Marine Oils

Ensuring consumer safety and market reputation

Marine oils (from fish, krill, and algae) are vital for nutrition primarily due to their high concentration of long-chain omega-3 polyunsaturated fatty acids, specifically EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid).

On the other side, marine oils are highly susceptible to persistent organic pollutants (POPs) and other environmental contaminants due to their chemical properties, specifically their lipophilic nature. Once POPs are released into the environment, they bioaccumulate in marine species like fish, krill or algae.

Refining processes intend to remove environmental contaminants. But it must be meticulously controlled to avoid producing unwanted processed contaminants.

Expertise of Eurofins

Being an experienced and reliable partner for ensuring quality and security of marine oil, Eurofins assists food and feed producing companies supervising the whole production stages from raw materials to intermediates to finished marine oil products.

Analytical portfolio

Composition and purity

- **Fatty acid profile**
  Determination of EPA, DHA, and full fatty acid spectrum
- **Triglyceride profile**
  Structural and compositional analysis
- **Sterols & tocopherols**
  Characterization of bioactive components

Environmental contaminants

- **Dioxins & Furans (PCDD/Fs)**
  Widespread POPs that bioaccumulate in marine organisms and are found in marine food chains.
  Highly sensitive screening of these persistent organic pollutants.
- **Polychlorinated biphenyls: DL-PCBs and NDL-PCBs or all 209 PCBs**
  Similar to PCDD/Fs widespread POPs
  Congener-specific analysis for safety evaluation
- **Flame retardants including polybrominated diphenyl ethers (PBDEs)**
  Industrial chemicals present at relevant concentrations in marine food webs

- **Per- and polyfluorinated alkyl substances (PFAS)**
  Emerging contaminants increasingly found in marine ingredients
- **Mercury and methylmercury**
  Highly toxic, especially in predatory fish, with methylmercury often in aquatic systems
- **Inorganic arsenic and total arsenic**
- **Other heavy metals, e.g. Pb, Cd**
  Can be found at high concentrations in marine ecosystems
- **Polycyclic Aromatic Hydrocarbons (PAHs)**
  These are highly toxic components found in crude oil, fuel, and lubricants, that are known to harmful effects on the behaviour, physiology and reproduction of fish.
- **Mineral Oil Hydrocarbons (MOH)**
  These include mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH), which originate from petroleum products, lubricating oils, and fuel emissions.
- **Pesticides and other POPs Screening**

Process contaminants

- **Oxidation products**
  Processing can lead to undesired oxidation products, such as fatty acid peroxides and aldehydes, resulting in rancidity, unpleasant odour, and discoloration.
  - Peroxide Value (PV)
  - Anisidine Value (AV)
  - Total Oxidation (TOTOX)
- **MCPD and related compounds**
  2- and 3-MCPD esters and glycidyl esters are processing contaminants formed during the deodorization phase of refining.
- **Plasticizers, e.g. phthalates**
  These can be formed if improper processing, such as overheating or over-refining, occurs

About us

- Private independent laboratory
- More than 40 years of experience
- Accreditation according to DIN EN ISO/IEC 17025:2018
- GOED member (Global Organization for EPA and DHA Omega-3s)
- IFFO member (The Marine Ingredients Organisation)
- Analyses acc. to common EU guidelines and regulations as well as California Proposition 65
- Continual successful participation in independent interlaboratory comparisons (national / international)
- Short turn-around times
- Enormous capacity (> 2000 samples / month)
- 24/7 tracking of samples and access to test results via Online Service (EOL) after online sample registration

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