

# **General Requirements for Food Transport**

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# **Preamble**

The transportation of food is one of the most critical stages, which can considerably affect food safety throughout the food chain. Therefore, it is greatly important to ensure that the movement of food is carried out under the most appropriate conditions in terms of temperature and sanitation as stipulated in the relevant approved Saudi and GSO standards and regulations.

## *Purpose and Scope of Application*

The purpose of this guide is to set forth general requirements and temperature controls for the transport of various food products as set out by relevant standards and regulations. A clear understanding of these measures is necessary to ensure the safety of food products in transit and to prevent any potential (e.g.: physical, chemical, or biological) risks during this stage.

This guide is concerned with the requirements for the transportation of chilled and frozen foods and (frozen, non-frozen, cold, and dried) beverages.

### **Accountability**

Food transporter or distributor is accountable for the following:

- Carrying out proper cleaning and sanitation.
- Ensuring effective separation in consignments containing more than one type of food.
- Ensuring that foods in transit are kept under appropriate temperatures as outlined in table 1 & 2.
- Disposing immediately of any food items, which have undergone contamination or spoilage during transportation.

## *Means of Transport Requirements*

- The transport vehicle must be designated for transporting chilled or frozen foods, and must have a cooling capacity sufficient to maintain the temperature required for the transported products.
- The transport vehicle must be suitable clean and adequately insulated. Using the vehicle for the transport of any substances, which may pose risk to food or public health, is strictly prohibited
- The transport vehicle must have a cooling system capable of keeping food products under appropriate temperatures throughout the journey.
- The refrigerated containers must keep food products under temperatures ranging from 1.5 to 10°C as deemed appropriate to the type and nature of the product transported, while keeping the temperatures above 10°C in case of fruit and vegetables as shown in Table 1 and 2.
- In case of frozen food, the cold storage must have a maximum temperature of -18°C.
- Non-refrigerated vehicles may be used for dry or packaged foods, provided that the storage room maintains a maximum temperature of 25 to 30 °C and allows for air circulation sufficient to lower the temperature and relative humidity inside.
- The transport vehicle must be sufficiently sealed to prevent entry of pests, dust or any other physical pollutants.

- The transport vehicle must be clean, disinfected and free of any unpleasant odors.
- The refrigerated containers must be of high cooling and freezing quality and provided with a thermometer whose dial is placed outside the room to give a reading representative of all the loading space.
- The temperature readings of the refrigerators and freezers must be recorded continuously and kept long enough as a reference.
- The refrigerated container must be set at a maximum threshold temperature of 10°C long enough before loading.
- The refrigerated containers and freezers must be provided with instruments to measure relative humidity.
- Adequate circulation of air must be maintained inside the refrigerated containers and freezers with a circulation rate within a reasonable range to prevent fluctuations in temperature and humidity.
- The space between packages must be good enough to allow for adequate air circulation and sufficient exposure of package surfaces to the circulating air.
- All food transport vehicles must be well designed, well maintained and in good condition.
- All food transport containers must be made of easy-to-clean and easy-to-sanitize materials. The design must take into account the removal of excess water, and other substances used for sanitization.
- The packages inside the container must not be stacked in direct contact with the floor or walls. It is preferable that the distance between the packages and the walls is less than 45 cm.

- The internal surfaces of the container must be smooth and have no sharp edges.
- The internal surfaces of the containers must have as few welded bolts and joints as possible.
- Adequate lighting must be installed in the means of transport.
- Packages must be stacked in regular rows on shelves or pallets.
- The interior floor, walls and ceiling must be corrosion resistant (made of stainless steel, aluminum or any other appropriate food-grade materials).
- The ceiling must be fitted with rustproof hooks to hang chilled and frozen carcasses.
- The doors must be provided with air or plastic curtains to prevent cool air from escaping during loading or unloading.
- Tankers of water or liquid substances of food must be made of food-grade rustproof (e.g.: stainless steel) materials. They must be provided with detachable hoses.
- The refrigerated equipment must be designed in such a way as to prevent food contamination.
- Necessary corrective measures must be put in place to detect any leakage in the cooling system.
- Refrigerants must be designated as per GSO 970 “*Stores for Frozen and Chilled Foodstuffs – Part III: Labelling and Marking*”.
- Unwashed raw vegetables must be kept away from cooked or ready to eat foods.
- If the means of transport is designated for the carriage of unpackaged foodstuff or milk where the interior surfaces of the container come into direct contact with food, the surfaces must be capable of withstanding steam, hot water or chemical sterilization.

## General Requirements for Transporting Chilled and Frozen Foodstuff

### Table (1)

Temperature Controls for Transporting fresh vegetables



Foodstuff Type	Transportation Temperature (°C)
Asparagus	0
Lima – Beans (Seeds in pods)	7
Green beans	0 to 5
Beet	0
Cauliflower	0
Cabbage	0
Carrot	0
Celery	0
Cucumber	7 to 10



Table (1) / Continued

## Temperature Controls for Transporting fresh vegetables

Foodstuff Type	Transportation Temperature (°C)
Eggplant	7 to 10
Lettuce	0 to 1
Watermelon	4 to 10
Peas	0
Pepper	7 to 10
Potatoes	10 to 16
Mushroom	0
Okra	7 to 10
Dry onion Spring onion	0 to 1
Parsley	0
Parsnip	0
spinach	0
Sweet corn	0 to 4
Green ripe tomatoes	13 to 18
Pink ripe tomatoes	7 to 10
Zucchini and Cucurbitales	10 to 13
Radish	0

Table (2)

## Temperature Controls for Transporting fresh fruit



Foodstuff Type	Transportation Temperature (°C)
Apple	-1 to 4
Apricot	-1 to 0
Avocado	4
Banana	13 to 14
Raspberry	-1 to 0
Grapefruit	5 to 10
Lime	10 to 13
Colored sour	10 to 13
Salty lemon	9 to 10

Table (2) / Continued

## Temperature Controls for Transporting fresh fruit

Foodstuff Type	Transportation Temperature (°C)
Peach	0
Pear	-1 to 0
Pineapple – Green ripe	10 to 16
Pineapple – Ripe fruit	7
Mango	7 to 10
Guava	8 to 10
Dates (Fresh)	0
Fig	- 0.5 to 0
Grapes	- 0.5
Plum	-1 to 1
Strawberry	0 to 2
Mandarin	2 to 5
Papaya	7 to 10
Cherry	-1 to 0
Orange	0 to 8

Table (3)

## Temperature Controls for Transporting Chilled Dairy &amp; Dairy Products



Foodstuff Type/ product	Temperature Not More Than (°C)
Milk and flavored milk	5°C
Yogurt, flavored yogurt, and yogurt with fruit cubes	5°C
Laban and flavored laban	5°C
Laban beverage – (Ayran or Doogh )	5°C
Unripened cheeses	5°C
Labneh and flavored labneh	5°C
Cream and flavored cream (Cream or kaymak)	5°C
Butter	5°C

Table (4)

## Temperature Controls for Transporting Chilled Meat &amp; Meat Products



Foodstuff Type/ product	Temperature Not More Than (°C)
Red meats (Cows, bubalus, camles, and deer meats....etc.)	5°C
Lamb and goat meats	5°C
Red minced meats	5°C
Red meats burger	5°C
Chicken white meats	5°C
Chicken burger	5°C
Chicken gizzards	5°C
(Duck- goose- turkey- rabbit- pigeon- quail- ostriches meats....etc.)	5°C

Table (4) / Continued

## Temperature Controls for Transporting Chilled Meat &amp; Meat Products

Foodstuff Type/ product	Temperature Not More Than (°C)
Edible organs and guts of big animals (Liver- Kidney – heart – tongue – spleen – tail – hearts - ....etc)	5°C
Sausage (Hot dog) Meats and poultry	- 0.5 to 1°C
Brain, testicles, and tripe	5°C
Kebab, kofta, and meatball	5°C
Packed and unpacked fish	0°C
Crustacean	0°C
Fish burger	5°C
Crayfish	5°C
Caviar (Fish egg) in saline solution	10 to 18°C

**General Requirements for transporting (Unrefrigerated and Unfrozen)  
Foodstuff**

**Table (5)**

**Children Food**



Foodstuff Type/ product	Temperature Not More Than (°C)
Sterilized liquid milk ready for infant use	25°C
Dry milk food for children	25°C
Filtered food for children	25°C
Fruit juices for children	25°C
Children food in form of powder or prepared granules of grains, legumes, vegetables, or fruit.	30°C
Flavored liquid dietary supplement for children	25°C
Flavored powder dietary supplement for children	25°C
Flavored liquid milk for children	25°C

Table (6)

## Meats and Meats Products



Foodstuff Type/ product	Temperature Not More Than (°C)
Canned Meats	30°C Note: If the Pastirma is chopped, it shall be kept at temperature from (0 to 5°C)
Salted and spiced meats such as Pastirma and Salami slices	30°C
Canned meat with vegetables	30°C
Dried meats	30°C
Whole egg powder, albumen, and yolk	30°C
Canned fish	30°C
Canned crustaceans	30°C
Dried fish and crustaceans	30°C
Salted fish in saline solution	30°C



Table (7)

## Dairy and Dairy Products



Foodstuff Type/ product	Transportation Temperature (°C)
Powdered skimmed milk	30°C
Powdered whole fat milk	30°C
Sterilized milk	30°C
Evaporated milk	30°C
Sweet condensed milk	30°C
Sterilized flavored milk	30°C
Powdered cream (Covering cream)	30°C
Whey powder	30°C
Packaged cheeses in saline solution such as Domiati, Akkawi, and Nabulsi	30°C
Natural margarine	30°C
Cooked cheese	30°C
Ice cream powder	30°C
Cream (Cream-Kaymak)	30°C
Sterilized skimmed analogue cream with ultra-high-temperature (UHT)	30°C
UHT milk (Long-life)	30°C

Table (8)

## Vegetables, fruit, and Their Products



Foodstuff Type	Transportation Temperature (°C)
Canned vegetables and fruit	30°C
Dried fruit juices	30°C
Jelly and Marmalade jam	30°C
Chips and corn puffs	30°C
Dried vegetables and fruit such as fig, raisin, prune, and apricot....etc.	30°C
Spice sauce in all types	30°C
Pickles	30°C
Spiced tomato sauce	30°C
Tomato paste	30°C
Hot sauce	30°C

Table (8) / Continued

## Vegetables, fruit, and Their Products

Foodstuff Type	Transportation Temperature (°C)
Peeled tomatoes, ketchup, and tomatoes pulp	30°C Note: It shall be packed with sterilization conditions
vegetables and fruit juices concentrate	30°C
Fruit nectar or sterilized mixture fruit nectar	30°C
Juices and drink of sterilized fruit	30°C
Dates and grape syrups	30°C
Table olive kept in saline solution or sterilization and heat processed	30°C
Mustard sauce	30°C
Spices	30°C
Mushrooms	30°C
Apricot leather (Qamar al-Din)	30°C
Fried fruit slices such as apple, pears, and peaches slices in various flavors	30°C
Canned Fruit Pulp, canned fruit and vegetable juices concentrate specified for manufacturing purposes	30°C
Stuffed grape leaves	30°C
Grape leaves in saline solution	30°C
Processed and dried vegetables	30°C
Processed vegetables	30°C

Table (9)

## Oils, Plant-Based Fats, and Its products



Foodstuff Type	Transportation Temperature (°C)
Vegan margarine, vegetables oils, and hydrogenated vegetable oils and its products such as Palm Olein and Palm Stearin	30°C
Margarine	30°C
Animal or vegan margarine	30°C

Table (10)

## Grains, Legumes, Nuts, and Their Products



Foodstuff Type	Transportation Temperature (°C)
Regular bread	30°C
Croissant	30°C
Cake, cake chips, sponge cake, chocolate cake, fruit cake	30°C
Pound cake	30°C
Cheesecake	30°C
Ready cake	30°C
Stuffed puffs such as Thyme (Zatar) and cheese..etc.	30°C
Doughnut	30°C
Grinded and roasted coffee	30°C
Instant coffee	30°C
Salted and sweet biscuits	30°C
Stuffed or topped biscuits	30°C
Oat chips	30°C

Table (10) / Continued

## Grains, Legumes, Nuts, and Their Products

Foodstuff Type	Transportation Temperature (°C)
Cake mixes	30°C
Cake, croissant, processed, and mechanically packaged baked pastries	30°C
Cake with cream	30°C
Legumes powder	30°C
Crushed legumes	30°C
Wheat bran	30°C
Instant vermicelli	30°C
Canned legume such as Hummus, Hummus with Tahina, and Fava Beans... etc.	30°C
Dry grains such as barley, oat, corn.. etc.	30°C
Roasted, peeled, salted or sweet nuts	30°C
Peeled roasted nuts topped with dry fudge layer	30°C
Rice	30°C
Flour	30°C
Legumes powder such as Hummus powder and crushed dried Falafel	30°C
Peanut butter	30°C
Starch in all types	30°C
Cereal products such as corn flakes and wheat	30°C
Rice..etc.	30°C
Grinded roasted coffee with cardamom (Arabic coffee)	30°C
Pasta	30°C
Non whole semolina	30°C

Table (11)

## Beverages and Water



Foodstuff Type	Transportation Temperature (°C)
Malt beverage	30°C
Natural concentrate fruit beverage (Squash)	30°C
Artificial concentrate fruit beverage	30°C
Artificial beverage with natural or artificial flavors	30°C
Soft drinks and non-carbonated energy drinks	30°C Note: It shall be packed with sterilization conditions
Aromatic water such as rose water and orange blossom	30°C
Natural sparkling mineral water (Carbonated)	30°C
Non-sparkling natural mineral water (Non-carbonated)	30°C
Packaging drinking water	30°C

Table (12)

## Other various products



Foodstuff Type	Transportation Temperature (°C)
Compressed inactive baking yeast	30°C
Uncompressed inactive dried baking yeast	30°C
Backing powder	30°C
Custard powder	30°C
Cappuccino powder	30°C
Creme Caramel powder	30°C
Muhallebi powder	30°C
Grinded spices	30°C
Loqumat Alkadey powder	30°C
Vanilla powder	30°C



Table (12) / Continued

## Other Various Products

Foodstuff Type	Transportation Temperature (°C)
Food flavors and colors powders	30°C
Liquid food flavors and colors	30°C
Crunchy snacks	30°C
Fresh eggs (Table eggs)	11 to 15°C
Pasteurized liquid eggs	5°C
Vinegar	30°C
Gum	30°C
Coffee creamer	30°C
All types of packaging tea bags	30°C
Nutritious beverages powders such as those that contain sugar, milk solids, flour, barley, chocolate powder, calcium carbonate, various bicarbonate flavors...etc.	30°C
Artificial drinking powder	30°C
Chocolate powder	30°C
Jelly powder	30°C
Plain dry candy	30°C
Enriched dry candy	30°C
Bee honey	30°C

Table (12) / Continued

## Other Various Products

Foodstuff Type	Transportation Temperature (°C)
Soup powders	30°C
Soup that its water is partially removed in a form of cubes or something else	30°C
Instant Basbousa powder	30°C
Brown and white sugar	30°C
Cane sugar syrup concentration	30°C
Tea	30°C
Green tea	30°C
Food salt	30°C
Iodized salt	30°C
Halva	25°C
Halva	25°C
Mayonnaise	25°C
All types of chocolate	25°C
Raw chocolate (Not processed)	25°C
Royal jelly	30°C
Liquid and druid Glucose	30°C