DRAFT TANZANIA STANDARD

TBS/CDC-10 (6221) P3 CORRUGATING MEDIUM/ FLUTING — SPECIFICATION

TANZANIA BUREAU OF STANDARDS
0 Foreword

This Draft Tanzania Standard is being developed by Stationery and Paper Products Technical Committee under supervision of the Chemicals Divisional Standards Committee and it is in accordance with the procedures of the Bureau.

Corrugating medium or fluting is used in manufacture of packaging containers.

This Draft Tanzania Standard is the first edition of corrugating medium/fluting for corrugated boxes – Specification.

This draft Tanzania Standard has been prepared with assistance drawn from the following documents:

- IS 1763: 2018 Specification for substances of paper and pulp board, published by India Bureau of Standards

The assistance obtained from the above sources is hereby acknowledged with thanks.

For the purpose of deciding whether a particular requirement of this Tanzania Standard is complied with, the final value observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with TZS 4.
Corrugating medium/fluting – Specification

1 Scope

This draft Tanzania Standard specifies the requirements, sampling and test methods of corrugating medium/fluting used to manufacture packaging containers.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

TZS 4: Rounding off numerical values
TZS 79: Paper – Determination for bursting strength
TZS 80: Paper – Sampling methods for testing
TZS 81: Method for the determination of grammage (basic mass)
TZS 82: -ISO 187, Paper board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples
TZS 83: -ISO 287; Paper and board — Determination of moisture content of a lot — Oven-drying method
TZS 423: -ISO 535: Paper and board — Determination of water absorptiveness- cobb method
TZS 748-2: - ISO 1924-3, Paper and board — Determination of tensile properties — Part 3: Constant rate of elongation method (100 mm/min)
TZS 891: -ISO 534; Paper and board — Determination of thickness, density and specific volume
ISO 12192: Paper and Board - Determination of compressive strength – Ring Crush method
ISO 9895: Paper and Board- Compressive strength – Short Span Test
3 Terms and definitions

For the purpose of this draft Tanzania Standard the following definitions shall apply:

3.1 bursting strength
maximum uniformly distributed pressure, applied at right angles to its surface, that a test piece of paper or board will stand, under specified test conditions.

3.2 corrugating/ fluting medium
middle liner of the corrugated board that are used in manufacture of corrugated board containers for packaging purposes.

3.3 cross direction (CD)
direction in the paper that is at right angles to the machine direction.

3.4 defective
set of test pieces that fails in one or more respects to comply with the relevant requirements of the standard.

3.5 grammage (substance)
mass of unit area of paper or board determined by the specified method of test and expressed in grams per square meter and conditioned in accordance with TZS 82/ISO 187.

3.6 nominal grammage (substance)
the value of the mass per unit area used for reference purposes (i.e. when purchasing material)

3.7 actual grammage (substance)
the value of the mass per unit area determined by testing

3.8 long grain
orientation when the machine direction of the paper is in the long direction of the sheet.

3.9 lot
one or more nominally identical package of paper, the paper having been made on the same equipment under essentially the same conditions, from one manufacturer, and submitted at any one time for inspection and testing.

3.10 machine direction (MD)
direction in a paper or a board parallel to the direction of travel of the web on the paper or board machine

3.10 sizing
the addition of materials in the pulp stock or on the surface of the sheet (surface sizing) - -in order to increase paper resistance to the spontaneous penetration of aqueous liquids and its resistance to the surface spreading of such liquids.
4 Requirements

4.1 General requirements

4.1.1 Corrugating medium/fluting shall be made from 100% waste paper or combination of waste paper and agricultural waste or non-wood in a combination with sulphate pulp or any other material that will ensure compliance with the requirements given in Table 1.

4.1.2 The paper shall be free from fibre bundles, foreign matter, holes, creases and other visible defects and shall be uniform in texture.

4.1.3 The corrugating medium shall be of reasonably good formation or uniform formation, thickness and substance.

4.1.4 The corrugating medium shall be free from abrasive constituents that may induce a high rate of wear of corrugating rolls.

4.1.5 The corrugating medium shall be such that it does not crack during corrugating process.
4.2 Specific requirements

4.2.1 Corrugating medium for corrugated board shall be manufactured as per preferred substances given in Table 1.

4.2.2 If a substance not given in Table 1 is required, it shall be agreed upon between the purchaser and the supplier and shall be selected so that it conforms to the steps of increment given below:

<table>
<thead>
<tr>
<th>Range of substance</th>
<th>Steps of increment of substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>g/m²</td>
<td>g/m²</td>
</tr>
<tr>
<td>110 - 150</td>
<td>10</td>
</tr>
<tr>
<td>Above 150</td>
<td>25</td>
</tr>
</tbody>
</table>

4.2.3 Corrugating medium/ fluting shall comply with the relevant requirement given in Table 1 when tested in accordance with the method specified therein.

Table 1- Specific requirements for corrugating medium/fluting.

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Characteristics</th>
<th>Requirements</th>
<th>Test method (see clause 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Product range (Nominal grammage, g/m²)</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>Grammage, g/m², ± 5 %</td>
<td>100  110  120  130  140  150  175  200  225  250  275  300</td>
<td>TZS 81</td>
</tr>
<tr>
<td>ii.</td>
<td>Moisture content, %, m/m</td>
<td>6 - 8.5</td>
<td>TZS 83</td>
</tr>
<tr>
<td>iii.</td>
<td>Thickness, micron, min</td>
<td>200</td>
<td>TZS 891</td>
</tr>
<tr>
<td>iv.</td>
<td>Bursting Strength, Kg/cm², min</td>
<td>2.4  2.65  2.9  3.1  3.4  3.6  3.8  4.3  4.5  4.6  4.8  4.9</td>
<td>TZS 79</td>
</tr>
<tr>
<td>v.</td>
<td>Burst Index, KPa.m²/g, min</td>
<td>2.4</td>
<td>TZS 79</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Value</td>
<td>Minimum</td>
</tr>
<tr>
<td>---</td>
<td>-------------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>vi.</td>
<td>Bulk, cc/g, min</td>
<td>1.6</td>
<td>TZS 891</td>
</tr>
<tr>
<td>vii.</td>
<td>R.C.T, KN/m, CD, min</td>
<td>0.82</td>
<td>0.90</td>
</tr>
<tr>
<td>viii.</td>
<td>S.C.T, KN/m, CD, min</td>
<td>1.80</td>
<td>1.90</td>
</tr>
<tr>
<td>ix.</td>
<td>Cobb 60 seconds, g/m², 27°C, Top side, max</td>
<td>100</td>
<td>TZS 423</td>
</tr>
<tr>
<td>x.</td>
<td>Cobb 60 seconds, g/m², 27°C, Wire side, max</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
5 Sampling

5.1 Sampling methods shall be carried out as prescribed in TZS 80.

5.2 Number of Tests

Each of the rolls/packages selected from the lot shall first be examined for the requirements given in 4.1 and 4.2. Then a sheet of suitable size from rolls shall be cut, taking at least the top three layers. Test pieces shall then be cut from sheets for testing requirements mentioned in 4.1 and 4.2. Tests for these characteristics except pH shall be conducted individually on each of the sample sheet. A roll or sheet not meeting the requirements for any one or more of these characteristics shall be considered as defective. Test for pH shall be conducted on composite sample.

5.3 Criteria for conformity

A lot shall be declared as conforming to the requirements of this standard if the requirements in clause 4 are satisfied and if the number of defective roll and sheets does not exceed the acceptance number. This acceptance number shall depend on the size of the sample and shall be equal to 0 if the sample size is less than 13. It shall be equal to 1 if the sample size is greater than or equal to 13.

6 Test methods

Samples of corrugating medium for corrugated board shall be conditioned in accordance with TZS 82/ISO 187.

7 Packaging and marking

7.1 Packaging

7.1.1 Packaging requirements will vary according to the roll’s diameter and width, corrugating medium for corrugated board shall be packed in rolls on a core of 75 to 100 mm inside diameter and in length equivalent to the width of paper, with a wooden or plastic plug at each extending to a minimum of 75 mm into the core.

7.1.2 Corrugating medium/fluting shall be packaged in suitable material that protects it from dust, moisture and dirt during transportation, storage and normal use.

7.2 Marking

7.2.1 Each roll shall be legibly and indelibly marked with the following:

a) Description and the paper grammage (actual);

b) Batch number or code number;

c) Machine direction;

d) Month and year of manufacture;

e) Diameter and width of roll;

f) Weight in Kg of the roll including the mass of the core and plugs;

g) Country of origin/ manufacture; and

h) Name and physical address of the manufacturer or local distributor and registered trademark.