endogenous phospholipid-based lipid matrix (biomimetic formulation)
Spatial profile	Macroscopic / variable dimensions.	Micrometric & fluctuating (10 to >100 µm).	Nanoscale (from a single layer of 5 nm. up to multiple layers).
Mechanism of Action (MoA)	Antimicrobial/ bactericidal action via active substance elution or contact killing	Hydration layer or low-surface-energy barrier reducing bacterial adhesion.	Biomimetic phospholipid hydration shield providing passive anti-fouling (non-biocidal)
Integrity & tolerance	Risk of Antimicrobial Resistance (AMR).	High risk of flaking (delamination) under friction.	Low risk: nanolayer coating, bio-based, Biocompatibility evaluated according to ISO 10993-1 endpoints
Ease of integration	Complex integration and demands high investments	Intensive, multi-step integration required	Simple dip-coating process at room temperature. No UV-curing needed

Validate LipoCoat® and upgrade your portfolio.

Connect with our engineering team to set up a pilot and see exactly how our coating performs under your specific testing parameters. Our coating can be easily tested without special procedures for handling, use, or disposal.

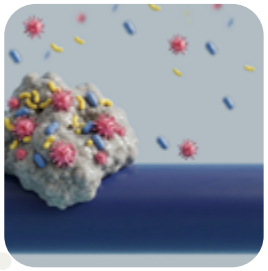
Request an R&D sample kit via our website:

RESULTS

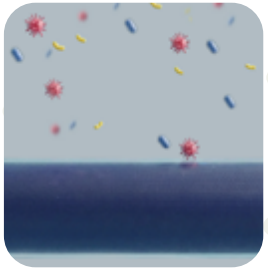
Safe by design

LipoCoat® improves medical devices by passively. It eliminates the need for antibiotics or toxic agents that drive antimicrobial resistance (AMR). Similar to our own cell biology, our platform creates a smooth hydrophilic layer that acts as a natural anti-adhesion barrier, reducing the chance of pathogens and proteins attaching. All without synthetic substances, such as API, Si and PFAS.

Uncoated



LipoCoat®



In *in vitro* tests under static conditions (ASTM E3151 mod.), common clinically relevant pathogens were unable to colonize LipoCoat®-treated surfaces. While uncoated controls showed dense microbial colonization, the coated surfaces remained completely biofilm-free.

Anti-fouling performance under physiological flow

The LipoCoat® coating technology offers long-lasting anti-fouling protection, even under dynamic flow conditions that closely mimic human blood circulation. In an in vitro blood flow model (7.5 dyn/cm^2), clinically relevant pathogens exhibited a significantly reduced initial attachment to LipoCoat®-coated central venous catheters, demonstrating the coating's strong resistance to microbial colonization. When compared to uncoated control samples, LipoCoat®-treated surfaces sustained near-complete inhibition of biofilm formation for up to 29 days under continuous exposure.

0%

API, Si and PFAS

up to

99%

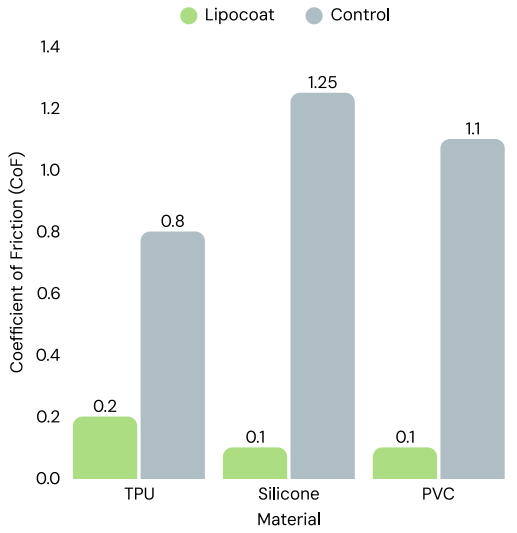
Reduction of bacterial adhesion

Lower friction than conventional solutions.

Our hydrophilic coating technology forms a nanoscale surface with an exceptionally low contact angle. This drastically cuts the insertion force needed for medical devices like needles and CVC catheters. *In vitro* tests show that our coating significantly reduces friction across various polymer materials. On stainless steel needles, our coating outperforms conventional silicone oil under wet conditions.

Discover more lab insights in our application paper:

www.lipocoat.com



Regulatory and certification

Our platform technology has been extensively tested according to ISO 10993-1 standards, guaranteeing it contains no active or harmful substances. LipoCoat® act as a passive, biocompatible barrier. This makes the regulatory approval process for your devices much simpler.

Since certification needs differ by device type and use, we supply all our compliance documentation in digital format.

Read more at: www.lipocoat.com/regulatory

APPLICATIONS

Use cases

As the medical device industry transitions away from legacy chemical coatings, LipoCoat provides a regulatory-compliant, PFAS-free roadmap for your products. Together, we can engineer safer solutions across diverse medical applications.

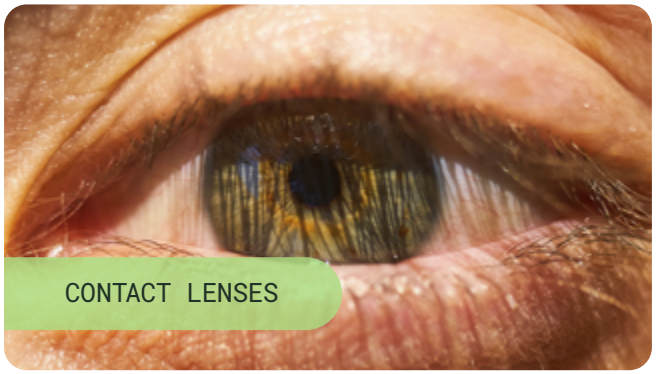
Reducing biofilm formation without active chemicals

Catheters represent one of the primary vectors for hospital-associated infections (HAIs), which impose a massive financial and human toll on global healthcare systems. One of the key challenges is preventing biofilm formation on these devices. While antimicrobial coatings can address this issue, they unfortunately drive bacterial resistance.

In contrast to other coatings on the market, LipoCoat® provides **a passive, drug-free solution to reduce biofilm formation**. No harsh chemicals, pharmaceuticals, or active compounds are processed into the final product. The LipoCoat® platform technology is uniquely suited for cardiovascular and urological catheters, effectively **preventing protein adsorption (thrombosis control) and offering low friction** to minimize tissue trauma. In fact, cardiovascular catheters utilizing our coating are already TFDA-approved and on the market.

COATING: CATHETER

- UP TO 30 DAYS
- 500 NM. COATING THICKNESS
- SINGLE USE
- ON THE MARKET



Improved patient comfort and safety

The coating of LipoCoat® fundamentally alters how lens materials interact with the tear film to **maximize both safety and comfort**. By increasing surface wettability, our coating ensures a stable, continuous layer of moisture remains on the lens throughout the day. Simultaneously, it significantly enhances surface lubricity, minimizing mechanical friction between the eyelid and the lens during blinking.

Beyond comfort, the safety profile is dramatically improved by **reducing surface contamination**. Tests demonstrate that lenses coated with LipoCoat® prevents protein deposits on contact lenses and supports the eye's natural defense system. LipoCoat® binds and stabilizes the body's enzyme lysozyme, allowing the eye's natural antibacterial shield to keep working.

COATING: CONTACT LENSES

- UP TO 6 MONTHS
- 5 NM. COATING THICKNESS
- REUSABLE
- ON THE MARKET

Enhanced lubricity without using silicone.

LipoCoat® provides a toxic-free alternative to standard lubricants. The impending restrictions on the use of persistent chemicals means that many medical products need to consider alternative coatings. However, it has proven difficult to find the right alternative, as many strict criteria must be perfectly matched.

LipoCoat® can serve as an alternative to silicone-treated needles. Our bio-inspired coating forms a **hydrophilic shield**. This hydrophilic property enhances patient comfort. It achieves immediate, dry friction reduction comparable to silicone treated needles.

COATING: NEEDLE

- TRANSIENT USE
- SINGLE USE
- IN DEVELOPMENT

FAST: The one-step integration process

To apply our coating to medical devices, we utilize a proprietary technology called Fast Amphiphile Solution Transfer (FAST). This integration approach is highly efficient, requiring **no heating, curing, or intense UV light.** Instead, a **single, simple dip** instantly creates a uniform layer. Remarkably, the coating's thickness is controlled by the molecules within the liquid itself, rather than the application process. Thanks to this straightforward nature, LipoCoat® can be seamlessly integrated into existing manufacturing lines without major modifications.

APPLICATION STEPS

CLEAN ····· SINGLE DIP ····· DRY

- ALL AT ROOM TEMPERATURE
- NO PRIMER OR UV CURING NEEDED

ABOUT US

About us

We founded "*The Lipocoat Group*" with a clear mission: to solve complex medical challenges without using harmful substances. What began as an in-depth study into the functioning of human cell membranes evolved into an innovative coating technology entirely free of active or toxic substances. In less than ten years, The Lipocoat Group has grown to develop, manufacture, and sell multiple medical coating solutions worldwide.

Our platforms:

- LipoCoat®
- SonoCoat®

- Based in Enschede, The Netherlands
- Internal R&D Center
- Internal production & test facility
- 1000 m² R&D, cleanroom, laboratory, and production facility
- ISO 13485:2016

Services

Beyond coatings, Lipocoat provides expert analytical services to quantify (bio)materials, medical devices, and coatings using ASTM- and ISO-aligned standards. We deliver precise, traceable data to support regulatory compliance, optimize surface performance, and ensure product quality and safety for medical applications.

- SURFACE MEASUREMENTS
- BIOCOMPATIBILITY
- MICROBIAL EVALUATION
- FRICTION TESTING

Partner up

Ready to experience our unique coating technology? Partner with our team to accelerate your product evaluation.

Patient safety and comfort

- Bio-inspired, biocompatible, and free of API's, PFAS or Si.
- Nanoscale hydrophilic coating
- Reduced friction and bacterial adhesion

Competitive pricing model

- No expensive specialized tooling required.
- Minimal material consumption during application.
- Reduction in overall OPEX.

Operational safety

- Fully biodegradable.
- Non-halogenated waste streams.
- Safe to operate in standard cleanroom or production environments.

Low barrier to entry

- No pharmaceutical classification required
- No curing or complex equipment required
- Compatible with standard dip coating at room temperature.

Ready to evaluate our coating?