

# SAAPPA



## PALLET SPECIFICATION FOR POME FRUIT EXPORTS

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**Approved by:**  .....

### 1. Scope and Purpose

This specification establishes the requirements for manufacture and acceptance of fruit export pallets.

It is intended to assist manufacturers, producers and packers of export fruit to manufacture, source or use pallets that conform to certain basic dimensional and functional standards thereby minimizing losses due to inconsistent or inadequate pallet quality.

It is acknowledged that different fruit kinds could require pallets with different configurations, materials, intended applications and thus specifications. Provision is made for this by using the pallet drawing as the basis for defining and differentiating such detailed specifications.

### 2. Applicable Documents

The following standards are referenced in this document:

2.1 ISO 8611 Pallets for Materials Handling – Flat Pallets:

- Part 1: Test methods
- Part 2: Performance Requirements and Selection of Tests
- Part 3: Maximum Working Loads

2.2 ASTM D1185 Standard Test Methods for Pallets and Related Structures

2.3 ISO 6780 Pallets for Intercontinental Materials Handling – Principle Dimensions and Tolerances

3.4 ISPM 15 Guidelines for regulating wood packaging material

### **3. Requirements**

#### **3.1 Item definition**

3.1.1 Description. A pallet is a structure to assist in the consolidation, handling, transportation and cooling of a predetermined quantity of fruit packaging units. This specification is applicable to pallets used in the following scenarios:

- The payload is a maximum of 1000kg
- The payload comprises consolidated fruit packaging units (e.g. cartons or crates)
- The base footprint of the pallet is approximately 1200mm X 1000mm.
- Pallets can be constructed from any suitable material (timber, plastic, composites, paper, etc)
- Pallets have 2-way access (4-side entry) for handling equipment
- Pallets are used in racking systems on the 1200mm side only
- Pallets are for single use only (non-returnables)
- Consolidated pallets are not double stacked on top of each other

3.1.2 Exceptions. This specification also provides for the following deviations to the above conditions:

- Deviations in payload significantly less than or more than 1000kg
- Excessive transport distances and conditions
- Racking on the 1000mm side
- Handling with slings during conventional vessel loading

In the event that any of these exceptions are applied, the special tests as outlined in paragraph 4.5 become applicable.

3.1.3 Drawings. This specification is compiled to be used for a variety of pallets of different configurations, materials and intended applications in the fruit export chain. Each pallet shall be specified in detail on a drawing which shall conform to the following requirements:

- A title block on the drawing with a name or title for the pallet
- A unique drawing number, revision level and issue date.
- Name and contact details of the drawing owner
- Dimensions, materials and fasteners to enable manufacturing
- Workmanship, treatments and marking requirements

The specification owner shall maintain a list of pallet designs with drawing numbers and revision levels that conforms to the requirements of this pallet specification.

#### **3.2 Performance Characteristics**

3.2.1 The pallet shall be able to support a payload of 1000kg, and shall be able to do so during all the handling, transport and environmental conditions as described in this specification.

3.2.2 The pallet shall enable the lifting of the consolidated load with a forklift or similar material handling device, and shall withstand the acceleration forces normally induced by the handling operations.

3.2.3 The pallet shall be able to support the payload on a racking system during cold storage with a deflection of not more than 2.0% of the effective span (the effective span is 1050mm on the 1200 side)

3.2.4 The pallet shall be able to withstand the acceleration forces and vibration during transportation in road trucks, rail trucks and ships for its intended supply chain operation.

3.2.4 The pallet shall be able to withstand impact forces simulated by an impact of up to 1.27m/s between a loaded pallet and a forklift or any other fixed object.

### 3.3 Physical Characteristics

3.3.1 The pallet shall conform to the dimensions and tolerances as specified in the relevant pallet drawing.

3.3.2 The pallet shall be constructed with the materials as specified in the relevant drawing.

3.3.3 The pallet dimensions that interface with material handling equipment shall conform to the following specific requirements of ISO 6780: "Pallets for intercontinental material handling – Principle dimensions and tolerances":

- a. Vertical dimension for entry of forks and pallet trucks: 97mm, min.
- b. Horizontal dimension for fork entry on 1200 side: 760mm, min
- c. Horizontal dimension for fork entry on 1000 side: 710mm, min
- d. Width of middle block support: 150mm, max

### 3.4 Reliability

3.4.1 The pallet shall be able to conform to all the requirements in this specification at any point during one complete lifecycle. One lifecycle is defined as the storing time after manufacturing, packing, transport, cold storage, shipping and overseas cold storage and -distribution.

### 3.5 Environmental Conditions

3.5.1 The pallet shall be able to withstand a cold storage environment of -0.5°C at 95%RH throughout its intended lifecycle

### 3.6 Workmanship

3.6.1 The pallet shall be manufactured to an acceptable standard in order to prevent failures throughout the future lifecycle of the pallet. Particular attention shall be paid to:

- Workmanship notes on drawings.
- Position and application methods of fasteners
- Defects in materials (e.g. knots, cracks, bark, wane)
- Pallets shall be clean and free of fungal growth, mould and insects.

### 3.5 Treatment

3.5.1 Fruit export pallets made of timber shall be treated according to ISPM 15: “Guidelines for regulating wood packaging material”. The purpose is to reduce the risk of introduction and/or spread of quarantine pests associated with wood packaging material made of coniferous and non-coniferous raw wood, in use in international trade. The key requirements in this regard are one of two alternatives:

- Heat Treatment (Kiln drying and CPI) – indicated by HT
- Methyl Bromide Fumigation – indicated by MB

3.5.2 Any other treatment requirements for the pallets shall be specified on the relevant drawings.

### 3.6 Identification and Marking

3.6.1 Pallets produced in accordance with ISPM 15 shall also be marked as prescribed in ISPM 15:

- International certification mark
- Country code - XX
- Producer code - 000
- Treatment code - HT or MB

3.6.2 In addition to ISPM 15 markings, marking of a pallet shall include at least the following as well:

- Pallet Identification: Identification code or Colour code (e.g. white block)
- Rated pallet load (when outside the norm of 1000kg)
- Producer code (if not included in ISPM marking, e.g. non-wooden pallets)

## **4. Quality Assurance Provisions**

### **4.1 General**

4.1.1 The responsibility for testing rests with the supplier to demonstrate that the products conform to requirements. The purchaser and end user reserve the right to witness the tests or separately perform all tests and inspections.

4.1.2 The inspection and tests shall be performed by an approved testing authority appointed by the specification owner.

### **4.2 Inspection**

4.2.1 The pallet samples presented for tests shall be accompanied by a standard test request indicating the drawing number and revision level that they conform to.

4.2.2. All the pallets in the sample shall be visually and dimensionally inspected against the relevant drawing to confirm at least the following:

- Major dimensions (width, length, height)
- Material thickness on critical components
- Interface dimensions (see paragraph 3.3.3)
- Type of materials used
- Position and quantity of fasteners (where applicable)
- Treatment (where applicable)
- Marking

4.2.3 The inspection shall be carried out by the acceptance authority to the extent that it can be stated with confidence that the pallets are representative of the drawing. Any deviations shall be noted.

### **4.3 Qualification Tests**

4.3.1. Qualification tests shall be performed with the introduction of a new pallet design, or when major design changes on a previously approved pallet design are implemented.

4.3.2 Qualification tests shall be performed by a specialist test facility in accordance with the requirements of the acceptance authority

4.3.3 Qualification tests shall be done according to the guidelines of ISO 8611 or ASTM D1185.

4.3.4 The test sample size and conditioning shall be as per above guidelines (e.g. ISO 8611). For each test at least 3 pallets shall be used. All non-destructing tests shall have a sample size of at least 5 units.

#### 4.4 Routine Acceptance Tests

4.4.1 Routine acceptance tests shall be performed as and when required by the pallet manufacturer, the purchaser, the user or any other party to confirm that the quality of the pallets still conform to requirements.

4.4.2 Routine acceptance tests shall be performed by any operator who has received the necessary training on the routine acceptance test equipment and test procedure.

4.4.3 The routine acceptance tests shall be done on the specialized routine acceptance test bench for export fruit pallets.

4.4.4 The acceptance tests can be performed at any time during the pallet life cycle on discretion of the acceptance test requester.

4.4.5 A minimum sample size of 5 pallets is required.

4.4.6 Sample conditioning is not required.

4.4.7 The pallets shall be rejected if more than 2 defects occur.

4.4.8 If one defect or failure occurs, then a second sample of 10 pallets shall be tested. The pallets shall be accepted if no more defects occur.

4.4.9 The following tests shall be performed according to the test instructions developed for the pallet test bench:

- Air bag bending test on rack support with test load  $L=1.25 \times \text{Rating}$
- Fork lift bending test with test load  $L= 1.25 \times \text{Rating}$
- Vertical pull test with test load  $L= 0.5 \times \text{Rating}$
- Shear impact test (3 X impacts)
- Corner drop test from 1m height (3 X Drops)
- Top edge impact test (3 X impacts)
- Block impact test (3 X impacts)

Note: These tests may be adapted by the testing authority to suit special circumstances.

#### 4.5 Special Tests

4.5.1 Special tests are required when the application of the pallet deviates from the standard description, as explained in paragraph 3.1.2. These tests need to be added to both the qualification tests and routine acceptance tests.

4.5.2 When the rated pallet payload deviates from the norm of 1000kg, the test load and deviation criteria on the bending test, forklift test and bottom deck test shall be altered proportionally.

4.5.3 For excessive transport distances and conditions, a vibration test is required. (During qualification tests only).

4.5.4 When racking is required on the 1000mm side, then the bending test need to be done on both this side and on the 1200mm side.

4.5.5 When pallets will be handled with slings during conventional vessel loading, then the sling test shall be added.

#### 4.6 Defect Classification

4.6.1 A pallet failure is defined as one of the following conditions:

- When the observed damage affects pallet strength, stiffness or functionality.
- When the deflection during the bending test is more than 2% of the effective test length  
Deflection < 0.02 X (Length – 150mm)
- Change of diagonal dimension of more than 4% after drop test

#### 4.7 Test Report

4.7.1 The test report shall contain at least the following information:

- Date of test
- Test sponsor and test performer
- A statement to indicate that visual and dimensional inspection was done on test samples to affirm that pallets conform to referenced drawing.
- Reference to test equipment used
- Conditioning applied to test samples
- Number of replicate specimens per test
- Test results
- Listing of observers
- Signature of responsible testing authority