*भारतीय मानक* **IS 17454 : 2023**

***Indian Standard***

# वस्त्रादि — सैनिटरी नैपकिन वेंडिंग मशीन के दिशानिर्देश और सामान्य आवश्यकता — विशिष्टि

*( पहला पुनरीक्षण )*

# Textiles — General Requirement for Sanitary Napkin Vending Machine — Specification

*( First Revision )*

ICS 55.230, 59.120.99



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Textile Machinery and Accessories Sectional Committee, TXD 14

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Machinery and Accessories Sectional Committee had been approved by the Textiles Division Council.

Sanitary napkin vending machine is a self-service vending machine used for dispensing sanitary napkins against acceptance of coins, paper currency, token card, digital mode, biometric system, radio-frequency identification (RFID) or through mechanical operation.

The vending machine is expected to be very useful for young girls and women in providing immediate access to sanitary napkins anytime during menstrual emergencies. It can be easily installed at different work places like schools, colleges, community centers and public places like airports, hospitals, shopping malls, railway stations, and bus stops etc. This would not only provide easy access, but also help to empower women and create awareness about women's health.

This standard was originally published in 2020. This revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

a) Title of the standard has been updated;
b) Scope and definitions have been modified;
c) Material, size and design requirements have been modified;
d) Requirements for resistance to temperature and humidity, cyclic calibration test and battery/power back-up and workmanship and finish have been specified;
e) Operating instruction and maintenance clause has been modified;
f) Marking requirements have been updated; and
g) Sampling plan has been modified.

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# TEXTILES — GENERAL REQUIREMENT FOR SANITARY NAPKIN VENDING MACHINE — SPECIFICATION

*( First Revision )*

## 1 SCOPE

This standard covers the general requirements for mechanical or electrically operated or combination thereof for sanitary napkin vending machine.

## 2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed in Annex A.

## 3 DEFINITIONS

For the purpose of this standard, the following definitions shall apply.

**3.1 Sanitary Napkin** — Sanitary napkin is an absorbent material used to absorb fluid discharged during menstruation.

**3.2 Vending Machine** — A machine that dispenses the intended product/article to the user when a coin or token or any other mode of payment is inserted.

## 4 MATERIAL

**4.1** The cabinet and their parts shall be constructed with strength and rigidity adequate to withstand normal conditions of handling, transport and usage. The cabinet and door shall be constructed from mild steel sheet of minimum 1.2 mm thickness conforming to IS 1079 or cold rolled close annealed (CRCA) sheet of minimum 1.2 mm thickness conforming to IS 513 (Part 1). The cabinet and the door shall be powder coated for adequate strength and corrosion resistance (*see* IS 13871). The thickness of the powder coating shall be minimum 50 micron when tested as per method given in IS 101 (Part 3/Sec2).

**4.2** The cord/cable used in the machine shall conform to IS 694 and the electronic push button shall conform to IS/IEC 61058-1.

**4.3** The spring used in the machine shall be of good quality stainless steel with spiral design and shall conform to IS 4454 (Part 4). There shall be equal gap between the springs so that smooth dispensing/vending of the product shall be ensured.

## 5 SIZE AND DESIGN

**5.1** The size of sanitary napkin vending machine shall depend upon the product storage capacity, single row/column or double row/column. The maximum size of the machine shall not be more than width (762 mm), depth (305 mm) and height (914 mm). The weight of the machine shall not be more than 30 kg. The other size, dimension and weight of the machine shall be as per the agreement between the buyer and the seller.

**5.2** The machine may be single row/column or multi row/column as per the product storage capacity. The machine shall be wall mounted with easily removable mounting accessories.

**5.3** The machine shall be flexible and adjustable to allow storage and vending of various sizes of sanitary napkin as specified in IS 5405 or other sizes as per the user requirement.

## 6 WORKMANSHIP AND FINISH

There shall be no sharp edges or corners liable to cause injury to the user in the normal conditions of use.

## 7 REQUIREMENTS FOR SANITARY NAPKIN VENDING MACHINE

### 7.1 Resistance to Temperature and Humidity Changes

**7.1.1** Vending machine shall be able to operate at temperatures and humidity within the ranges as given in Table 1 and comply with the following requirements after being subjected to the test method given in **7.1.2.1** and **7.1.2.2**:

a) Shall operate as intended; and
b) The mechanical and electrical operation of all working parts shall be unimpaired.

**7.1.2** *Test Method*

**7.1.2.1** Subject one vending machine to the temperature cycle [cycle 1, Sl No. (i) to (iv) sequentially] as given in Table 1. After the cycle 1, operate the vending machine within 5 min of its removal from the conditioning chamber. The machine is to be held in its normal working position and shall remain immobile for the duration of the test.

**7.1.2.2** Subject the same vending machine to the humidity cycle [cycle 2, Sl No. (i) to (iv) sequentially] as given in Table 1. After the cycle 2, operate the vending machine within 5 min of its removal from the conditioning chamber. The machine is to be held in its normal working position and shall remain immobile for the duration of the test.

**Table 1 Temperature and Humidity Cycles**
(*Clauses* 7.1.1 and 7.1.2)

| Sl No. | Duration, h | Cycle 1 | Cycle 2 |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| i) | 6 ± 10 min | store at temperature: (-10 ± 2) °C | store at relative humidity: (50 ± 2) percent |
| ii) | 6 ± 10 min | store at temperature: (10 ± 2) °C | store at relative humidity: (70 ± 2) percent |
| iii) | 6 ± 10 min | store at temperature: (30 ± 2) °C | store at relative humidity: (80 ± 2) percent |
| iv) | 6 ± 10 min | store at temperature: (50 ± 2) °C | store at relative humidity: (90 ± 2) percent |

### 7.2 Vending Mechanism

**7.2.1** The vending mechanism can be by following ways:

a) By vertical spirals (coils)/horizontal spirals (coils)/sliding mechanism; or
b) Independent motor for selection/coils; or
c) Vend by DC Motor.

The machine shall vend single product once correct credit is inserted or selected. Vending mechanism shall be tested for various mode of payment/selection as agreed between the buyer and the seller. If coin is used as mode of payment, then the machine shall accept coins of at least six types and reject any coin of other than pre-designated type. The type of coin to be accepted shall be clearly and indelibly marked on the machine.

NOTE — Coins of same denomination but of different shape and size shall be considered as different type.

### 7.3 Cyclic Calibration Test

**7.3.1** The sanitary napkin vending machine shall operate/work properly for at least 20 vending cycles for each type of insertion when tested as per the method given below:

**7.3.1.1** Insert the correct credit and allow the machine to vend the product that is sanitary napkin.

**7.3.1.2** If the machine vends correct amount of product, then this shall be considered as one cycle.

**7.3.1.3** Repeat the above procedure for 20 cycles per type.

### 7.4 Battery/Power Back-up

The sanitary napkin vending machine shall be provided with a battery having a power backup of at least 12 h. The battery used in the vending machine shall be in accordance with IS 16046 (Part 1) or IS 16046 (Part 2) or lithium ion/lead acid battery as agreed between the buyer and seller. For checking the battery backup, one vend after every 10 min shall be done for 12 hours (total 72 vends) without electric power supply. The battery shall be able to vend the sanitary napkins without any problem.

**7.5** The sanitary napkin vending machine shall operate on single phase 220 volts ± 10 percent, 50 Hz power supply. There shall be inbuilt protection against normal voltage fluctuation. The electrical components in the machine shall conform to the safety requirements according to IS 302 (Part 1).

**7.6** All electrical wiring, connections and electrical joints shall be electrically and mechanically secure (*see* IS 732).

**7.7** The vending machine shall have provision for display sold out or no-stock.

**7.8** The display screen/transparent window shall indicate the stock available on the main frame of the vending machine to ensure visibility of low stocks/balance stock in the vending machine. In case of double row/column vending machine, provision for individual selection of row/column shall be available for user or auto-selection in case of same product on both column.

## 8 OPERATING INSTRUCTION AND MAINTENANCE

**8.1** Each machine shall be provided with an operation manual that clearly list operating instructions, directions for installation, the recommended maintenance schedule and cleaning instruction in English, Hindi and regional language.

**8.2** A preventive maintenance manual with instructions for routine and preventive maintenance checks and servicing shall be provided by the manufacturer in English, Hindi and regional language.

**8.3** Do’s and Don’ts instruction shall be plated or printed on the machine on front side.

**8.4** The manufacturer shall give minimum one year warranty for machine or as agreed between buyer and seller.

**8.5** The vending machine shall have provision for data retrievable electronically for total product vending, total coins taken on day to day or monthly basis or as agreed between buyer and seller.

## 9 MARKING

**9.1** Each sanitary napkin vending machine shall be legibly and indelibly marked with following information:

a) Name of manufacturer and trade mark/brand name;
b) Model and serial number;
c) Sanitary napkin storage capacity;
d) Size and weight;
e) Pictorial diagram of coin;
f) Power/Voltage;
g) Date of manufacturing and country of manufacture;
h) Vending mechanism and mode of operation; and
j) Any other information as required by buyer or by law/regulations in force.

### 9.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

## 10 PACKING

The vending machine shall be packed securely in a suitable material that is not prohibited for use for the purpose under any applicable law/regulation in force so as to allow normal handling, transport, shipment and storage without damaging and tearing. Details of the packaging shall be as agreed to between the buyer and the seller.

## 11 SAMPLING

**11.1** The quantity of vending machines manufactured from same material, of a definite size, type, design and finish supplied to one buyer against one despatch note shall constitute a lot.

**11.2** The conformity of the lot to the requirements of this standard shall be determined on the basis of the tests carried out on the samples selected from it.

**11.3** Unless otherwise agreed to between the buyer and the seller, the sample shall be selected as prescribed in **11.4** and **11.5**.

**11.4** The number of machines to be selected from the lot shall depend on the size of the lot and shall be in accordance with col (2) and col (3) of Table 2.

**Table 2 Sample Size**
(*Clause* 11.4)

| Sl No. | No. of machines in a Lot | Sample Size for workmanship and finish, Cyclic Calibration, and Battery/Power Back-up |
|---|---|---|
| (1) | (2) | (3) |
| i) | 2 to 8 | 2 |
| ii) | 9 to 15 | 3 |
| iii) | 16 to 25 | 5 |
| iv) | 26 to 50 | 8 |
| v) | 51 to 90 | 13 |
| vi) | 91 and above | 20 |

**11.5** The number of machines to be tested and criterion for conformity for each of the characteristics shall be as follows:

**Table 3 Number of Test Specimens and Criteria for Conformity**
(*Clause* 11.5)

| Sl No. | Characteristic | No. of machines to be Tested | Criterion for Conformity |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| i) | Resistance to temperature and humidity | According to clause **7.1.2.1** and **7.1.2.2** | The sample shall confirm the test |
| ii) | Workmanship and finish, cyclic calibration, and battery/power back-up | According to col (2) and col (3) of Table 2 | All the samples shall confirm the test |

## ANNEX A
(*Clause* 2)

## LIST OF REFERRED INDIAN STANDARDS

| *IS No.* | *Title* |
|---|---|
| IS 101 (Part 3/Sec 2) : 1989 | Methods of sampling and test for paints, varnishes and related products: Part 3 Tests on paint film formation: Section 2 Film thickness (*third revision*) |
| IS 302 (Part l) : 2008 | Safety of household and similar electrical appliances: Part 1 General requirements (*sixth revision*) |
| IS 513 (Part 1) : 2016 | Cold reduced carbon steel sheet and strip: Part 1 Cold forming and drawing purpose (*sixth revision*) |
| IS 694 : 2010 | Polyvinyl chloride insulated unsheathed and sheathed cables/cords with rigid and flexible conductor for rated voltages up to and including 450/750 V (*fourth revision*) |
| IS 732 : 2019 | Code of practice for electrical wiring installations (*fourth revision*) |
| IS 1079 : 2017 | Hot rolled carbon steel sheet, plate and strip — Specification (*seventh revision*) |
| IS 4454 (Part 4) : 2001 | Steel wires for mechanical springs: Part 4 Stainless steel wire (*second revision*) |
| IS 5405 : 2019 | Sanitary napkins — Specification (*second revision*) |
| IS 13871 : 2021 | Powder coating — Specification (*first revision*) |
| IS 16046 | Secondary cells and batteries containing alkaline or other non-acid electrolytes — Safety requirements for portable sealed secondary cells and for batteries made from them for use in portable applications: |
| (Part 1) : 2018 | Nickel systems (*second revision*) |
| (Part 2) : 2018 | Lithium systems (*second revision*) |
| IS/IEC 61058-1 : 2000 | Switches for appliances: Part 1 General requirements |

**ANNEX B**
(*Foreword*)

**COMMITTEE COMPOSITION**
Textile Machinery and Accessories Sectional Committee, TXD 14

| *Organization* | *Representative(s)* |
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| Central Manufacturing Technology Institute, Bengaluru | DR NAGAHANUMAIAN (***Chairperson***) |
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## Amendments Issued Since Publication

| Amend No. | Date of Issue | Text Affected |
|---|---|---|
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