

# PhytoSquene®

Your plant-derived squalene for parenteral applications



**PhytoSquene®** is our non-animal-derived squalene that can be used in vaccines and other pharmaceutical applications.

**Squalene** is a natural organic molecule that is used in a range of applications including cosmetics, nutraceuticals and pharmaceuticals. In the healthcare industry, squalene is used in parenteral drug delivery as a component in adjuvant systems where it works as an additive that stimulates the body's immune response to the active ingredient in a vaccine.



### Plant-derived Squalene

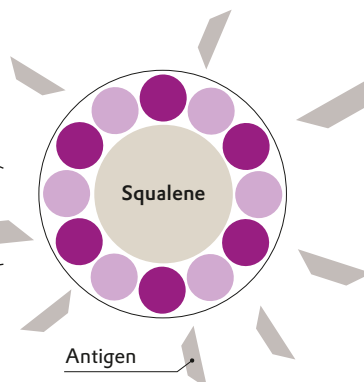
Extraction from Amaranth oil

PhytoSquene®







### Animal-derived Squalene

Extracted from shark liver oil



## Why is animal-derived squalene problematic?

Biodiversity/ ecosystems	Contamination	Quality	Supply chain
			
Unable to meet the growing demand for biopharmaceuticals	Many fish and sharks are highly contaminated with methylmercury	Batch-to-batch variation	Pharma-grade GMP squalene is limited
Many shark populations are listed as endangered species	Bioaccumulative environmental toxicant	Variation in quality of raw materials	Traceability is limited
Sharks are essential for ecosystems	Regulatory processes can be difficult	Variation in purity of raw materials	Inconsistency in raw material supply
		Regulatory concerns over pathogens / bioburden	

**PhytoSquene®** is manufactured from amaranth oil using a proprietary manufacturing process carried out in Germany. *Amaranth* (*Amaranthus caudatus*) is an herbaceous plant cultivated in many regions of the world. Amaranth oil is extracted from the amaranth seed via supercritical CO<sub>2</sub> production.

### Benefits of PhytoSquene®

#### PLANT DERIVED

#### CONSISTENT QUALITY

#### SUPPLY SECURITY

- Protects life below water
- Preserves biodiversity
- Renewable raw materials
- Consistent quality and high purity
- Compliant with Ph. Eur. specifications
- Supply chain reliability
- Large-scale manufacturing

### We provide PhytoSquene® for your formulation needs.

Get in touch today for more information and to request your sample [healthcare@evonik.com](mailto:healthcare@evonik.com)

This information and all further technical advice are based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used.

#### Evonik Operations GmbH Health Care Business Line

Kirschenallee | 64293 Darmstadt Germany  
Phone +49 6151 18-4019  
Fax +49 6151 18-3520

[healthcare@evonik.com](mailto:healthcare@evonik.com)  
[www.evonik.com/healthcare](http://www.evonik.com/healthcare)