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Handle With Care

The Alaska Shipper's Guide To Seafood Quality
Alaska Seafood Marketing Institute

CHAPTER ONE

Planning, Temperature, Packaging and Labeling

This booklet provides quality tips for shipping Alaska seafood products via air, land, sea and rail transportation systems. These recommendations were developed by the Alaska Seafood Marketing Institute in the recognition of the role transportation plays in selling high quality products in a distant marketplace.

Alaska's location has been a blessing and a curse for the seafood industry. While the cold, clean waters of the north Pacific support some of the world's most productive commercial fisheries, the seafood is caught and processed thousands of miles from its major markets.

Historically, the seafood industry developed within the confines of Alaska's major transportation systems. This situation changed in the past decade with federal deregulation of the airlines, development of wide body jetliners and the advent of containerized barge service to remote ports.

Now it is possible to deliver high quality fresh seafood from Alaska's isolated fisheries to markets anywhere in the U.S. at a competitive price, and to ship vans of frozen product from dozens of tiny fishing villages. This revolution in transportation has opened vast new market opportunities for fishermen and processing companies.

Still, taking advantage of the opportunity isn't as easy as dropping your fish off at the nearest airport or calling a trucking company to pick up a load of frozen product. The new markets have, in effect, stretched the boundaries of fishing and processing operations far beyond the traditional limits.

Selling fresh salmon directly to a restaurant in New York can involve very complex transportation arrangements. The price your salmon fetches in the Big Apple is likely to relate directly to the condition in which it arrives. So, obviously, are repeat sales.

Remember you haven't sold that fish when it is transferred to the physical control of a transporter; the sale is consummated only when the buyer takes possession. Thus,

paying attention to the details of proper shipping techniques is as important a part of quality control as good handling practices on the fishing grounds.

Unlike other parts of your seafood operation, you don't have physical control over the product during shipment. But that doesn't mean our role is any less important, only that advance planning becomes even more important.

Planning is critical, particularly for shipments of fresh seafood. The risks of encountering problems with air shipments of fresh seafood increase with each stop and change of plane enroute. Avoid layovers in airports without coolers or freezers.

Don't overestimate your ability to deliver product within a specified time frame. Product quality will end up taking a backseat to speed if your optimum production capacity is exceeded. Plan a tight delivery schedule, while allowing ample time for cargo transfers. Learn what facilities are available at airports along your cargo route so you can act quickly if a connection is missed.

Economics also must play a major role in transportation planning. For example, a concern for product quality might argue for shipping fresh seafood via priority air cargo, but the extra protection must be weighed against the extra cost. It makes little sense to price yourself out of the marketplace if nearly all cargo on a particular route arrives on schedule.

Temperature can be your friend or enemy. The optimum storage temperatures for maintaining product quality are 30 to 32 F. for fresh seafood and -10 to -20 F. for frozen seafood.

Almost too obvious to mention is the importance of maintaining cold temperatures while shipping fresh and frozen seafood. The ability to provide a consistent shipping temperature enroute should be given considerable weight when selecting a carrier.

Specify a preferred shipping temperature range when making arrangements with a carrier. You can obtain the longest shelf life by shipping fresh seafood at 30-32 F. and frozen product at -10 F., although 0 F. or colder is acceptable for frozen product. Have your buyer sample core temperatures of incoming product, and consider using a time and temperature monitoring device to determine whether temperature abuse has occurred during shipping.

Pre-chill the product to the desired transit temperature and use gel ice with fresh seafood shipments.

Planning is very important here, too, as transfers from one carrier to another and deliveries to buyers must be executed without the product sitting uncooled for extended periods of time.

Packaging is critical. Seafood must be protected from the rigors of travel with well-secured, stout shipping cartons. Your product may be stacked under other freight, jostled by storms at sea, dropped during transfer or left sitting in the snow, rain or sun. Strap with strong bands.

Insulating value and protection against dehydration also must be considered when selecting packaging. If you're shipping unglazed seafood, the product should be packed in a polyethylene bag before it is placed in the shipping carton to guard against freezer burn.

For shipments of fresh seafood, seal the product in polyethylene bags, use moisture proof containers and avoid wet ice. The airlines are very sensitive about leaking shipments of seafood, and usually conduct "tip tests" before accepting shipments.

Many innovative and sophisticated shipping containers have been put on the market in recent years. Do your homework well when considering these investments; weigh costs and benefits. Some of these containers might be worth the investment, but others might not represent enough of an improvement over more conventional containers to justify the additional expense.

Pay close attention to labeling. Label each container with the consignee's name and address, shipper's name, description of contents and gross weight of the package. Each container also should be clearly marked with shipping instructions, such as "Keep Frozen," "Keep Cool," "Perishable" and "This Side Up."

Make certain that your labels will stay on the containers throughout shipment. Many adhesive backings for labels will not adhere to damp wax-impregnated cartons.

Learn as much as you can about moving your seafood to market. After all, your responsibility doesn't end until you safely deliver the product to a buyer. If the customer isn't happy with the quality of the product received, you're the one who loses the next sale, regardless of who is at fault.

CHAPTER TWO

Shipping by Air

General Advice

Air shipments of fresh seafood from Alaska boomed when freight rates tumbled with federal deregulation of the airline industry and the introduction of wide body jetliners specializing in cargo. Suddenly it became economically feasible to sell fresh seafood to markets thousands of miles away.

Air fresh seafood is a phenomenon of the 1990s. Few airports are designed to provide adequate facilities for seafood shipments and many airlines are just discovering that seafood represents a growing market opportunity.

Plan fresh seafood shipments very carefully. Potential problems multiply with the number of stops enroute, and plane changes increase the risk even more. Pick nonstop flights if possible and take care to avoid changing airlines.

Although many airports do not have refrigerated storage, some airlines interested in attracting customers who ship seafood will make a refrigerated van available or help them to locate adequate storage near key airports.

Container integrity is very important to airlines. Not only do leaky cartons of seafood create odors that passengers find objectionable, but corrosion created by the moisture can cause extensive damage to the airplane skin or lining. Ask your air carrier for packaging requirements and recommendations.

Do not use wet ice in air shipments of fresh seafood. Pre-chill the product to 30 F. and put frozen gel packs inside the shipping carton.

Incorrect or insufficient labeling is an invitation to disaster in the event of a missed flight connection. The product description, container gross weight and the consignee's name and address should be written in indelible ink prominently on each carton. Use stickers or other means of conveying vital stowing information such as "Keep Cool," "Fresh Seafood," "Perishable" and "This Side Up."

Avoid re-packaging at the airport by staying within the maximum gross weights of shipping containers. A standard 100- pound wet lock box itself weighs 10 pounds, so no more than 90 pounds of fish and gel ice should be packed inside. Check with the airlines to ensure your containers meet shipping standards for gross weight and strength.

Advise your buyers that the safest procedure is to receive shipments of fresh seafood at the airport. This allows for an immediate inspection by the airlines should problems be detected with the shipment. Keep a detailed description on the airbill of odor, temperature, damaged cartons or other signs of potential problems.

If the shipment is not examined at the airport and shipping related problems are later discovered, immediately contact the airline to request an inspection of the air freight. Keep the container and damaged product for inspection.

Wet ice can be used in some intrastate shipments of fresh seafood in totes. Check with your air carrier.

Frozen seafood also is shipped via air freight, but this is not a widespread practice since shipping in freezer vans aboard barges generally is cheaper and more

convenient. Some markets are best reached by air and small amounts of product that must move quickly often are sent by jet.

Handling Recommendations for Shipments of Packaged Fresh Seafood by Air

Pre-chill seafood to 30 F. Place the product in one 4-rail or two 2-mil polyethylene bag(s) that are tied off to prevent leakage. Check the boxes for leakage and repack if necessary.

Use enough frozen gel packs to maintain a low temperature during transit. Follow these general guidelines:

Four 1-pound packs per 100-pound box.

Three 1-pound packs per 80-pound box.

Two 1-pound packs per 50-pound box.

The recommended outer packaging material is a wax-impregnated, multiwalled, fibreboard/cardboard container that has a strong bursting strength and an adequate top load capacity. Use an additional one-inch styrofoam liner inside the polyethylene bags to enhance container integrity, increase insulating value and protect against leakage.

Band the whole package with a minimum of two bands around the girth of the box. Some airlines also require lengthwise banding, so the packing specifications of each carrier should be checked.

Label the box with consignee's name and address, shipper's name, description of contents (species, grade and size) and the gross weight of the container. Also clearly mark "Perishable," "Keep Refrigerated," "This Side Up," etc. 19 make handlers aware of stowing instructions.

Plan shipments so that cargo transfers are conducted at airports equipped with refrigerated storage facilities. Flights should be scheduled to allow about two hours for cargo transfer to connecting planes.

Specify a preferred range of storage temperature to the airline. (The recommended holding temperature for fresh seafood is 30-32 F.) Air carriers who lack refrigerated storage probably will help you locate what's available at any given stopover.

Communications between shipper, expeditor and airlines are critical. Product should never be left unrefrigerated for more than two hours.

Handling Recommendations for Shipments of Toted Fresh Seafood by Air within Alaska

Preloading:

Cover the bottom of the tote with a bed of ice, pack a single layer of fish, sprinkle a thin layer of ice, and alternate layers of fish and ice no more than 35 inches deep. Dressed fish should be belly- iced.

Use totes with drain holes which may be unplugged to allow draining of melted icewater while fish are being held prior to loading. Totes also should have lids capable of preventing spilling, warming and contamination of the product.

Do not leave totes of iced fish on the runway for more than two hours before loading.

Give the air carrier an accurate estimate of when the product will be ready for loading onto the aircraft.

Loading:

Drain holes should be securely plugged immediately prior to loading into the aircraft to prevent leakage inside the plane.

The pilot should have an accurate estimate of the gross weight of loaded totes to prevent the aircraft's weight restrictions from being exceeded.

Handling Recommendations for Shipments of Frozen Seafood by Air

Seafood should be frozen to - 10 F. or colder (0 F. is considered acceptable) before packing for shipment. The product should be wrapped in one 4-mil polyethylene bag, sealed and placed in a double walled fibreboard/cardboard container with a strong bursting strength. The container should be secured with at least two bands around the girth.

Boxes should be labeled with consignee's name and address, shipper's name, description of contents (species, grade and size) and container gross weight. Also mark "Keep Frozen," "Frozen Seafood," "Perishable," or "Store at 0 F. or colder."

Checklist: One pound frozen gel ice per 25 pounds of product. Containers meet airline bottom and top loading requirements. Containers securely fastened with at least two bands. Gross weight of individual containers within carrier specs. Containers properly labeled. Consignee's name, address; shipper's name; description of contents, gross product weight.

CHAPTER THREE

Shipping by Refrigerated Van or Truck

General Advice

The bulk of Alaska's seafood harvest is frozen before leaving the state. Some fish are filleted, vacuum packed in consumer portions and labeled for sale, but most seafood is shipped in whole form. These frozen products generally are packed in freezer vans and hauled to the Lower-48 on barges or transferred directly to tramp freighters heading for Japan.

While freezer vans make it possible to process and ship seafood from Alaska's most isolated and undeveloped areas, this method of transportation puts much responsibility on the shipper. You have to check out the refrigeration systems, load the van properly, start the freezers and monitor the equipment until it is transferred to a carrier or buyer.

Shippers should become intimately familiar with refrigerated vans. Pre-loading, loading and holding system checks should be developed and followed closely. Set up a schedule for checking van temperatures at least once every eight hours.

The product should be within five degrees of the desired shipping temperature (- 10 F. or colder is preferred, 0 F. is considered adequate) before packing. Use sturdy boxes, protect against dehydration, and band the boxes well.

Do not load vans before performing system checks. Frozen seafood should not sit in an uncooled van while the refrigeration equipment is being repaired. The boxes should be packed tightly to eliminate cargo shifts at sea, but they also must be stacked to allow proper circulation of cold air.

Refrigerated vans should never be used for the primary freezing of seafood. These containers are designed only to function as mobile cold storages for maintaining the product temperature during shipping.

Fresh seafood also may be transported in refrigerated vans, although the distance between Alaska and most markets limits the volume to a small portion of the total harvest. Wet ice can be used in some refrigerated vans; check with your carrier.

The best holding temperature for fresh seafood during transit is 30-32 F. Be sure to pre-chill the product to this temperature range before loading. The product should be loaded to prevent movement while on the road, but air must be allowed to circulate throughout every layer of boxes.

Handling Recommendations for Shipments of Fresh and Frozen Seafood by Refrigerated Van or Truck

Frozen Packaging Techniques:

Frozen seafood, other than vacuum packaged products, should have a glaze within the 2-8 to 70 range to protect dehydration during shipment and subsequent storage. Whenever possible, provide additional protection against moisture loss by individually wrapping the product in a 1-rail polyethylene bag.

Pack frozen fish tail to tail in an orderly fashion. This eliminates the breaking of tails and glaze, and reduces the possibility of punctured boxes.

Shipping container integrity is very important. Use strong boxes with sufficient top-loading capacity for stacking to the load level limits of the vans. The containers should be designed specifically for seafood: moisture-resistant and reinforced, giving the necessary protection against product dehydration, contamination, damage or loss.

There are two common size ranges of frozen seafood shipping containers used in refrigerated vans: cardboard boxes with a capacity of 100 pounds or less and large (750-1,000 pound capacity) cardboard totes.

The use of metal strapping, unless otherwise specified by a buyer or carrier, is preferred to plastic strapping or tape for securing the boxes or totes and enhancing overall container integrity. The first thing a buyer sees when inspecting the product is the shipping container, and a damaged packing crate is a signal that the product may have been abused during shipment.

Fresh Packaging Techniques:

Whole, dressed fish should be belly and layer iced in strong, wax-impregnated boxes or totes (stainless steel, plastic or aluminum) with drainage holes. The fish should be packed tail to tail for maximum utilization of space. All fresh seafood should be pre-chilled to 30-32 F. prior to packing for shipment.

Pre-loading:

Clear the vans of all foreign objects such as pallets, packing crates and straps. The floor and air channels should be free of any materials that might obstruct air circulation. Check the canvas air chute to insure that it is properly attached to the ceiling along both sides and to the refrigeration unit in front. Close and latch the van doors, set the temperature dial on the front of the refrigeration unit to the desired transit temperature, and turn on the refrigeration. Maximum shelf life of frozen seafood is obtained by shipping at - 10 F. or colder, but a transit temperature up to 0 F. adequately protects product quality. The recommended transit temperature for fresh seafood is 30-32 F. Let the refrigeration unit run until it cycles itself off. This

insures that the fan and refrigeration are working properly and pre-cools the van for loading. Shut off the refrigeration before loading.

Loading:

The refrigeration controls should be turned off before loading begins. The product should be pre-cooled to the desired shipping temperature; some carriers will refuse seafood that is not within 5 F. of the shipping temperature. Do not stack the cargo any closer than 9-12 inches from the ceiling of the van (depending on container type). The van's weight capacity should not be exceeded. The cargo should not touch the canvas air chute.

Load the shipping containers as gently and neatly as possible. Block or brace the cargo as necessary to prevent shifting of the load during transit. The final stack of boxes should be adequately secured to prevent movement when the van doors are opened for unloading.

With shipments of fresh seafood, air circulation is enhanced by arranging the containers in a ventilated stack pattern. Leave narrow spaces between rows of containers in every other layer of product from the front of the van to the back. These spaces should create channels for cold air to circulate throughout the cargo and eliminate "hot spots."

Frozen seafood should be within 5 F. of the desired transit temperature before loading. For example, if you plan to ship at - 10 F., the product should be within the - 5 to - 15 F. temperature range. Load the containers as tightly together as possible, leaving a 9-12 inch air space between the ceiling and stacks of product. In vans without air channels on the floor, stack the bottom layer of containers on pallets.

The load must not project beyond the load line at the end of the van. Boxes extending beyond this point will obstruct the return air flow, resulting in uneven and insufficient cooling of portions of the cargo.

Loading operations should be conducted quickly and efficiently to avoid holding the product uncooled for extended periods of time.

Temperature recording devices can be used to provide a written record of product temperatures during transit and indicate whether temperature abuse has occurred. Temperature recording equipment should be placed where the sensing element will register the warmest temperature in the van. Time/temperature monitors also are tools for detecting temperature abuse during transit.

Post-loading:

Make temperature checks every eight hours or less to insure that the refrigeration unit is functioning properly and maintaining the proper holding temperatures. Activate the defrost cycle switch at each van check.

Keep the opening of the van doors to a minimum to reduce temperature fluctuations. Try to pack vans for single destinations. Small deliveries of product with frequent stops may require dividing the van into smaller, refrigerated compartments or warrant the use of flexible self-closing inner doors.

Refrigerated Van Checklist for Frozen Seafood:

Van Number. Transporter. Routing / Receiving Information. Destination. Consignee's Name and Address. Product. Est. Net Weight. Seal Number. No. Shipping Cartons Shipping Temp. Container floor and air channels cleared. Canvas air chute attached to ceiling and fan. Refrigeration unit checked before loading; van pre-cooled Product temperature within 5 F. of shipping range. Cargo not loaded within 9 -- 12" from ceiling. Cargo tightly loaded to prevent shifting / last row secured Boxes do not extend beyond the load line. Refrigeration turned on and checked after loading.

CHAPTER FOUR

Shipping by Freezer Ships and Railroad

General Advice

The primary physical responsibility shifts to the carrier aboard freezer ships or on the railroad, but the shipper continues to play an important role with personal inspections of freezer holds and refrigerated rail cars. Watch for cleanliness, check temperatures throughout the cargo area and make sure that loading operations move very smoothly without product being left unrefrigerated for extended periods of time.

Container integrity and proper loading are both very important for these delivery methods because of the potential for cargo shifting during storms at sea and the changing of rail cars. The best product quality results are obtained by shipping frozen seafood at - 10 F. or colder, although 0 F. or colder is considered an adequate holding temperature range.

Make sure the product will be received by your buyer or agent and that an initial quality inspection is made immediately upon arrival. have product core temperatures taken and ensure that temperature recording or monitoring equipment is checked.

Handling Recommendations for Shipments of Frozen Seafood by Freezer Ship

Pre-loading:

Examine the hold for ammonia leaks. Ammonia fumes can adversely affect seafood, rendering it unsalable. Ammonia leaks also indicate that the refrigeration system may be in poor condition. Check the condition of cargo handling equipment. Leaking hydraulic fluid can contaminate the seafood. Breakdowns of faulty equipment also will slow the loading process, resulting in incoming product being held without refrigeration.

Look at the overall cleanliness of the hold and ensure it is free of objects that could damage the seafood cartons or shipping crates. Potential contaminants should be isolated from the seafood cargo. Check temperatures in all areas of the freezer hold. The preferred shipping temperature range is - 10 F. or colder, but a constant holding temperature up to 0 F. is adequate to protect product quality.

Use temperature-recording devices if possible to provide a written record of product temperature during transit and indicate whether temperature abuse has occurred. The recording device should be placed where the sensing element registers the warmest air temperature in the hold. Time/temperature monitoring devices also are tools to indicate whether temperature abuse has occurred enroute.