



EAST AFRICAN STANDARD

Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics spirally-formed structured-wall pipes — Determination of the tensile strength of a seam

EAST AFRICAN COMMUNITY

Foreword

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

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. 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 procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

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.

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Introduction

In the preparation of this East African Standard, the following source was consulted extensively:

ISO 13262:2010, *Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics spirally-formed structured-wall pipes — Determination of the tensile strength of a seam*

Assistance derived from this source and others inadvertently not mentioned is hereby acknowledged.

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Systèmes de canalisations thermoplastiques pour branchements et collecteurs d'assainissement enterrés sans pression — Tubes thermoplastiques à paroi structurée enroulés en hélice — Détermination de la résistance en traction de la ligne de soudure



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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 13262 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 1, *Plastics pipes and fittings for soil, waste and drainage (including land drainage)*.

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Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics spirally-formed structured-wall pipes — Determination of the tensile strength of a seam

1 Scope

This International Standard specifies a method for determining the tensile strength of a seam in a spirally-formed thermoplastics pipe. It is applicable to all such thermoplastics pipes, regardless of their intended use.

2 Normative references

The following referenced documents are indispensable for the application 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 5893, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Specification*

3 Principle

Test pieces of specified shape and dimensions are taken from a thermoplastics pipe with a spirally-formed seam in the direction perpendicular to the seam, by cutting or machining.

The tensile forces necessary to rupture test pieces, including the seam, are determined using a tensile testing machine under specified conditions.

It is assumed that the following test parameter is set by the referring standard: rate of movement of the driven grip (see 4.1 and 8.2).

4 Apparatus

4.1 Tensile testing machine, conforming to ISO 5893 for the specified rate of movement of the driven grip. It shall be capable of applying the necessary force and travel (see 4.3 and 8.3).

4.2 Grips, for holding the test piece, conforming to ISO 5893, which shall be fixed to the machine in such a way that they move freely into alignment as soon as any force is applied, such that the longitudinal axis of the test piece coincides with the direction of the force along the centreline of the grip assembly.

4.3 Force indicator, capable of showing or recording, with an accuracy conforming to grade A of ISO 5893, the total tensile force to which the test piece held in the grips is subjected when tested at the speed specified.

4.4 Micrometer or equivalent, capable of determining the width of the test piece with an accuracy of 0,05 mm or smaller.

5 Test pieces

5.1 Shape of the test piece

The alignment and dimensions of the test piece shall be as shown in Figure 1. The test piece shall consist of the overall wall thickness (construction height) of the pipe from which it is taken.

5.2 Test piece preparation

5.2.1 General

At least 15 h after production of the pipe, divide the circumference of the pipe into five equal sectors.

Without heating or flattening the sectors, cut one rectangular test piece, perpendicular to the seam, from each sector of the pipe (see Figure 1).

5.2.2 Adjustment of test piece dimensions

If the test pieces, after having been cut from the pipe, do not conform to 5.1, their size may be reduced by milling, provided the milling conditions are chosen so as to avoid:

- a) any tangible heating of the test piece;
- b) damage to its surface, such as cracks, scratches or other visible flaws

to an extent that would affect the tensile properties to be measured.

If the width of the wound profile is such that more than one seam is included in the length of the test piece, the test piece shall be cut in such a way that the seams are symmetrically located over the test piece.

If it is not possible to cut the test piece without getting a rib in the grip area, the test piece may be cut slightly longer or shorter to avoid this situation. Individual ribs in the grip area may be removed, if necessary, for a proper attachment of the grips.

6 Conditioning

The test pieces shall be conditioned at (23 ± 2) °C for not less than 1 h in water or 2 h in air, except in cases of dispute when the minimum period shall be 2 h in water or 4 h in air.

7 Test temperature

The test temperature shall be (23 ± 2) °C.

8 Procedure

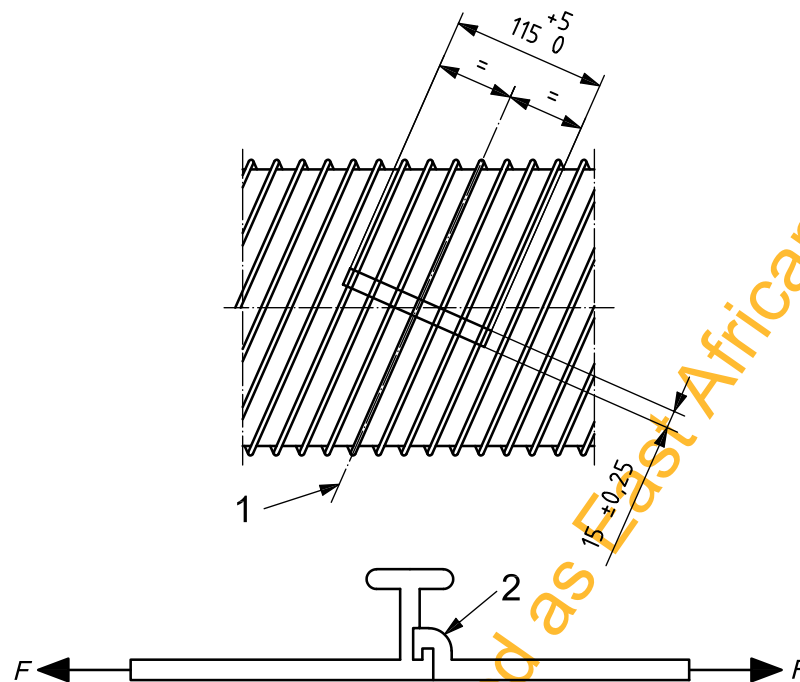
8.1 Place the test piece in the tensile testing machine such that there is axial alignment with the direction of pull. Clamp the grips uniformly and sufficiently tightly to prevent any slipping of the test piece.

8.2 Set the rate of movement of the grips to the value specified in the referring standard and start the machine.

8.3 Record the maximum force necessary during testing to rupture the test piece.

8.4 Repeat the test until five results have been obtained, after discarding any test pieces which have slipped in the grips.

Dimensions in millimetres

**Key**

- 1 seam
- 2 example of a seam

NOTE The lower figure is a schematic drawing only.

Figure 1 — Location and dimensions of a test piece

9 Expression of results

For each test piece, note the maximum force, in newtons, recorded during the test to rupture the seam. Express the result as the tensile strength of the seam, in newtons per 15 mm width.

10 Test report

The test report shall include the following information:

- a) a reference to this International Standard, i.e. ISO 13262:2010, and the referring standard;
- b) the complete identification of the pipe tested, including the constituent material, wall construction type, origin and nominal size;
- c) the conditioning medium (water or air) and conditioning period;
- d) the number of test pieces tested;
- e) the rate of movement of the grips;
- f) the tensile strength of the seam, in newtons per 15 mm width, for each test piece;
- g) any factor that could have affected the results, such as any incident or any operating detail not specified in this International Standard;
- h) the date of test.

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