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DRAFT EAST AFRICAN STANDARD

Paper sacks for packaging of cement — Specification

EAST AFRICAN COMMUNITY

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East African Community
P.O. Box 1096,
Arusha
Tanzania
Tel: + 255 27 2162100
Fax: + 255 27 2162190
E-mail: eac@eachq.org
Web: www.eac-quality.net

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 065, Paper and paper Products.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

This second edition cancels and replaces the first edition (EAS 866:2017), which has been technically revised. The main changes compared to the previous edition are as follows:

— In Table 1, the tensile strength values in both the machine and cross directions for the different grammages were adjusted

Paper sacks for packaging of cement — Specification

1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for valve sewn-gusseted and valve-pasted ends paper sacks for packaging of cement

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 186, *Paper and board — Sampling to determine average quality*

ISO 187, *Paper board and pulps — Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples*

ISO 287, *Paper and board — Determination of moisture content of a lot — Oven-drying method*

ISO 535, *Paper and board — Determination of water absorptiveness — Cobb method*

ISO 536, *Paper and board — Determination of grammage*

ISO 1924-3, *Paper and board — Determination of tensile properties — Part 3: Constant rate of elongation method (100 mm/min)*

ISO 1974, *Paper — Determination of tearing resistance — Elmendorf method*

ISO 2060, *Textiles — Yarn from packages — Determination of linear density (mass per unit length) by the skein method*

ISO 5079, *Textile fibres — Determination of breaking force and elongation at break of individual fibres*

ISO 5636-3, *Paper and board — Determination of air permeance (medium range) — Part 3: Bendtsen method*

ISO 6590-1, *Packaging — Sacks — Vocabulary and types — Part 1: Paper sacks*

ISO 7965-1, *Packaging — Sacks — Drop test — Part 1: Paper sacks*

ISO 8791-2, *Paper and board — Determination of roughness/smoothness (air leak methods) — Part 2: Bendtsen method*

ISO 21067, *Packaging — Vocabulary — Part 2: Packaging and the environment terms*

3 Terms and definitions

For the purposes of this standard, the terms and definitions in ISO 6590-1 and ISO 21067 shall apply.

4 Types

4.1 Type 1 shall be valve-sewn-gusseted.

4.2 Type 2 shall have valve-pasted ends

5 Requirements

5.1 General requirements

5.1.1 The paper shall be free from defects, which may adversely affect its serviceability. It shall be free from wrinkles, folds, paper dust, tears which have not been glued, stains, prominent marks, slime holes and foreign matters.

5.1.2 The paper sack shall be made of well nested plies of paper with matching stretch level. The combination of paper in the sack shall give a total tensile energy absorption (TEA) in sack as specified in Table 1.

5.1.3 The sewing thread used shall meet the requirements specified in Annex A.

5.1.4 In the construction of the sack tube, the outer ply fit shall be such that at the point of manufacture, each ply shall be smaller in circumference than the next outer ply within elongation limits of the material in order to ensure even distribution between plies.

5.2 Specific requirements

5.2.1 When tested in accordance with the methods specified in Table 1, the paper sack shall comply with the requirements specified therein.

Table 1 — Specific requirements for paper sacks for packaging of cement

S/No.	Characteristic	Requirements for different grammage				Test method ^a
i.	Grammage, g/m ² , ± 5%	70	75	80	90	ISO 536
ii.	Moisture content, %, m/m	6 - 8				ISO 287
iii.	Tensile strength, kN/m, min., (MD)	4.2	4.2	4.5	5.0	ISO 1924-3
iv.	Tensile strength, kN/m, min., (CD)	3.0	3.0	3.0	3.2	
v.	T.E.A, J/m ² , min. (MD)	154	165	165	200	
vi.	T.E.A, J/m ² , min. (CD)	156	175	175	203	
vii.	T.E.A index, J/g, min. (MD)	2.26	2.12	2.12	2.27	
viii.	T.E.A index, J/g, min. (CD)	2.29	2.24	2.24	2.31	
ix.	Stretch, %, min. (MD)	5.69	5.70	5.70	5.64	

x.	Stretch,%, min. (CD)	7.60	7.39	7.39	7.30	
xi.	Total balanced T.E.A, J/m ² , min.	466(3-ply) 621(4-ply)	514(3-ply) 683(4-ply)	514(3-ply) 683(4-ply)	402(2-ply) 606(3-ply) 807(4-ply)	
xii.	Tensile index Nm/g, min. (MD)	68	64	60	72	
xiii.	Tensile index, Nm/g, min. (CD)	47	46	43	52	
xiv.	Roughness, average of two sides, mL/min., max.	1 600	1 600	1 600	1 600	ISO 8791-2
xv.	Porosity, mL/min. (Bendtsen), min..	700	700	700	700	ISO 5636-3
xvi.	Tear resistance, mN, min. (MD)	1 020	1 157	1 157	1 294	ISO 1974
xvii.	Tear resistance, mN, min. (CD)	1 157	1 227	1 108	1 247	ISO 1974
xviii.	Water absorptiveness, g/m ² , max.	30	30	30	30	ISO 535
^a Conditioning shall be done in accordance with ISO 187.						

5.2.2 The paper sack shall not burst when tested in accordance with ISO 7965-1.

6 Packaging

6.1 Packaging and labelling

Paper sacks shall be shall be packaged in suitable packages that prevent them from damage during transportation, storage and normal use.

6.2 Labelling

Each paper sack shall be clearly and indelibly marked with the following particulars:

- a) name and physical address of the manufacturer/supplier and/or registered trademark;
- b) total balanced T.E.A (Tensile Energy of Absorption);
- c) country of origin or manufacture;
- d) batch/code number (optional); and
- e) type.

7 Sampling

Sampling shall be done in accordance with ISO 186.

Annex A (normative)

Requirements the sewing thread

A.1 Sewing thread/yarn

A.1.1 General

The thread/yarn shall be evenly spun with suitable number of turns per metre so that a balanced thread is produced.

The thread/yarn shall be singled and shall have uniformity of thickness throughout its length. When visually examined, the threads shall be free from hairiness and snarls.

A.1.2 Sewing threads made wholly or partly from synthetic fibres

A.1.2.1 Type of sewing thread

The type of sewing thread/yarn shall be as declared. In the case of blends, the blend composition shall be as declared subject to a tolerance of $\pm 5\%$.

A.1.2.2 Nominal linear density

The nominal density (resultant) of the sewing thread/yarn in text shall be as declared, subject to a tolerance of $\pm 4\%$. This shall be determined in accordance with ISO 2060.

A.1.2.3 Resultant linear density

The resultant linear density of the sewing thread/yarn in text shall be as declared subject to a tolerance of $\pm 2\%$ for continuous filament threads and $\pm 4\%$ for spun and plied threads.

A.2 Coefficient of variation of linear density

The coefficient of variation of the resultant linear density shall not exceed 2 % for continuous filament threads and 5 % for spun plied threads. The coefficient of variation (C.V.) shall be calculated from the following formula:

$$c.v = \frac{\sigma}{\bar{x}} \times 100\%$$

$$\sigma = \sqrt{\frac{\sum (\bar{x} - x)^2}{n}}$$

Where;

x is the resultant linear density in tex of any thread sample;

\bar{x} is the mean resultant linear density of all the samples;

n is the total number of samples; and

σ is the standard deviation in tex

A.3 Knots

The number of knots permissible in a package of sewing thread shall be as specified in Table 1.

TableA.1 — Number of permissible knots in a package

S/No	Package length, m	Permissible knots
i.	Up to 1 000	not more than 1
ii.	More than 1 000 but not exceeding 2 500	not more than 2
iii.	More than 2 500 but not exceeding 4 000	not more than 3
iv.	More than 4 000 but not exceeding 5 500	not more than 4
v.	More than 5 500 but not exceeding 7 000	not more than 5
vi.	More than 7 000 but not exceeding 8 500	not more than 6
vii.	More than 8 500	not more than 7

A.4 Total length

The total length of sewing thread contained in a package shall be as declared subject to a tolerance of – 0.2 %.

A.5 Net mass

The net mass of thread on a package shall be as declared subject to tolerance of - 0.2 %. Mass shall be the total mass of the absolute dry mass plus official regime.

A.6 Breaking tenacity

The minimum breaking tenacity of the sewing thread shall be 20 cN per tex. This shall be determined in accordance with ISO 5079.

A.7 Appearance

When visually examined, the thread shall have a uniform shade or whiteness and shall be devoid of singeing defects and stains.

A.8 Surface finish

The threads shall be well lubricated to ensure efficient working on the appropriate types of sewing machines.

Annex B (informative)

Typical examples of paper sacks

A.1 The typical types of paper sacks are shown in Figure A.1 and Figure A.2.

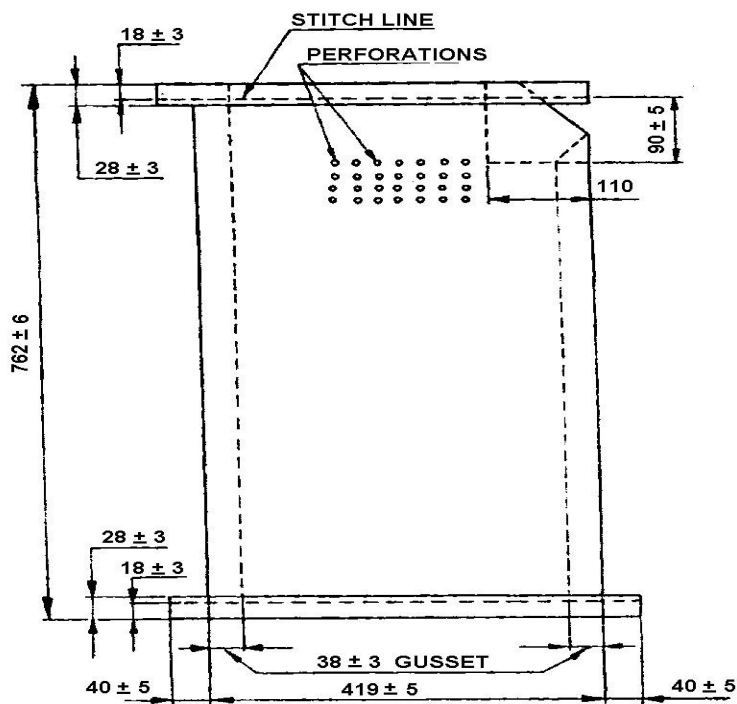


Figure A.1 — Multi-paper sacks for packaging 50-kg cement (sewn type)

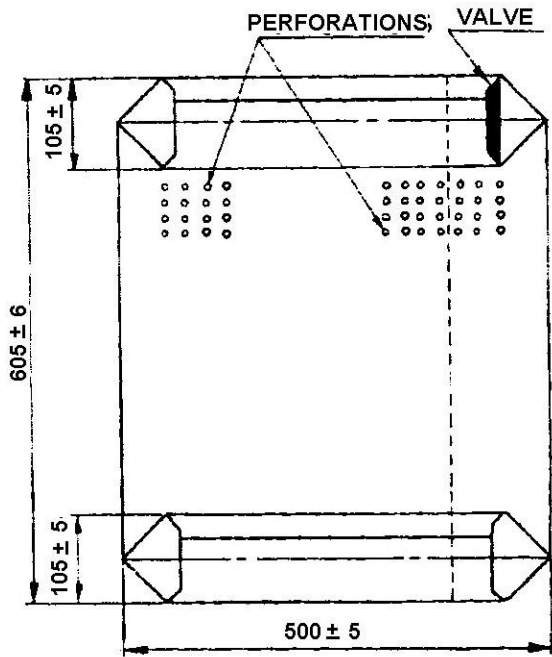


Figure A.2 — Paper sacks for packaging 50-kg cement (valve pasted end type)

Bibliography

KS 2497:2013, *Multi-wall paper sacks for packaging of cement - Specification*

Public Review Draft

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