
**Specifications for industrial laundry
machines — Definitions and testing of
capacity and consumption
characteristics —**

iTeh STANDARD PREVIEW

Part 1:
Flatwork ironing machines

[ISO 9398-1:1993](#)

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*Spécifications pour les machines de blanchisserie industrielles —
Définitions et contrôle des caractéristiques de capacité et de
consommations —*

Partie 1: Sécheuses-repasseuses



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 9398-1 was prepared by Technical Committee ISO/TC 72, *Textile machinery and allied machinery and accessories*, Subcommittee SC 4, *Dyeing, finishing and allied machinery and accessories*.

ISO 9398 consists of the following parts, under the general title *Specifications for industrial laundry machines — Definitions and testing of capacity and consumption characteristics*:

- Part 1: *Flatwork ironing machines*
- Part 2: *Batch drying tumblers*
- Part 3: *Washing tunnels*
- Part 4: *Washers-extractors*

Annex A of this part of ISO 9398 is for information only.

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Specifications for industrial laundry machines — Definitions and testing of capacity and consumption characteristics —

Part 1: Flatwork ironing machines

1 Scope

This part of ISO 9398 defines the characteristics of flatwork ironing machines and gives the usual test methods for these characteristics with regard to the capacity, power consumption and hourly productivity of these machines.

It does not cover safety requirements, for which reference should be made to the appropriate national regulations and legal texts.

This part of ISO 9398 is used for reference in the drafting of purchasing orders for flatwork ironing machines.

NOTE 1 If more detailed information on the effect of laundry machines on textiles is required, reference should be made to ISO 7772 after agreement between the parties involved.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 9398. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9398 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6348:1980, *Textiles — Determination of mass — Vocabulary*.

3 Definitions

For the purposes of this part of ISO 9398, the following definitions apply.

3.1 nominal capacity of a flatwork ironing machine

(1) Maximum water quantity (in kilograms per hour) which may be extracted from decatized cotton articles as specified in 4.1 mangled on this machine under the specified test conditions.

NOTE 2 The value of this evaporation capacity may be given on the rating plate of the machine.

(2) Maximum value of the dimension of passage of the articles thus mangled on the machine.

3.2 dried mass: Mass of a load of decatized cotton articles dried by appropriate methods. [ISO 6348]

3.3 moisture content: Mass of water, determined by appropriate methods, contained in a load of decatized cotton articles in relation to the *dried mass* of the same load, and expressed as a percentage of this dried mass.

3.4 mass at $(8 \pm 0,5)$ % moisture: Mass of a load of decatized cotton articles, as described in 4.1, whose *moisture content* is $(8 \pm 0,5)$ %.

3.5 residual moisture content after extraction: Mass of water contained in a load (see 4.1) of

decatized cotton articles after suitable rinsing and extraction, in relation to the *dried mass* of the same load, and expressed as a percentage of this dried mass.

3.6 residual moisture content after drying: Mass of water contained in a load (see 4.1) of decatized cotton articles, after suitable drying, in relation to the *dried mass* of the same load and expressed as a percentage of this dried mass.

4 General test conditions

4.1 Machine load

4.1.1 Amount of load

The test load shall correspond to 200 sheets, or the number of sheets necessary to allow the machine to operate for 30 min at the linear speeds specified by the manufacturer.

4.1.2 Nature of the load

The test load shall comprise sheets made of white decatized cotton with a mass per unit area of (175 ± 20) g/m² and dimensions of (250 ± 50) cm × (180 ± 36) cm.

4.1.3 Conditioning

The residual moisture content of the test load shall be (65 ± 1) % after rinsing in water and suitable extraction.¹⁾

4.1.4 Number of loads

Two identical loads, as defined in 4.1.1, shall be tested.

If the test loads conditioned as in 4.1.3 have to be kept for a period of time in the area where the tests are carried out, they shall be stored under a cover which will prevent any evaporation.

4.2 Energy supply

Energy for the test shall be supplied by steam, gas, electricity or heat-transport fluid, as specified by the manufacturer.

4.3 Temperature of the rinse water before extraction

The temperature of the rinse water used in the test shall be (17 ± 7) °C before extraction.

1) This moisture level $[(65 \pm 1) \text{ %}]$ may also be expressed as a level of 52 % with respect to a dried mass which has regained moisture to a level of $(8 \pm 0,5) \text{ %}$.

4.4 Ambient air

The ambient air temperature during the test shall be (24 ± 6) °C.

4.5 Condition of the machine

The machine shall be clean.

5 Determination of residual moisture content after flat-ironing

5.1 Test method

5.1.1 Under the general test conditions as specified in clause 4, condition the flatwork ironing machine for 30 min so that thermal equilibrium of the machine is attained.

5.1.2 Flat-iron a first test load (4.1) adjusting the linear speed to $0,85v_0$, where v_0 , in metres per minute, is the speed specified by the manufacturer. Record the value of the mass of the load thus treated.

5.1.3 Flat-iron a second test load (4.1) adjusting the linear speed to $1,15v_0$. Record the value of the mass of the load thus treated.

5.1.4 Repeat the operations in 5.1.2 and 5.1.3. Record the mean values of the mass of the load for each of the linear speeds specified ($0,85v_0$ and $1,15v_0$).

5.2 Expression of results

5.2.1 Plot the values found in 5.1.4 on a graph and draw the curve of the residual moisture content after flat-ironing as a function of the linear speeds specified.

5.2.2 Determine from the graph the linear speed v_1 which permits drying of the test load (4.1) to give a residual moisture value after flat-ironing of $(8 \pm 0,5) \text{ %}$.

6 Energy consumption of the machine

6.1 General

The energy consumption of a flatwork ironing machine is defined as the number of kilojoules or kilowatt-hours (of steam, electric or heat-transport fluid energy) required for flat-ironing of one test load (4.1) having a residual moisture level on discharge from the flatwork ironing machine of $(8 \pm 0,5) \text{ %}$ (see 6.3).

6.2 Test method

6.2.1 Under the general test conditions as specified in clause 4, condition the flatwork ironing machine for 30 min so that thermal equilibrium of the machine is attained.

6.2.2 Carry out two series of operations in succession, pausing for 15 min between one operation and the next, at the linear speed v_1 determined in 5.2.2, so that the test load when discharged from the machine has a residual moisture content of $(8 \pm 0,5)$ % corresponding to a "dry feel". The sheets shall be spaced about 0,20 m apart on passage through the machine.

6.2.3 Calculate the mean value of the energy consumption recorded during the two tests.

6.3 Expression of results

6.3.1 The energy required by the machine to produce the heat necessary may be expressed in two ways:

- a) as the consumption in kilojoules or kilowatt-hours per kilogram required for the flat-ironing of a test load of decatized cotton sheets as specified in 4.1, the residual moisture content of which has been reduced from (65 ± 1) % to $(8 \pm 0,5)$ % after flat-ironing;
- b) as the consumption, expressed as kilojoules or kilowatt-hours, per kilogram of water evaporated in 1 h from decatized cotton sheets as specified in 4.1, the residual moisture content of which has been reduced from (65 ± 1) % to $(8 \pm 0,5)$ % after flat-ironing.

6.3.2 Record the energy consumption required by the motor(s) for the mechanical drive.

6.3.3 The total energy consumption required by a flatwork ironing machine is the sum of the mechanical and thermal energy required.

EXAMPLE

Motor(s) kWh

Heating kWh

Total kWh

7 Hourly productivity of the machine

The hourly productivity of the flatwork ironing machine shall be controlled simultaneously with its energy consumption.

The flatwork ironing machine in an industrial laundry is part of a production chain comprising:

- a preparation section (smoothing out);
- a feeding section;
- the actual flatwork ironing;
- a folding section.

The rapidity with which the operators work throughout the feed-in (with laundry articles) and collection points of this chain has a very marked effect on the efficiency of the machine; therefore, the method proposed for measuring the production is intended to permit comparison between the productivity of different machines.

7.1 General

The hourly productivity (or throughput) of a flatwork ironing machine is defined as the number of sheets which may be flat-ironed in 1 h under the test conditions specified in this part of ISO 9398.

7.2 Test method

The test conditions for determining the hourly productivity are identical to those specified in 6.2.

7.3 Expression of results

The hourly productivity at a flatwork ironing machine shall be expressed as:

- a) the mass of water evaporated from the test load in 1 h under the test conditions specified in 6.2;
- and
- b) the number of sheets, as specified in 4.1, discharged from the machine in 1 h and under the test conditions specified in 6.2.

The productivity may also be expressed as:

- c) the mass, in kilograms, of decatized cotton sheets, as in 4.1 which can be flat-ironed within 1 h to a residual moisture content of $(8 \pm 0,5)$ %.

8 Machine information

8.1 Identification

- manufacturer;
- manufacturer's address;
- machine type and reference number.

8.2 Specifications

- number of beds or cylinders;
- nominal diameter of clothed rolls, in millimetres;
- type of roll;
- description of roll springing and covering, including whether hard spring or soft spring;
- working pressure range of the beds, in kilopascals;
- working pressure range of the rolls, in kilopascals;
- nominal steam pressure, in kilopascals;
- maximum linear speed, in metres per second;
- compressed air supply requirements, in kilopascals;
- working width, in millimetres;
- mass (usually “gross weight”), in kilograms.

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Annex A (informative)

Bibliography

- [1] ISO 6741-1:1989, *Textiles — Fibres and yarns — Determination of commercial mass of consignments — Part 1: Mass determination and calculations.*
- [2] ISO 7772-1:—²⁾, *Assessment of industrial laundry machinery and its effect on textiles — Part 1: Washing machines.*
- [3] ISO 7772-2:—²⁾, *Assessment of industrial laundry machinery and its effect on textiles — Part 2: Extracting machines.*
- [4] ISO 7772-3:—²⁾, *Assessment of industrial laundry machinery and its effect on textiles — Part 3: Flatwork ironing machines.*
- [5] ISO 7772-4:—²⁾, *Assessment of industrial laundry machinery and its effect on textiles — Part 4: Batch drying tumblers.*

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