



# GEMMA Micro

The complete nutrition for all lifestages of zebrafish



[www.zebrafish.skrettingusa.com](http://www.zebrafish.skrettingusa.com)



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## Complete nutrition for all lifestages of zebrafish (*Danio rerio*)

**GEMMA Micro** is formulated with a high percentage of soluble hydrolysed marine proteins, HUFAs, phospholipids and algae resulting in each particle exhibiting a green colour. **GEMMA Micro** is a highly stable feed exhibiting excellent physical characteristics.

**GEMMA Micro** has been documented to improve fecundity, eliminate Artemia and reduce feeding frequency to only one event per day upon feeding GEMMA Micro 300.

**GEMMA Micro** is a non GMO product according to EC regulation 1829/2003.

### Composition

Product	Size (µm)	Protein (%)	Oil (%)	Ash (%)	Fiber (%)	Phosphorus (%)
GEMMA Micro 75	50-100	59	14	14	0.2	1.3
GEMMA Micro 150	100-200	59	14	14	0.2	1.3
GEMMA Micro 300	200-500	59	14	14	0.2	1.3
GEMMA Micro 500	400-700	59	14	14	0.2	1.3

### Feeding Recommendations

GEMMA Micro 75 can be fed at 5 days post-fertilization to zebrafish larvae, ad libitum at a minimum of 3x times daily. Transition to GEMMA Micro 150 at 18 days post-fertilization or thereabouts and feed ad libitum 3x daily until transition to GEMMA Micro 300 at 31 days post fertilization or thereabouts. We recommended feeding twice daily to sub-adults and once daily for adults and adult spawners. GEMMA Micro 300 is of sufficient size to feed adult fish, however, some programs transition to GEMMA Micro 500 during the adult stage depending on their housing.

### Storage & Packaging

**GEMMA Micro** should be fed out within 24 months from date of manufacture and should be stored in a cool (max 20°C), dark and dry place. Opened **GEMMA Micro** bags should be used within one month, sealed and refrigerated.

**GEMMA Micro** is packaged in special aluminum/polyethylene bags under modified atmospheric conditions.



While every effort is made to ensure accuracy, the information provided in this sheet is only a guideline and Skretting reserves the right to modify it without prior notice. To read Skretting's Terms and Conditions of Sale, please visit our website: [www.skretting.ca/](http://www.skretting.ca/) [www.skretting.us](http://www.skretting.us)



# GEMMA Micro

GEMMA Micro provides for 100% Artemia replacement

GEMMA Micro improves fecundity

GEMMA Micro reduces the requirement for multiple feedings to only one event per day upon using GEMMA Micro 300

GEMMA Micro provides for greater survival rates when compared to programs using live feed



## Feed Rate Recommendations

Life Stage	Age (dpf*)	Weight (grams)	Recommended Product	Total Daily Feed Rate (% biomass/day)	Total Daily Feed per 10 fish (grams/day)	Recommended Feedings Times/day
Fry	5-17	0.001-0.02	GEMMA Micro 75	25.0-20.0	0.003-0.040	3
Juvenile	18-30	0.02-0.07	GEMMA Micro 150	20.0-13.0	0.040-0.090	3
Sub-Adult	31-55	0.07-0.22	GEMMA Micro 300	13.0-7.0	0.090-0.154	2
Adult (1)	56-100	0.22-0.6	GEMMA Micro 300	6.0-1.2	0.132-0.072	1
Adult (1) Spawning	56-100	0.22-0.6	GEMMA Micro 300	9.6-4.8	0.211-0.288	1
Adult (2)	100-150	0.6-0.8	GEMMA Micro 300/500	2.0-1.0	0.120-0.080	1
Adult (2) Spawning	100-150	0.6-0.8	GEMMA Micro 300/500	4.9-4.3	0.294-0.344	1

\*dpf=days post fertilization

## GEMMA Micro Packaging

Product	Bag Size		Case Size	
	0.5kg	2.5kg	14kg (28 x 0.5kg)	20kg (8 x 2.5kg)
GEMMA Micro 75	x		x	
GEMMA Micro 150	x	x	x	x
GEMMA Micro 300	x	x	x	x
GEMMA Micro 500		x		x

# GEMMA Micro - A FEED FOR ALL LIFESTAGES OF ZEBRAFISH

## Frequently Asked Questions

### 1. Must GEMMA Micro 75 and GEMMA Micro 150 be co-fed with paramecium or rotifers?

GEMMA Micro provides for 100% replacement of any requirement for live feed. For those who prefer to first feed rotifers, then GEMMA Micro 75 can be introduced as a co-feed with removal of rotifers upon transition to GEMMA Micro 150.

### 2. What studies validate GEMMA Micro as a complete diet for all life stages of zebrafish?

Lawrence, Best, James and Maloney. The effects of feeding frequency on growth and reproduction in zebrafish (*Danio rerio*). *Aquaculture* 368-369 (2012) 103-108.

The Successful Elimination of Live Food from a High Throughput Zebrafish Facility. Carrie Barton, Sinnhuber Aquatic Research Laboratory, Oregon State University, USA. In preparation. (Presented at Aquaculture America 2015).

### 3. How does GEMMA Micro compare to Artemia with respect to spawning success and fecundity?

When compared to control groups fed Artemia + dry diets, treatments fed only GEMMA Micro 300 resulted in higher breeding success with more embryos produced per spawn, and a significantly greater lifetime embryo production.

### 4. Can GEMMA Micro simplify laboratory processes and reduce costs?

GEMMA Micro can save on the direct cost of consumables (Artemia cysts and algae), but also on all the associated labor in maintaining these processes in the laboratory. The capacity of the live feed preparation room no longer dictates the usable area for housing fish.

### 5. Is GEMMA Micro sterilized?

GEMMA Micro is manufactured and packaged under strict hygienic controls where the bags are nitrogen flushed creating modified atmospheric conditions but it is not irradiated or certified sterile. Please call us for additional information.

### 6. Can I "wet" feed GEMMA Micro, or does it need to be fed dry?

GEMMA Micro can be wet fed using a squirt bottle. Duration of "wet" feeding should be kept short. Feed only one rack side at a time and then reload the bottle. Invert the bottle several times before feeding tank.

### 7. What is the best before dating for GEMMA Micro?

GEMMA Micro has a guaranteed composition for two years from the date of production for un-opened bags.

### 8. How quickly should I use GEMMA Micro once the bag is opened?

GEMMA Micro should be used within 30 days after the bag has been opened. It should then be sealed, and refrigerated. Vacuum sealing is preferred if possible.

### 9. Can I freeze GEMMA Micro to extend the shelf life on opened bags?

GEMMA Micro can be frozen.

### 10. Can I use GEMMA Micro in hand feed dispensers or automatic feeding systems?

GEMMA Micro has excellent free flowing physical characteristics. The feed will remain free from clumping in a properly closed container. This makes it suitable for hand feeders, programmable feeders, feeding robots, and belt feeders.

# Who is Skretting?

Skretting is a global leader providing innovative and outstanding solutions.

Skretting's GEMMA Micro diets are made in France, and shipped to our warehouse in Maine, USA, for distribution throughout North America. Cutting edge research and development at our Aquaculture Research Center (ARC) ensures that we continuously develop the best quality feeds for our customers.



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ARC's internationally-accredited facility laboratory analyses the results for all of our product trials. With the help of NIR calibrations, which are centrally coordinated by ARC and exist for almost all the raw materials that we source globally, our local units conduct precise measurements of the nutritional value for our feed components. Our formulators use this information to establish the best formulation recipes.





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To order GEMMA Micro visit:  
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