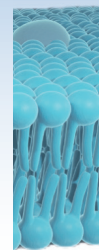


Collaborating with

**AdipoGen<sup>®</sup>**  
LIFE SCIENCES



## Lipodisq<sup>™</sup> Styrene: Maleic Acid Copolymer [SMA]

### Toolkit for Drug Delivery of API and for Membrane Protein Study

Lipodisq<sup>™</sup> reagents are novel polymers containing styrene and maleic acid monomer units. Lipodisq<sup>™</sup> polymers are capable of forming nano-sized lipid-based discoidal particles (nanodiscs or SMA-Lipid Particles / SMA-LP) suitable for incorporating membrane proteins [1]. The Lipodisq<sup>™</sup> technology can solubilize commonly used lipids such as dimyristoylphosphatidylcholine (DMPC) with hydrophobic active ingredients (API) without the use of detergents [2]. Lipodisq<sup>™</sup> particles, also referred to within scientific literature as SMALPs [3] or Native Nanodiscs [4], typically have a diameter of 9–10 nm.

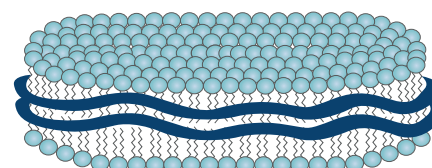
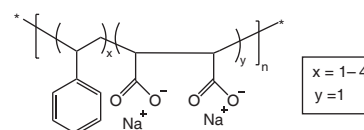


FIGURE: Lipodisq<sup>™</sup> Nanoparticle drug delivery system.

**LITERATURE REFERENCES:** [1] Mechanisms of Formation, Structure, and Dynamics of Lipoprotein Discs Stabilized by Amphiphilic Copolymers: A Comprehensive Review: P.S. Orekhov, et al.; Nanomaterials **12**, 361 (2022) • [2] Applications of Synthetic Polymer Discoidal Lipid Nanoparticles to Biomedical Research: M. Tanaka; Chem. Pharm. Bull. **70**, 507 (2022) • [3] Understanding the Structural Pathways for Lipid Nanodisc Formation: How Styrene Maleic Acid Copolymers Induce Membrane Fracture and Disc Formation: V.A. Bjornestad, et al.; Langmuir **37**, 6178 (2021) • [4] Physico-chemical Characterization, Toxicity and In Vivo Biodistribution Studies of a Discoidal, Lipid-Based Drug Delivery Vehicle: Lipodisq Nanoparticles Containing Doxorubicin: M.L. Torgersen, et al.; J. Biomed. Nanotechnol. **16**, 41 (2020)

PRODUCT NAME	PID	PH (5%) IN WATER	FUNCTIONAL PH RANGE IN BUFFER	M <sub>w</sub>	M <sub>n</sub>
Lipodisq <sup>™</sup> Styrene: Maleic Acid Copolymer 1:1 [SMA-100] (pre-hydrolyzed)	IAX-700-201	4.25 +/- 0.25	3.50 – 5.50	5,500	2,100
Lipodisq <sup>™</sup> Styrene: Maleic Acid Copolymer 2:1 [SMA-200] (pre-hydrolyzed)	IAX-700-202	7.00 +/- 0.25	5.50 – 8.00	7,500	2,700
Lipodisq <sup>™</sup> Styrene: Maleic Acid Copolymer 3:1 [SMA-300] (pre-hydrolyzed)	IAX-700-203	7.50 +/- 0.25	6.00 – 9.00	9,500	3,050
Lipodisq <sup>™</sup> Styrene: Maleic Acid Copolymer 4:1 [SMA-400] (pre-hydrolyzed)	IAX-700-204	9.25 +/- 0.25	8.50 – 10.50	10,500	4,500

Poly(Styrene-maleic acid) Structure



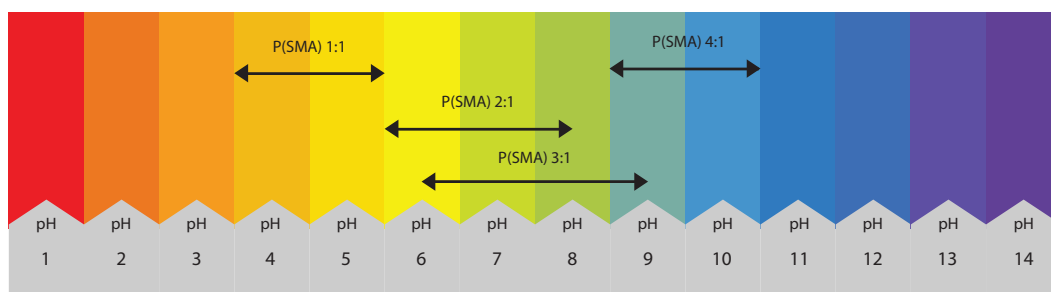
Lipodisq<sup>™</sup> is a proprietary technology developed by Malvern Cosmeceutics Limited and is subject to granted international patents.

Lipodisq<sup>™</sup> is a registered trademark of Malvern Cosmeceutics Limited.

For more Products see **Backcover**

## Selecting Your Lipodisq™ Polymer Reagent:

For ease of use, all grades of Lipodisq™ polymer reagents are available as Poly(styrene-maleic acid) in a pre-hydrolyzed form, and are readily soluble in aqueous solutions.



To maximize membrane protein stability and experimental success, Lipodisq™ polymers are available in 4 defined structures. The ratio of styrene and maleic acid is tailored to allow the user to produce Lipodisq™ particles within the optimum pH range for their chosen protein of study. Lipodisq™ polymers cover an operational range of pH 3.50–10.50 depending on S:MA acid ratio.

## Generating Customized Nano-Particle Sizes:

Adjusting Lipodisq™ solutions to the extremes of their optimal pH range enables Lipodisq™ particles to be formed with an increased particle size to accommodate larger membrane protein complexes.

## Lipid Compound Tested for Lipodisq™ SMA-formulation:

PRODUCT NAME	PID	SIZE
DMPC (1,2-Dimyristoyl-sn-glycero-3-phosphocholine) (14:0 PC)	IAX-700-400	50 mg   5 x 50 mg   1 g

Lipodisq™ are nanosized lipid-based discoidal particles that can be manufactured with P(SMA) and lipids such as DMPC (14:0 PC) (Prod. No. IAX-700-400) to incorporate hydrophobic, poorly water-soluble active compounds, such as peptides, lipids, lipoproteins, transmembrane proteins and glycolipids.

## Ready-to-use and Size-certified Nano-formulated Compounds Powered by Lipodisq™:

**Exclusive!**

PRODUCT NAME	PID	SIZE
Lipodisq™ Control Sterile Solution	IAX-700-100	1 ml
Curcumin (high purity) Lipodisq™ Sterile Solution	IAX-700-101	1 ml
Melatonin Lipodisq™ Sterile Solution	IAX-700-102	1 ml
Metformin Lipodisq™ Sterile Solution	IAX-700-103	1 ml
Oxyresveratrol Lipodisq™ Sterile Solution	IAX-700-104	1 ml
Resveratrol Lipodisq™ Sterile Solution	IAX-700-105	1 ml
Umifenovir Lipodisq™ Sterile Solution	IAX-700-106	1 ml
Dexamethasone Lipodisq™ Sterile Solution	IAX-700-107	1 ml
Ambroxol Lipodisq™ Sterile Solution	IAX-700-108	1 ml
<b>NEW</b> Retinoic Acid Lipodisq™ Sterile Solution	IAX-700-109	1 ml
Custom Lipodisq™ Sterile Solution	Contact Innaxon for further information.	

All API are formulated at 1 mg/ml in Lipodisq™ Sterile Solution (low endotoxin).