INTERNATIONAL STANDARD

ISO 11948-1

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Urine-absorbing aids —

Part 1:
Whole-product testing

Aides pour absorption d'urine —

Partie 1: Essais portant sur le produit entier

Reference number
ISO 11948-1:1996(E)

Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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.

International Standard ISO 11948-1 was prepared by Technical Committee ISO/TC 173, *Technical systems and aids for disabled or handicapped persons,* Subcommittee SC 3, *Aids for ostomy and incontinence.*

ISO 11948 consists of the following parts, under the general title *Urine-absorbing aids*:

— *Part 1: Whole-product testing.*

— *Part 2: Determination of short-time liquid release (leakage) under conditions of light incontinence and low pressure*

Annex A of ISO 11948 is for information only.

Introduction

The method described in this part of ISO 11948 was selected from those used in the ISO Pad Leakage Project, in which a variety of disposable urine-absorbing aids were tested in various ways in the laboratory and by a user population of about 100 heavily incontinent persons, the majority of whom were non-ambulatory adult females residing in hospitals or nursing homes in eight different countries. The applicability of the method to other groups (e.g. babies or ambulatory adults) or to other classes of product (e.g. reusable or non-body worn) is unknown. See references [1] and [2] in annex A.

The method measures the maximum absorption capacity of the absorbing material in the entire urine-absorbing aid. The method is useful for comparing the performance of products whose absorbing cores are uniform in composition and absorbing properties, but it overestimates the amount of urine these products hold in actual use. The method has not been validated for predicting performance of urine-absorbing aids whose absorbent cores are designed to be non-uniform in composition and absorbing properties.

Urine-absorbing aid user performance is affected by many other factors in addition to absorption capacity, such as: the pressure on the product; the posture of the user (e.g. sitting, standing, moving, lying down); the flowrate at which the user loses urine; and how well the product is put on. From user trials, urine-absorbing aid performance is also known to be affected by composition and design features such as shaping, profiling, composition of the absorbent core, elastication and the kind of fixation system used to keep the product close to the body. This method does not differentiate these product features.

Urine-absorbing aids —

Part 1:
Whole-product testing

1 Scope

This part of ISO 11948 specifies a method for determining the absorption capacity of the absorbent core of body-worn urine-absorbing aids.

NOTE — Other methods for measuring absorption capacity examine aspects which are outside the scope of this part of ISO 11948.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 11948. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 11948 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

ISO 6353-2:1983, *Reagents for chemical analysis — Part 2: Specifications — First series.*

3 Definitions

For the purposes of this part of ISO 11948, the following definition applies:

3.1 urine-absorbing aid: Product containing material for the purpose of absorbing urine.

4 Principle

The urine-absorbing aid is weighed dry, soaked in test liquid, drained, and weighed wet. Subtraction of the dry mass from the wet mass gives the absorption capacity.

5 Preconditioning of test samples

Urine-absorbing aids shall be removed from their packing, unfolded, and conditioned in an atmosphere of 23 °C ± 2 °C and 50 % ± 5 % relative humidity for 24 h to 36 h prior to testing.

6 Test conditions

Urine-absorbing aids shall be tested at 23 °C ± 2 °C and 50 % ± 5 % relative humidity.

7 Reagent

7.1 Test liquid, c(NaCl) = 9,0 g/l, prepared at 23 °C ± 2 °C, comprising grade 3 distilled water as specified in ISO 3696, containing 9,0 g/l sodium chloride as specified in ISO 6353-2.

8 Apparatus

8.1 Reservoir, of dimensions not less than the length and width of the urine-absorbing aid to be tested, capable of containing test liquid to a depth of 100 mm.

NOTE — Internal dimensions of 900 mm × 600 mm × 150 mm are recommended.

8.2 Drainage screen (see figures 1 and 2), of length and width 20 mm less than the internal dimensions of the reservoir. The drainage screen is made of rods of 3 mm ± 0,25 mm diameter welded together to form a square grid with 25 mm ± 1 mm between rod centres. The rods running parallel to the length of the drainage screen are underneath, and those parallel to its width are on top.

Dimensions in millimetres

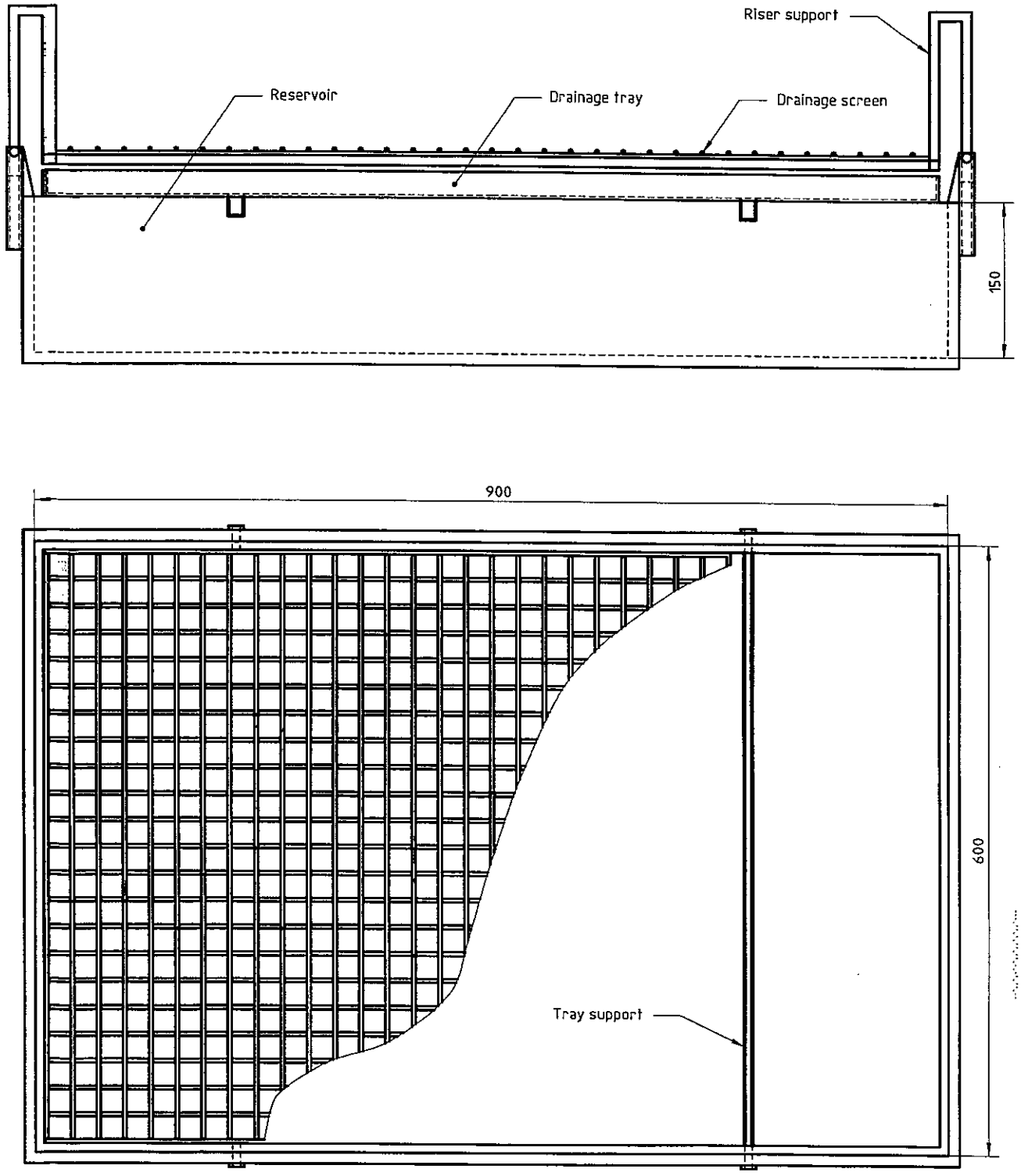

Figure 1 — Test equipment

Dimensions in millimetres

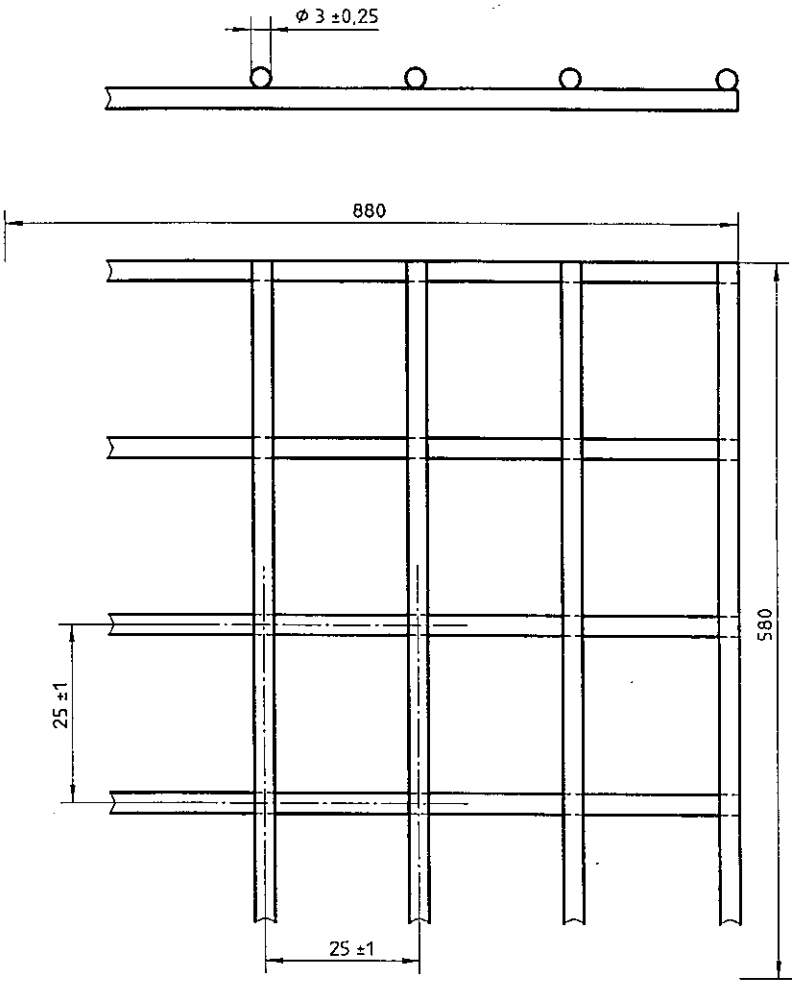

Figure 2 — Drainage screen detail

The drainage screen (or the reservoir) is fitted with means for resting the drainage screen directly above the reservoir.

NOTE — The rods should be made from nonabsorbent, corrosion-resistant material. During pretests of the method, only rods made of stainless steel were used. Other material may affect the test results.

8.3 Drainage tray, of the same length and width as the drainage screen and of minimum internal depth 25 mm, provided with a means for sliding the drainage tray into and out of position between the reservoir and the drainage screen.

8.4 Balance, capable of measuring the dry mass of the urine-absorbing aid under test to the nearest 0,1 g.

8.5 Balance, capable of measuring the mass of the tared drainage tray and the wet urine-absorbing aid under test to the nearest 1 g.

9 Procedure

9.1 Fill the reservoir to a depth of at least 100 mm with the test liquid.

9.2 Using the balance (8.4), measure the dry mass of the urine-absorbing aid to the nearest 0,1 g.

9.3 If the urine-absorbing aid has elastication, cut the elastics so that it will lay flat, ensuring that a route for absorbing material to escape is not created.

9.4 Lay the urine-absorbing aid flat on the drainage screen. If the urine-absorbing aid is fitted with a barrier to liquid on one side, ensure that this side faces upwards. If the barrier to liquid extends beyond the edge of the drainage screen, ensure that it is not tucked underneath the urine-absorbing aid such as to impede absorption during the test.

9.5 Lower the drainage screen and urine-absorbing aid to the bottom of the reservoir.

9.6 Leave the urine-absorbing aid to soak for 30 min ± 30 s if it contains any superabsorbent material, or 5 min ± 10 s if it does not.

9.7 Massage the urine-absorbing aid gently while it is soaking to remove any pockets of trapped air.

9.8 Raise the drainage screen and urine-absorbing aid clear of the reservoir and allow excess liquid to drain back under gravity into the reservoir from the urine-absorbing aid for 5 min ± 10 s. Ensure that no puddles of test liquid gather on the top of the barrier to liquid, if the urine-absorbing aid is fitted with one.

9.9 Tare the balance (8.5) to the dry mass of the drainage tray.

9.10 Slide the drainage tray into position between the reservoir and the drainage screen.

9.11 Roll up the urine-absorbing aid, allowing any fluid that is displaced by the rolling procedure to fall through into the drainage tray.

9.12 Weigh the wet urine-absorbing aid, the drainage tray and any liquid it contains on the tared balance, to the nearest 1 g.

9.13 Subtract the dry mass of the urine-absorbing aid from the mass measured in 9.12 to give the absorption capacity, to the nearest 1 g.

9.14 Repeat steps 9.1 to 9.13 until at least five samples of the urine-absorbing aid have been tested.

10 Test report

The test report shall include the following information:

a) a reference to this part of ISO 11948;

b) identity of the urine-absorbing aid tested;

c) the material from which the drainage-screen rods are made;

d) the number of individual tests;

e) for each individual test:

- the dry mass, reported to the nearest 0,1 g,
- the absorption capacity, reported to the nearest 1 g;

f) for all of the repeats:

- the arithmetic mean of the dry masses, reported to the nearest 0,1 g,
- the standard deviation of the dry masses, reported to the nearest 0,01 g,
- the arithmetic mean absorption capacity, reported to the nearest 1 g,
- the standard deviation of the absorption capacities, reported to the nearest 0,1 g;

g) date and place of testing;

h) any other information, as agreed between product supplier and customer;

i) any deviation from the method specified in this part of ISO 11948 which may influence the test results.

Annex A
(informative)

Bibliography

[1] A.M. COTTENDEN, The ISO Pad Leakage Project: Findings to date, *INDA J. Nonwovens Res.*, **2** (2), 1990, pp. 23-28.

[2] A.M. COTTENDEN and D.J. LEDGER, The ISO Pad Leakage Project: An update, *INDA J. Nonwovens Res.*, **3** (2), 1991, pp. 52-60.

[3] ISO 9949-1:1993, *Urine absorbing aids — Vocabulary — Part 1: Conditions of urinary incontinence.*

[4] ISO 9949-2:1993, *Urine absorbing aids — Vocabulary — Part 2: Products.*

[5] ISO 9949-3:1993, *Urine absorbing aids — Vocabulary — Part 3: Identification of product types.*

ICS 11.180

Descriptors: disabled persons, hygiene conditions, medical equipment, urine collection bags, urine absorbing aids, tests, determination, capacity, capacity measurement.

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