Packaged Crawfish Tail Meat

Guidance for fresh and frozen product

Sea Grant Louisiana

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Fresh and frozen crawfish are evaluated by the same Louisiana Department of Agriculture and Forestry (LDAF) standards. However, different processing techniques can result in different product weight loss. This guide outlines various processes and provides best management practices to help ensure that product–fresh and frozen–will meet *§107.D (b) of Title 7, Chapter 1. Weights and Measures: Naturally adhering fat content of packages of peeled crawfish shall not exceed ten (10) percent of the net weight of the crawfish in the package.* Therefore, it is important to understand how crawfish tail meat loses weight.

Important Definitions

Fat on Tail - Hepatopancreas tissue left on tail after peeling. Peeling temperature affects the amount of fat left.

Drip Loss - The liquid that muscle loses after freezing and thawing. Cooking process and packaging have an impact on the amount of drip loss.

When making processing decisions, the first choice is whether to **hot peel** or **cold peel** the crawfish. Boiling and steaming are effective and used in both processes. Proper cooking deactivates the proteolytic enzyme, which prevents meat from turning mushy when packaged.

Hot Peel

- Goes direct from steamer/cooker to peeling table
- Crawfish is chilled after packaged
- Ice slurry before freezing or refrigeration is best
- Fat on Tail Range: -0.80 – 8.62%
- Drip Loss Range (up to 12 months): 1.81 – 12.35%

Cold Peel

- Goes to a chilling tank after steamer/cooker
- Chilled to below 50°F
- Most common technique now
- Fat on Tail Range (fresh tail meat): -0.39 – 6.47%
- Drip Loss Range (up to 12 months): 2.21 – 13.53%

The next decision concerns packaging. The two most common options are **vacuum packing,** which removes air from the package, or **air packing** which does not. For longer preservation, vacuum packing is common.

Vacuum Pack

Impermeable to Oxygen

Air Pack

Permeable to Oxygen

To ensure product integrity, avoid over- or under-vacuum packing. When overpacked (around 100%), moisture gets squeezed out and can result in higher drip loss. In underpacked product (90% or less) freezer burn occurs more readily. The table below shows the relationship between time, vacuum pack percentatge and drip loss percentage.

~Time (seconds):	30	25	20	15	10	6
~Vacuum Pack %	97%	96%	95%	93%	85%	70%
Drip Loss %	1.9%	1.7%	1.7%	1.5%	1.5%	1.2%

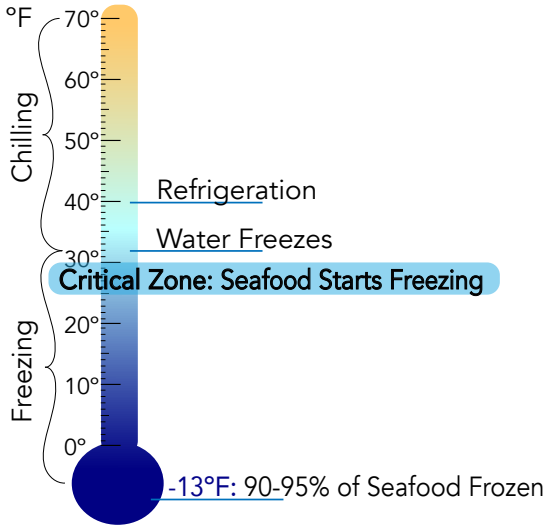
Once packaged, processors need to decide whether to **keep the crawfish fresh** or **freeze the crawfish**:

Fresh Crawfish

- The packaging of the product in a fresh state
- Lower weight loss, since there is little to no drip loss
- Stored at 40°F or below if it is not vacuum packed
- Stored below 38°F if it is vacuum packed
- Shelf Life: 4 days (hot peeled), 10 days (cold peeled)

Frozen Crawfish

- The process of removing heat to lower the product temperature below -0.4°C or -18°F
- Reduces microbial and enzymatic activity
- Allows for longer shelf life
- Freezing is advantageous because it achieves stability without damaging quality

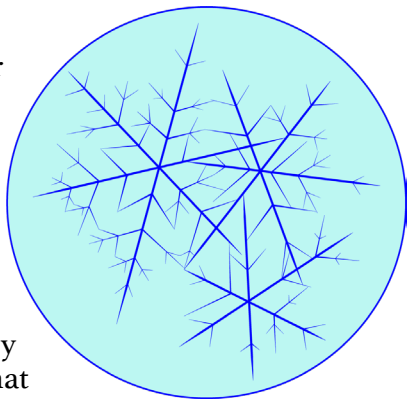


Freezing Protocol

Freezing does not result in an inferior product. **When a fresh product is properly frozen and thawed, the quality of the product will be the same as the fresh product.**

Freezing is not the opposite of fresh, rotten is. Therefore, it is important to maintain the frozen state of crawfish meat. The cold chain management should not be broken. The seafood freezing point is well below the freezing point of water.

When freezing, observe the **Critical Zone** for frozen seafood. Most water in packaging turns to ice between 30.2°F and 25°F. Cross this zone quickly to obtain small ice crystals. Below 14°F, ice formation slows. **To achieve a frozen state, a seafood product needs to reach an internal temperature of -13°F or below.**



Frozen crawfish should be kept under controlled temperatures to minimize further change in the ice crystals. Recrystalization, which is when small crystals disappear and large crystals grow or fuse together, can be minimized by maintaining a low and constant storage temperature.

If **crawfish is frozen**, then carefully consider how the product will be thawed. LDAF will sample thawed product, not frozen. Since frozen crawfish will experience both drip loss and fat loss, it is important to slowly bring the product back up to temperature. **Thawing is as critical as freezing.** Even though seafood can be safely thawed under running cold water, in the microwave or via refrigeration, the option that will maintain optimum seafood quality is **thawing via refrigeration overnight.**

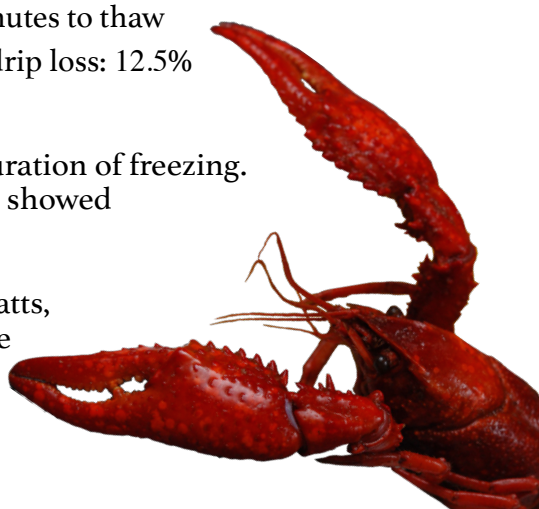
Refrigeration

- Transfer to refigerator
- 21 to 25 hours to thaw
- Lowest rates of drip loss. Maximum: 8.4%

Cold Water Bath

- Submerge in water at 50°F
- 40 to 50 minutes to thaw
- Maximum drip loss: 12.5%

Drip loss rates in frozen crawfish meat do not seem to be affected by the duration of freezing. Studies examining packages stored for 3, 6 and 12 month intervals storage, showed similar rates of drip loss.



For more information on crawfish processing, please contact Dr. Evelyn Watts, Seafood Technology Extension Specialist with Louisiana Sea Grant and the LSU AgCenter.

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