

# FISHMEAL AND FISH OIL

## Strategic and sustainable marine ingredients

Raw fish and trimmings are boiled, separated, dried and grinded into fishmeal and fish oil.

100 kg of raw material can produce 20 kilos of fishmeal and 5 kilos of fish oil.

EU fishmeal members produce 10% of the world's fishmeal and 20% of the world's fish oil.



### SUSTAINABILITY



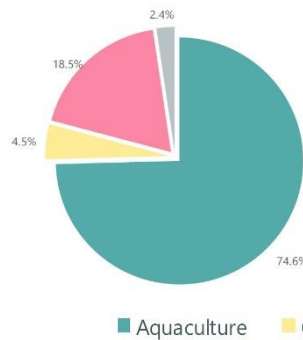
- Sustainable exploitation of natural resources based on biological advice
- No overfishing
- Fish stocks are within safe biological boundaries and closely monitored
- Use of fish with no or little demand for direct human consumption
- Use of rest raw material/trimmings from filleting industry
- Stocks and factories are certified by independent third parties
- Complies with IFFO RS, MSC and FAO Code of Conduct
- Primarily used in aquaculture-production, which has a low environmental footprint compared to e.g. beef and pork

### HIGH QUALITY PRODUCTS

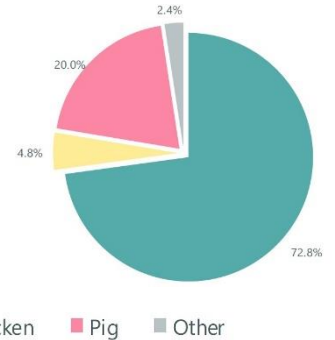


- Raw material freshness
- Modern vessels with cooling equipment
- Pelagic fishing with minimal impact on ecosystems
- Full traceability to verify species and origin
- Safety ensured by meeting all legislative requirements
- Quality testing is performed all the way from catch to customer ensuring that all products are in accordance with the highest standards
- Production is performed in respect for the use of valuable marine resources and certified according to ISO standards

Use of fishmeal by market in 2018



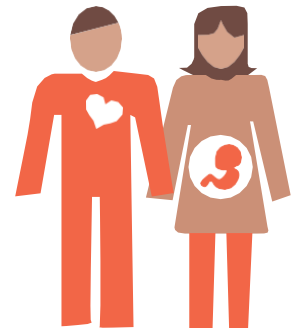
Use of fish oil by market in 2018



### HEALTH BENEFITS

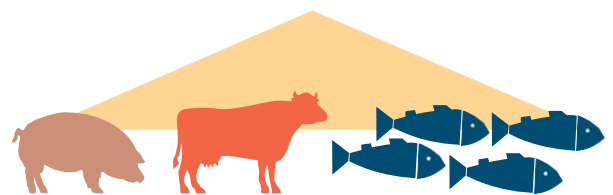
Fishmeal and fish oil provide a balanced amount of all essential amino acids, minerals, phospholipids and omega-3 fatty acids (DHA and EPA) and help bring those into the human food chain.

EPA and DHA are central components in all cell membranes - particularly important for the development of the brain and vision early in life. EPA and DHA contribute to the function of the heart, blood system and immune system.



- Reduce blood pressure
- Reduce risk of cardiac attack
- Reduce inflammation and formation of blood clots

### STRATEGIC FEED INGREDIENTS



Fishmeal and fish oil are, without comparison, the most valuable ingredients in diets for aquaculture and many land-farmed animals. The composition of micronutrients, including amino acids, vitamins and minerals support the growth and optimal physiological function of animals and farmed fish, making fishmeal and fish oil indispensable feed ingredients.

- High protein content of 62 to >70 %
- Rich in long chain omega-3 fatty acids EPA and DHA
- Contain minerals: calcium, phosphorus, magnesium, potassium and selenium
- Contain vitamins: B1, B2, B6 and B12
- Comparatively high digestibility

# Why fishmeal and fish oil are sustainable

- Fishmeal and fish oil are produced mainly from small, short-lived fish with little or no potential for direct human consumption as well as from recycled trimmings from fish processing for human consumption.
- The major species used to produce fishmeal and fish oil in Europe are capelin, sandeel, blue whiting, sprat, Norway pout and boarfish.
- The production is always based on a sustainable exploitation of natural resources. All fish stocks used to produce fishmeal and fish oil in European countries are subject to strict catch limitations. The total allowable catches (TACs) are based on biological advice and under strict governmental regulation.
- A growing amount of raw material comes from recycled trimmings. The fillet yield for most fish species varies between 30% and 65% of the mass of the fish, and the cut offs constitute a valuable resource for the fishmeal and fish oil producers. Europe is leading in optimizing the exploitation of these valuable marine resources.
- All EFFOP members meet the requirements of IFFO RS for the fisheries they are sourcing. These requirements include independent third-party inspections and certification, full traceability and responsible production.
- All fish stocks used as raw material by EFFOPI members are either IFFO RS compliant or MSC certified.
- All members of EFFOP support and implement the FAO code of conduct for responsible fisheries.
- Aquaculture production has a low environmental footprint compared to production of other foods e.g. beef and pork.
- Fishmeal as a protein ingredient competes openly with other protein sources. EFFOP recognizes that there is a need for other protein sources in agriculture and aquaculture feed to meet the global food demand. Alternatives should be equally sustainable and traceable.