

Reefers Services

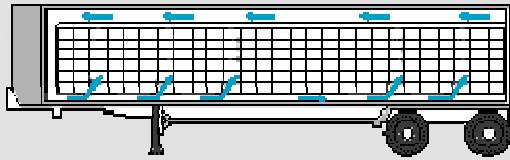
Service Summary

- Service Summary Capacious internal volume to provide maximum cargo space
- Low heat leakage to maintain optimum product temperature
- Minimal air leakage
- Reefer Container
- Frozen Products
- Chilled Products
- Controlled/Atmosphere
- Generator Sets

- Transit Shelf Life and Temperature Settings
- offer a worldwide Reefer service
- Weekly services with fast transit times
- Equipment where you need it
- 40 ft standard (8' 6") and 40 ft high-cube (9' 6")
- Generator sets and "Transfresh" Controlled Atmosphere equipment are provided
- Modern technology Container to aid air circulation, heat removal with temperature and humidity control
- Environmental friendly refrigerant 134A (non CFC)
- Skilled staff handling your reefer cargo
- Stuffing and Handling support to ensure optimal condition for your products
- 24 hour automatic and manual equipment function monitoring

Reefer Container

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Construction

Reefer containers have been constructed to the most advanced standards and are tested under extreme weather conditions.

The design ensures the following benefits for the customer:

- Low tare weight to maximize payload
- Capacious internal volume to provide maximum cargo space
- Low heat leakage to maintain optimum product temperature
- Minimal air leakage

Air flow

Reefer containers have bottom-air delivery, which means that the air is supplied from the bottom of the container through a special T-bar floor.

Power Supply

Containers are equipped with a permanent refrigeration unit with individualized temperature control by Partlow thermostat.

Environment

Reefer containers are fitted with machinery which utilizes the ozone-friendly refrigerant R134a.

Pre-Trip Inspection (PTI)

Before a container is released to a customer, it must pass a thorough Pre-Trip Inspection (PTI).

The PTI is actually an extensive check of both the container and the machinery, ensuring that only clean and undamaged containers with reefer machinery in perfect running condition are released.

Catalog

Containers are equipped with "Temperature Recording Chart" which monitors the temperature throughout the trip of the container.

Refrigerated 40' x 8' x 9'6"



		Aluminum	
		Millimeters	Feet
International Dimensions (1000mm= 3.281')	Length	11,520	37' 9"
	Width	2,286	7' 6"
	Height	Nominal Usable	2,546 2,446
Door Opening	Width	2,280	7' 5"
	Height	2,567	8' 5"
		Kilograms	Pounds
Weight	Max Gross	32,500	71,649

	Tare	4,100	9,039
	Max Payload	28,400	62,610
		Cube Meters	Cube Feet
Internal Capacity	Nominal	67.3	2062
	Usable	64.9	2292

Refrigerated 40' x 8' x 8'6"



			Aluminum	
			Millimeters	Feet
International Dimensions	Length	11,570	37' 11"	
	Width	2,285	7' 5"	
	Height	Nominal Usable	2,250 2,150	7' 4" 7' 0"
Door Opening	Width	2,290	7' 6"	
	Height	2,265	7' 5"	
			Kilograms	Pounds
Weight	Max Gross	30,480	67,195	
	Tare	4,480	9,876	
	Max Payload	26,000	57,319	
			Cube Meters	Cube Feet
Internal Capacity	Nominal	58.4	2062	
	Usable	55.9	1974	

Frozen Products

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Packaging requirements

The packaging material must be able to support a stacking height of up to 2.45 meters.



Stowage

Packages /cartons and no space between the cargo and the walls of the container. It is, however, very important that the cargo is stowed below the red load line (10 cm below the of the container) as this allows the refrigerated air to circulate evenly around the cargo, thereby keeping the frozen products at the required temperature.

Ventilation

When frozen products are transported, no fresh air ventilation will be performed.

Chilled Products

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Packaging requirements



The packaging material must be able to support a stacking height of up to 2.45 meters. The material should be able to withstand humidity without collapsing and should allow the passage of an adequate vertical air flow through the cartons, in order to maintain the desired temperature. As the air flow comes from the bottom of the container, the optimum air circulation will be achieved if each carton has symmetrical holes at both and bottom. Furthermore, the wrapping material used should be sufficiently secured, in order to avoid any blockage of the evaporator fan.

Stowage

Respiration” from the live chilled products produces heat, water vapour, carbon dioxide and gases, which may damage the product and should therefore be removed. The stuffing should allow the refrigerated air to circulate through the packaging material and throughout the entire load.

There are two standard loading patterns for chilled products:

Block Stowage

The products should be stacked as a solid block, without any space between the cargo and the walls of the container. If the cargo cannot cover the entire floor area, heavy cardboard must be placed in the empty space. This will prevent the air from “shortcycling”, which means finding the easiest way, resulting in the insufficient cooling of the cargo.

Cargo may not be stowed above the red load line. This is in order to ensure proper refrigerated air circulation. Slipsheets may not be used for live chilled cargo.

Palletized Cargo Stowage

The guidelines for block stowage should be observed, and in addition, the following points are recommended:

The cartons must be stacked squarely on of each other, in order to ensure that the weight is evenly distributed on the four corners of the cartons.

The ventilation holes, located at the and bottom of the cartons, must be aligned in order to allow the air to pass freely through the entire load. Shrink-wrapped pallets, slip sheets, foam trays, plastic bags or similar materials which may obstruct and block the air passage should not be used.

Ventilation

The ventilation of chilled products is necessary in order to remove the heat, carbon dioxide and gases produced by the cargo.

Heat is removed by continuously circulating the internal air, whereas carbon dioxide and gases are removed by replacing the internal air supply with cooled fresh air.

Humidity Control

The relative humidity of the air affects the quality of fruits and vegetables. If the humidity is too high, mould may develop. On the other hand, if the humidity is too low the products may wilt or shrivel.

The majority of live products require a relative humidity of 90 per cent, which is maintained by the respiration of the product itself when ventilation and temperature settings are at the optimum level.

In addition to the normal ventilation and temperature controls, reefer containers are equipped with a de-humidification system, which can reduce and maintain the relative humidity in the container at a level of between 65 and 80 percent - depending on the commodity involved.

It should be noted, however, that the system cannot supply added humidity to the air.

Controlled-Atmosphere

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Purpose of Controlled Atmosphere



When fresh perishables are shipped to distant markets, they require a precisely controlled transport environment. It is well known that harvested fruit and vegetables continue to live and breathe until they are consumed or destroyed by decay or desiccation. Under normal circumstances, these factors dictate the life span of individual products.

The life span can, however, be prolonged by keeping the commodities at the optimum temperature, combined with supplying the most effective blend of oxygen, carbon dioxide and nitrogen.

By transporting products under CA, the applied environment will slow down the ripening process and extend the shelf life of the products.

Benefits of using Controlled Atmosphere offer you the benefit of the TransFresh CA advanced system:

- A substantial increase in the range of commodities suitable for sea transportation, thereby eliminating the necessity of expensive airfreight
- An important extension of the distribution radius
- The opening of new markets
- A considerable increase in shelf life
- The reduction of product loss caused by deterioration
- Higher prices due to enhanced quality

It should be emphasized, however, that problems related to poor product quality, poor post-harvest procedures and incorrect pretreatment of the products cannot be solved by the use of Controlled Atmosphere.

Generator Sets

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Gensets are used to power the reefer containers, thereby maintaining the set temperature during rail or road transportation. Provides (at an extra charge) gensets of the clip-on type, which means that the gensets are clipped on to the upper front of the reefer container. Please contact your local agent for further information



Transit Shelf Life and Temperature Settings

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Useful hints for shipping reefer commodities

All numbers on these pages should only be used as a guideline and recommendation for cargo transported in reefer containers. The temperature and the transit life time are highly dependent on the stage of ripeness and place of origin of the product. If you have any questions regarding specific commodities, please contact your local agent.

Commodity	Max. Transit Shelf Life (Days)	Recommended Container Temperature Setting		Air Vent Open (%)
		F	C	

FRESH VEGETABLE AND MELONS

Artichokes, globe	15-20	32	0	10
Asparagus	100-150	32	0	5
Beans, lima	7-10	32-39	0	5
Beans, snap or green	7-10	32	0	20
Beets, bunch	10-14	32	0	5
Beets, roots	90-150	32	0	-
Broccoli	10-14	32-39	0-4	20
Brussels sprouts	17-25	32-39	0-4	20
Cabbage, Chinese	30-60	32-39	0-4	5
Cabbage, green, red, savory	90-180	32	0	20
Cantaloupes	10-14	38-40	3-4	20
Carrots, ped	28-180	32	0	5
Casaba melons	21-28	50	10	20
Cassava	14-21	56	13	-
Cauliflower	20-30	32	0	20
Celeriac	180-240	32	0	5
Celery	14-28	32-39	0-4	20
Chard	10-14	32	0	20
Chayotes	8-10	45	7	5
Chicory	14-28	32	0	20
Collards	10-14	32	0	20
Corn, sweet	4-6	32	0	5
Crenshaw melons	14-21	50	10	20
Cucumbers	10-14	54-61	12-16	20
Dasheen or taro	42-140	56	13	-
Eggplant	10-14	50	10	5
Endive (escarole)	10-17	32	0	10
Garlic	90-210	28.5-32	-2-0	5
Ginger	90-180	56	13	5
Greens, leafy	10-14	32	0	20
Honey melons (untreated)	21-28	45-50	7-10	20
Honey melons (C2 H4 treated)	21-28	41	5	5
Horseradish	300-350	32	0	-
Kohlrabi	25-30	32	0	10
Leeks, green	30-60	32	0	5
Lettuce	10-17	32-39	0-4	10
Mushrooms	4-10	32	0	5
Okra	7-10	50	10	10
Onions, dry	30-180	32-39	0-4	10
Onions, green	7-10	32	0	10
Parsley	30-60	32	0	20
Parsnips	60-120	32-39	0-4	-
Peas	7-10	32-39	0-4	20
Peppers, bell (sweet)	12-18	45-50	7-10	10
Peppers, chili	14-21	45-50	7-10	10
Persians melons	14-21	50	10	20
Potatoes, processing	56-175	50-65	10-18	10



Potatoes, seed	84-175	36-40	2-4	10
Pumpkins	60-90	46-54	8-12	-
Radishes	10-17	32-39	0-4	5
Rhubarb	14-21	32-39	0-4	5
Rutabagas	60-120	32	0	5
Salsify	60-120	32	0	5
Spinach	5-10	32	0	20
Squash, soft-skin (summer)	7-14	45-50	7-10	10
Squash, hard-skin (winter)	84-150	50-55	10-13	-
Sweet potatoes	90-180	56	13	-
Temarinds	21-28	45	7	5
Tomatoes, mature green/breaker	21-28	54-58	12-14	20
Tomatoes, turning/light pink	7-14	50	10	20
Turnips, roots	60-120	32	0	5
Turnips, green	10-14	32	0	5
Water chestnuts	100-128	40-45	4-7	5
Watercress	4-7	32	0	20
Watermelons	14-21	50	10	-
Yams	50-115	56-60	13-16	-
Yucca	10-14	50	10	-

FRESH FRUITS

Acerola	50-58	32	0	5
Apples	90-240	32-39	0-4	5
Apricots	7-14	31	-1	10
Avocados	14-28	40-50	4-10	10
Bananas	7-28	57	14	10
Berries
Blackberry	2-3	31	-1	5
Blueberry	10-18	31	-1	5
Cranberry	60-120	36-40	2-4	5
Currants	7-14	31	1	5
Dewberry	2-3	31	-1	5
Elderberry	5-14	31	-1	5
Gooseberry	14-28	31	-1	5
Loganberry	2-3	31	-1	5
Raspberry	2-3	31	-1	5
Strawberry	5-10	31	-1	10
Breadfruit	14-40	56	13	20
Chaimito	20-25	38	3	5
Cherries, sour	3-7	31-31	-0.6-0	5
Cherries, sweet	14-21	30-32	-1.1-0	5
Cherimoya	14-28	54	12	10
Coconuts	25-56	32-35	0-2	-
Dates	24-52	32	0	5
Durian	42-56	39	4	5
Figs	7-10	32	0	10
Grapefruit (California, Arizona)	28-42	48-60	9-16	5

Grapefruit (Florida, Texas)	28-42	48-60	9-13	0-45
Grapefruit (Mexico)	28-42	48-58	9-14	5
Grapes	56-180	30-32	-1.1-0	5
Guava	14-21	50	10	10
Jackfruit	14-45	56	13	20
Kiwi fruit (Chinese gooseberry)	28-84	32	0	25
Lemons	30-180	38-56	3-13	20
Limes (Persian, Tahiti)	21-35	48-52	9-11	20
Limes (Mexican, Key)	10-15	52	11	20
Langsat	10-15	52	11	5
Lychee	21-35	35	2	5
Mangoes	14-25	42-55	6-13	20
Mangosteens	14-25	56	13	20
Nectarines	14-28	31	-1	20
Olives	28-42	45	7	20
Oranges (California, Arizona)	20-56	38-45	3-7	20
Oranges (Florida, Texas)	56-84	32-36	0-2	20
Papaya	7-21	45-54	7-12	20
Passion fruit	14-21	54	12	20
Peaches	14-28	31	-1	20
Pears (Anjou, 20 th Century Asian)	120-180	30-31	1.1-0.6	10
Pears (Bosc, Bartlett)	60-90	30	-1	10
Persimmon (Fuyu)	35-84	50	10	20
Persimmon (Hachiya)	50-90	41	5	20
Pineapple	14-36	50	10	5
Plantains	10-35	48-58	9-14	10
Plums and Prunes	14-28	31	-1	20
Pomegranates	28-56	32-41	0-5	5
Quinces	60-90	31	-1	20
Rambutan	7-21	54	12	20
Sapote	14-21	54	12	20
Tamarillos	28-42	32	0	10
Tangerines and Mandarin Oranges	14-28	38-40	3-4	20
Uglifruit	14-21	40	4	-
Frozen Vegetables and Fruits	.	0	-18	-
FRESH MEATS				
Beef, Horse, Lamb, Pork, Poultry, veal	14-28	29	-2	.
FROZEN MEATS				
Beef, Horse, Lamb, Pork, Poultry, veal	.	-5	-21	-
FROZEN FISH				
fatty (i.e., herring, mackerel)	.	-10 to -5	-23 ~ -21	-
Lean	.	-10 to -5	-23 ~ -21	-
Shrimp, Scallops	.	-5 to -0	-23 ~ -18	-
Crab, Lobster	.	-10 to -5	-23 ~ -21	-
PROCESSED MEATS				
Bacon-slab	21-28	27	-3	-
-slice	.	27	-3	-

Bologna, franks	.	27	-3	-
Braunschweiger, liver sausage, and liver loaves	.	27	-3	-
Cold cuts, (sliced) : Lebanon bologna, luncheon loaf, pickle pimiento loaf
Dried beef (sliced)	.	41	5	-
Hams-baked, boiled, ready to eat	.	28	-2	-
Hams-smoked	.	27	-3	-
Port sausage	.	27	-3	-
Sausage (country and Polish)	.	27	-3	-
POULTRY AND EGGS				
Poultry : Fresh, ice-packed	.	33	1	-
Poultry : Fresh, chilled	.	29	-2	-
Eggs	180	33-38	1-3	-
DIARY PRODUCTS AND CHEESE				
CHEESE				
Natural (brick cheddar, Camembert, Neufchatel)	.	30-34	-1~1	-
Natural (cottage, cream, Limberger, Swiss)	.	32-34	0~1	-
Process (American, brick, Limberger, Swiss)	.	38-45	3~7	-
Roquefort (natural)	.	30-34	-1~1	-
Swiss (natural)	.	30-34	-1~1	-
Cheeses foods	.	40-45	4~7	-
BUTTER				
Fresh	.	38-42	3~6	-
Frozen	.	-5	-21	-
Margarine	.	35	2	-
Ice creams	.	-15	-26	-
MISCELLANEOUS				
Batteries	.	45	7	-
Candy	.	60	16	-
Christmas trees	.	32	0	-
Film/photographic chemical	.	50	10	-

Disclaimer Note: Please note that the advice and suggestions provided in the following sections are no more than general guidelines given as reference only. No liability can therefore be admitted by in respect of the procedures and suggestions described on this website.

Each individual shipment may deserve specific care and special handling and/or stowage, and the following tips may therefore not apply to your particular cargo. If you require any technical advice or support, please contact your sales representative"