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EAST AFRICAN STANDARD

Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics shafts or risers for inspection chambers and manholes — Determination of resistance against surface and traffic loading

EAST AFRICAN COMMUNITY

First Edition 2010

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 13266:2010, *Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics shafts or risers for inspection chambers and manholes — Determination of resistance against surface and traffic loading*

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

INTERNATIONAL STANDARD

ISO 13266

First edition
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Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics shafts or risers for inspection chambers and manholes — Determination of resistance against surface and traffic loading

Systèmes de canalisations thermoplastiques pour branchements et collecteurs d'assainissement enterrés sans pression — Éléments de réhausse thermoplastiques pour boîtes d'inspection et de branchement ou regards — Détermination de la résistance aux charges de remblai et de circulation

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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 13266 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)*.

Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics shafts or risers for inspection chambers and manholes — Determination of resistance against surface and traffic loading

1 Scope

This International Standard specifies a method of testing the resistance of the upper assembly of inspection chambers and manhole components against surface and traffic loading.

It is not applicable to requirements for testing the cover and frame. Those requirements are specified in EN 124 or other standards, depending on the material.

NOTE Upper assembly components normally include riser shafts, tapers, reducing slabs and telescopic joints.

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 13260, *Thermoplastics piping systems for non-pressure underground drainage and sewerage — Test method for resistance to combined temperature cycling and external loading*

EN 124, *Gully tops and manhole tops for vehicular and pedestrian areas — Design requirements, type testing, marking, quality control*

ENV 1046, *Plastics piping and ducting systems — Systems outside building structures for the conveyance of water or sewage — Practices for installation above and below ground*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
inspection chamber
drainage or sewerage fitting used to connect drainage or sewerage installations and to change the direction of drainage or sewerage runs, which terminates at ground level and has a riser shaft with a minimum outer diameter of 200 mm and an inner diameter of less than 800 mm

NOTE The termination at ground level permits the introduction of cleaning, inspection and test equipment and the removal of debris, but does not provide access for personnel.

3.2
manhole
drainage or sewerage fitting used to connect drainage or sewerage installations and/or to change the direction of drainage or sewerage runs, which terminates at ground level and has a riser shaft with a minimum inner diameter of 800 mm

NOTE The termination at ground level permits the introduction of cleaning, inspection and test equipment and the removal of debris, and provides access for personnel.

4 Principle

A test assembly comprising at least the first 1 m of chamber or manhole components, measured from and including any component or recommended installation assembly detail at the top end of the inspection chamber or manhole, is buried either in a soil box or under field conditions and a load is applied (see Figure 1).

During loading, the vertical displacement of the cover assembly is measured. After the test is finished, the test assembly is visually inspected and checked for defects.

The referring standard can require test conditions that differ from those set in this International Standard for the following test parameters:

a) the number of test pieces (see Clause 6);

b) the maximum load (see Clause 9);

c) the soil group of granular surround (see Clause 9);

d) the compaction of the granular surround (see Clause 9).

5 Apparatus

5.1 Soil box, large enough to accommodate at least the first 1 m of the test assembly and such that at all sides of the assembly a free space of 300 mm minimum is available. The box shall conform to the rigidity and other general requirements specified in ISO 13260.

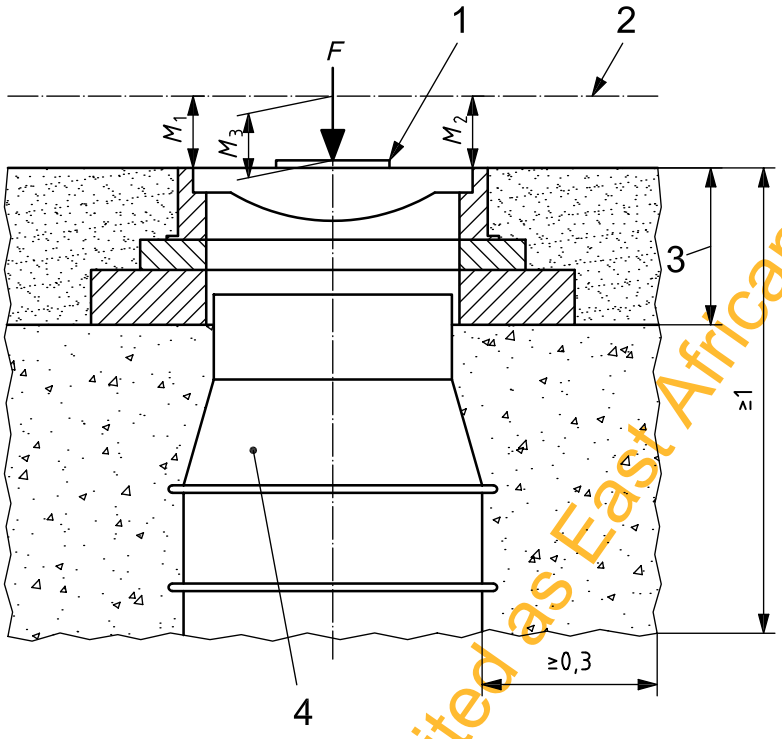
5.2 Loading device, capable of applying the required load to the middle of the cover and of maintaining a constant load for a minimum of 15 min. The load shall be applied via a loading plate conforming to the requirements given in EN 124.

NOTE A loading device can comprise a hydraulic actuator; alternatively, the load can be applied using dead weight.

5.3 Thermocouple, capable of measuring temperature to an accuracy of ±5 °C.

5.4 Test assembly, comprising at least the first 1 m of test assembly measured from, and including, the top assembly detail of the inspection chamber or manhole (see Figures 1 and 2).

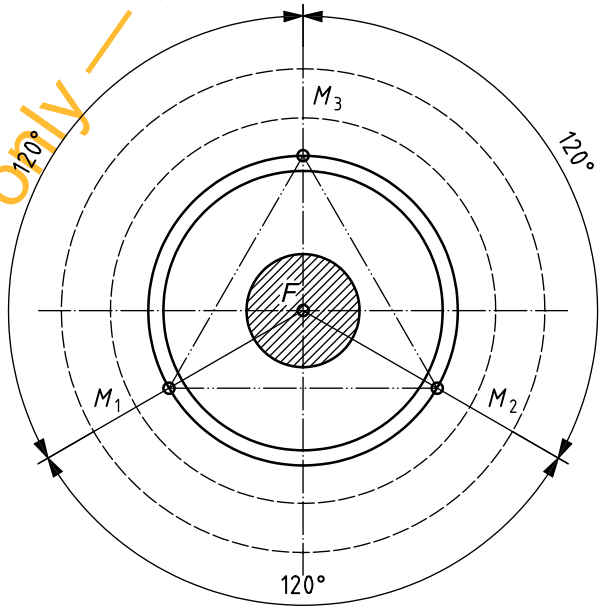
Dimensions in metres



Key

1	loading plate, size in accordance with EN 124
2	reference line, datum
3	cover solution
4	top element of chamber or manhole
F	test load
M_1, M_2 and M_3	dimensions for determining the displacement (see 8.2)

Figure 1 — Test assembly



Key

F	centre point of application of the test load
M_1, M_2 and M_3	points of measurement of displacements (see 8.2)

Figure 2 — Position of measuring points

6 Number of test pieces

Unless otherwise specified in the referring standard, the number of test pieces shall be one.

7 Conditioning and test temperatures

The test pieces shall not be tested for at least 24 h after manufacture.

The test shall be performed at ambient temperature between 5 °C and 25 °C. The test shall not be performed if the granular surround is at a temperature of less than 3 °C. The temperature of the granular surround shall be recorded.

8 Procedure

8.1 Bury the test assembly (5.4) either in the soil box (5.1) or under field conditions using the test parameters given in Table 1, ensuring that there is at least 300 mm of specified granular surround conforming to Clause 9. Where the test assembly is to be buried in the field, excavate enough soil to accommodate at least the first metre of the riser shaft below the test assembly. Bury the thermo-couple in the granular surround at the top of the riser shaft, but below the other assembly components, at a distance of approximately 300 mm.

Where the inspection chamber or manhole incorporates a pavement as an integral part of the cover, apply the pavement as in real practice and bury under field conditions.

Where telescopic joints are supplied, install the support ring and covers in accordance with the manufacturer's product or installation description.

Measure and record at the specified points the distance between the top of the cover and a reference line (datum) which will not be affected by the load (see Figure 1).

8.2 Apply the load using the loading device (5.2) within a period of 1 min to 5 min and maintain at the maximum value specified in Table 1 for a minimum of 15 min. Having applied the load re-measure and record the distances between the top of the cover and the datum.

8.3 After removal of the load, visually inspect the test assembly inspecting for cracks or defects likely to impair performance.

9 Test parameters

Unless as otherwise specified in the referring system standard, the test parameters shall conform to Table 1.

Table 1 — Test parameters

Classification of inspection chamber or manhole[a]	Maximum load[b] kN	Soil group of granular surround[c]	Compaction of granular surround[d] %
Class A	5	3	⩽ 95
Class B	50	2	> 95 and ⩽ 98
Class D	100	1	> 98
Class E	150	1	> 98

[a] The classification of the application shall be in accordance with EN 124.

[b] The maximum load is not to be confused with the test load for covers in EN 124.

[c] The classification of soil group shall be in accordance with ENV 1046. The soil group shall be as specified, unless otherwise specified in the minimum required installation condition of the manufacturer, in which case, the manufacturer's requirements shall apply.

[d] Unless otherwise specified in the minimum required installation condition of the manufacturer, in which case, the manufacturer's requirements shall apply.

10 Test report

The test report shall include the following information:

a) a reference to this International Standard, i.e. ISO 13266:2010, and the referring standard;

b) a detailed identification of the inspection chamber or manhole components tested sufficient for factory process control requirements;

c) the installation details used during the test and their relationship to the recommended details of the manufacturer;

d) the test procedure used;

e) the soil temperature;

f) the maximum load;

g) the measured displacement(s);

h) the test duration time;

i) after testing, any observed crack(s) and other defects likely to impair the performance of the inspection chamber or manhole;

j) any factors that could have affected the result, such as any incidents or any operating details not specified in this International Standard;

k) the date of test.

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