

FMS SPECIALISED REFRIGERATED VESSEL PROTOCOL

1. Background

This protocol prescribes procedures and requirements for shipping citrus fruit to the EU under the Citrus FMS in specialised refrigerated vessels (SRV). The protocol applies to shipments from all ports.

Table 1. SRV shipping regime codes.

Option	Shipping regime code	Cold room precooling pulp temperature = target temperature (°C)	Vessel release pulp temperature (°C)	Set point (°C)	Minimum time to discharge (days)
A and B	ECV2	≤ 3.0	≤ 3.0	2.0	24
	ECV0	≤ 1.0	≤ 1.0	0.0	22
	ECV01A	≤ 0.0	≤ 0.0	-1.0	20
C	ECV01C	≤ 0.0	≤ 0.0	-1.0	22

2. Shipping regime code options

- Option A and B fruit can be shipped under ECV2, ECV0 or ECV01A.
- Option C fruit can only be shipped under ECV01C.

3. Packaging requirement

- Cartons must comply with the **“Packaging Material Specifications and Palletization Protocols for the 2022 Citrus Export Season”**.
- The following cartons / packaging types are allowed:
 - Telescopic cartons: **only the new A15C SuperVent carton.**
 - Open display cartons with adequate ventilation.
 - No fruit wrapping is allowed, except alternating rows on the top layer for display purposes.
 - Ventilated trays may be used as internal packaging.
 - IFCO plastic crates are allowed. However, if internal packaging (trays) are used, the trays must be ventilated.
 - **Bulk bins, with ventilated sheets placed at the bottom of the bin.**
 - **The 9-slat pallet design is recommended to allow alignment of pallet slat spacings with the carton ventholes.**

- The following additional specifications apply to palletizing:
 - Ventilation in securing sheets must align with the vent holes at the bottom of the cartons.

4. Inland cold store and packhouse procedures:

- Pallet type (height)
 - Fruit must be packed and prepared at the packhouses for shipment in conventional vessels, as thermocouples need to be installed (no thermocouple installation at the packhouse is required for fruit handled at FPT Durban).
 - The norm for pallet height in specialised refrigerated vessels is the standard height pallets. Delivering hi-cube pallets in port/cold stores in order to break them down (remove layers of cartons) to standard height pallets, is not allowed in the FMS.
 - Only a very limited number of specialised refrigerated vessels can accommodate hi-cube pallets. It is CRITICAL to confirm with the shipping agent that the vessel can carry hi-cube pallets before despatching hi-cube pallets from the packhouse.
- Positioning of Thermocouple wires:
 - A minimum of four pallets per consignment must have Thermocouple wires installed.
 - Place the Thermocouple wire in a fruit in a carton positioned in the centre line of the pallet and on the 3rd layer from the bottom.
 - Thermocouple wire must be placed in a fruit halfway into the carton on the short side of the pallet.
 - Thermocouple wire tip must be placed in the core of the fruit.
 - Thermocouple wire must be so positioned and long enough (minimum of 1 m) to hang on the side of the pallet to allow measurement on arrival at the cold stores/quayside by PPECB assessor.
 - The pallet must be clearly marked with a sticker on the side where the wire is hanging from.
- Requirements for Thermocouple wires:
 - Thermocouple wires must comply to PPECB requirements for temperature accuracy:
 - Class 1 as per IEC 60584-2 & JIS C 1602 standards
 - Limit of Error ($\pm 0.5^{\circ}\text{C}$) as per special Tolerances (ASTM E230)
 - Supplier of the thermocouple wires can be found throughout the country as well as online (e.g., za.rs-online.com).
- Reading of Thermocouples by PPECB
 - At loading in cold store.
 - On arrival at quayside in port.

5. Cold store precooling preparation (quayside and inland)

- Cold stores should request the PPECB for a site visit to verify temperature logging equipment and placement of temperature probes prior to the season.
- Pallets of fruit delivered at the cold store must be pre-cooled to **target temperature** or below (Table 1), before the treatment is deemed to commence.
- PPECB will communicate to the cold store/s the minimum days required for the fruit to remain in the cold store at or below target temperature (Table 1) before vessel loading may commence. PPECB issues instruction to the cold store operator that loading may not commence before the specified date-time (**Control Point 1**).
- The target temperature to be monitored by a fruit pulp temperature logging system.
 - **NB:** A cold room will have a starting time, which is dependent on the last pallet to reach target temperature or below (Table 1). This will be the starting time and date of the treatment.
 - In those regime codes and port combinations for which zero (0) days are required in cold room, it is still required to cool the fruit to below the target temperature per regime (Table 2).
- To comply with the CBS-RMS, the 18-day CBS re-inspection will be handled as follows: If pallets are older than 18 days at this point in the cold chain, and the target temperature has not yet been reached, they must be re-inspected for CBS. However, once all pallets in the cold room have reached target temperature they will be deemed as being shipped and no 18-day CBS re-inspection will be required during further cold storage prior to loading.
- For inland cold stores, it is recommended to reduce the pulp temperature to 1.0°C or more below the target temperature (Table 1) for the last 24 hours before loading out.
- Transport of pre-cooled fruit to the quayside
 - Cold rooms within 100 km from port are allowed to transport cooled pallets in tarpaulin trucks.
 - Inland cold rooms >100 km from the quayside need to transport cooled pallets in refrigerated road motor transport (RRMT).
- **All temperature recordings during precooling must be made available to PPECB to verify:**
 1. **When precooling target temperature was achieved = starting point of treatment.**
 2. **That the precooling target temperature was maintained for the required duration.**

6. Calculations to determine cold storage and shipping duration days

- The shipping line must supply the applicable PPECB port office with the voyage duration results from the **Shipping Line Calculator**.
- Cold store facility to supply temperature data of relevant cold rooms to PPECB to confirm completion of required days at or below target temperature (**Control Point 2**).
- Based on the days in the cold store at or below target temperature, **PPECB will issue instructions to the Master of the Vessel when fruit can be discharged** in the designated port in the EU (**Control Point 3**).

Table 2. Examples of requirements in cold storage (precooling) and voyage for ECV2/0/01A/01C (using examples of possible voyage durations): Shipping Line Calculator.

Option	Shipping Regime Code	EU Port	SA Port	Total treatment duration (cold room + voyage)	Estimated voyage (days)	Required days in cold room at or below target temperature
A and B	ECV01A	Rotterdam (RTD)	DRB-RTD	20	18	2
			DRB-PE-RTD	20	21	0
			DRB-PE-CPT-RTD	20	23	0
			CPT-RTD	20	17	3
			PE-CPT-RTD	20	19	1
		Lisbon (LSB)	DRB-LSB	20	16	4
			DRB-PE-LSB	20	19	1
			DRB-PE-LSB	20	20	0
			CPT-LSB	20	15	5
			PE-CPT-LSB	20	17	3
	ECV0	Rotterdam (RTD)	DRB-RTD	22	18	4
			DRB-PE-RTD	22	21	1
			DRB-PE-CPT-RTD	22	23	0
			CPT-RTD	22	17	5
			PE-CPT-RTD	22	19	3
		Lisbon (LSB)	DRB-LSB	22	16	6
			DRB-PE-LSB	22	19	3
			DRB-PE-LSB	22	20	2
CPT-LSB			22	15	7	
PE-CPT-LSB			22	17	5	
ECV2	Rotterdam (RTD)	DRB-RTD	24	18	6	
		DRB-PE-RTD	24	21	3	
		DRB-PE-CPT-RTD	24	23	1	
		CPT-RTD	24	17	7	
		PE-CPT-RTD	24	19	5	
	Lisbon (LSB)	DRB-LSB	24	16	8	
		DRB-PE-LSB	24	19	5	
		DRB-PE-LSB	24	20	4	
		CPT-LSB	24	15	9	
		PE-CPT-LSB	24	17	7	

C	ECV01C	Rotterdam (RTD)	DRB-RTD	22	18	4
			DRB-PE-RTD	22	21	1
			DRB-PE-CPT-RTD	22	23	0
			CPT-RTD	22	17	5
			PE-CPT-RTD	22	19	3
	Lisbon (LSB)	DRB-LSB	22	16	6	
		DRB-PE-LSB	22	19	3	
		DRB-PE-LSB	22	20	2	
		CPT-LSB	22	15	7	
		PE-CPT-LSB	22	17	5	

7. Transport of cargo from an inland cold store facility

- Cold stores must schedule truck delivery to port to ensure minimum waiting time prior to off-loading and loading into the vessel.
 - **Durban:** Inland cold stores to deliver all pallets to FPT quay side.
 - **Cape Town:** Inland cold stores to deliver all pallets to FPT quay.
 - **Port Elizabeth:** Inland cold stores to deliver all pallets to PE Port quay 10 or 11.
- On arrival at the quay side, PPECB assessors will measure the temperature of the four pallets per truck via the thermocouple wires and record it on the PPECB Q147 form.
- Loading will commence if fruit temperature of all measured pallets are according to (Table 1):
 - $\leq 5.0^{\circ}\text{C}$ for ECV2
 - $\leq 3.0^{\circ}\text{C}$ for ECV0
 - $\leq 2.0^{\circ}\text{C}$ for ECV01 (A and C)
- If one of the four pallets in the consignment fails to comply (temperature is warmer than 5.0°C (ECV2), 3.0°C (ECV0), or 2.0°C (ECV01) no pallet from the respective truck will be off-loaded. The consignment (truck) will have to return back to the cold store facility for re-cooling to target temperature before the pallets can be represented for loading (**Control Point 4**).
- Trucks can only depart from quay side once all pallets are off-loaded and loaded onto the vessel.
- No standing of pallets on quay side will be allowed.
- PPECB will stop loading in windy or dusty conditions to prevent contamination.
- PPECB will not allow loading to commence if the quay side is in an unsatisfactory loading condition such as free-standing water, muddy conditions, rubble etc.
- Any damaged pallets which cannot immediately be repaired must be removed from the quayside. A PPECB Q70 rejection report will be completed. Damaged pallets will be removed from the consignment and must be returned to the cold store.

- On completion of loading and before Estimated Time of Departure (ETD) the **final mates receipt and final PhytClean report** per common or independent cooling deck must be provided to the PPECB official (**Control Point 5**).
- All rejected pallets (including pallets under cooling) that are older than 18 days up until 28 days, must be re-inspected for export to the EU. Pallets older than 28 days are not allowed to be exported to the EU.
- Pallets can be co-loaded within a deck provided they remain separate export consignments.

8. Loading of relevant decks and temperature control

- Loading of conventional shipments will be under direct control of PPECB.
- To allow accurate temperature monitoring, is compulsory to use vessel cargo probes to record and monitor fruit pulp temperatures. PPECB will calibrate the on-board USDA sensors and oversee the placement of the probes.
- Prior to departure the Master must supply PPECB with a full temperature set (DAT, RAT, and pulp probes) for each FMS deck (**Control Point 6**).
 - Maximum pulp temperature tolerance from set point is 1.0°C (**Table 1**).
- **Master of the Vessel is responsible to maintain required pulp temperature** within the PPECB instruction letter for **the duration of the voyage**.
- No additional data loggers by exporters/packhouse are required.

9. Inspection on arrival in EU port

- Prior to offloading, exporters must reconcile all pallet ID's with consignment/ phytosanitary certificate issued to allow 100% inspection.
- RFW/Lisbon Warf to report all phytosanitary certificates to the inspection body via the client system to enable inspection of each individual consignment / certificate.
- Exporters to supply manual and/or electronic addendums per phytosanitary certificate with all relevant pallet IDs.
- Exporter to supply inspector with the locations of the relevant pallets from the stock management system.
- **NB:** To allow the inspector to timeously examine all the consignments on the vessel, it is important to combine multiple pallets into each phytosanitary certificate.
- **NB:** The pallets of each consignment will not be physically batched, instead the inspector will be given pallet locations within the cold store from where samples can be drawn.

10. Co-loading of EU/Russia cargo in the same cooling compartment

- A maximum total of 25% Russian cargo will be allowed to be co-loaded with EU cargo per cooling compartment.
- Russian cargo must be loaded first and against the bulkhead of the cooling compartment.
- The Russian and EU cargo must be clearly divided by separation mesh to prevent the wrong cargo being offloaded at the time of discharge.
- Loading of Russian cargo will only commence if fruit temperature measured in the pallets of the Russian cargo are **(Control Point 7)**: (Table 1)
 - $\leq 5.0^{\circ}\text{C}$ for ECV2
 - $\leq 3.0^{\circ}\text{C}$ for ECV0
 - $\leq 2.0^{\circ}\text{C}$ for ECV01A and ECV01C