

# Emulsifier technology for effective feed production



Extrusion

bredol®

Nouryon



# Value-added production of extruded feed with Bredol emulsifier

The use of Bredol emulsifier in the extrusion process gives a multitude of benefits

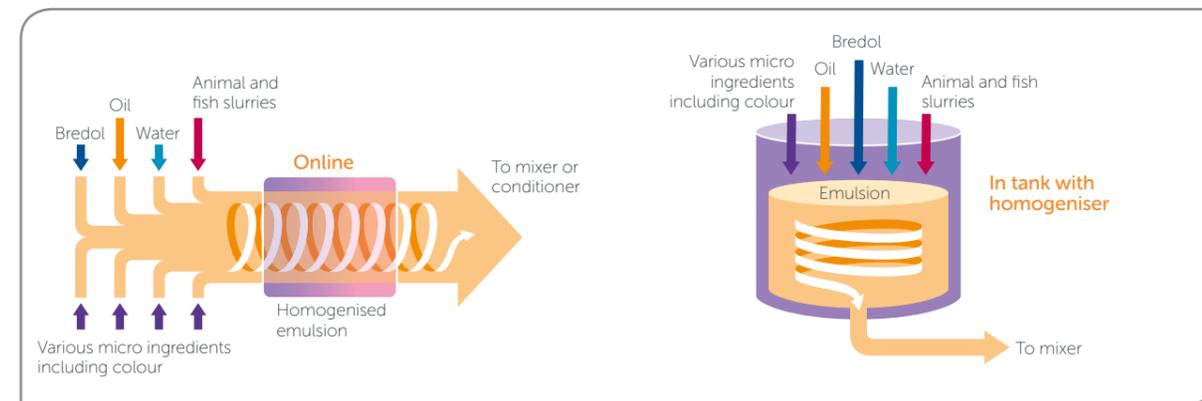
The water is better distributed and absorbed which improves heat transfer and conditioning in the meal. The amount of water needed for the extrusion process can be reduced which means lower drying costs and better finished product quality. The possibility of adding water and oil in emulsion form means improved distribution of both liquids.

An improved plastic effect is achieved which leads to smooth production without variability and better extruder capacity. In many cases it is possible to considerably increase the production speed. Apart from increasing capacity there is added flexibility to

produce feed of a desired density. This can influence the floating characteristics of aqua culture feed and permit more consistent package filling in pet foods.

The use of liquid components becomes easier with Bredol emulsifier. Fat and water and other ingredients form a fine mix which will be evenly distributed and absorbed in the meal leading to smoother production. High viscosity products become more manageable. Micro ingredients are better dispersed or dissolved and better utilised. In practice, the addition can be achieved through online mixing or via a tank with homogeniser.

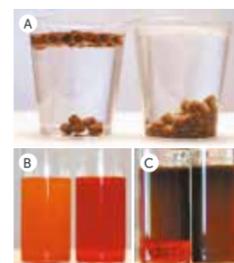
## Examples of liquid concepts



## After treatments

Bredol is used in various types of after treatment.

- A. Sinkability** Certain fish pellets which tend to float even after process adjustments can be coated by oil and Bredol improving the wetting ability and hence the sinkability
- B. Pigment solubility** The pigment solubility has been increased by help of Bredol
- C. Palatability – digest** Example of unstable digest which has been stabilised.



### With Bredol

Homogeneous mixture of water and oil

Homogeneous mixture of liquids evenly distributed and absorbed in the meal

Water in oil emulsion micelle

Low water requirement for conditioning means less drying after extrusion

Fully conditioned meal

Even dry surface

Effective water and steam distribution giving uniform expansion and good structure

### Without Bredol

Water and oil separated

Lumps in the meal due to uneven distribution of liquids

Water and oil added separately

High water requirement. High drying costs after extrusion

Partly conditioned meal

Uneven wet surface with breakout

Poor water and steam distribution causing uneven expansion

## Typical advantages in production

Improvements experienced using Bredol in Pet and Fish food extrusion trials at institutes and many other commercial sites;

- 10 to 30% output increase
- 15 to 30% water reduction leading to reduced drying costs
- 8 to 20% extruder power reduction
- Increased product quality and better control of density

Results will be dependant on product type, raw materials, and machine configuration.

Contact us directly for detailed product information  
and sample request at [bredol@nouryon.com](mailto:bredol@nouryon.com)

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