1. **INTRODUCTION**

The responsibilities and actions to ensure optimum cold chain operations are summarised in the PPECB HP02 document. The HP02 and HP22 documents must be read jointly with this document (HP01) to ensure that all requirements are met.

PPECB does not claim that all the procedures and specifications in these documents are comprehensive. The handling procedures are therefore continuously revised to suit the changing situations and requirements. Comments to improve the procedures are therefore welcomed.

1.1. **Approved facilities**

All container and specialised reefer loading must take place from a PPECB approved loading facility as per FBO requirements.

2. **PROCEDURES FOR LOADING OF CONTAINERS**

2.1 **Integral refrigerated containers**

Integral refrigerated containers are also known as reefer containers. These containers are fitted with their own cooling unit as an integral part of the container.

The cooling unit is designed and built to take up as little space as possible and has therefore very limited refrigeration capacity to cool the product and can only lower pulp temperature over an extended period of time.

Cold air is supplied by the cooling unit via the “T-bar” floor and warm air from the cargo is extracted from the top of stack and returns to the evaporator coil where the heat is removed and transferred to the outside.

2.2 **The following are very important for all containers:**

- The total floor surface must be covered to avoid short-circuiting of cold air.
- Pallet height must not exceed the horizontal RED loading line.
- Last pallets loaded must not extend beyond the vertical RED loading line at the door end or the end of the T-bar floor.
- Fan spaces and air passages must be unobstructed.

**Integral containers** need an external source of electricity (360-380V) to power the cooling unit and air circulating fans. Special plugs are provided on the ships, in container handling and port terminals and also some loading depots. Clip-on diesel powered electric generators (Gensets) are required to supply electricity during road and rail transport.

Some integral containers can be fitted with special equipment to maintain controlled atmosphere (CA) conditions.

2.3 **Capacity**

**Integral containers** are available in both 20 foot and 40 foot (12m) units - also known as FEU’s. The FEU’s usually take 20 ISO pallets but some of the older types only take 19 pallets with the 20th pallet stowed breakbulk at the door end. The TEU (20 foot) take 9 pallets, with the 10th pallet stowed breakbulk. So called “high cubed” (FEU) integral containers, can take 20 pallets up to 2,35m high including the pallet base. These containers can take the equivalent amount of cartons equal to 23 pallets.
2.4 Loading temperature requirements

Carrying temperatures are summarized in Table 1.

2.4.1 Containers

Citrus fruit should be **pre-cooled to the specified carrying temperature (Reefer Code) prior to loading** into containers. This will ensure maximum storage life and shelf life, reduce moisture loss, and reduce the incidence of decay.

2.4.1.1 Soft citrus:

- A maximum pulp temperature of **3°C** above the specified carrying temperature will be allowed e.g. if carrying at 3.5°C (set point, or delivery air temperature), pulp temperature may not exceed 6.5°C. Soft citrus should be shipped at 3.5°C. If more colour development is required the fruit can be shipped at 10°C with a maximum loading temperature of 13°C.

- Cartons must be stacked/palletized neatly and in such a way that no cartons will protrude past the dimensions of the pallet base. The pallets must be strapped in at least three positions preferably more to ensure that the pallet/cartons remains squarely upright. It is strongly advisable to use pallet bases with a maximum of 9 slats thereby ensuring sufficient ventilation between the slats for vertical air flow. Pallets must in no way lean to one side.

2.4.1.2 All other citrus packed in:

- **Open top cartons or bulk bins**: Must be pre-cooled to a maximum pulp temperature of **3°C** above the specified shipping temperature. A maximum pulp temperature increase (on the outside of pallets) of **5°C** above the specified carrying temperature will be allowed during the handling, loading and transport of the fruit, until re-cooling has recommenced. Maximum specified carrying temperature shall be as indicated in Table 1.

- **Telescopic cartons – wrapped and unwrapped fruit**: must be pre-cooled to a maximum pulp temperature of **3°C** above the specified carrying temperature. A maximum pulp temperature increase (on the outside of pallets) of **5°C** above the specified carrying temperature will be allowed during the handling, loading and transport of the fruit, until re-cooling has recommenced. Maximum specified carrying temperature shall be as indicated in Table 1.

- Carton ventilation holes must always be open.

- Cartons must be stacked/palletized neatly and in such a way that no cartons will protrude past the dimensions of the pallet base. The pallets must be strapped in at least three positions preferably more to ensure that the pallet/cartons remains squarely upright. It is strongly advisable to use pallet bases with a maximum of 9 slats thereby ensuring sufficient ventilation between the slats for vertical air flow. Pallets must in no way lean to one side.
LOADING OF AMBIENT FRUIT (“W” BOOKINGS) IS NOT A RECOMMENDED PRACTICE – PPECB reserves the right to stop all shipments should there be any indication that the quality of the fruit is compromised.

2.4.2. Procedure for ambient loading of hard citrus only shipments to non-European member country destinations:

2.4.2.1 Authorisation:

Permission must be obtained from the PPECB for all ambient consignments to which all parties agree to. This will be issued in the form of a dispensation under T13 conditions and under following agreements:

- By accepting a W-booking, the relevant shipping line agrees upfront to the conditions of fruit being booked and loaded at ambient conditions for a specific shipment.

- PPECB reserves the right to insist in quality outturn reports, to support future ambient shipments.

- PPECB reserves the right to stop all shipments in aforementioned manner should there be any indication that the quality of the fruit is compromised, or should any logistical or technical problem indicate greater risks to the product.

2.4.2.2 Conditions

- Un-cooled fruit to be loaded into the container as soon as possible after packing. A maximum accepted time period from the oldest packing date on pallets until container loading will be 10 days.

- It is advisable to avoid mixing different types of citrus fruit and or cartons in the same container.

- Fruit pulp temperatures shall not exceed plus 22°C at loading.

- The use of “Super Vent”, open top or similar type cartons is advised.

- Carton ventilation holes must always be open.

- All pallet caps/tops and interlocking sheets, must allow for proper ventilation.

- It is advisable to use pallet bases with a maximum of 9 slats thereby ensuring sufficient ventilation between the slats for vertical air flow. Pallets must in no way lean to one side. Pallets with fewer slats are acceptable on condition that their strength is equal to or better than 9 slat pallets.

- Cardboard bins and wooden crates must have ventilation openings at the base and caps at the top to promote convective cooling.

2.4.2.3 Citrus fruit that may not be shipped ambient (i.e. warm/un-precooled)

- All soft citrus cultivars
- Navels
- All late season citrus fruit, after October
- All citrus fruit de-greened (gassed with ethylene)
- All citrus fruit to be shipped under cold treatment protocols
- All fruit with a high risk of decay.

2.4.2.4 Procedure for ambient loading of hard citrus only shipments to European member country destinations:

- The fruit must reach the port facility/container terminal/cold store and be under cooling (10ºC or below) within 4 days from PPECB pack house inspection, however, in terms of ambient loading, the following will apply:
  - Container shipments (loaded either at the pack house or port facility) must also be under cooling within 4 days from PPECB pack house inspection;
  - If the fruit is not under cooling within 4 days, the exporter to ensure that the fruit is presented for re-inspection to DAFF – DIS.

- The fruit shall be stored at a temperature with a delivery air set point of 10ºC or below.
- The fruit shall be shipped at a delivery air temperature set point of 10ºC or below.
- All Cold Storage facilities must be registered with DAFF additional to the normal PPECB annual registration.
- It is strongly recommended not to load 100% ambient fruit in decks that are not square or rectangular in the case of conventional shipments.

2.5 Maximum periods without cooling (TTT’s) for all Citrus

- TTT for all pre-cooled citrus in integral containers: 16 hours

The TTT specifies the maximum cumulative time allowed from the time that the first pallet of fruit leaves the cold room for loading into a container, until the time that the full container is again connected to a power source. In the case of the integral container, the 16 hours TTT allows for one (1) hour loading from the cold store into the container, fourteen (14) hours transit time to the port and one (1) hour port handling and reconnecting to a power plug. Gensets must be used to supply electricity to the container if the transport time to the port is more than fourteen (14) hours.

Delays in connecting a container cooling unit to power must be avoided.
Fruit must be placed under cooling as soon as possible.
Fast re-cooling will quickly remove condensation, resulting in a reduced risk of decay.

2.6 Multiple container loading points is not recommended, but can be accommodated under the following guidelines:

- The Exporter / Agent must notify PPECB booking section of both loading points at time of placing bookings.
- Maximum two loading points per container.
- Always start at the furthest point first.
- Distance between points must be such that the total cumulative (TTT) of 16 hours is not exceeded.
- If it will take more than 16hours, then a generator unit must be attached.
- A maximum tolerance of 3, 0ºC will be allowed at both loading points for pre-cooled loads.
2.7. Fresh air intake/ventilation

A ventilation setting of minimum **15 cubic metres per hour** for integral containers is required.

The following procedures shall apply:

- The Exporter or his Agent specifies the required carrying temperature regime, code and fresh air vent setting at time of booking shipping space (Export notification).
- The container Owner/Operator must inform the container depot of the required fresh air vent setting, as well as temperature setting.
- Personnel at the loading depot must check that the fresh air vent is opened according to the Export notification.
- Personnel at the loading depot must also ensure that the temperature is set according to the export notification.
- PPECB will audit the fresh air vent settings and temperature settings at time of loading and in the terminal.
- PPECB will instruct the Master of a vessel in writing of the required carrying temperature and fresh air ventilation.

2.8 Plastic Wrapping: (Containers/Specialised Reefers)

Care must be exercised in the use of plastic or shrink wrapping (pallet securing) materials. **Use only a loosely woven lattice type that when stretched over the cartons still allows for the horizontal penetration of air.**

3. PROCEDURES FOR LOADING OF SPECIALISED REEFER VESSELS

Refrigerated vessels have several decks. Cold air is supplied to the bottom of the palletised fruit (high pressure) and removed from the top of the pallets (low pressure). Cold air is therefore circulated from the bottom vertically up through and around the pallets.

Most modern reefer vessels have high cooling capacities, attention should be paid to ensure uniform cooling. The reason for this is that product heat must be transported from inside the pallet to the cooling coil. The medium that removes this heat is the cold circulating air.

Any factor that may reduce air circulation around the fruit will also reduce the cooling efficiency of the system. The nature of the telescopic citrus carton is such that the pallet becomes a big densely packed carton with much insulating material (cardboard). It is therefore impossible to circulate cold air around the fruit - the object to be cooled. This results in slow cooling and re-cooling and even hot spots of excessive temperature increases (as much as 20°C warmer than the actual air delivery temperature under extreme conditions).
Efficient uniform pre-cooling of vessel spaces prior to loading into reefer vessels (and for that matter into any refrigerated transport space) is an absolute prerequisite for minimum quality loss during transport and storage. This should be the objective of every exporter wanting to guarantee quality to the buyer.

The following procedures were developed over the years taking into account the technical characteristics and requirements as well as certain commercial considerations:

3.1 Loading of pre-cooled fruit

Product temperature increase must be kept to an absolute minimum once the cold chain is started. One of the important reasons is that exposure of the cold fruit to a warmer environment will result in the formation of condensation on the cold fruit surface. This will result in the fruit (and the packaging material) becoming moist. Moisture is a sure way of promoting decay (rots). Fluctuating temperatures also stimulate senescence, leading to associated quality losses. The practice to load citrus at a warmer temperature than the optimum carrying temperature is therefore not recommended.

3.1.1 Packaging Conditions

- Cartons must be stacked/palletized neatly and in such a way that no cartons will protrude past the dimensions of the pallet base. The pallets must be strapped in at least three positions preferably more to ensure that the pallet/cartons remains squarely upright. It is strongly advisable to use pallet bases with a maximum of 9 slats thereby ensuring sufficient ventilation between the slats for vertical air flow. Pallets must in no way lean to one side.
- Telescopic carton holes must always be open

3.1.2 Maximum product loading temperature

Carrying temperatures are summarised in Table 1.

**Soft citrus:**

A maximum pulp temperature of 3°C above the specified carrying temperature will be allowed e.g. if carrying at 10°C (set point, or delivery air temperature), pulp temperature may not exceed 13°C.

**Other citrus:**

A maximum pulp temperature of 3°C above the specified carrying temperature will be allowed e.g. if carrying at 10°C (set point, or delivery air temperature), pulp temperature at time of loading into the shipping space may not exceed 13°C.

3.1.2.1 Maximum temperature increases allowed during loading

In the centre carton: 0.5°C increase
On the outside of the pallet: 5.0°C increase

3.2 Loading of ambient fruit

LOADING OF AMBIENT (“W”-BOOKING) FRUIT IS NOT A RECOMMENDED PRACTICE – PPECB reserves the right to stop all shipments should there be any indication that the quality of the fruit is compromised.
Some citrus fruit however, under certain conditions, can be loaded directly (un-cooled) into reefer decks. This include some early season grapefruit, lemons, and Valencia’s in order to allow breakdown of green background colour in the skin.

3.2.1 Procedure for ambient loading of hard citrus only shipments to non-European member country destinations:

3.2.1.1. Conditions

By accepting a W-booking, the relevant shipping line agrees upfront to the conditions of fruit being booked and loaded under ambient temperature for a specific shipment.

PPECB reserves the right to stop all shipments in aforementioned manner should there be any indication that the quality of the fruit is compromised, or should any logistical or technical problem indicate greater risks to the product.

- Un-cooled fruit to be loaded into the vessel spaces as soon as possible after packing. A maximum accepted time period from the oldest packing date on pallets until vessel loading will be 10 days.
- It is advisable to avoid mixing different types of citrus fruit and or cartons in the same shipping space.
- Fruit pulp temperature not to exceed plus 22°C at loading.
- The use of “Super Vent”, open top or similar type cartons is advised.
- Carton ventilation holes must always be open.
- All pallet caps/tops and interlocking sheets, must allow for proper ventilation.
- It is advisable to use pallet bases with a maximum of 9 slats thereby ensuring sufficient ventilation between the slats for vertical air flow. Pallets must in no way lean to one side. Pallets with fewer slats are acceptable on condition that their strength is equal to or better than 9 slat pallets.
- Cardboard bins and wooden crates must have ventilation openings at the base and caps at the top to promote convective cooling.
- It is strongly recommended not to load 100% ambient fruit in decks that are not square or rectangular in the case of conventional shipments.

3.2.1.2 Citrus fruit that may not be shipped ambient (i.e. warm/un-precooled)

- All soft citrus cultivars
- Navels
- All late season citrus fruit, after October
- All citrus fruit de-greened (gassed with ethylene)
- All citrus fruit to be shipped under cold treatment protocols
- All fruit with a high risk of decay.

3.2.1.3 Procedure for ambient loading of hard citrus only shipments to European member country destinations:
• The fruit must reach the port facility/cold store/vessel and be under cooling (10ºC or below) within 4 days from PPECB pack house inspection, however, in terms of ambient loading, the following will apply:
  • Fruit trucked/railed to the port facility can be loaded directly onto a vessel, provided that it is within 4 days from PPECB pack house inspection;
  • If the fruit is not under cooling within 4 days, the exporter to ensure that the fruit is presented for re-inspection to DAFF – DIS.

• The fruit shall be stored at a temperature with a delivery air set point of 10ºC or below.

• The fruit shall be shipped at a delivery air temperature set point of 10°C or below.

3.2.1.4. Citrus fruit that may not be shipped at ambient or mixed with other cargo (i.e. warmer than the carrying temperature PLUS the specified tolerances) are listed in par 3.2.1.2.

3.2.2 Maximum percentage direct loading

Pre-cooled citrus fruit direct to vessel (i.e. fruit temperature with a tolerance up to 3°C above the carrying temperature) will only be allowed provided the fruit can be cooled in the shipping space to the carrying temperature within six (6) days after completion of loading.

3.2.3 Shipping arrangements

The following arrangements will be applicable during the shipment of ambient fruit.

• Same packaging conditions as for container shipments (Par 2.4.2.2)
• Do not load ambient products into hatch no. 1.
• Always start loading partly loaded decks from the evaporator/cooling end.
• Plastic or similar sheeting must cover the floor in partly loaded decks in order to avoid air short-circuiting the cargo.
• Avoid mixing soft citrus in same cooling compartment with those carrying fruit at ambient conditions.
• Jumping of decks should be limited and will only be allowed under certain conditions and all floor spaces must be covered. It is the responsibility of the Captain to ensure that partly loaded cargo is well protected and receive proper pre-cooling. Next loading port must have partly loaded cargo covered during the stowing of bottom decks.
• Loading shall be as quick as possible. If delays do occur the decks must be closed and cooling commenced.
• Completed decks must be closed and cooling applied as soon as practically possible.
• The following special shipping arrangements will be for specific vessels and instructions will be given to the Captain, during the season for,
  ➢ Specific fan speed arrangements
  ➢ Ventilation setting requirements
  ➢ Temperature setpoint arrangements
  ➢ Probing of certain decks
  ➢ Constant en-route reporting and monitoring

3.2.4 Fresh air ventilation

3.2.4.1 Pre-cooled loaded decks:

Fresh air must be introduced into the shipping spaces (decks) at such a rate to maintain the carbon dioxide (CO₂) level below 0,5% at all times, or as per specific arrangement.

3.2.4.2 Ambient loaded decks:
In order to assist the recooling of complete ambient decks, it is recommended not to have any ventilation for the 1st 24 hours after completing a deck, thereafter to reset ventilation to maintain carbon dioxide (CO\textsubscript{2}) level below 0.5\% (Refer paragraph 3.2.4 special arrangements).

3.2.4.3 Air circulation rate

Cold air must be circulated in the shipping space at a rate of at least 60 complete air changes per hour based on the empty volume of the space, or as specific arrangement (paragraph 3.2.4).

3.3 Lower temperature set points

Should it be necessary, Exporters, with the approval of all parties can ship warmer fruit at lower setpoints, in order to assist cooling of warm decks. This will be done through special arrangement (paragraph 3.2.4).

3.4 Compromise temperatures in conventional decks only

Most optimum carrying temperatures for citrus are summarised in Table 1. Under certain conditions, however, different types of citrus fruit may be mixed in the same conventional deck.

The following general guidelines will be followed:

- The warmest specified temperature will apply for the fruit concerned provided the proportion of that fruit exceeds 25\% of the total load.
- Compromise temperatures are also dictated by fruit quality and other conditions. These factors will have to be considered at the time of planning the loading programme.

4. SPECIAL SHIPMENTS FOR INTRANSIT STERILIZATION

A number of countries require very strict precooling and shipping temperature control to comply to quarantine requirements. These cold treatment (‘steri’) protocols are government-to-government agreements and are therefore not open to debate. The protocols are covered in separate documents, obtainable from the various PPECB port offices or from the PPECB website at www.ppecb.com.

5. PROCEDURES FOR VENTILATED AND OPEN DOOR CONTAINERS SHIPMENTS

VENTILATED SHIPMENTS, I.E. SHIPPING CITRUS FRUIT IN SPACES WITHOUT ANY TEMPERATURE CONTROL IS NOT RECOMMENDED

Sometimes it may, however, be necessary to do ventilated shipments to nearby destinations. The following requirements must be met:
5.1 **Only early season** oranges, lemons and grapefruit may be shipped ventilated. This procedure will be terminated as soon as decay becomes a potential problem (more than 2% rejections) and when rejections for fruit fly start to increase.

5.2 **No ventilated shipments shall be allowed after October.**

5.3 **Soft citrus** cultivars, repacked or **de-greened** citrus fruit cannot be shipped ventilated.

5.4 **The voyage** must be shorter than 10 days and the fruit may not be in containers for more than 14 days in total.

5.5 **All ventilated** shipments must be shipped directly to end destination and not via a transhipment Port in RSA.

5.6 **Ventilated decks must be:**
   - **Fitted with air circulation fans** to maintain an air circulation rate of at least 90 complete air changes per hour based on the empty volume of the shipping space.
   - **Continuously ventilated** to ensure no build up of carbon dioxide above 0.5%, or any other gas or any odour that may result in a taint. A minimum of at least one complete fresh air change, based on the total empty volume of the shipping space, must be applied per 12 hours.
   - **Absolutely clean** with no dust and no potential harmful chemical, liquid or any other product (e.g. cement, paints, solvents, detergents, petroleum products, hides).

5.7 **Ventilated containers must be:**
   - Absolutely clean and in good condition.
   - Inspected and passed by PPECB.
   - ISO certified and have a valid safety certificate (SCS plate).
   - Stowed on deck.
   - **Ventilated containers** can be stowed under deck provided that at least 90 complete fresh air changes is applied and that the decks are absolutely clean and odour free at all times.

5.8 **Types of containers that may be used:**
   - **Fantainer** or ventainer where an electrically operated fan continuously circulates ambient air through the load. This is the best system for ventilated shipments.
   - **Flat rack**, provided effective product protection is possible to keep the product in the shade, dry and still allow maximum fresh air circulation.
   - **Open side container** provided effective cargo protection is possible. The container must be constructed in such a way that it still complies to ISO and other safety standards.
   - **Open door containers** are not recommended.
   - **Ventilated containers** of the type with bottom and top ventilation openings on the long sides may be used. Air circulates by convection only and only along the sides and not through the load.

**NOTES:**

- Ventilated containers must be stowed on deck in such a way that only fresh air is circulated through the load. It must at all times be protected against any trace of exhaust gas, fumes, other gases, chemicals, rain, seawater, etc.
- Special care must be taken during loading of the container to ensure maximum air circulation through the total load in the container.
6. **CARRYING TEMPERATURES**

6.1 **Carrying temperature instruction**

PPECB prepares a written carrying temperature instruction based on the booking for shipping space by the Exporter, loading information and Shipping Line’s documentation.

The ship’s planner must inform the PPECB port office in writing of any changes in the requested and agreed carrying temperature or stowage plans. He will present a proper Reefer List, or Bayplan or Deckplan to PPECB and the Master. The PPECB then audit all information and together with ship’s planner, verify all changes, before PPECB hands over the final covering coded temperature letter to the Master.

The PPECB will, verbally and in writing, instruct the Master or the Chief Engineer of the required temperatures to be maintained during the voyage. It must, however, be remembered that:

- The Master has control over the delivery air temperature (DAT) only and has no means to control the return air temperature (RAT) other than applying cold blasts as specified by PPECB in the temperature letter.
- The Master has the right of refusal to reset integral container DAT set points and will only do so if it is absolutely safe for his crew to get access to the container.
- The fact that the DAT was kept within the specified 0.5°C tolerance does not guarantee optimum pulp temperatures. Insufficient ventilation through the carton and the pallet, heat build up due to product respiration, warm loading temperatures and a number of other factors have a big influence on the RAT and pulp temperatures. These and other factors cannot be controlled by the Master.

6.2 **Temperature recording**

The ship must be fitted with the prescribed number of air (and preferably also pulp) temperature sensors connected to a temperature recorder or data logger. The temperature recording devices as well as temperature control thermostats must be regularly calibrated and must be accurate within ±0.5°C.

**PPECB will not accept vessels:**

- With faulty temperature recording devices.
- Keeping hand written logs only.

6.3 **Temperature logs**

The Shipping Line must ensure that the temperature logs or charts for the entire voyage is returned to the PPECB once requested. Failure to do so confirms non-compliance to the PPECB instruction and the Shipping Line will be held responsible for any temperature related quality losses.

6.4 **Reporting on temperature**

PPECB will, on receipt of a written request and confirmation (notification number that an insurance claim was instituted), compile a technical report on pre-shipment and voyage temperature conditions.

7. **IN CONCLUSION**
The abovementioned procedures for the sea shipment of citrus fruit were developed over many years. These procedures describe the most optimum conditions presently known and will be regularly updated.

All temperature enquiries or any deviation from the procedures, as described in this document, must be reported to the relevant PPECB Manager in the port of intended export.

The PPECB Manager: Research and Development or General Operations Manager: Coastal and or Senior Cold Chain Specialist can also be consulted should more information or decisions on logistical and quality matters be required.

It must, however, always be remembered that fresh citrus fruit is alive and still biologically active and therefore continuously loses quality. Microorganisms are always present and will, even during low temperature storage, result in decay if optimum procedures are not applied.

It can therefore not be accepted that fresh citrus fruit that were passed for export based on a quality inspection and thereafter being handled strictly according to the most optimum procedures, will always arrive in a perfect condition at the final destination.

Comments and suggestions to improve this document and South African citrus fruit on the overseas market are most welcome and will be considered in a very positive way.

**TABLE 1**

Optimum carrying temperatures (°C) for well and poorly coloured citrus fruit as well as the maximum time between packing and reaching optimum pulp temperature for citrus fruit to be shipped from South Africa in conventional vessels and containers.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>OPTIMUM PULP TEMPERATURE</th>
<th>MAX. TIME TO REACH OPT. PULP TEMP.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WELL COLOURED</td>
<td>POORLY COLOURED</td>
</tr>
<tr>
<td></td>
<td>°C</td>
<td>Code*</td>
</tr>
<tr>
<td>Oranges Navels</td>
<td>3.5</td>
<td>C35</td>
</tr>
<tr>
<td>Oranges other</td>
<td>3.5</td>
<td>C35</td>
</tr>
<tr>
<td>Soft citrus – all</td>
<td>3.5</td>
<td>C35</td>
</tr>
<tr>
<td>Grapefruit</td>
<td>7.0/10.0</td>
<td>C07/C10</td>
</tr>
<tr>
<td>Lemons / Limes</td>
<td>7.0</td>
<td>C07</td>
</tr>
<tr>
<td>Other citrus</td>
<td>7.0</td>
<td>C07</td>
</tr>
</tbody>
</table>

**IMPORTANT NOTES RE CARRYING TEMPERATURES**

1. PPECB does not take any responsibility for any quality or other losses or potential losses.

2. PPECB may without prejudices consider deviations from the most optimum procedures and temperatures dispensation set out in this document upon receipt of a written request. (PPECB ISO 9001 – 2000 form T13)

3. Carrying temperature regimes and fresh air ventilation required for fresh citrus fruit to be specified in the booking request for shipping space.
4. Please find all regimes and ventilation requirements in the PPECB HP22 protocol, also published and updated on the PPECB website - www.ppecb.com