

SRI LANKA STANDARD 1124 : 1996

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**GUIDELINES FOR THE CONSTRUCTION OF
CORRUGATED FIBREBOARD BOXES USED FOR
PACKAGING OF PINEAPPLES**

SRI LANKA STANDARDS INSTITUTION

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SLS 1124 : 1996

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SRI LANKA STANDARDS INSTITUTION
No 53, Dharmapala Mawatha,
Colombo 03,
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This standard does not purport to include all the necessary provisions of a contract.

**Sri Lanka Standard
GUIDELINES FOR THE CONSTRUCTION OF
CORRUGATED FIBREBOARD BOXES USED FOR PACKAGING OF PINEAPPLES**

FOREWORD

This Standard was approved by the Sectoral Committee on Packaging, Paper and Board and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 1996-01-18.

Corrugated fibreboard boxes are utilized as inner and outer containers for packaging of a wide variety of goods for domestic use and for export purposes. Corrugated fibreboard boxes are being used for packing fruits in Sri Lanka. These guidelines will help the manufacturer, in the selection of material and construction of corrugated fibreboard boxes for the packaging of pineapples. Pineapples exported from Sri Lanka are generally packed in vertical position. Therefore corrugated fibreboard boxes intended for packaging of pineapples in vertical position are covered in this standard. In the manual on the packaging of fresh fruits and vegetables, published by the International Trade Centre, pineapples are graded as A, B, C, D and Baby. Pineapples exported from Sri Lanka generally fall into the grades B and C.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or an analysis, shall be rounded off in accordance with CS 102. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

In the preparation of this standard, the assistance derived from the following publication is gratefully acknowledged:

Manual on the packaging of fresh fruits and vegetables, 1988, published by the International Trade Centre, UNCTAD/ GATT.

1 SCOPE

1.1 This standard recommends guidelines for the construction of corrugated fibreboard boxes used for packaging of pineapples.

1.2 This standard also covers the methods of test for corrugated fibreboard boxes used for packaging of pineapples.

2 REFERENCES

- CS 102 Presentation of numerical values
 SLS 428 Random sampling methods
 SLS 473 Method for testing of paper and board for water absorption
 - Cobb Method
 SLS 680 Method for testing of board for bursting strength
 SLS 800 Code for styles of fibreboard boxes
 SLS 801 Corrugated fibreboard boxes.

3 DEFINITION

For the purpose of this standard the following definition shall apply:

3.1 flute (corrugation) : A single complete wave in corrugated board having designation A, B and C (see Table 1).

TABLE 1 - Designation of flutes (corrugations)

Designation (1)	Corrugations per metre (2)	Height of corrugations mm (3)
A flute	105 to 125	4.5 to 4.7
B flute	150 to 185	2.1 to 2.9
C flute	120 to 145	3.5 to 3.7

4 REQUIREMENTS

4.1 Material

4.1.1 Corrugated fibreboard

The corrugated fibreboard should be double wall (see Fig.1). It should be manufactured from kraft liner. The corrugated fibreboard should have non-leaning flutes of correct configuration and profile. Height of the flute should be uniform. Combinations of A, B and C flutes should be permitted in the manufacture of corrugated board. The corrugated fibreboard used should not crack or delaminate on bending or creasing.

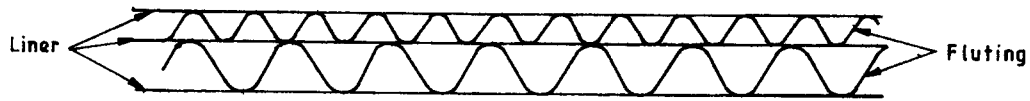


FIGURE 1 - Double wall corrugated fibreboard

4.1.1.1 Grammage (substance) of fluting

The grammage (substance) of the corrugating medium used should be not less than 106 g/m^2 (see Note 1). The grammage (substance) of the corrugating medium should be determined as given in Appendix B of SLS 801:1987 (see Note 2).

NOTES

1. The minimum value of 106 g/m^2 corresponds to corrugating medium of nominal grammage (substance) of 112 g/m^2 .
2. It should be determined in the case of dispute and when required by the purchaser or the vendor.

4.1.1.2 Grammage (substance) of liners

4.1.1.2.a) Outer liners

The grammage (substance) of the outer liner should be not less than 142 g/m^2 (see Note). The grammage (substance) of liners shall be determined as given in Appendix B of SLS 801:1987.

NOTE

The minimum value of 142 g/m^2 corresponds to corrugating medium of nominal grammage (substance) of 150 g/m^2 .

4.1.1.2.b) Inner liner

The nominal value of the grammage (substance) of the inner liner should be not less than 119 g/m^2 (see Note) and should be not more than the nominal grammage of either of the individual outer liners.

NOTE

The minimum value of 119 g/m^2 corresponds to corrugating medium of nominal grammage (substance) of 125 g/m^2 .

4.1.1.3 Bursting strength

The bursting strength of the corrugated fibreboard should be not less than 1 000 kPa when determined by the method given in SLS 680.

4.1.1.4 Water absorption

The increase in the substance of the outer surface of the corrugated fibreboard should be not more than 155 g/m² when determined by the method given in SLS 473.

4.1.1.5 Printability

The outer surface of corrugated fibreboard should have good printability.

4.2 Adhesives

A suitable bio-degradable adhesive capable of firmly adhering the components of the boards together should be used.

4.3 Dimensions

4.3.1 The dimensions of the boxes should be the internal dimensions of the assembled box, measured between the opposing faces of the box in the sequence of:

Length (L) - the longer dimension at the opening

Breadth (B) - the shorter dimension at the opening

Height (H) - the dimensions from the top of the opening to the base, measured, where applicable, from inner flap to inner flap.

4.3.2 The inside dimension (L x B x H) of the box should be 360 mm x 260 mm x 370 mm in the case of boxes used for packing six fruits each weighing 1 100 g to 1 500 g (see Note) and 360 mm x 260 mm x 330 mm in the case of boxes used for packing six fruits each weighing 800 g to 1 100 g (see Note). A tolerance of ± 3 mm should be permitted on the specified dimension.

NOTE

The following are the grades based on the weight of fruit given in the Manual on the packaging of fresh fruits and vegetables, published by the International Trade Centre :

Grade A : Pineapples weighing above 1 500 g.

Grade B : Pineapples weighing from 1 100 g to 1 500 g.

Grade C : Pineapples weighing from 800 g to 1 100 g.

Grade D : Pineapples weighing less than 800 g.

Baby grade : Pineapples weighing approximately 500 g.

4.4 Construction**4.4.1 Style of box**

The style of the box should be 0204, given in Appendix A of SLS 800:1987.

4.4.2 Creasing and slotting

The corrugated fibreboard should be properly creased and slotted so that when the box is assembled, there should be no holes at the corners.

4.4.3 Manufacturer's joint

Manufacturer's joint should be made by one of the following methods as agreed to between the manufacturer and the purchaser such that the direction of the flutes are parallel to the manufacturer's joint.

4.4.3.1 Stitched lap joint

Manufacturer's joint shall overlap not less than 30 mm and be fastened with copper or zinc-coated steel staples or stitches not more than 60 mm apart. The first and the last staples should not be further than 25 mm from the beginning and the end of the joints respectively. The staples and the stitches should be centrally located along the overlap and may be straight or at an angle of 45°.

4.4.3.2 Glued joint

Manufacturer's joint should overlap not less than 30 mm and be firmly bonded with suitable adhesive throughout the entire area of the joint. There should not be excess adhesive spread outside the joint. When subjected to very humid conditions, the adhesive should have a performance better than or equal to that of the adhesive used in the manufacture of corrugated fibreboard.

4.4.4 Ventilation holes and hand holes

The box should have 3 ventilation holes on each side (LH) (see Fig.2.a) at the one third distance from the top. The diameter of each ventilation hole should be 25 mm. Hand holes should be present on each side (BH) at the one third distance from the top. The length of the hand hole should be 75 mm and the breadth should be 25 mm.

4.4.5 Partitions

Partitions to be used should have six cells (see Fig.2.b). Partitions should be made such that they do not obstruct the ventilation path.

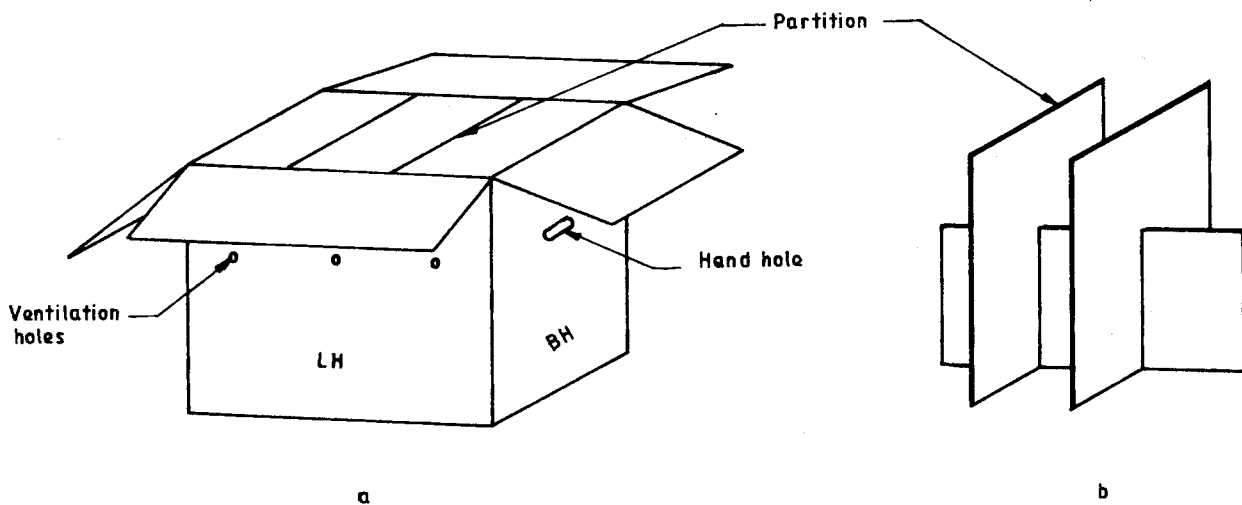


FIGURE 2 - Corrugated fibreboard box for packaging of pineapple

4.5 Method of closure

Pressure sensitive tapes or reinforced paper tapes should be applied over the seams of the top and bottom flaps to extend not less than 50 mm over each end of the box.

5 PACKAGING AND MARKING

5.1 The lay flat boxes should be packed and supplied as agreed to between the purchaser and the supplier.

5.2 Unless otherwise stated by the purchaser, each box should be legibly and indelibly marked with the following :

- a) Name and address of the manufacturer;
- b) Batch or code number;
- c) Gross mass limit in kilograms;
- d) Minimum bursting strength, in kilopascals;
- e) Combined maximum internal dimensions, in millimetres; and
- f) Registered trade mark, if any.

6 METHODS OF TEST

Tests shall be carried out as prescribed in SLS 473, SLS 680 and Appendix B of SLS 801:1987.

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The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI which includes surveillance inspection of the factory, testing of both factory and market samples.

Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.



SRI LANKA STANDARDS INSTITUTION

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