Food Mail Program

Guidelines for Facilities, Handling, Packaging, Sanitation and Inspection

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

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Chapter 1

Facilities and Handling

I General guidelines for facilities and handling operations

Facilities

Buildings should be soundly constructed and maintained in good condition, and should not present any chemical, microbiological or physical hazards to the food. Buildings should be designed to provide suitable environmental conditions, permit adequate cleaning and sanitation, minimize contamination from extraneous materials, prevent pests from entering and provide adequate space for satisfactory performance of all operations.

For every building used by the Food Mail Program

- The buildings and facilities should be constructed to avoid cross-contamination. The establishment should be designed in sections separated by doors or similar dividers.
- Floors, walls and ceilings should be constructed of durable and cleanable materials that are suitable for the operations conducted in the area.
- Walls should be well joined. Floors should be sufficiently sloped so that liquids drain into trapped outlets.
- Windows should be equipped with close-fitting screens.

- Air intakes from the outside should be located to prevent intake of contaminated air (free from gas vapor, contaminants, insects, etc.).
- Containers used for waste should be clearly identified and should be leakproof.

Sanitary facilities

- Toilets should be maintained and well-located. Warm water, disinfectants, paper towels and a hand-dryer should be available. Furthermore, signs asking staff to wash their hands after each use of the toilet must be hung on the walls. It is recommended that taps be automatic to avoid cross-contamination from touching them.
- Lunch and smoking rooms should be separate from, and not lead directly into, the food packaging section or food storage area, and should be correctly ventilated and maintained.

Handling

Packaging material and incoming material should be transported, stored and handled in a manner that prevents conditions that may cause food contamination. Establishments should have an established program to monitor and control all elements in this section and to maintain appropriate records.

General

- Perishables of different types such as vegetables and meat should not be kept in the same storage room because they differ in terms of temperature and consumption requirements. Also, every product should be stored at the proper temperature at each step of the Food Mail Program (see temperature charts for more details).
- Effective measures should be taken to prevent contamination of raw materials, ingredients and to keep packaging materials from coming into direct or indirect contact with contaminating material.
- Suspect products and/or packages (rotten, bad smell, visual quality not in conformance with inspection guidelines, chapter 4) should be clearly identified and isolated in a designated area until properly disposed of.

Stock rotation

Stock rotation is critically important, especially for fruits and vegetables, when the products' shelf life ranges from a few days (strawberries) to a few weeks (potatoes). The rule to follow is "first in, first out."

Storage of chemical products

- Chemicals should be received and stored in a dry, well ventilated area, separate from all food handling areas.
- Chemicals should be stored and mixed in clean, correctly labeled containers.
- Chemicals should be dispensed and handled only by authorized and properly trained personnel.
- All non-food chemicals used should be listed in the "Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products", published by Agriculture and Agri-Food Canada, or the manufacturer should have "a letter of no objection" from Health Canada.

(This section was taken from Food Safety Enhancement Program (FSEP) Volume II.)

Storage of packaging materials

All packaging materials should be stored in a clean, hygienic place. They should not contain any undesirable elements such as insects, residual material or micro-organisms.

Food carriers (vehicles and aircraft)

- Carriers should be inspected at arrival and/or before loading to ensure they are free from contamination and suitable for transporting foods.
- An in-house inspection program should be established to verify that all carriers have been adequately cleaned and sanitized.
- Carriers should be loaded, arranged and unloaded in a manner that prevents damage and contamination of the food and packaging materials.

(This section was taken from FSEP, Volume II.)

Specifications for each step of the Food Mail Program

1 Storage prior to shipping

Facilities

Products intended to be shipped over long distances must be of ***optimal quality.*** Therefore, cold storage with optimal temperature should be provided at the departure point. Optimal temperature for perishables means that separate rooms, with different temperatures, should be considered. For fresh fruits and vegetables, rooms at 0-4°C and 10-12°C should be available. For highly perishable products, such as dairy products and fresh meat, a room at 0°C should be available. Finally, for frozen products, a freezer at -18°C should be provided. The temperature should be controlled within ±2°C.

In storage rooms used for most fruits and vegetables, the humidity control should be able to maintain relative humidity between 90 and 95%. This can be done by using oversized exchangers that can work with a lower temperature differential, thus limiting condensation and subsequent air dryness. Dry products, such as onions and garlic, should be maintained at 60% relative humidity.

When palletizing or handling pallets, a refrigerated handling room with an intermediate airlock should be used. This area should be refrigerated at 10°C to maintain product quality.

Handling

For any shipment lasting more than 24 hours, boxes should never be stacked more than 1.5 m high (less than that is suggested, whenever possible), regardless of the product shipped. On rough roads, the bearing capacity of boxes is reduced by vibration.

Products with similar temperature requirements must be palletized together. This will help to keep the initial pallet temperature during transport when the air temperature inside the truck is not always uniform. Heavier boxes (heavier products) should be placed on the bottom, while boxes of lighter products must be placed on top.

Cardboard boxes should be stacked in columns (corner on corner) to maximize the strength capacity of the boxes. In the column stack method, the load must be stabilized using retaining nets, stretch-wrap, shrink-wrap or strapping, and rigid corners.

Before loading, the trailer should be aligned with the loading dock with the door open.

The air conditioning system should be working to maintain adequate temperature inside the trailer before loading.

2 Ground transportation

Facilities

Air distribution inside the truck should be optimized to reduce temperature disparities inside the trailer, avoiding hot or cold spots. It is **essential** to use state-of-the-art flooring (slotted) and an air distribution system (air chute) to provide an even air distribution (see Figure 1). A monitoring schedule should also be implemented to optimize and control this important step during shipping. Two temperature recorders ***must be*** used during the shipping process (one at the front and one at the back of the truck).

Handling

Because of the different requirements of the products involved, an appropriate ground transport operation would involve using separate refrigerated trucks for different categories of products. For example, refrigerated trucks should be used for highly sensitive products (0°C), for fresh fruits and vegetables (10°C) or frozen perishables (-18°C). The temperature used for transporting fresh fruits and vegetables is often a compromise that provides adequate conditions for short-term operations. In this case, optimal temperature control is essential to obtain the best results. When it is not impossible to maintain the best temperature, 10°C-12°C should be selected to ensure minimal damage from chilling sensitive produce such as bananas.

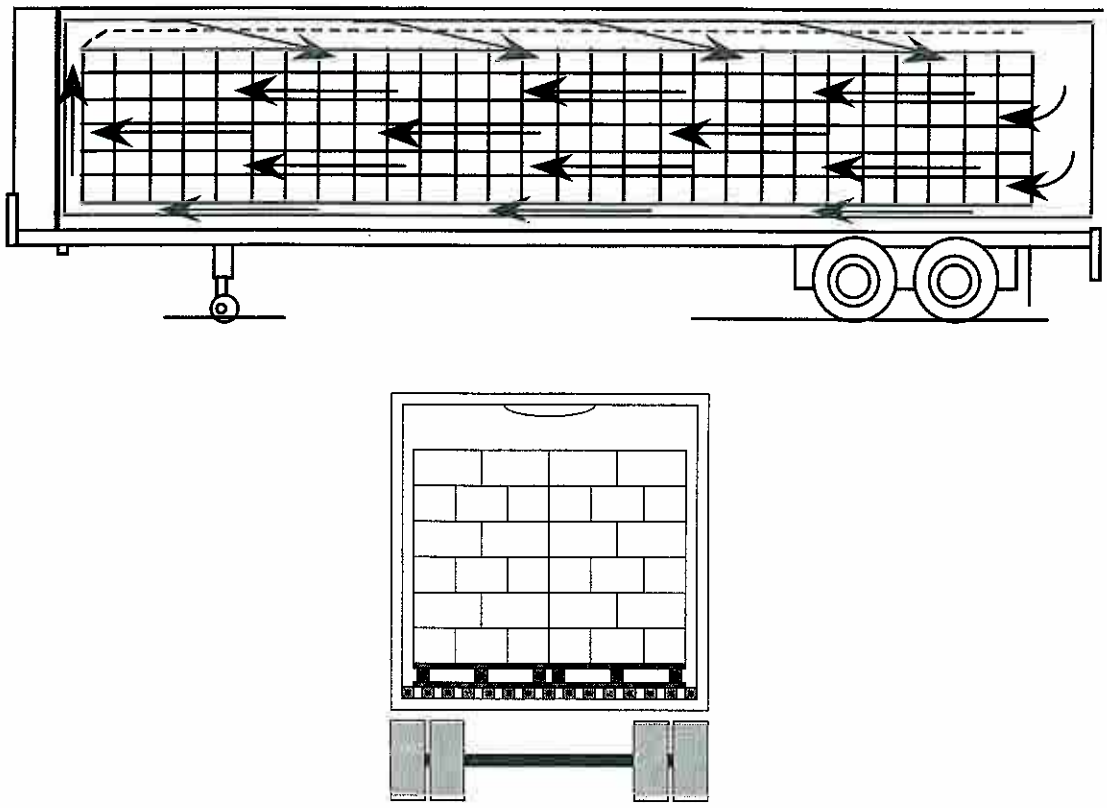


Figure 1 Trailer with optimal air circulation using a chute and a slotted floor.

In addition, we suggest that an air suspension system should be used for ground transportation because of rough roads, especially during seasonal changes.

3 Food Mail Entry Point

Facilities

To ensure the quality of produce, cold storage with an optimal temperature should be provided at the intermediate point. That means that separate rooms, with different temperatures, should be considered. Minimal requirements (for short-term transit) for fresh fruits and vegetables are: rooms at 0-4°C, 8-12°C and room temperature. For highly sensitive products such as dairy products and fresh meat, a room at 0°C should be available. For frozen products, a freezer at -18°C should be considered. The temperature should be controlled within ±1°C.

In storage rooms for fruits and vegetables, the relative humidity should be controlled and maintained at 90 to 95%. Using oversized coils or humidifying systems may help increase the relative humidity of the air. Dry products or other products that require high temperatures, such as onions and garlic, may be maintained at a higher temperature and lower relative humidity (60 to 65%) for a short period. Good packaging that limits water loss will be helpful for most tropical products.

Handling

Upon arrival, trailers should be rapidly unloaded and the pallets should be broken down and stored as soon as possible in cold storage rooms at the appropriate temperature (0-2°C for highly sensitive products and some fruits and vegetables, at 8-12°C for fresh fruits and vegetables and -18°C for frozen products).

Re-packing operations should be performed in a cold room with a temperature not exceeding 12°C.

Re-packing and shipping operations should be started as soon as possible in order to provide the ***best quality*** for air shipment. For re-packing operations, care should be taken to segregate products by temperature category (0°-2°C, 12°C or -18°C). Products with the same temperature needs should be packed and palletized together. Each box should contain only one product or a mixture of the same products that have similar temperature requirements. When ready, each box ***should be returned immediately to the appropriate cold room.***

During re-packing, products should be handled with great care to avoid bruising and damage. Packaging guidelines (chapter 3) should be followed.

Each box should be labeled with the temperature requirement. This will allow optimal control of the products during shipment. In case of delay for delivery, this procedure will also eliminate the risk of error during intermediate storage.

4 Transit between the distribution centre and the airport

Facilities

Adequate temperature should be maintained during transit from the warehouse to the airport, especially in extreme weather conditions. Cold temperatures during winter could cause chilling injury, while high temperatures during summer may cause irreversible damage to some products. The best way to control temperature is by using a refrigerated truck to transport perishables. Temperature should again be set at 0°C for highly perishable products, 10°C for fruits and vegetables and -18°C for frozen products. If separate trucks are not available, using an insulated truck is a minimum requirement for transporting perishables to the airport. Covering the pallets with an insulated blanket or using good packaging practices will also reduce the effects of extreme weather conditions.

Handling

Loading and unloading operations should be as quick as possible (less than 30 minutes is recommended) because of the lack of refrigerated areas on the loading dock (warehouses) and unloading areas at the airport. Upon arrival at the airport, trucks should be unloaded rapidly and boxes should be stored as soon as possible at the appropriate temperature in cold storage as prescribed on the box labels.

5 Airport

Facilities

If perishables cannot be shipped to remote communities immediately after they are received at the airport because of delays due to weighing, routing, weather, etc., it is essential to have refrigerated areas ready to accommodate most products. The requirements in this case are similar to those at the wholesaler. Rooms at 0-4°C and 10-12°C should be available for fruits and vegetables. For highly perishable products such as dairy products and fresh meat, a room at 0°C should be available and for frozen products, a freezer at -18°C is ***essential***.

Handling

Once prepared, orders for each store should be checked for temperature compliance and placed in cold storage before being loaded on the plane.

Whenever possible during loading operations, adverse weather conditions should be avoided. If possible, loading should take place inside a hangar. However, temporary storage on the tarmac can be acceptable when using an insulated blanket to cover the load (total loading time should be less than 15 minutes). Loading an aircraft outside a

hangar can expose the load (inside) to heat during summer or freezing (chilling injury) during winter.

The loading operation before the flight should be as short as possible. During loading operations, care should be taken to avoid exposure to extreme weather conditions. Using a shelter from which to load the aircraft will limit the exposure to sun, wind, rain or snow. Also, products with different temperature requirements should be loaded separately for optimal safety.

Less sensitive products (those more resistant to adverse conditions) should be the first to be brought from the cold storage and loaded into the airplane. For example, on very cold days, frozen products should be loaded first to limit the exposure of fresh perishables to the cold air, thus avoiding freezing.

Products with similar temperature requirements must be palletized together. This will help to keep the initial pallet temperature, during transport when the air temperature inside the truck is not always uniform.

Heavier boxes (heavier products) should be placed on the bottom, while boxes of lighter products must be placed on top.

6 In flight

Temperature and air pressure

For a mixed load of perishables, temperature in the cargo space during flight should be maintained as close as possible to 10°C. If the cockpit requires some heating, it should be done without heating the rest of the plane. Two temperature recorders ***must be*** used during the shipping process (one at the front and one at the back of the airplane).

Temperature control during the flight should be a concern. Variation in temperature in the aircraft should be controlled by avoiding heat release in the cargo space.

Use insulated blankets to maintain adequate temperatures. Using such blankets reduces temperature variations and maintains a higher humidity around the products. They also minimize the effects of cold/hot spots in the load. For frozen products, for which a low temperature (-18°C) is required, using insulated blankets will be ***essential*** if the temperature is higher than recommended. Frozen products will have to be covered as tightly as possible to prevent air from entering. Frozen products should be placed in a large ice chest, if available.

So far, nothing can really be done to compensate for reduced pressure inside the plane. However, some products may react to cruising altitudes near 3000 m. Sealed products such as yogurt may burst their lids if a temperature near 0°C is not properly maintained.

Notification of Retailers

The day before shipping, a fax or e-mail should be sent to the retailers to notify them of the expected delivery time. At least one hour before departure, a fax or e-mail should be sent to confirm with the retailers, in each community, the exact arrival time.

7 Operations upon arrival

Facilities

At the final destination, the minimum requirement would be a shelter to protect the boxes against adverse weather conditions such as rain, snow, cold air, direct sun or strong wind during handling operations. This shelter should be used only for very short periods of time, before transporting the products to retail stores. Ideally, boxes should be loaded and immediately transported to the retail stores. Thus, some arrangement should be made to have ground transport ready to receive perishables upon arrival and immediately after unloading.

Handling

On arrival, boxes of products should be manually unloaded with care (box by box). The unloaded boxes should be placed and covered immediately in an insulated sleigh (komatik), or a small insulated trailer or truck can be used to transport the products to the stores. Boxes can be covered with insulated blankets to limit product degradation.

Optimally, sleighs and trailers should wait for the plane and be ready for unloading.

Upon receiving the load, both parties should sign a receipt of acknowledgement.

Upon arrival, a waiting time of 10 minutes is allowed for the receivers to appear. After that period, the aircraft loadmaster will decide either to take off or unload inside a protective shelter against wind and cold (winter) or against direct sun (summer).

Considering the short distances from the airport to most communities, the complete operation (unloading the plane, loading the sleighs or trucks, transport and unloading the sleighs or trucks) should not take more than 10 to 15 minutes. No boxes should remain in transit between the tarmac and the retail store for more than 30 minutes.

8 Retail stores

Facilities

Upon arrival at the retail store, perishables should be promptly placed in a cold storage room or in the refrigerated display (refrigerated counter).

Cold storage at 0-4°C should be available for fresh products and highly perishable products. A freezer at -18°C should be available for frozen products. Tropical products and other commodities such as onions (dry) may be stored at room temperature (8 - 12°C) or in a display if they are ready for sale. If required, some products that are more resistant to water loss can be stored at room temperature for short periods of time (for example, apples, pears and citrus).

Refrigerated retail display cabinets should be able to provide dual temperatures (2°C and 8°C), for example, see the standard perishable display in Figure 2. Products should be carefully placed in the right position.

Handling

In all cases, products should be placed as quickly as possible in adequate temperature conditions either for storage or sale. Arriving boxes should be considered a priority.

Perishables should be placed in refrigerated display cabinets right after arrival. Moreover, products should be correctly placed in the refrigerated display where an adequate temperature is maintained. Every product that cannot be placed in the refrigerated display should be placed ***immediately*** in cold storage.

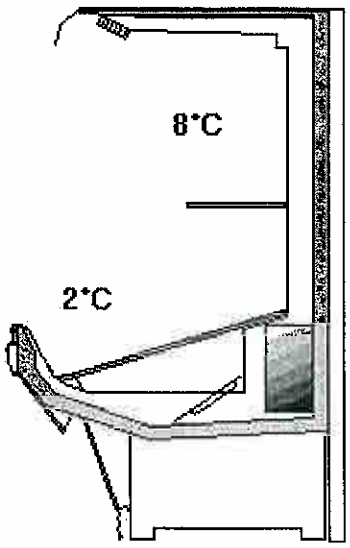


Figure 2 Example of a refrigerated retail display cabinet

Chapter 2

Packaging

1 General description of a package

The packaging is intended to maintain the quality of perishable products and minimize the negative effects of transportation. Packaging used for products shipped under the Food Mail Program must protect the contents against temperature abuse, water loss, shocks, vibrations, contamination, handling abuses, etc. Containers must be strong enough to withstand piling and stacking during handling and shipping. Ideally, they will be reusable, thus helping to reduce transportation cost and waste.

In order to maintain their quality, perishables such as fresh fruits and vegetables usually need specific conditions during transport, including a relatively low temperature and high humidity level. Temperature, a major concern during transport, depends on the product's characteristics. Usually, the temperature used for storage and transporting fresh fruits and vegetables ranges from 0 to 15°C. For fresh dairy products and meats, the temperature ranges from -1°C to 4°C. During transportation and storage, microbial development (*Escherichia coli*, *Salmonella*, *Listeria*, etc.) is responsible for most losses in the quality of meat and dairy products.

2 Packaging materials

Packaging materials play many different roles, but all of them are aimed at preserving the quality of perishable goods. Cardboard acts as a mechanical barrier around the products. Plastic liner helps maintain adequate relative humidity and protects against harmful gas. Insulation limits heat transfer, and coolant allows a lower temperature in a non-optimal environment.

Other materials may be used to control gas emission (plastic film, ethylene scrubber), limit heat transfer (insulation), limit water vapor release (plastic film), maintain cold temperature (coolant, insulation, etc.), avoid spoilage or leakage (absorbing mats), and protect against mechanical stresses such as impacts and vibrations (cushioning material).

Cardboard

Usually, standard cardboard boxes are used for packaging. Plastic, polystyrene or wood containers as well as bags may also be used. Using inadequate boxes leads to losses, especially when they are compressed by stacking. We ***strongly recommend*** using new, strong cardboard boxes to ship perishables. These boxes can reduce the risk of crushing and puncture.

Plastic liner used with pallets

A plastic liner placed around a pallet of products or individual boxes is a cheap and relatively efficient type of insulation. It drastically reduces the air circulation inside the pallet and between containers. When used around a specific product, plastic liner may act as a barrier to ethylene gas and also to water vapor. Thus, it can be used to protect products that are susceptible to shriveling and wilting. Special care should be taken to avoid condensation (free water) inside the package due to temperature variation. Condensation inside the plastic layer may cause mold growth and decay. As mentioned above, a plastic liner may be used to avoid contact between products producing ethylene and ethylene-sensitive products.

Ethylene scrubber

Ethylene scrubber can also be used to remove and destroy ethylene present inside the package. The scrubber is usually in the form of small beads containing potassium permanganate.

Insulation

Insulation is used to slow down the heat transfer from the package. Global insulation (pallet or load) can be performed by using an insulating reflective cover that limits heating by the sun and reduces air circulation (as does plastic liner). This cover should be removed when the pallet is placed in cold storage to allow adequate ventilation and eventual heat removal. Insulation can also be used inside cardboard boxes to form a barrier to the heat flow. This type of insulation is used in extreme conditions or for products that are particularly sensitive to extreme temperature. As for the insulating cover, boxes should be immediately opened upon arrival to avoid excessive heating due to respiration.

Coolant

Coolant may be used in several forms: ice, dry ice or gel ice. Ice packs have many advantages over other coolants because their temperature is not too low (-5 to -10°C) and they do not provide free water when melting. Dry ice is costly and can create very low temperatures (-70°C) that can cause a risk of cold burning. Although ice is the cheapest coolant providing an adequate temperature (0°C), it creates a lot of water spill. It should be noted that cardboard loses 50 to 60% of its resistance when wet. In addition, because of the fragile nature of perishables, **gel packs** are usually preferred.

Gel packs are available as soft pouches of gel (MicroBan Ice-Pack) or small pockets of hydrophilic powder (Cold Ice) that must be first soaked in water and subsequently frozen or refrigerated prior to use.

Cushioning materials

Cushioning material should be used to protect products against the movement inside the boxes caused by vibrations and repetitive impacts. The ideal material is soft, and not dense. Small cardboard cups (specific for fruits), loose paper and foam sheets can be used as cushioning material.

3 General packaging practices

Choice and filling of boxes

Whenever possible, products should be packed in individual boxes. The box size should allow compact but not tight packaging of the products. This means that products should not move inside the box and the box should not bulge. The box should allow a maximum weight of about 20 kg and a maximum height of 30 cm.

Product handling

During packaging operations, products must be handled very carefully. Most of them are soft and fragile and may be easily bruised, even by a slight squeeze or weak repetitive shocks. Fragile products (such as avocado, mango, papaya, tomato) should be packed individually with paper or other cushioning material to protect them against shocks. Very small products such as berries or mushrooms must be shipped in punnets (small, light containers or baskets) for convenience and protection.

Plastic liner used inside boxes

Plastic liner should be used in each box to protect against water loss, ethylene (production or exposure), direct cold or hot air. It is a cheap way to provide a certain level of protection for perishables. Products may be wrapped individually, as in retail packages, or a liner should be wrapped around the entire box.

Insulation and coolants

When used, insulation is placed either inside or outside the boxes. When placed outside, insulation is also a reflective material used during warm weather to reflect direct sunlight. Inside insulation is most often used in cold conditions for products that need a higher temperature. The coolant, when used, is placed inside the box on the upper layer and separated from the products by a piece of cardboard to avoid direct contact.

Mixed load boxes

Mixed load boxes are practical for very small volume items that would need many small boxes if packed separately. When more than one product is placed in a single box, choose products with similar temperature requirements (see table pg 59 to 61). ***This is absolutely imperative.***

In addition, ethylene compatibility should also be considered (see pg 59 to 61). When packing more than one type of product in a single box, each type must be isolated from the other by using a plastic liner or plastic bags.

The heaviest and hardest products must be placed at the bottom of the boxes. Fragile, light and small products should be placed on top. In this case, coolant should be placed over the heavy products, between layers of cardboard, to avoid crushing fragile items.

4 Package requirements

Low temperature products (0-4°C) – label "0-4°C"

List of products

Vegetables: Artichokes, asparagus, beans (Lima), beets, broccoli, Brussels sprouts, cabbage, carrots, cauliflower, celeriac, celery, collard, endive, garlic, horseradish, kale, kohlrabi, leafy greens, leeks, lettuce, mushrooms, onions (dry and green), parsley, parsnips, peas (green), radishes, rhubarb, rutabagas, spinach, sweet corn, turnips, watercress.

Fruits: Apples, apricots, berries (blackberries, blueberries, currants, cranberries, dewberries, gooseberries, raspberries, strawberries), cantaloupes, cherries, dates, figs, grapes, lemons, nectarines, oranges, peaches, pears, persimmons, plums, prunes, quinces.

This category of products needs protection against warm air. The optional use of a plastic liner will reduce the amount of air entering the package, will limit water loss and will protect the products against ethylene. Using of retail packages will have a similar effect in this respect. In all cases, products should be protected from shocks and vibrations by wrapping with paper or other cushioning material. Paper cushioning will also act as insulation.

Products requiring low temperature (0 to 4°C) should be packed in new cardboard boxes, and ***optionally*** with plastic liner or in a retail package, insulated and packed with ice gel to provide sufficient cooling to keep the temperature low. This is especially important during summer, because most of the time the outside temperature is higher than the required temperature. Insulation may be provided by a 0.5 to 1.0 cm thick reflective foam or plastic-bubble sheet (ThermoFoil, CoolGuard or others). Other types of standard insulation (EPS: 1 to 2 cm) may also be used.

When the outside temperature is high, using ice gel inside the box is highly recommended to maintain a low temperature for a longer period. There is no precise formula for computing the required quantity of ice gel. However, the surface of the box should be almost entirely covered.

If the outside temperature is very low, insulation may avoid injuring the products by freezing or chilling. If the outside temperature is high, reflective insulation will minimize the effect of solar radiation (sun). Do not forget that the boxes must be opened immediately after arrival.

Medium temperature products (8 to 12°C) – label "12°C"

List of products

Vegetables: Cucumbers, eggplant, okra, peppers, potatoes, pumpkins, snap beans, squash (summer and acorn), sweet potatoes, tomatoes (mature green), tomatoes (ripe) and yams.

Fruits: Avocados, bananas, melon (casaba), grapefruit, guavas, honeydew melon, mangoes, lemons, limes, olives, oranges, papayas, Persian melons, pineapples (ripe), watermelon, grapefruit.

These products need protection against cold air, because many are very susceptible to chilling injury. A plastic liner will reduce the amount of cold air entering the package, will limit water loss and will protect the products against ethylene. Using retail packages will have a similar effect from this point of view. In all cases, products should be protected from shocks and vibrations by wrapping them with paper or other cushioning material. Paper cushioning will also act as insulation.

Products requiring a medium temperature only need to be packed in new cardboard boxes if the temperature during transport is well maintained (10°C). When the outside temperature is not constant (and very low), the products should be insulated. Again,

insulation may be a 0.5 to 1.0 cm thick reflective foam or plastic-bubble (ThermoFoil or others) or standard insulation (EPS: 1 to 2 cm).

Insulation will reduce heat transfer from the surrounding environment. When the temperature and solar radiation are high, consider using reflective protection to reduce heating. The use of reflective or bright white material may be useful. Boxes must be opened immediately after arrival.

To avoid chilling injury, no coolant should be used. Ice packs may cause problems.

Highly sensitive products (-1°C / 2°C) – label " 0-4°C"

List of products

This category includes dairy products (especially fresh milk) and fresh meats. The major difference between these and other perishables is that they are already packed for shipping. Thus, the most important factor to consider is temperature.

These products are very sensitive to high temperature. Temperature should be maintained at the required level. These products should be packaged in good quality cardboard or plastic boxes that protect against shocks.

Special care should be taken to maintain the cold chain all along the distribution process. If it is not possible to do so, the use of insulated boxes, insulating blankets and coolant is required.

Frozen products (-18°C) – label "-18°C"

List of products

This category includes frozen products (especially meat). The big difference from other perishables is that the temperature of such products should never be higher than -18°C.

These products are very sensitive to high temperature. Therefore, the temperature should be maintained at the required level. Use very high-insulated boxes (25 mm insulated panels such as EPS boxes) and, if possible, ice packs or gel packs. Packaging is the key factor for frozen foods. Moreover, special care should be taken to maintain the cold chain all along the distribution process.

5 Special packaging

Control of water loss (optional)

Water loss may be limited by placing plastic film around the products. Perforated plastic film is especially efficient when used for high transpiration products such as lettuce or herbs. Holes in the plastic film allow some of the water vapor to evaporate, and prevent excessive condensation that may cause decay. Retail packages are also effective from this point of view, if they are well designed. For example, packing apples by four or six in a tray wrapped in plastic maintains quality and limits water loss and ethylene production.

Almost any type of plastic film may be used to control water loss. Different types of plastic are available, in various thicknesses and at various prices. Plastic liner may be tight or perforated, depending on the use and the level of control desired.

Ethylene compatibility

Ethylene producers or ethylene sensitive products (see Table 3)

Some products cannot be combined and transported together due to their sensitivity to ethylene or their high ethylene production rate.

For example, the presence of apples near lettuce or broccoli may cause russet spotting in lettuce or yellowing in broccoli even if the storage temperature is adequate for the product. Refer to the appropriate table for details about the effects of ethylene on perishable products.

When shipping such a combination, ethylene-sensitive products should be packed in separate plastic bags or liners inside the cardboard box to avoid exposure to ethylene. An ethylene scrubber such as "Ethylene Eater" or "Bioconservation" will also help reduce the negative impact of ethylene on the products' quality. These products, a potassium permanganate type on a silica base, are presented as small round pellets, easily placed in ventilated pouches. The purple pellets turn brown when ethylene is absorbed and destroyed.

Mechanical protection

Perishables sensitive to bruising, such as bell peppers or tomatoes, should be protected from mechanical damage caused by impact or vibrations. If they are not placed in special trays used to reduce movement, they should be packed individually with paper or other simple cushioning material, such as foam.

This procedure will avoid movement (rotations and bounces) during transport. Such movements cause bruises that are a source of decay for many perishables. Protection may be provided for small and fragile products, such as mushrooms, by using retail packages.

These packages provide adequate protection. However, care must be taken to avoid stacking fragile products or assembling heavy boxes on top of light and fragile ones.

6 Seasonal changes

Due to the large seasonal variations, packaging may be adapted to the prevailing outside weather conditions. During the warmer summer season, heating of the packages will occur more often than during the cold season. Conversely, freezing products and chilling injury will occur only during winter.

For the purpose of the guidelines, the cold season will be considered to be November to March and the warm season will be considered to be June to August. April to May and September to October will be considered transition periods.

During the cold months, special attention should be given to medium and high temperature products. Insulation and tight packaging should be used in this case. For low temperature products, packaging in cardboard and plastic liner alone will allow adequate shipping most of the time if the waiting times are short and the tightness of the package is good. In this case, the respiratory activity of the perishables will maintain a temperature close to 0°C.

During the warm months, special attention should be paid to low and medium temperature products. For these products, using insulation and ice packs and/or gel packs will ensure adequate quality when shipping to remote communities.

Due to the higher temperature in the summer, packaging in cardboard and plastic liner will be sufficient (no chilling injury possibilities). Supplemental protection against direct sun should be provided to avoid solar heating of the boxes.

During transition periods, suppliers and shippers should work together and decide what packaging to use. For cold days, packaging without insulation for high temperature products may be possible if an insulating blanket is used during transport.

Trial and error procedures will permit suppliers to determine more precisely the cold and warm seasons.

Chapter 3

Sanitation

1 General requirements for a good sanitation program

The sanitation program identifies all parameters that should be controlled to avoid food contamination and measures that should be taken to maintain cleanliness in the establishments and vehicles. Also, the sanitation program optimizes cleaning and disinfecting operations and standardized all activities related to sanitation among employees.

General considerations for sanitation

- An appropriate detergent should be selected, considering the type of uncleanliness and the surface to be cleaned. The detergent used should not be corroding and must be compatible with other substances such as disinfectants because they are often used in combination. Cold solutions of detergent can be effective in certain cases. However, heat is required to eliminate residues from animal grease.
- The methods of cleaning and disinfection should be chosen by a qualified authority. The hygiene specialist should consider the products handled, the packaging, the staff and the manufacturers of detergents and disinfectants to select suitable chemical disinfectants.
- Management should monitor the procedure to ensure good and efficient cleaning.
- The detergents and disinfectants should be handled carefully and stored far from the foodstuffs and packaging. For example, alkaline products should not be mixed with acid products. Mixing hypochlorite solutions with acid products releases chlorine gas

that could cause suffocation. Detergents and disinfectants should be used appropriately.

- Use any chemical according to the manufacturer's instructions. The chemical should be listed in the "Reference Listing of Accepted Construction Materials, Packaging Materials and Non-Food Chemical Products" published by Agriculture and Agri-Food Canada or the manufacturer should have "a letter of no objection" from Health Canada (FSEP Volume Π).
- Wearing glasses and protective clothing is recommended while handling chemical products.
- Any staff who use or might be in contact with chemical products should be informed on how to avoid chemical contamination of food.
- Chemical substances and pesticides that may present a health risk should carry a label warning about their toxicity and indicating their usage. Substances likely to contaminate food should not be used or stored in the food handling area.

Packaging and storage sections

- Packaging tables in contact with food should be made of stainless steel or non-corrosive metal. They should always be clean and in good condition. Daily washing is necessary.
- Storage rooms should be cleaned every week and cold rooms every two weeks.

- Before cleaning the room, transfer the food products to another section or to another cold room.
- Before cleaning the racks, sieves and tank plates once a month, all power supplies should be cut off for the safety of employees.
- Thermometers should be cleaned every month and checked for accuracy in order to ensure the products are stored at sufficiently low temperatures to preserve them.

Vehicles

Vehicles should be cleaned and inspected at each loading. The trailer should be free of insects, rodents, dust, moulds, and liquids from previously loaded products that leaked. Their presence automatically implies washing and disinfecting the trailer. Trailers should be cleaned every week and as often as necessary.

Toilets and washrooms

Toilets should be maintained and adequate ventilation is necessary. The air movement should be forced to circulate to the exterior of the toilet. All washbasins in the warehouse, including those in the toilets, should be washed at least every week. An easily washed dustbin with a lid is required to avoid cross contamination.

Garbage disposal

Garbage should be stored in order to avoid food contamination. It should be removed from working areas as often as necessary and at least once a day. Storage and evacuation of wastes should be handled so that they cannot contaminate potable water, air or people or be accessible to rodents. They should be removed from the food handling area as often as necessary and at least once a day. The trash bins should be washed and disinfected immediately after.

Pest control program

A permanent and effective program against rodents should be established. Regular monitoring of all the warehouses and their accesses should be made in order to detect any irregularities. If pests penetrate the warehouse, steps should be taken immediately to eliminate them. This procedure should be approved and carried out by a qualified authority.

Establishments should post a description of an effective and safe pest control program. The written pest control program includes:

- the name of a contact person at the establishment in charge of pest control;
- the name of the extermination company, where applicable, or the name of the person responsible for the program;

- the list of chemicals and methods used;
- a map of bait locations;
- the frequency of inspection; and
- pest survey and control reports.

2 Staff and cleanliness practices

The objective of the staff program is to ensure safe food handling practices. The staff program should provide, on an ongoing basis, the necessary training for operations staff. An adequate program to monitor and control all elements in this section and to maintain the appropriate records should be established. (FSEP Volume II.)

Staff training

The company should give employees training in good food handling practices and in personal hygiene to make them aware of the danger of poisoning. Staff should be trained to understand what they are responsible for, the acceptable limits for food products, the importance of monitoring the temperature and action they must take if the limits are not met. Also, any person who works directly or indirectly with food should understand and should be able to identify differences between biological, chemical and physical contamination that can possibly occur during different stages of their work.

(FSEP Volume II.)

Communicable diseases

No person known to be suffering from, or known to be a carrier of, a disease likely to be transmitted through food, or having infected wounds, skin infections, sores or diarrhoea, is permitted to work in food handling areas where there is any likelihood that he or she could contaminate food with pathogenic micro-organisms. (FSEP Volume II).

All employees suffering from transmissible diseases must be assigned to work where there is no risk of cross-contamination.

Injuries

- Any person who has an injury should stop handling food until the injury is protected by a waterproof bandage or plaster and the person is assigned to a working place that does not present any cross-contamination risks.
- All persons having an open cut should protect it by a secure waterproof covering before returning to work.
- A sick employee who works in the food handling area should be transferred temporarily to another department until he or she is completely recovered to avoid possible contamination.

Medical test

All employees should undergo a medical test and any person who presents a risk of contaminating for the food must be assigned to another department until he or she has completely recovered to avoid possible contamination.

Hand washing

- Employees who are in contact with food must always wash their hands before working, after each use of the toilet and as often as necessary. Washing with an anti-bacterial product and hot potable water is required.
- A good hand washing should take around 30 seconds to one minute.
- Hand washing should include the wrist and palms of the hand to remove dirt and residual food.

Personal cleanliness and conduct

- Any action that might contaminate the food, such as eating, smoking and chewing gum must be prohibited in the food handling area.
- Tobacco should not be permitted in food handling areas.

(FSEP volume II.)

5 Recommendations

- For more information about the sanitation program, procedures and adequate and effective detergents and any other chemicals products, contact Sani-Marc Inc. or the equivalent.

Phone: 1-800-567-2525

Fax: (819)-758-5800

- For more information about adequate and effective washable material for floors, ceiling, walls and paint, contact Sico Company or the equivalent.

Web site: www.sico.com

Richard Joly

Tel: (514) 332-3607

- To ensure good monitoring and rapid control of the sanitation program, two quick tests are often used in the food industry:

1. Lightening test: gives an appropriate estimation of the cleanliness of any surface. It is fast (30 seconds) and easy to use.
2. Contact plates: Can describe the type and quantity of bacteria present on any surface. Results are given in 24 hours.

Chapter 4

Inspection

1 Dairy products

1. Dairy products that arrive at the Entry point should have at least three days of shelf life (three days before the expiry) to allow enough time to sell the product in northern communities. If this is not followed, inspector(s) should report this fault to Canada Post.

2. Particular attention should be paid to the dairy products packaging at the entry point. If inspector(s) judge that packages are not salubrious (free of risk for human health) and/or can cause health problems, this fault should be reported to Canada Post.

3. If anything seems to be unacceptable, such as bad odours, leaking products and unusual colour, this fault should be reported to Canada Post.

4. The temperature of dairy products upon arrival should be monitored. Therefore, samples of these products should be inspected. The temperature of dairy products should be maintained at 4°C. The acceptable range is 4°C ± 2°C.

2 Bread and bread products

1. Bread products should have at least three days of shelf life when they arrive at the entry point (three days prior to best before date) to allow enough time to sell the product in northern communities. If this is not followed, inspector(s) should report this fault to Canada Post.

2. Particular attention should be paid to bread products when they arrive at the entry point. If inspector(s) judge that the packaging is not salubrious and/or can cause health problems, this fault should be reported to Canada Post.

3. If anything seems to be unacceptable, such as bad odors, leaking packaging and unusual color, this fault should be reported to Canada Post.

3 Meat products

Fresh meat

1. Meat products should have at least three days of shelf life when they arrive at the entry point (three days prior to the best before date) to allow enough time to sell the product in northern communities. If this is not followed, inspector(s) should report this fault to Canada Post.

2. Particular attention should be paid to the meat products packaging when they arrive at the entry point. If inspector(s) judge that packaging is not salubrious and/or can cause health problems, this fault should be reported to Canada Post.

3. A visual inspection should be done (see visual standard reference for beef at the end of this document). Also, if anything seems to be unacceptable, such as bad odors, leaking products and unusual color, this fault should be reported to Canada Post.

4. The temperature should be monitored upon arrival. Sampling a certain amount of the products should be carried out. The temperature of fresh meat must be maintained at the optimal temperature during transportation. The optimal temperature for fresh meat is 0°C. The acceptable range is -1°C to 4°C.

Frozen meat

1. Frozen meat should have at least six days of shelf life when it arrives at the entry point (six days prior to the best before date) to allow enough time to sell the product in northern communities. If this is not followed, inspector(s) should report this fault to Canada Post.

2. Frozen meat should not be stored longer than three months and should be sold before the three months are finished.

3. Particular attention should be paid to the frozen meat packaging when it arrives at the entry point. If inspector(s) judge that packaging is not salubrious and/or can cause health problems, this fault should be reported to Canada Post.

4. If anything seems to be unacceptable, such as bad odors, leaking products and unusual color, this fault should be reported to Canada Post.

5. The temperature of a sample of products should be monitored upon arrival. The temperature of frozen meat must be maintained at the optimal temperature during transportation. The acceptable range is -15°C or less upon arrival. Normally, meat should be kept at -18°C or less.

4 Fresh Fruits and vegetables

1. Fresh fruits and vegetables should have at least two days of shelf life when they arrive at the entry point to allow enough time to sell products in northern communities. If this is not respected, inspectors should be able to refuse such products.

2. Particular attention should be paid to the products' packaging when they arrive at the entry point. If inspector(s) judge that packaging is not salubrious, products should be refused.

3. A visual inspection should be done according to the established visual standard annexed at the end of this document. Also, if anything seems to be unacceptable, such as bad odors, leaking products and unusual color, products should be refused.

4. The temperature of a sample of fresh fruits and vegetables should be monitored upon arrival. Temperatures should be taken every time a truck arrives at the warehouse. The temperature of fresh fruits and vegetables should be maintained at the optimal temperature during transportation.

The optimal temperature for fresh fruits and vegetables ranges from 0°C to 4°C or from 8°C to 12°C, depending on the type of products (see the list of optimal storage temperature at the end of the document). The acceptable range is 2°C ± 2°C for highly perishables or 10°C ± 2°C for tropical and sub-tropical products.

Charts: fresh produce and inspection

Temperature compatibility

Ethylene sensitivity

Inspection Tool

Tables

Table 1 Storage and shipping temperatures for fresh fruits and vegetables

Fruits	Temperature (°C)	Life	Vegetables	Temperature (°C)	Life
Apples	-1-4	3-8 m	Artichokes	0	2 w
Apricots	0	1-2 w	Asparagus	0-2	2-3 w
Avocados	4-12	2-4 w	Beans (Lima)	3-4	3-5 d
Bananas	12-14	2-3 w	Beets	0	4-6 m
Berries			Broccoli	0	10-14 d
blackberries	0	3 d	Brussels sprouts	0	3-5 w
blueberries	0	2 w	Cabbage	0	5-6 m
cranberries	2-4	2-4 m	Carrots	0	5-9 m
currants	0	10-14 d	Cauliflower	0	2-4 w
dewberries	0	3 d	Celeriac	0	3-4 m
gooseberries	0	2-4 w	Celery	0	1-2 m
raspberries	0	2-3 d	Collard	0	10-14 d
strawberries	0	5-7 d	Cucumbers	10-12	10-14 d
Cantaloups	2-4	5-15 d	Eggplant	8-12	7-10 d
Cherries	0	2-3 w	Endive	0	2-3 w
Dates	0	6-12 m	Garlic	0	6-7 m
Figs	0	7-10 d	Green onions	0	3-4 w
Grapefruit	10-12	6-10 w	Horseradish	0	10-12 m
Grapes	0	2-8 w	Kale	0	3-4 w
Guavas	5-12	2-3 w	Kohlrabi	0	2-4 w
Honeydew	7-12	3-4 w	Leafy greens	0	10-14 d
Lemons	0, 10-12	1-6 m	Leeks	0	1-3 m
Limes	9-12	6-8 w	Lettuce	0	2-3 w
Mangoes	12	2-3 w	Mushrooms	0	3-4 d
Melon (casaba)	7-12	4-6 w	Okra	7-12	7-10 d
Nectarines	0	2-4 w	Onions	0	1-8 m
Olives	7-12	4-6 w	Parsley	0	1-2 m
Oranges	0-12	3-12 w	Parsnips	0	4-6 m
Papayas	7	1-3 w	Peas (green)	0	1-3 w
Peaches	0	2-4 w	Peppers	7-12	2-3 w
Pears	0	2-7 m	Potatoes	3-12	5-8 m
Persian melons	7-12	2 w	Pumpkins	10-12	2-3 m
Persimmons	0	3-4 m	Radishes	0	3-4 w
Pineapples	7-12	2-4 w	Rhubarb	0	2-4 w
Plums	0	2-4 w	Rutabaga	0	4-6 m
Prunes	0	2-4 w	Snap beans	4-7	7-10 d
Quinces	0	2-3 m	Spinach	0	10-14 d
Tangerines	4	2-4 w	Squash	5-12	5-14 d
Watermelon	10 -12	2-3 w	Sweet corn	0	4-8 d
			Sweet potatoes	12-16	4-7 m
			Tomatoes (green)	12-21	1-3 w
			Tomatoes (ripe)	7-12	4-7 d
			Turnips	0	4-5 m
			Watercress	0	3-4 d
			Yams	12	3-6 m

Relative humidity for all commodities is between 90 and 95% except for dates, garlic, onions and pumpkins (60-75%).

Table 2 Temperature compatibility for fruits and vegetables

Low temperature (0-4°C)		Medium temperature (8-12°C)
Artichokes	Apples	Avocados
Asparagus	Apricots	Bananas
Beans (Lima)	Berries (all)	Cucumbers
Beets	Cantaloupes	Eggplant
Brussels sprouts	Dates	Grapefruit
Cabbage	Figs	Guavas
Carrots	Grapes	Honeydew melon
Cauliflower	Lemons	Lemons
Celeriac	Nectarines	Limes
Celery	Oranges	Mangoes
Collard	Peaches	Melon (casaba)
Endive	Pears	Okra
Garlic	Persimmons	Olives
Horseradish	Plums	Oranges
Kale	Prunes	Papayas
Kohlrabi	Quinces	Persian
Leafy greens		Pineapples (ripe)
Leeks		Pumpkins
Lettuce		Squash
Mushrooms		Snap beans
Onions (dry and green)		Sweet potatoes
Parsley		Tomatoes (green)
Parsnip		Tomatoes (ripe)
Peas (green)		Watermelon
Radishes		Yams
Rhubarb		
Rutabaga		
Salsify		
Spinach		
Sweet corn		
Turnips		
Watercress		

Table 3 Ethylene compatibility for some fruits and vegetables

Ethylene producers	Ethylene sensitive	Damage (for sensitive)
Apples	Asparagus	Toughening
Apricots	Broccoli	Yellowing
Avocados	Brussels sprouts	Black spotting
Bananas	Cabbage	Black spotting
Blueberries	Carrots	Bitterness
Cantaloupes	Cauliflower	Curd discoloration, yellowing,
Durians	Celery	Lignification of fibres, yellowing
Figs	Cucumbers	Yellowing, decay
Guavas	Eggplant	Calyx abscission, browning
Honeydew	Fresh herbs	Yellowing, leaf drop, petiole bending
Kiwifruit	Grapefruits	Peel senescence, susceptibility to decay
Mangoes	Green peas	Yellowing
Nectarines	Leeks	Yellowing
Papayas	Lemons and limes	Increased decay incidence
Passion fruit	Lettuce	Russet spotting, yellowing
Peaches	Mandarins and tangerines	Increased decay incidence
Pears	Onions	Sprouting
Persimmons	Oranges	Increased decay incidence
Plums	Peaches and pears	Dark spots, ripening
Quinces	Potatoes	Sprouting
Tomatoes	Snap beans	Browning, degreening
	Spinach	Yellowing
	Watermelon	Softening, flesh mealiness, rind separation

For fruits able to produce ethylene, ripe fruits can induce ripening of immature fruits. For most fruits, ethylene induces softening of the tissues.

Asparagus

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

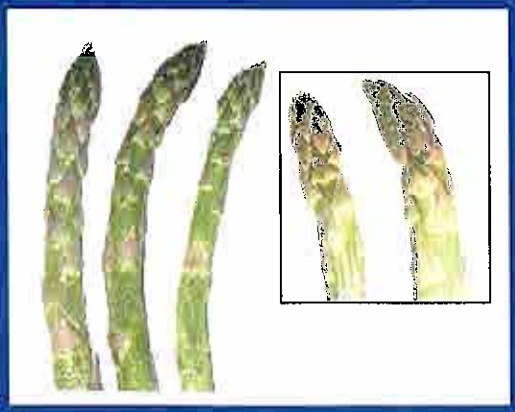
Food Mail Program
Quality Requirements

Optimal Quality

Bright green colour
Tightly closed tip
Compact tips
Straight stalk
Tender and glossy

Accept

Spear toughening
Slight wilting
Tip opening
Slight yellowing



Reject

Discoloration
Browning of stem bracts
Bud wilting
Spear curvature
Decay-soft rot (bad smell)

Air Cargo Transportation Research Group, 2001

Banana

CANADA POST / POSTES CANADA

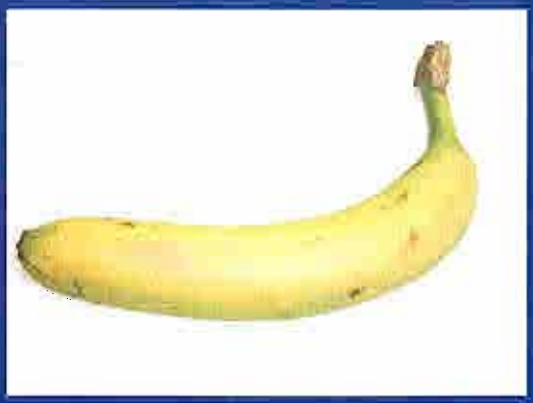
Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality

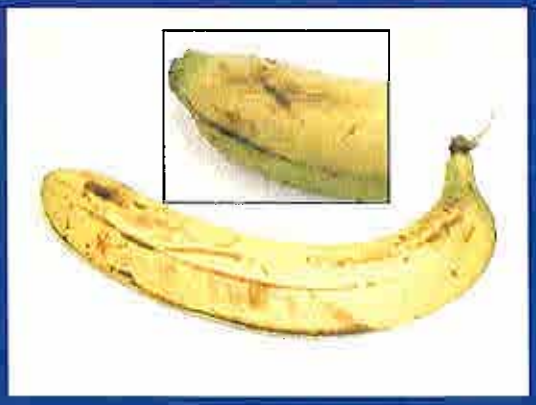
Bright colour

Full yellow colour
Firm



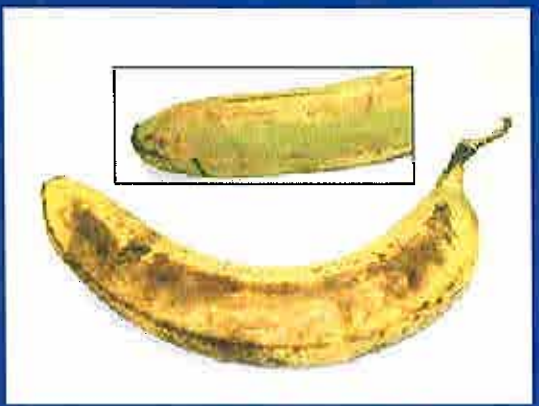
Accept

Few small brown spots
Few brown spots
Minor softening



Reject

Big brown spots
Darkening of the skin
Overripe
Extremely soft
Foggy spots (not ripe)
Bad smell



Air Cargo Transportation Research Group, 2001

Beef (fresh)

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality

Bright red colour
White fat

Accept

Slight oxidation
Slightly slimy surface

Reject

Oxidation (severe)
Slimy texture
Darkening (brown)
Rot, putrification
Bad smell

Air Cargo Transportation Research Group, 2001

Bell Pepper

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

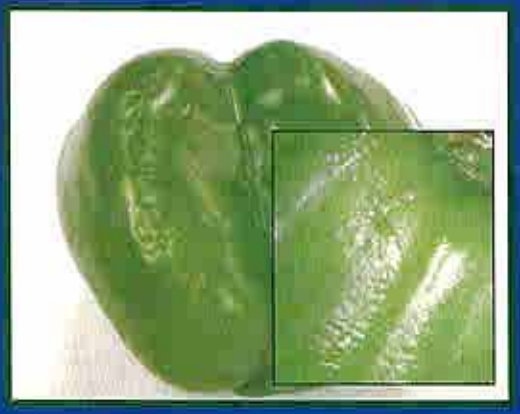
Food Mail Program
Quality Requirements

Optimal Quality

Bright colour
Glossy surface
No signs of wilting
Firm

Accept

Loss of firmness
Slight wilting
Tiny pits



Reject

Discoloration
Severe softening
Wilting
Pitting
Decay of seed cavity

Air Cargo Transportation Research Group, 2001

Boston

(Lettuce)

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program Quality Requirements

Optimal Quality

Bright light green colour
Firm but tender
Crispy

Accept

Slight yellowing
Few brown spots
Slight wilting
Small decayed spots

Reject

Severe yellowing
Wilting
Browning
Decay (centre)

Air Cargo Transportation Research Group, 2001

Broccoli

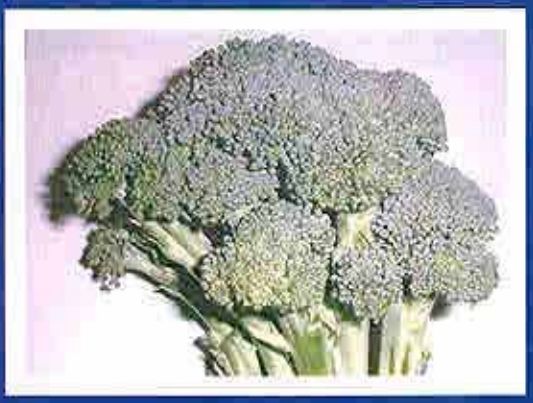
CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

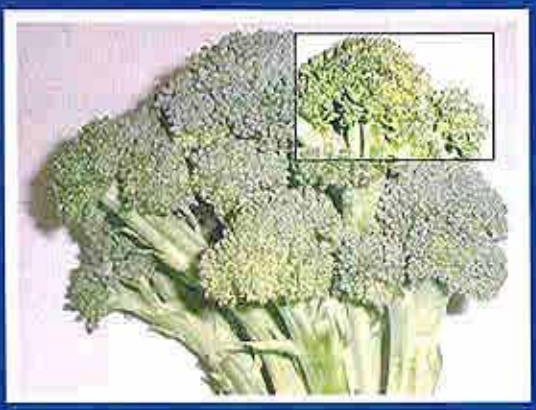
Optimal Quality

Dark green colour
Firm but tender
Tightly closed florets
Stalk snaps easily



Accept

Slight yellowing
Slight softening
Slight wilting



Reject

Severe yellowing
Florets are opened
Extremely soft
Bends easily
Does not snap
Wilting (dry)
Decay (bad smell)

Air Cargo Transportation Research Group, 2001

Cabbage

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality

Bright Colour
Firm
Compact head

Accept

Slight yellowing
Few brown spots
Slight wilting

Reject

Yellowing
Wilting
Many brown spots
Bad smell
Decay

Air Cargo Transportation Research Group, 2001

Cauliflower

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality

White creamy colour
Tightly closed florets
Firm but tender
Dark green leaves

Accept

Slight yellowing
Few brown spots
Slight wilting (leaves)
Florets slightly opened

Reject

Yellowing
Softening
Floret are opened
Many brown spots
Bad smell
Decay

Air Cargo Transportation Research Group, 2001

Cucumber

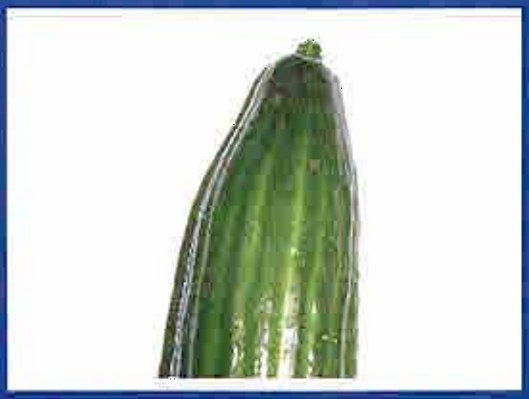
CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality

Bright colour
Glossy surface
Firm



Accept

Loss of firmness
Slight wilting
Slight pitting

Reject

Yellowing
Soft tip
Wilting
Pitting (brown spots)
Decay (dark spots)

Air Cargo Transportation Research Group, 2001

Iceberg
(lettuce)

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality
Bright colour
Firm
Crispy
Easily compressed

Accept
Slight yellowing
Slight browning
Slight wilting
Few russet spots

Reject
Yellowing
Wilting
Browning
Many russet spots
Decay

Air Cargo Transportation Research Group, 2001

Mushroom

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality

White milky colour
Glossy surface
Cap tightly closed
Veil intact (tight)

Accept

Brown spots
Slight cap opening
Slight wilting
Veil partially broken

Reject

Severe browning
Cap open
Gills exposed
Softening
Dry cap
Bad smell- soft rot

Air Cargo Transportation Research Group, 2001

Orange

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality

Bright colour
Glossy surface
Firm

Accept

Loss of firmness
Slight wilting
Blossom end softening

Reject

Skin discoloration
Very dry skin
Wilting
Decay

Air Cargo Transportation Research Group, 2001

Radish

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

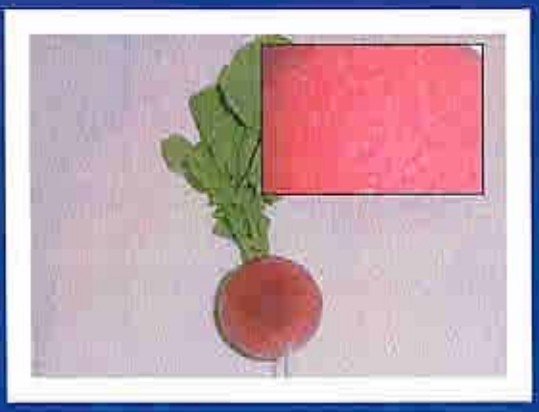
Food Mail Program
Quality Requirements

Optimal Quality

Bright red colour
Glossy surface
Firm
Tender leaves

Accept

Slight darkening
Slight browning
Slight wilting
Loss of glossiness



Reject

Wilting
Softening
Severe dryness
Darkening
Decay

Air Cargo Transportation Research Group, 2001

Tomato

CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

Optimal Quality

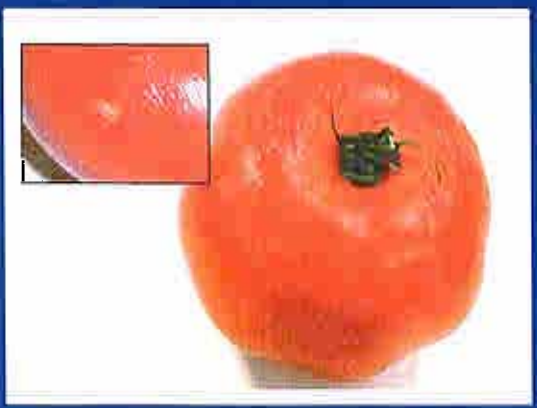
Bright red colour
Glossy surface
Firm

Accept

Slight softening
Slight pitting
Slight wilting

Reject

Discoloration
Uneven ripening
Wilting
Softening
Cracking
Decay (bad smell)



Air Cargo Transportation Research Group, 2001

Zucchini

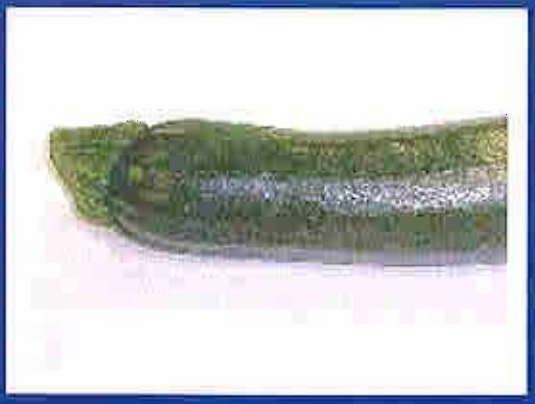
CANADA POST / POSTES CANADA

Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

Food Mail Program
Quality Requirements

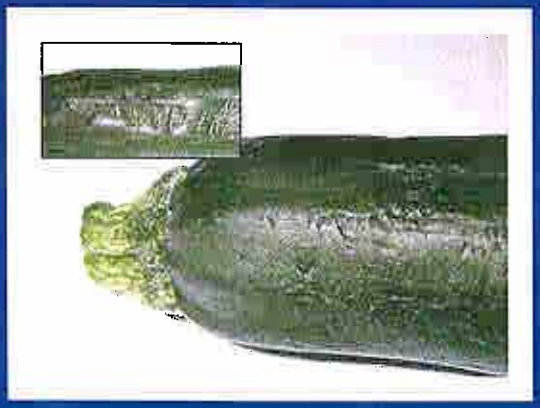
Optimal Quality

Bright green colour
Tender skin
Glossy surface
Firm



Accept

Slight softening
Slight pitting
Slight wilting



Reject

Severe wilting
Soft tip
Pitting
Decay
Bad Smell

Air Cargo Transportation Research Group, 2001