

Chilling Fish Fillets In 10 to 25 Pound Containers

Introduction

Seafood processors use a variety of containers for distributing fresh fish fillets. These include polyethylene plastic (poly) bags, rectangular high density polyethylene (HDPE) plastic containers, rectangular tin-free steel containers, and poly bags inside of rectangular wax-coated cardboard containers. Containers generally hold 10 or 20 lbs. of fillets, but the shape and depth of the containers vary greatly. This study was conducted to compare the cooling rates of fresh fish fillets in several sizes of commercially used containers for fish fillets.

Experimental

Fresh rockfish (*Sebastes* spp.) fillets were warmed to 55°F (12.7°C) in fresh water and drained. Containers were filled with fillets to the capacity stated by the manufacturer.

Ten lbs. of fillets were packed into 2.75-4.5 inch (7-11.4 cm) deep plastic containers, 2.56 inch (6.5 cm) deep steel containers, poly bags (5.5 inches or 14 cm thick when filled), and into poly bags placed into 2.875 inch (7.3 cm) deep wax-coated cardboard containers.

Twenty lbs. of fillets were packed into 4.25 inch (10.8 cm) deep metal containers, and poly bags (7 inches or 17.8 cm thick when filled).

Twenty-five lbs. of fillets were packed into 5.25 inch (13.3 cm) deep plastic containers.

Two thermocouples were inserted into fillets in the center of each container and connected to a recorder. The containers were placed into bottom-iced 100 lb. wax-coated cardboard "wetlock" shipping boxes. The containers were surrounded by at least one inch of ice. The 100-lb. boxes were held at 40°F (4.4°C). Fillet temperatures were monitored every 10 minutes until the centers of the containers reached 35°F (1.7°C). Two containers of each size were included in the tests.

Chilling Times

Figure 1 gives cooling curves for fish fillets in plastic containers of different depths. As expected, the fillets in deeper containers took longer to cool than fillets in shallower containers.

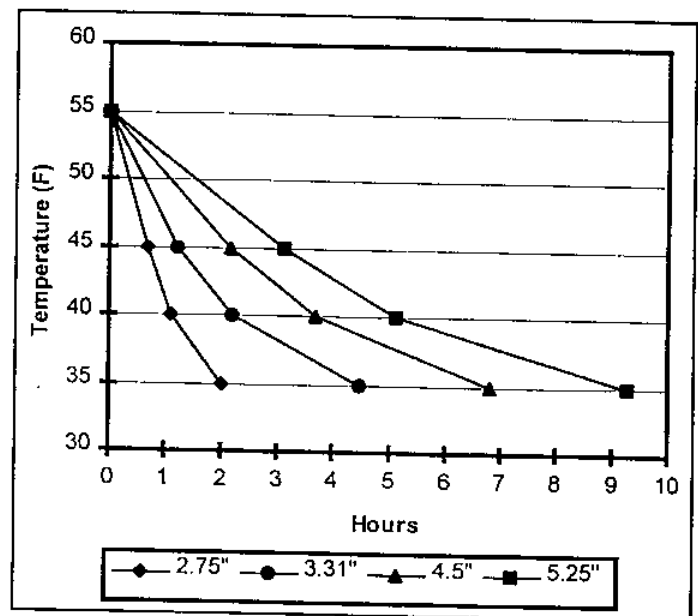


Figure 1. Chilling curves for fresh fish fillets iced in plastic containers 2.75, 3.31, 4.5, and 5.5 inches deep.

Chilling times were directly related to container depth with two exceptions (Figure 2). Poly bags containing 10 lbs. of fillets appear to have cooled more rapidly than other containers of the same depth. These poly bags may have settled and flattened after the height of the bag was initially measured and ice was added.

The other exception was the 10 lb. poly bag of fillets inside of a waxed cardboard carton. The fillets in this container cooled more slowly than in containers of similar depth. In this case, the outer cardboard container probably insulated the fillets from the surrounding ice, causing the fillets to cool more slowly.



