

More Than Fat: How Spray-Dried Egg Supports Aqua Feed Extrusion

August 2026, Number 103



Keywords:

Exwin 46, whole egg powder, spray drying, fat, extrusion performance, pellet quality, functionality, lubrication.

Extrusion Is Becoming More Demanding

As aquaculture feed formulations continue to evolve, extrusion has become a critical part of producing consistent, stable and high-quality pellets.

In this environment, the technological properties of individual ingredients can be just as important as their nutritional composition. Among these properties, the behaviour of dietary fat during extrusion deserves particular attention.

When Fat Becomes a Processing Advantage

Recent research has demonstrated that increasing fat inclusion can reduce energy consumption during feed compaction through the formation of a fat-enriched lubrication layer. However, the effect depends on the source, level and physical form of the fat. Excessive free fat can reduce mechanical energy transfer and pellet strength, making the way fat enters the feed matrix an important consideration.

Why Spray-Dried Fat Is Different

Unlike free liquid oils, spray drying converts an oil-containing emulsion into a dry powder in which the lipid is distributed within a solid particle matrix. The process can produce small, highly dispersed particles and allows the physical characteristics of the resulting fat-containing powder to be controlled through the emulsion and drying conditions.

Research on spray-dried lipid systems has demonstrated that spray drying can produce encapsulated lipid particles with controlled physical characteristics, rather than simply introducing free oil into the formulation.

For this reason, a high crude-fat value in a spray-dried ingredient should not automatically be interpreted as equivalent to adding the same amount of free oil.

From Processing to Pellet Quality

Lipids are part of a important balance: excessive lubrication can reduce friction, mechanical energy transfer and die pressure, affecting starch gelatinization, expansion and the final physical properties of the pellet.

This makes the physical form of fat particularly relevant. A well-designed spray-dried ingredient can introduce its lipid fraction as part of a dry, structured matrix rather than as an immediately available pool of free oil.

The potential benefits extend beyond the extruder itself: consistent processing, controlled fat distribution and the resulting pellet characteristics are all important considerations when selecting raw materials.

The Exwin46 Advantage

Exwin46 Spray Dried Whole Egg Powder naturally contains a significant amount of egg-derived fat, that is incorporated into a spray-dried whole-egg matrix.

Its fat is delivered as part of a spray-dried, dry-matrix ingredient that can contribute to the processing functionality of the complete feed; which should not be viewed simply as a high-fat ingredient

As aquafeed formulations continue to move toward higher energy density and increasingly complex raw material combinations, understanding how fat is delivered—not simply how much fat is present—can provide an important advantage in extrusion and pellet production.

References:

- Pennells, J., Salini, M., Rombenso, A., Simon, C., & Ying, D. (2025). *The State-of-the-Art of Aquafeed Extrusion: Mechanisms, Challenges and Opportunities*. *Reviews in Aquaculture*, 17, e70002. <https://doi.org/10.1111/raq.70002>
- Bastiaansen, T.M.M., Verge-Mèrida, G., Benders, R.T., Dijkman, J.A., Thomas, M., Hendriks, W.H., de Vries, S., Devant, M., & Bosch, G. (2025). *The lubricating effect of fats on pellet manufacturing*. *Animal Feed Science and Technology*, 326, 116390. <https://doi.org/10.1016/j.anifeedsci.2025.116390>
- Mujica-Álvarez, J., Gil-Castell, O., Barra, P.A., Ribes-Greus, A., Bustos, R., Faccini, M., & Matiacevich, S. (2020). *Encapsulation of Vitamins A and E as Spray-Dried Additives for the Feed Industry*. *Molecules*, 25(6), 1357. <https://doi.org/10.3390/molecules25061357>
- Drusch, S., & Berg, S. (2008). *Extractable oil in microcapsules prepared by spray-drying: Localisation, determination and impact on oxidative stability*. *Food Chemistry*, 109(1), 17–24. <https://doi.org/10.1016/j.foodchem.2007.12.016>