

Assessment of industrial laundry machinery by its effect on textiles —

Part 1: Washing machines

ICS 97.060

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National foreword

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, pages ii to iv, pages 1 to 24, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Amendments issued since publication

Amd. No.	Date	Comments

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Contents

	Page
National foreword	Inside front cover
Foreword	iii
Text of ISO 7772-1	1

INTERNATIONAL STANDARD

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Assessment of industrial laundry machinery by its effect on textiles —

Part 1: Washing machines

Évaluation des machines à laver industrielles par leurs effets sur les textiles

Partie 1: Machines à laver rotatives



Contents

	Page
Foreword	iii
Introduction	1
1 Scope	1
2 Normative references	1
3 Definitions	2
4 Preliminary procedures	4
5 Relationship between liquor quantity and dip level for open-drum washing machines	5
6 Mechanical agitation (MA)	6
7 Rinsing effectiveness	9
8 Mixing time	13
9 Water and energy consumption	15
10 Moisture retention	19
11 Test report	19
Annex A (normative) Identification of the test machine	20
Annex B (normative) Reference machine	20
Annex C (normative) Preparation and calibration of test pieces	20
Annex D (normative) Determination of alkalinity	Inside back cover
Annex E (informative) Bibliography	Inside back cover
Figure 1 — Indicating sight glass	7
Figure 2 — Example of typical alkalinity/time curve for mixing test	15
Figure C.1 — MA test piece	22
Figure C.2 — Carrier with MA test piece attached	23
Figure C.3 — Example of an MA test piece after processing	24
Table 1 — Record of results for batch machines	10
Table 2 — Calculated mean values and standard-deviation values	11
Table 3 — Record of results for continuous-washing machines	11
Table 4 — Mixing time	14
Table 5 — Electric motors — Power and peak loading (see 9.3.1)	17
Table 6 — Pressures of water and steam supply services (see 9.3.1)	18
Table 7 — Other external services	18
Table 8 — Flow rates of services	18
Table 9 — Electricity supply	18
Table 10 — Consumption of water, heat and power	18
Table 11 — Consumption of water, heat and power per 100 kg of air-dry load processed	19

Descriptors: Industrial facilities, laundries, washing machines, tests, performance tests, textile products.

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 7772-1 was prepared jointly by Technical Committees ISO/TC 38, *Textiles*, and ISO/TC 72, Textile machinery and machinery for dry-cleaning and industrial laundering.

ISO 7772 consists of the following parts, under the general title *Assessment of industrial laundry machinery by its effect on textiles*:

- *Part 1: Washing machines;*
- *Part 2: Extracting machines;*
- *Part 3: Flatwork-ironing machines;*
- *Part 4: Batch-drying tumblers.*

Annex A to Annex D form an integral part of this part of ISO 7772, Annex E is for information only.

Introduction

The rapid technical development of laundry machinery and the changes in the pattern of purchasing have led to an urgent need for a standard means of assessment of the effect of machine performance on textiles.

Two different approaches to the provision of the necessary information were considered:

- a) definition of essential specifications for laundry machinery, for use by agreement between manufacturer and customer (see for example ISO 9398);
- b) preparation of standard methods for rating and assessing the effect of the principal types of machine so that the test results obtained on machines of a similar type could be compared directly wherever the machines were located and whenever they were tested.

ISO 7772 deals with the second approach, since the urgent need was for procedures that could be used on a range of machines to evaluate their effect under reproducible conditions, including specification of the loads to be used.

Thus it will be possible to compare the basic effects of one machine against another, and a machine against a specification quoted in a contract. No performance level is set. Another advantage in the approach adopted is that the tests can be conducted at any location where the necessary services are available.

It is hoped that, with the advance of techniques, and widespread use of ISO 7772, updated methods can be incorporated.

1 Scope

This part of ISO 7772 specifies methods for the assessment of the effect on textiles of washing machines, including batch-washing machines, continuous-washing machines and washer-extractors.

Methods are described for determining mechanical effects due to the rotary action of the machine, the rinsing effectiveness, the mixing time and the consumption of water, heat and power. Certain other effects such as retention of whiteness may be evaluated using the methods specified in ISO 4312.

In the case of batch-washing machines, this part of ISO 7772 applies only to machines with a capacity in excess of 7 kg.

The methods described in this part of ISO 7772 can be used separately, and therefore any combination of them can be agreed on between the interested parties.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7772. 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 7772 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 2267:1986, *Surface active agents — Evaluation of certain effects of laundering — Methods of preparation and use of unsoiled cotton control cloth*.

ISO 2602:1980, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*.

ISO 3801:1977, *Textiles — Woven fabrics — Determination of mass per unit length and mass per unit area*.

ISO 6330:—, *Textiles — Domestic washing and drying procedures for textile testing*¹⁾.

ISO 7772-2:1996, *Assessment of industrial laundry machinery by its effect on textiles — Part 2: Extracting machines*.

IEC 60258:1968; 60258 am 1:1976, *Direct acting recording electrical measuring instruments and their accessories*.

¹⁾ To be published. (Revision of ISO 6330:1984)

3 Definitions

For the purposes of this part of ISO 7772, the following definitions apply.

3.1

air-dry mass (ADM)

the total mass of clean textile articles, including the mass of the moisture absorbed from the ambient atmosphere (see also 3.4)

3.2

alkalinity

the concentration of alkali in a liquor

3.3

batch-washing machine

a washing machine that, in a washing sequence, discontinuously washes and rinses textile articles

3.4

bone-dry mass (BDM) (moisture content between 0,5 % and 1,0 %)

the mass of a textile article (or of a number of articles) after being dried in a specified manner, when successive determinations of mass after several drying procedures show no progressive change in mass of the textile greater than 0,5 %

NOTE Specified drying procedures include repeated processing of the article or articles in a heated tumbler from which the exhaust air reaches a temperature of not less than 80 °C nor more than 120 °C, or repeatedly passing the article or articles through a flatwork ironing machine. These temperatures are appropriate to cotton fabrics which constitute the test loads and test pieces specified in this part of ISO 7772.

3.5

cage

that part of a washing machine which rotates and contains the load during the washing and rinsing processes

3.6

carrier

cotton fabric, complying with ISO 2267, cut into squares measuring 1 000 mm × 1 000 mm in which “windows” are cut for attachment of MA test pieces (see 3.18), to ensure proper movement during washing and for ease of identification after processing

3.7

compartment

a subdivision of a cage

3.8

continuous-washing machine

a washing machine in which textile articles pass continuously or intermittently from the loading point, through the machine, to the discharge point

3.9

dwelt time

the time for which the cage is stationary during reversals in the direction of rotation

3.10

extraction

the mechanical removal of liquor from wet textiles

3.11

final extraction

in a washer-extractor, the final stage of a process during which the cage rotates at its highest speed in order to achieve low moisture retention within the load

3.12**gross cage volume**

the theoretical volume within the major internal dimensions of the cage

3.13**hydro-extractor**

a machine in which water is removed from wet textile articles by mechanical means

3.14**intermediate extraction**

in a washer-extractor, the extraction between process stages

3.15**lifter**

a step or ledge on the internal periphery of the cage, usually parallel to the cage axis

3.16**load**

the textile articles with which a washing machine is loaded

3.17**loading factor**

the air-dry mass of the load, expressed in kilograms per litre of net cage volume

3.18**MA test piece**

a cotton fabric of specified construction and dimensions, in which five circular holes of specified diameter and location are cut

3.19**MA figure**

the number of unbroken loosened threads in the hole of the MA test piece after processing, giving an indication of the degree of mechanical agitation during processing

3.20**net cage volume**

the gross cage volume less the total of the volumes occupied by lifters, recessed loading doors and the like

3.21**outer cylinder**

the part of a washing machine that encloses the cage and the liquor

3.22**process time**

the net total time taken for washing and associated rinsing in the agreed process

3.23**recovered water**

effluent from a washing machine which is made available for re-use

3.24**reference washing machine**

a washing machine of specified characteristics in which a reference washing process is carried out

3.25**laundry regain**

the difference between air-dry mass and bone-dry mass, expressed as a percentage of bone-dry mass

NOTE This term is used for practical purposes for industrial laundry machinery, but does not have the same meaning as "moisture regain" (see ISO 6348).