SOUTH AFRICAN POME FRUIT INDUSTRY PACKAGING MATERIAL GUIDELINES 2024

IMPORTANT POINTS TO REMEMBER

- Only source cartons and other packaging material from **reliable suppliers/manufacturers.** Ensure that you receive what you have specified and ordered
- Cartons must have adequate **horizontal and vertical ventilation** capabilities
- Cartons must have sufficient **compression strength** that can withstand pressure on bottom layers of hi-cube loads in high humidity (90%) conditions
- Do not exceed the **total pallet height** of 2.4m for containerised consignments (keep below the 'Red Load Line')
- Wooden pallet bases of good quality and **sound palletisation methods** are essential for cargo to withstand the numerous handlings in the logistics chain.
- Wooden pallets are not to be treated with **SOPP fungicide** as this chemical can lead to contamination of fruit and the exceeding of allowed residue levels for the EU. It is the packer's responsibility to ensure that the MRL levels are acceptable.
- Correct **width of slats and spaces between slats** are vital to ensure that carton ends rest on slats and not in gaps
- Pallet corner blocks must be clearly marked with the **ISPM15 mark** to indicate that it has been treated correctly.
- Use temperature management tools **(thermocouples & temperature recorders)** to manage the all-important cold chain
- Please note that the rules/laws regarding the **use of plastics** are changing by the day and have serious implications for the industry. Keep yourself informed about the latest developments. This also applies to certain supermarkets' specifications.

- Although care is taken to keep the guidelines updated, users must avail themselves of the latest changes in standards. Hortgro is not accountable for consequences stemming from the use of these guidelines

POME FRUIT PACKAGING MATERIAL GUIDELINES

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1. CARTONS

1.1 General

Cartons are specifically designed and manufactured for the following purposes:

- Unitisation
- Protection
- Conditioning
- Promotion

It is therefore very important that when ordering cartons, cognizance be taken of these properties to ensure that cartons comply with specifications and that the fruit is handled and presented in the best possible manner.

Cartons are mainly constructed from kraft corrugated paper board. This corrugated board consists of three components namely liner sheets, corrugated sheet (fluting) and adhesive. The combination and properties of these components determine the strength of the carton.

Re-useable plastic crates (such as Chep) can be used instead of cartons but costs and receiver demands will be deciding factors. Check for cleanliness as they are a potential source of contamination.

1.2 Ventilation

Sufficient ventilation of cartons is crucial to ensure that fruit is effectively pre-cooled and that the cold chain is maintained throughout the handling process.

Airflow consists of both a horizontal and a vertical component. Sufficient horizontal airflow is required for pre-cooling in forced air cooling tunnels where air direction is horizontal. In integral reefer containers and specialized reefer vessels the air flow is vertical and therefore cartons should provide for vertical airflow. Often vertical cooling is neglected and results in costly breaks in the cold chain.

Air holes at the bottom of the carton are important for vertical cooling. The amount and spacing of these air holes are a function of paper combination, type of inside packaging and type of wooden pallet used. It is recommended that at least 5% of the surface area on each surface be open for air flow.

The edge vent cartons P21 and P22 are now recommended. This carton type will shorten the pre-cooling times, which will benefit fruit quality in certain incidences, as well as reducing energy costs and time needed during the peak usage periods.

Inner packing material in most cases unfortunately blocks off ventilation holes. The physical vertical air flow is then largely prevented. This applies especially when plastics bags are used e.g. for Golden Delicious. Keep this in mind when deciding on final pre-cooling practices or temperature regime within containers.

1.3 Target Market

The carton type and carton design are functions of the specific target markets. For example, the UK market is less exporter trademark orientated because supermarkets want to promote their own

trademarks. The UK market is therefore more focused on generic black and green cartons, depending which supermarkets are used, for example Tesco requires green, compare to black cartons required by Sainsbury, M&S and ASDA.

1.4 Marking requirements

Marking on cartons is an extremely important aspect that is taken for granted with the design of cartons. The BUSINESS PANEL of any carton (including printed carton labels) should comply with the requirements as established by the EU or to any other regulations that are specified by a target market. Present your design to DAFF/PPECB and exporter before you order any cartons from a manufacturer. The following is normally required:

- Class I or II
- Fruit Type
- Carton Depth (Recommended)
- Country of Origin: “Produce of South Africa”
- Complete Address of Exporter or Producer
- Name of Variety
- Number of fruits
- Content of Carton: “14 x thrift bags”
- PUC or PHC Code: Registered Producer – or Pack House Code with DAFF
- Food Safety Accreditation Number: Global Gap, Nature’s Choice registration number etc.
- Pack Code
    - The pack code is a **4** digit code that indicates the pack date. Two **additional** digits can be used for orchard numbers if required. Please refer to your PPECB inspector for guidelines.

Note: If you include all the detail on the label, the carton then just becomes the carrier and does therefore not need any of the legal information requirements. It is recommended that the international recycle logo and code be included in carton stereo design.

1.5 Carton Specifications

Cartons should only be sourced from reputable/accredited manufacturers. The purchaser should insist that a 1 in 1000 sample of each lot be held by the manufacturer until the end of the season in case of claims.

Paper combination for a specific carton design is crucial in determining carton strength. It is advised that when ordering cartons the manufacturer gives an undertaking that the cartons meet minimum standards. Problems are experienced annually with cartons of which certain layers, especially the bottom layers, cave in after pallets are placed in cooling facilities or after arrival overseas. Producers/packers should ensure that they receive the specific product that they ordered and for which they paid. It is of extreme importance to receive test samples of each batch of cartons and to keep it in a storeroom for testing. / verification purposes by SABS, should problems be encountered with carton strengths. (Note: Suppliers usually include the free sample carton on front of each pallet – keep it with batch COC document). This is the only way to finalise a claim successfully, since the principle of authentication should be practiced at all times. Authentication is not just applicable on fruit but also on packaging material.

Specifications:

Telescopic cartons are designed for the fruit to carry SOME of the weight of the cartons stacked on top. It is critical to ensure that the correct trays are used to avoid the carton outer staying proud of the inner carton. Not only will the fruit bear excessive weight but horizontal ventilation holes may be partially or fully blocked.

Where „Open Display“ cartons are used it should be noted that in practice machine erected cartons seem to be more sturdy than hand folded cartons provided the correct glue is used and close supervision is applied in the assembly process.

The use of below standard packaging material must be strongly discouraged by all parties involved, due to the negative impact it has on fruit quality and also the harmful influence on the overseas image of SA fruit. Manufacturers are sometimes unjustly blamed for cartons that cave in due to weak palletizing actions. Weak palletizing is unfortunately prominent in the pome fruit industry.

PAPER COMBINATION should not be observed in isolation and is a function of carton type and carton design. Please note carefully the fluting (BE or BC) of paper. These determine the strength of the carton and are also a stipulating price factor.

As a guide use the following BCT crush strength for determining the minimum carton strength. Take the gross pack type multiplied by the number of layers per stack and then multiply that with a safety factor of 5.6. This calculation would give you a minimum BCT strength.

E.g. MK4 = 18.75 x 7 x 5.6
= 735Nm² or 73.5kg

1.6 Carton Size and Counts

Apples

1. Single layer Display Carton (MK7)

Carton	*Counts*					*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*
A06D 75mm	32	35	39	40	42	115	130
B06D 85mm	24	28	32	35		100	115
C06D 95mm	18	20	24	28		90	105

2. Double layer Display carton (MK9)

Carton	*Counts*				*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*
A12D 134mm	88	96			70	75
B12D 144mm	70	78	80	84	65	70
C12D 154mm	48	56	64		60	65

3. 12.5kg M12T Telescopic Carton (MK6)

Carton	*Counts*												*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*
M12T	48	56	64	70	80	84	88	100	113	125	138	150	70	80

4. 18.25kg M18T Telescopic Carton (MK4)

Carton	*Counts*											*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*
M18T	70	80	90	100	110	120	135	150	165	180	198	49	56

5. 21kg M21T Telescopic Carton (Bushel)

Carton	*Counts*	*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*

M21T	216	231	252	42	42

Please note that some receivers and especially UK supermarkets insist on specific coloured cartons with special marking instructions. Special marking instructions also apply to registered varieties like Pink Lady® and Sundowner®.

Note: If you pack M21T with a slipsheet the potential to pack 56 cartons/hi-cube pallet arises. Ensure that your receiver has the necessary equipment to unload the container or uses hand labour to unload. The increased payload of a container is approximately 3 tons.

Pears

6. Single layer Display Carton A/B/C06D 6.3kg

Carton	*Counts*								*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*
A06D 75mm	18	20	24	26	30	35	40	45	115	130
B06D 85mm									100	115
C06D 95mm									90	105

7. Single layer Display Carton A/B/C07D 7.0kg

Carton	*Counts*								*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*
A07D 75mm	20	25	26	30	35	40	45	50	115	130
B07D 85mm									100	115
C07D 95mm									90	105

8. Multi LayerTelescopic Carton 7.0kg M07T

Carton	*Counts*											*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*
M07D 155mm	20	25	28	32	35	40/42	45/48	50/56	60	63	67	100	115

9. Multi LayerTelescopic Carton 12.5kg M12T (MK6)

Carton	*Counts*												*Ctns/Std Pallet*	*Ctns/Hi-cube pallet*
M12T	38	42	45	48	52	60	70	80	90	96	112	120	80	90

10. Double Layer Display Carton 12.5kg A12D (MK9)

Carton	Counts										Ctns/Std Pallet	Ctns/Hi-cube pallet
A12D 134mm	70	80	90								70	75
B12D 144mm	70	80	90								65	70

Note: If you use the A12D 132mm carton you can hi-cube 80 cartons.

Please note that some receivers and especially UK supermarkets insist on specific coloured cartons with special marking instructions.

1.6 Pallet Heights

The height of a pallet, when palletisation is completed, is of critical importance in the handling and shipping process.

Pallet heights are determined by:

- Type of carton and carton strength;
- Racking in cold stores
- Pack house / Cooling facility loading ramps;
- Type of shipping and container; and
- Road transport.

Sufficient clearance should be provided between the top of the pallet and the transport mode's roof to ensure that forklifts can operate efficiently without damaging the pallet and its contents. This is particularly important when a forklift is negotiating loading ramps.

A maximum pallet height of **2,14 m** can be rated as a good industry standard in the case of **conventional shipping**. It leaves enough room for airflow and workspace and will be sufficient in most cases. In the case of **hi-cube integral containers**, the maximum pallet height is set at **2,40 m**. There is a specific **"Red Loading Line"** marked in the container that indicates the maximum height pallets can be stacked to ensure that airflow in the container is not restricted.

VERY IMPORTANT: Please remember the wooden pallet base height: The standard wooden pallet base is +/- 155 mm high and the CHEP pallets are +/- 176 mm high.
Note: The direction of the top stringer on a pallet will alter how cartons fit on the pallet. Check that your carton edges are on solid timber. Otherwise use a bottom sheet.

The following **RECOMMENDED PALLET HEIGHTS** are based on standard wooden pallet base and are as follows:

A. Apples

CARTON TYPE/ PALLET	RECOMMENDED CARTON QUANTITY FOR STANDARD PALLET	RECOMMENDED CARTON QUANTITY FOR "HI CUBE"
A06D – MK7	115	130
B06D – MK7	100	115
C06D – MK7	90	105
A12D – MK9	70	75
B12D – MK9	65	70
C12D – MK9	60	65
M12T – MK6	70	80
M18T – MK4	49	56
M21T - Bushel	42	42

B. Pears

CARTON TYPE/ PALLET	RECOMMENDED CARTON QUANTITY FOR STANDARD PALLET	RECOMMENDED CARTON QUANTITY FOR "HI CUBE"
A06D – MK7	115	130
B06D – MK7	100	115
C06D – MK7	90	105
A12D – MK9	70	75
B12D – MK9	65	70
M12T – MK6	80	90

(NB: These quantities do not always apply when CHEP pallets are used!)
*Please note that the level of container loading docks directly influences the number of cartons that can be stacked safely on a pallet. A too sharp incline or decline can lead to cartons being damaged at the door of the container.

CARTON DIMENSIONS are at all points specified as the following: **600 X 400 X 85 mm**.

600 = Length of carton = Outside dimensions
400 = Width of carton = Outside dimensions
134 = Depth of carton = Inside dimensions

1.7 Weight of Packs

Considerable confusion exists surrounding the NETT and the GROSS WEIGHTS of the different packaging. In certain situations it leads to rejections overseas with serious financial implications. The EU may consider underweight packaging as a legal violation. Receivers overseas usually specify weights, but in the absence thereof, the following guidelines may be followed:

A. Apples

Carton	*Carton Dimension*	*Trays*	*Bags*	*Mass*	
				Min (Compulsory)*	*Max (Recommend)*
12.5kg M12T	300x400x227mm	383x281mm	Length- 410mm Width - 310mm Depth - 775mm	12.5kg	13.0kg
12.5kg A12D	600x400x134mm	588x364mm	Length- 610mm Width - 410mm Depth - 800mm	12.5kg	13.0kg
12.5kg B12D	600x400x144mm	588x364mm	Length- 610mm Width - 410mm Depth - 800mm	12.5kg	13.0kg
12.5kg C12D	600x400x154mm	588x364mm	Length- 610mm Width - 410mm Depth - 800mm	12.5kg	13.0kg
6.5kg A06D	600x400x75mm	588x364mm	Length- 410mm Width - 310mm Depth - 775mm	6.5kg	7.0kg
6.5kg B06D	600x400x85mm	588x364mm	Length- 410mm Width - 310mm Depth - 775mm	6.5kg	7.0kg
6.5kg C06D	600x400x95mm	588x364mm	Length- 410mm Width - 310mm Depth - 775mm	6.5kg	7.0kg
7.0kg A07D	600x400x75mm	588x364mm	Length- 410mm Width - 310mm	7.0kg	7.5kg

			Depth - 775mm		
7.0kg B07D	600x400x85mm	588x364mm	Length- 410mm Width - 310mm Depth - 775mm	7.0kg	7.5kg
7.0kg C07D	600x400x95mm	588x364mm	Length- 410mm	7.0kg	7.5kg
18.25kg M18T	500x333x261mm	480x313mm	Length – 550mm Width – 350mm Depth – 875mm	18.25kg	18.75kg

*Minimum weight on arrival in the market

B. Pears

Carton	***Carton Dimension***	***Trays***	***Bags***	***Mass***	
				Min* (Compulsory)	***Max (Recommend)***
12.5kg M12T	300x400x220mm	383x281mm	Length- 410mm Width - 310mm Depth - 775mm	12.5kg	13.0kg
12.5kg A12D	600x400x134mm	588x364mm	Length- 610mm Width - 410mm Depth - 800mm	12.5kg	13.0kg
6.3kg A06D	600x400x75mm	588x364mm	Length- 610mm Width - 410mm Depth - 410mm	6.3kg	6.8kg
6.3kg B06D	600x400x85mm	588x364mm	Length- 610mm Width - 410mm Depth - 410mm	6.3kg	6.8kg
6.3kg C06D	600x400x95mm	588x364mm	Length- 610mm Width - 410mm Depth - 410mm	6.3kg	6.8kg
7.0kg A07D	600x400x75mm	588x364mm	Length- 610mm Width - 410mm Depth - 410mm	7.0kg	7.5kg
7.0kg B07D	600x400x85mm	588x364mm	Length- 610mm Width - 410mm Depth - 410mm	7.0kg	7.5kg
7.0kg C07D	600x400x95mm	588x364mm	Length- 610mm Width - 410mm Depth - 410mm	7.0kg	7.5kg
7.0kg M07T	300x400x155mm	383x281mm	Length – 450mm Width – 350mm Depth – 630mm	7.0kg	7.5kg

*Minimum weight on arrival in the market

The lid of the telescopic carton lid may not stand proud more than 15mm above the carton inner.

To allow for moisture loss it is recommended that a 200g moisture loss addition be allowed per 12.5kg pack without plastic bags and 100g for fruit packed in bags.

2. Internal Packaging

2.1 Trays/Counts

Pulp OR polystyrene (only black laminated) trays may be used as specified by the final customer.
Note: With a change to no single use plastic, other options should be considered e.g. paper trays.

A. Apples are to be packed according to the following counts per carton:

M12T			*A/B/C/12D*			*M18T*		
Counts	***Layers***	***Trays***	***Counts***	***Layers***	***Trays***	***Counts***	***Layers***	***Trays***
48	4	2 x 48A 2 x 48B	48	2	1 x 48A 1 x 48B	70	4	2 x 70A 2 x 70B
56	4	56	56	2	2 x 56	80	4	80
64	4	2 x 64A 2 x 64B	64	2	1 x 64A 1 x 64B	90	4	2 x 90A 2 x 90B
70	4	2 x 88A 2 x 88B	70	2	2 x 70	100	4	100
80	4	2 x 80A 2 x 80B	78	2	2 x 39	110	4	2 x 110A 2 x 110B
84	4	84	80	2	1 x 81A 1 x 81B	120	4	120
88	5	3 x 88A 2 x 88B	84	2	1 x 84A 1 x 84B	135	5	135
100	5	100	88	2	2 x 90	150	5	3 x 150A 2 x 150B
113	5	3 x 113A 2 x 113B	96	2	1x 96A 1 x 96B	165	5	165
125	5	125				180	5	180
						198	6	165

B. Pears are to be packed according to the following counts per carton:

M12T			*M07T*		
Counts	***Layers***	***Trays***	***Counts***	***Layers***	***Trays***
38	3	13/12	20	2	10/11
42 mark38	3	14	25	2	12/13
45	3	15	28	2	14/14
48	3	16	32	2	16A/16B
52	3	17/18	35	2	17/18
60	4	15	40	2	20/20
70	4	17/18	42 mark 40	2	21/21
80	4	20	45	2	22/23
84 mark 80	4	20/21	50	2	25/25
90	4	22/23	56 mark 50	2	28/28
96	4	24	60	3	20/20/20
100	4	25	63	3	21/21/21
112	4	28	67	3	22/22/23
120	4	30			

A/B/C06D			*A/B/C07D*			*A12D*		
Counts	***Layers***	***Trays***	***Counts***	***Layers***	***Trays***	***Counts***	***Layers***	***Trays***
18	1	18	20	1	18	70	2	35
20	1	20	25	1	20	80	2	40
24	1	24	28	1	24	90	2	45
26	1	26	32	1	26			
30	1	30	35	1	30			
35	1	35	40	1	35			
40	1	40	45	1	40			
45	1	45	50	1	45			

2.2 **Fruit Labeling**

Certain markets require individual fruit to be labeled with PLU (**P**rice **L**ook **U**p) labels. The requirements are as follows:

UK/Europe:

The PLU code for **small fruit** must be used when two PLU numbers are registered for a specific variety.

North America:

Fruit must be labeled with the PLU code according to the Fresh Produce Consortium (FPC) classification i.e two PLU numbers per variety to distinguish between small and large fruit. The classification is as follows:

Fruit Size Classification for PLU Labeling			
		Large Fruit	**Small Fruit**
Apples (MK 6 Equivalent)	Count	-64	70+
	Fruit Mass	>205g	<205g
Pears (MK 6 Equivalent)	Count	-60	70+
	Fruit Mass	>180g	<180g

Only PLU numbers that are registered with the Fresh Produce Consortium (FPC) may be used on the fruit label. Consignments will be rejected if wrong codes are used! This also applies if small fruit codes are used for large fruit and vice versa.

Fruit exported in bags or bulk bins do not require PLU labels unless specifically requested by the importer.

PLU Codes per Variety				
Fruit kind	**Variety**	**Variety Name on Label**	**PLU Code**	
			Large Fruit	**Small Fruit**
Appels	Braeburn	Braeburn	4103	4101
	Cripps Pink	Cripps Pink	4130	4128
	Cripps Red	Cripps Red	3010	3010
	Fiesta	Fiesta	4120	4120
	Fuji	Fuji	4131	4129
	Gala	Gala		4133
	Golden Delicious	Golden	4020	4021
	Granny Smith	Granny Smith	4017	4139
	Late Top Red	Late Top Red	4016	4015
	Pink Lady *	Pink Lady	4130	4128
	Royal Gala	Royal Gala	4174	4173
	Sundowner	Sundowner	3010	3010
	Top Red	Top Red	4016	4015
Pears	Beurre Bosc	Beurre Bosc	4413	4026
	Beurre Hardy	Beurre Hardy	3013	3013
	Bon Rouge	Bon Rouge	3014	3014

	Comice *	Comice	4414	4414
	Concorde	Concorde		3016
	Conference	Conference		3017
	Flamingo *	Flamingo	3019	3019
	Forelle *	Forelle	4418	4418
	Golden Russet Bosc	Golden Russet Bosc	4413	4026
	Packham's Triumph	Packham's	4421	4421
	Rosemarie *	Rosemarie	3025	3025
	Williams Bon Chretien	Williams BC	4409	4024

*Classified as “Premier”

Documentation:

Indicate that the fruit has been labeled with an efficiency of more than 85% by intering **‘LB’** (Labeled) in the **Inventory** space. For unlabeled fruit **‘UL’** (Unlabeled) to be entered.

Receivers may insist on branded labels. This is in order provided the guidelines above are followed.

2.3 Carton Pressure Absorbing Sheets

For apples without bag liners the following sheets can be used:

Polystyrene Pad
Bubble Pack
Aerothene Pad/Net
Corrugated Craft Sheet
Foam Sheet

For bruise sensitive varieties like Golden Delicious it is recommended that cartons sheets be used even if the apples are packed with bag liners.

Please ensure that the smooth side of the top sheet/bubble pad is in contact with the fruit. If place the other way round, the PLU stickers may be pulled off when the sheet is removed.

When pears are packed without plastic bags, bubble or Aerothene sheets are to be used. **For highly sensitive varieties like Comice pears Aerothene is recommended.** The smooth side of the sheet must face the pears.

Please ensure that when labeling by hand, the fruit labels are properly adhered to the fruit before placing the pad on top to prevent them sticking to the pad.

2.4 Plastic Bags

The following bags are to be used for these specific **Apple** varieties:

Variety	***Colour Bag***
Gala/Royal Gala	Red (Not all markets)
Golden Delicious	Green
Cripps Pink/Pink Lady	Red
Granny Smith	Green

The following bags are a guideline to be used for these specific **Pear** varieties:

Variety	***Colour Bag***
Beurre Hardy, Flamingo, Bon	**Yellow Perforated** bag

Rouge/Red Williams, Victoria Blush	
All other varieties	Green

Some supermarkets insist on different coloured bags. Please check with the specific supermarket.

Note that all bags must be 20 micron except for Summer Pears and Golden Delicious which must be 37,5 micron. 60 micron is optional for CA Golden Delicious.

After packing the bag must be folded carefully and the last fold tucked in firmly between the wall of the carton and the outside of the bag or the bags must be individually sealed with adhesive tape to prevent them blowing open. The packer must specify the required bag when ordering as there are numerous variants available.

3. Palletisation

3.1 Wooden Pallet Base

Chep pallets are demanded by some supermarkets. Although it is a very sturdy high quality pallet and can be cost effective, it has the following disadvantages:

- Due to the fact that it operates on a basis of an “exchange system”, a very accurate and intensive administration system is required for it to be effectively managed
- Being ±21mm higher than a standard pallet, it could reduce the number of layers that can be stacked on the pallet and still fit into the container under the “Red Loadline”
- Vertical airflow may be less than for standard pallets
- The top stringers tend to be in the opposite direction from a standard pallet. Check the carton edges.

Standard wooden pallets are in use. Unfortunately, many manufacturers are active in this area, which leads to big variations in the quality of the product. Every season problems are experienced with pallets that break or that are of incorrect dimensions. Should this be the case, it is very difficult to use trolley jacks effectively and / or it will be hard to load containers and refrigerated trucks. A well manufactured standard wooden block pallet is more than adequate. It is a pity that a negative sentiment, due to poor craftsmanship, is becoming increasingly prominent. The standard locally produced wooden block pallet must be of 1200 x 1000 x 155mm dimensions **(See Annexure 3 for the White Block Pallet specification)**

For apples packed in 18.5kg M18T cartons, a special pallet with smaller dimensions (1170x1000mm) can be used to ship 21 pallets in a hi-cube container. The stacking pattern is different to the normal pattern.

Only pallets that have been ISPM treated, may be used for export. The pallet must have clearly stamped or burn-in information on two sides as follows:

ISPM 15 code of country where pallet was treated
Registered pallet manufacturer’s code
Treatment Method (e.g. HT= Heat treatment)
DB= De-barking

Where these ISPM15 markings are not present or are illegible, the pallet will be rejected for export.

Pallets may be treated with a suitable fungicide (Not SOPP) provided it does not contaminate fruit.
Kiln dried pallets (13% moisture content) are recommended. Pack houses must ensure that suppliers do not supply pallets that can lead to MRL’s on fruit exceeding limits set by the different markets.

MAKE SURE THAT THE PALLET IS SQUARE AS THE SECRET OF A STABLE PALLET IS TO GET THE FIRST LAYER OF CARTONS SQUARE.

If a racking system is used in cold stores ensure that the pallet base is strong enough to hold the weight of the fruit whilst not being supported. If the base sags then the cartons on the base will be damaged along with the fruit, as well as creating a safety hazard.
Note: Due Diligence and Reasonable Principles apply should pallet failure occur. In case of a fatality, criminal proceedings could result.

3.2 Pallet Purchasing Strategy and Storage

The selection of supplier, the quality control and the storage of pallets are critical in ensuring a secured supply of good quality pallets throughout the packing season (Refer to Annexure 4 for guidelines).
Pallets must be used in a FIFO system otherwise you increase the probability of contamination even if the pallets were treated.

3.3 Securing Strips/Sheets for Display Cartons

NOT USING SECURING STRIPS/SHEETS IS A GUARANTEE FOR PALLET FAILURE!

Sometimes it happens that a large consignment of cartons is delivered at a producer/supplier without the matching securing strips. Each specific carton type or design requires a unique set of securing strips. Without securing strips proper palletising is impossible, as the pallet will turn diagonal during handling, lean over and later collapse. In many situations the layers below are also compressed. Securing strips fasten and stabilise the pallet internally and act as a “skeleton”. It is very important to place the correct number of securing strips on the specified layers. During palletising five sets of securing strips are placed at four different heights on the pallet. Note that the probability of a claim being rejected when securing sheets have been omitted, is high.

If a securing board is used ensure that it has adequate holes to provide for vertical air flow.

Note: Carton manufacturers supply specific packing instructions with cartons and included in that is the securing sheet requirements. If these standards are not met and carton failure occurs, the cost of failure is for the Packers account.

3.4 **Buckles**

The standard metal buckles that allow for retensioning of straps are recommended for securing of pallet straps. Do not over tension the strapping as this can compromise the buckle and damage the corner piece. Certain plastic buckles are available but make sure it is of the correct material and allows re-tentioning of the staps.

3.5 Corner Pieces

Although there are cheaper plastic angle pieces available, poli-coated angle pieces are normally used. From a food safety point of view, certain target markets may have a problem with the plastic angle pieces. The 45x45x4x1900mm is recommended for standard pallets but for hi-cube pallets the length must match the pallet height so that the top layer of cartons is secured without the angle pieces protruding.

The implications of wrapping of pallets with plastic netting must be carefully considered before it is accepted as a standard practice. Restriction of air flow, drawing of samples for inspection and QC, etc. must be kept in mind.

3.6 Pallet Cap

The protection of the top of the pallets is especially important to protect exposed fruit against physical damage, exposure to pollution (especially dust) and contamination. It also assists in holding the cartons columns on the pallet in place.

The specially designed pallet cap can be used, but the 1000 x 1200 mm “AB Board” type can be used as a substitute. The “AB Board’ is not only more cost effective but also more durable. The pallet cap must be strapped down to ensure that it does not increase the height of the pallet. Keep in mind that the pallet cap may restrict vertical airflow.

4. Thermocouples

It is essential to use a thermocouple (Type T) to monitor the integrity of the cold chain.The ends of the wires should be heat welded together so that penetration of the fruit and temperature measurement can take place more accurately. Place the heat welded end of the wire **into a fruit** in a carton in the cent**re** of the pallet (at a position more or less halfway of the pallet height) or at a comfortable working height. The other end of the wire is placed on the outside on one of the short sides (1000 mm side) of the pallet. Refer to the PPECB document on “Guidelines for the use of thermocouples.”

Ensure that a thermocouple identification sticker is placed on each pallet where the thermocouple ends protrude from the pallet. (As well as the specific box where the thermocouple is put in). **This yellow sticker must have the wording to indicate that it is a thermocouple for temperature measuring purposes.**

5. Temperature Recorders

Several temperature recorders are available to the industry.. Before deciding on a specific one, please make sure that your overseas receivers have the necessary software to download information. Make sure that specific cartons and pallets are marked accordingly so that overseas QC personnel can retrieve recorders easily. Manufacturers will issue recorders with specific stickers so that cartons and pallets can be marked clearly.

New generation temperature recorders are now available. These recorders monitor the temperature on regular intervals and send the data via cellphone technology to the relavant parties.Should serious temperature deviations be reported en route, it allows the exporter to make timeous contingency arrangements.

(A comprehensive guide for selection and use of temperature recorders can be found in Hortgro’s Pome Fruit Handing Protocol Guidelines)

6. Paltrack Registration

All commodities, varieties, packs/cartons/sizes, classes, brands, target markets, inventory codes and PUC/farm codes used for the export of fruit must be registered centrally with Paltrack to ensure that it can be recorded in industry systems for handling, operational and documentation purposes. The registration is done for a specific exporter.

To register, an exporter must contact Paltrack (Angela/Nazeem/Margeaux/Edward) at (021) 970 2777 or send an e-mail to ccr@paltrack.co.za. Registration should be completed within 2 working days.

Please note that there are other organisations such as Prophet (www.prophetize.co.za) that offer systems (QX, Koldstore, Fruittrack) where registration through Paltrack is not required **provided** the fruit will not be handled at facilities where only Paltrack is used.

It should be note that if a consignment is delivered at an industry facility like FPT without the required registration, intake may be delayed and additional costs incurred. Therefore, please make sure that all packs are registered before a season commences.

7. Closing

The above document will be revised and amended on a regular basis. Any proposals regarding the development or amendments of this document will be appreciated. Thanks to all those who have made time and effort available to update this document in order to address packing material concerns and to set a guideline for the pome fruit industry.

ANNEXURE 2

THE IMPORTANCE OF PACKAGING MATERIAL TO FOOD SAFETY COMPLIANCE

A. From a SA Statutory point of view

1. **R908 under the Foodstuffs, Cosmetics and Disinfectants act - Regulations relating to the application of the hazard analysis and critical control point system (HACCP System) - Section 2**:
   "A full description of the product shall be drawn up, including relevant safety information such as: composition, physical-chemical structure (including pH etc.) microbial/static treatments (heat treatment, freezing, brining, smoking, etc.) packaging, durability and storage conditions and method of distribution."

2. **The Official Food Safety Regulation (R707 of 13 May 2005) and also the EC 852 of 2004 – Hygiene of foodstuffs** looks at both the construction and storage of packaging material in a food handling facility. It is reflected in the official checklists used to audit FBO's.

Extract out of the Official food safety checklist:

2.5	*PACKAGING*		
2.5.1	Are safety data sheets available for packaging?	MINOR	**Packaging design and material should provide adequate protection for products to minimize contamination, prevent damage, and accommodate proper labelling. It must be non-toxic (glue) and not pose a threat to the safety and suitability of food under the specified conditions of storage and use.**
2.5.2	Is packing material kept in an area separate to the packing line and free from dust contamination and water?	MINOR	**Packaging material comes into contact with the product, and can thus impair the safety of the product if not kept under hygienic conditions.**
2.5.3	Is packaging stored above the ground and away from the walls?	MINOR	**This will facilitate cleaning and inspection (pest control) and stock taking. Packaging material should be stored on pallets, approximately 30-50 cm away from walls.**

B. From a Commercial point of view

1. **SABS 049 – Food hygiene management, Section 6.3.10:**
   "Packaging material used in contact with food shall be free from contamination, shall not transmit to the food substances injurious to the health of the consumer, shall not taint the food, shall not impart off-flavours or off-odours to the product, and shall be able to render the protection required by the particular food product."

   To demonstrate this, they would ask for Material safety data sheets from the manufacturer, proving that the packaging can be used safely, i.e. food grade glue etc.

2. **The BRC Global standard for food has a section on product packaging (section 4.4):**
   Product packaging shall be appropriate for the intended use and stored under conditions to minimize the risk of contamination and deterioration.

   1. *Procedures shall be in place to confirm that product packaging conforms to specification.*
   2. *Packaging shall comply with relevant food safety legislation and suitability for use.*
   3. *Where appropriate, packaging shall be stored away from raw materials and finished product.*
   4. *Where packaging material pose a product risk, special handling procedures shall be in place to prevent product contamination or spoilage. Records shall be maintained of failures and corrective actions taken.*
   5. *Any part-used packaging materials shall be effectively protected before being returned to storage.*
   6. *Product contact liners (or raw material/work-in-progress contact liners) shall be appropriately coloured to prevent accidental contamination.*

Where staples or other items are used which are likely to cause contamination in packaging, appropriate precautions shall be taken to minimize the risk of product contamination.

ANNEXURE 3

Specification for the 1200 x 1000mm White Block Pallet for the Export of Stone and Pome Fruit
Specification W001

1. Introduction

Solid wooden pallets, made and tested to export standards, are a prerequisite to ensure products are handled, delivered and stored in sound marketable condition. Often poor selection of supplier and deviations from prescribed standards lead to product damage and financial losses.

Specifications, set out below, offer basic guidelines to ensure that pallets of good quality are employed in the export supply chain.

The dimensions and spacing of top slats are extremely important as they not only support the cartons in critical positions but specified gaps between slats are vital to ensure adequate vertical air flow for effective cooling.

2. Description

Non-reversible, perimeter base, four way entry disposable wooden pallet with dimensions of 1200mm x 1000mm x 153mm with 9 top slats spaced to support the pallet load securely whilst allowing sufficient vertical ventilation for adequate cooling.

3. Material

3.1 Timber

3.1.1 Material

All bearer blocks must be made and tested fit for purpose. A block should never have timber core in the middle. Composite blocks must not absorb excessive moisture.
The density of the timber should be at least 400kg/m² at a moisture content of 12%.
For SA Pine, no wood may have a moisture content of more than 20% when used in constructing the pallet.

3.1.2 Grain

The grain of the timber must run along the length of the blocks and slats.

3.1.3 Finish

The finish quality of all components shall be finely sawn or better.

3.1.4 Dimensions

Dimensions will vary dependant on the carton packed. The table below represents an example of how you should specify a pallet.

Description	Number	Length (mm)	Width (mm)	Thickness (mm)
Top slats	9	1200	76	19
Top stringers (bearers)	3	1000	76	25
Bottom stringers	3	848	76	19
Bottom stringers	2	1200	76	19
Blocks	3	100	76	90
Blocks	6	125	76	90

The width and number of top slats can vary dependant on the availability of timber. However, their positioning must then change accordingly.

3.1.5 Tolerances

Description	Length (mm)	Width (mm)	Thickness (mm)
Slats, stringers and bearers	+0 -2	+3 -2	+2 -0
Blocks	+2 -2	+2 -2	+1 -1

The variation in the top deck slats must not be more than 2mm. Manufacturers must allow for shrinkage when cutting components from wet material.

3.1.6 Squareness

Ends of slats to be cut square (2mm over width)

3.1.7 Non-permissible Defects of Timber

Components shall be free of:

i. Pith in solid boards
ii. Bark
iii. Knots and knot-holes that interfere with nailing
iv. Knots that are more than 35% of the width of any timber used
v. Split splay (spike) knots and knotholes with sharp edges which could damage cartons on the pallet
vi. Wane that exceeds 25% of the total surface area of any one side of the top or bottom slats, provided that the opposite side has full-face area (The full-face area must always be on top)
vii. Wood beetles or signs thereof
viii. Twist that exceeds 4 degrees
ix. Splitting of individual lengths that exceeds 200mm. One at each end of top slats and bottom stringers or two at one end.
x. Fungal growth or mould

3.1.8 Treatment

All pallets are to be treated according to **ISPM 15**.(Full details are available on the NDA website www.agric.za/NPPOZA/wood.htm). Ensure your pallet manufacture's registration with DAFF is current as this changes form time to time. If your manufacture is not registered it could result in rejections.

Preservative treatments ***may*** be done on wooden pallets.

1. Preservative treatments shall comply with SABS (SANS 1288) requirements.
2. SANS 10 005 recommends preservative treatments, but these *may taint foodstuffs*.
3. Manufacturer must be able to prove that any preservative(s) used will not taint foodstuffs.
4. **Important**: Kiln dried wooden pallets need not be treated with fungicides

3.2 Nails

All nails to be annular-ringed (ring-shank) type mild or hardened steel
Nails to be positioned as shown on drawings
Nail guns to be set so that the nails are not driven more than 2mm below the surface of the slat to prevent cracking
On blocks the nailing area must not be reduced by more than 15mm

Top slats to bearers:	Minimum length 38mm
	Minimum diameter 2,5mm
Top decks to blocks:	Minimum length 90mm
	Shank diameter between 3 and 4 mm
Bottom slats to blocks:	Minimum length 60mm
	Minimum diameter 2,5mm

4. Construction

All wooden parts shall be joined with the nails as set out in Point 4 and as shown in the drawings
All tolerances shall be met, in particular dimension and positioning of top slats. At no point should a carton corner edge not be supported by the pallet top slat.
The bottom stringers must be flush against each other, leaving no gaps where they join
No nail shall be closer than 15mm from any wooden board or edge
The centre-to-centre distance between any two nails must not be closer than 50mm (when used along the wood grain) or 25mm (when used across the wood grain)
Nail heads shall not protrude from any part of the pallet
Nails that secure top slats to stringer boards shall be clinched (across the wood grain)
Nails shall not be sunk deeper than a ¼ of the thickness of any part of the pallet
Nails incorrectly driven or bent shall be removed and replaced (Alternatively such nails may be broken off below the surface of the wood and replaced)
No splitting of wooden parts after nailing will be allowed

End-grain nailing shall not be allowed

5. Marking

All four corner blocks of a pallet shall be painted white on the outside to indicate that the pallet was constructed according to the 'White Block' pallet specification.
Each pallet shall be legibly and indelibly branded or stencilled (in black) according to ISPM 15 on the outer face of a block (letters and symbols minimum 20mm high) with the following information:

- The manufacturer's name or trade name or trade mark
- The last two digits of the manufacturing year
- The pallet load rating (1 000kg or 1 500kg) as relevant

6. Testing

6.1 Manufacturers

Manufacturers must be able to supply their test and inspection methods in writing to buyers
The inspection and test methods must comply with SANS 1386:2005 guidelines

6.2 Pack House

A sample of 5 pallets is to be chosen randomly from a consignment of 200 pallets or part thereof
If in any sample more than one pallet is rejected, the consignment will be rejected entirely.
Where only one pallet in the sample is rejected, a further 5 pallets will be drawn and tested. Should any of these 5 pallets be rejected, the consignment in its entirety will be accepted after removal of pallets which visually show defects.

7. Annexure

ANNEXURE 4

Pallet Purchase Strategy

Solid wooden pallets, made and tested to export standards, are a prerequisite to ensure products are handled, delivered and stored in sound marketable condition. Often poor selection of supplier and deviations from prescribed standards lead to product damage and financial losses.

The following strategy is a guideline in acquiring, testing and storing pallets:

1. Plan your seasonal pallet requirements well in advance of the season to ensure that you do not run out of stock during critical periods or are forced to use substandard products.

2. Select a reliable supplier with a good track record of quality and service.

3. Remember price is not the only criteria.

4. Make sure that your supplier is in possession of the correct specification and is equipped to adhere to these specifications. Get a written undertaking from the supplier that the specifications will be adhered to.

5. On receipt of a consignment of pallets, a quality test should be done, preferably whilst the load has not been fully offloaded. The following is advised:

    i. Discretion test: Is the general appearance of the pallets of such a standard that it can be confidently used for export products?

    ii. Checklist: Ensure that the delivery checklist is complete and that the indications given hold true.

    iii. Full quality test: Draw samples according to the Quality Control Test as set out in **Annexure A** and follow the guidelines as proposed.

iv. Do not accept pallets that do not comply with the specifications given.

6. Store pallets in a safe and suitable area that is not exposed to extreme weather and dust conditions and where insect infestation can be controlled. A well-ventilated undercover area would be recommended.

7. When stockpiling pallets, keep in mind that:

   i. In dry areas (Namibia/Orange River) pallets may dry out to the extent that it will be so brittle by the time it is used, it cannot be handled without damage to the pallet and/or product. Therefore, do not stock too long in advance of the season.

   ii. When storing in unprotected conditions for extended periods discolouring and mould may result.

   iii. Stacking pallets tightly also allows for less air flow and increases potential for mould growth, especially if FIFO not adhered too.

   iv. Discolouring may lead to illegible manufacturer stamps and could result in pallet loads being rejected after packing.

   v. FIFO (First-In, First Out) usage should be adhered to.

   vi. Pallets left over at the end of the season should be sold off, used for other products or stored undercover where deterioration will be limited.

8. Ensure that the correct pallet is used for the product to be palletised.