

इंटरनेट

मानक

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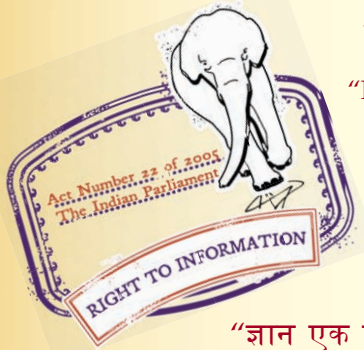
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IS 8423 (1994): Specification for controlled percolating hose for fire fighting [CED 22: Fire Fighting]



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“Knowledge is such a treasure which cannot be stolen”

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IS 8423 : 1994
Reaffirmed 2010

भारतीय मानक

अग्नि शमन के लिए नियंत्रित अंतःस्रावी हौज -
विशिष्ट

(पहला पुनरीक्षण)

Indian Standard

CONTROLLED PERCOLATING HOSE FOR
FIRE FIGHTING — SPECIFICATION

(*First Revision*)

First Reprint SEPTEMBER 1998

UDC 614:843-2

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1994

Price Group 3

**AMENDMENT NO. 1 FEBRUARY 2001
TO
IS 8423 : 1993 CONTROLLED PERCOLATING HOSE
FOR FIRE FIGHTING — SPECIFICATION**

(First Revision)

(Foreword) — Insert the following at the end of second para:

'like forestry fire services'.

(Page 2, clause 10.1) — Substitute '21.1' for '21.4'.

(Page 2, clause 12) — Substitute '10 kgf/cm²' for '7 kgf/cm²' in line 3 and '5 minutes' for '2 minutes' in line 4.

(Page 3, Table 3) — Substitute the following for the existing table:

Lot Size (In Length)	Sample Size (in Length)	Permissible Number of Defective Lengths
(1)	(2)	(3)
Up to 15	3	0
16 to 25	5	0
26 to 50	10	0
51 to 100	20	1
101 to 200	32	1
201 to 500	50	1
501 and above	80	2

(CED 22)

**AMENDMENT NO. 2 MAY 2006
TO
IS 8423 : 1994 CONTROLLED PERCOLATING HOSE
FOR FIRE FIGHTING — SPECIFICATION**

(First Revision)

(Page 2, clause 10.1, Note) — Substitute the 'Pinholes' for 'The hose'.

(CED 22)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 3 NOVEMBER 2008
TO
IS 8423 : 1994 CONTROLLED PERCOLATING HOSE FOR
FIRE FIGHTING — SPECIFICATION

(First Revision)

[Page 2, clause 16.2(a)] — Substitute the following for the existing:

Type of 'Controlled Percolating Hose'.

at, BIS, New Delhi, India

(CED 22)

Reprography Unit, BIS, New Delhi, India

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

Controlled percolating hose is used by the fire services in circumstances where some degree of percolation is essential to prevent the hose from being scorched when used over hot surfaces and also where water damage because of percolation is not of any consequence.

Only the performance characteristics of hose have been dealt with in this standard. This is with a view to allowing scope for development in the manufacturing processes. It may be noted that to ensure an alround quality of this type of hose, a balance has to be struck between various conflicting requirements. This has been a guiding factor in the preparation of this standard.

This standard was first published in 1977 with a view to guiding the users in purchasing fire fighting hose of a dependable quality and to assist the manufacturers in producing it. The present revision of the standard is being taken up with a view to modifying the standard in light of experience gained in the field. The major changes in the revision include:

- i) Minimum values for percolation for all sizes.
- ii) Higher test pressure for proof pressure test to 2.1 MPa (21.4 kgf/cm²) in place of 18 kgf/cm²/min. Also bursting pressure increased to 3.5 MPa (35.7 kgf/cm²) from 32 kgf/cm².
- iii) Modification in kink test procedure.

So as to control the quality of the hoses (which are woven from cotton yarn) at the initial stages of manufacturing, the presence of Pentachlorophenyl Laurate (PCPL) as given in 3.1 be checked prior to internal treatment according to the procedure given in Clause 10 of IS 3522 (Part 2) : 1989 Textiles — Estimation of common preservatives — Part 2.

Technical committee responsible for the formulation of this standard is given at 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 : 1960 'Rules for rounding off numerical values (revised)'. 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

CONTROLLED PERCOLATING HOSE FOR FIRE FIGHTING — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard lays down the requirements of controlled percolating hose for fire fighting purposes.

2 REFERENCES

2.1 The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	Title
380 . 1978	French chalk, technical (<i>second revision</i>)
443 : 1975	Methods of sampling and test for rubber hoses (<i>second revision</i>)
1389 : 1984	Methods for testing cotton fabrics for resistance to attack by micro-organisms (<i>first revision</i>)
3522 (Part 2) : 1989	Textiles -- Methods of estimation of common preservatives used in textile industry : Part 2 (<i>first revision</i>)

3 TYPE OF HOSE

3.1 The hose shall be made of a jacket of cotton or synthetic material or their combination. The jacket shall be treated internally with any suitable coating agent to ensure controlled percolation. The jacket shall be free from visible defects, such as dirt, knots, lumps and irregularity of twists. If the jacket is woven from cotton yarns it shall be tested for Pentachlorophenyl Laurate (PCPL) according to the procedure laid down in 10 of IS 3522 (Part 2) : 1989 and shall be not less than 1.5 percent by mass.

NOTE — Other rotproofing materials may also be used provided when tested by pure culture, mixed culture, *Aspergillus niger* and soil burial methods, prescribed in IS 1389 : 1984 shall conform to the requirements stipulated against each method.

4 DIAMETER

4.1 The nominal internal diameter of hose shall be 38, 50, 63 and 70 mm.

4.1.1 The internal diameter of the hose shall be measured by a suitable tapered plug gauge, and shall conform to the specified diameter within a tolerance of + 2.0 mm.
—0.0

5 LENGTH

5.1 The hose length shall be 30 m or of such length as required.

6 COIL DIAMETER (MACHINE COILED)

6.1 The hose shall be flexible and on being machine coiled, the diameter of the coil of 30 m hose shall not exceed 45 cm for all sizes in dry state without coupling. The coil diameter shall be measured at the widest part of the coil.

7 MASS

7.1 The average mass of hose per metre shall not be more than that prescribed in Table 1. For determination of mass, sample of the hose shall be conditioned at $27 \pm 2^\circ\text{C}$ and 65 ± 5 percent relative humidity for a period of at least 48 hours and then shall be weighed under same conditions.

Table 1 Mass of Hose per Metre

Nominal Diameter	Average Mass, Max
mm	g
38	250
50	300
63	350
70	400

8 PERCOLATION

8.1 The percolation, when tested in accordance with the procedure laid down in 8.1.1 shall not exceed the limits prescribed in Table 2.

Table 2 Percolation Requirements

Nominal Diameter	Percolation, Litre	
mm	Min	Max
38	0.40	4.0
50	0.60	5.0
63	0.80	5.0
70	1.20	6.0

8.1.1 A 3.5 m portion of a length of hose shall be subjected to the test. The test length may be obtained by isolating in a trough a 3.5 m portion of a longer length. Water under pressure shall be passed through the test length in such a manner that the pressure is built up steadily over a period of two minutes to a value of 7 kgf/cm² (70 N/cm²), which shall then be maintained throughout the period of the test by regulating water discharge at the other end with the help of suitable coupling with stop cock or pet cock. Measurement of leakage shall be made from the beginning of the sixth minute until the end of the tenth minute.

9 EVENNESS OF WETTING OUT

9.1 The full length sample of the dry hose is connected to the pump fitted with water and pressure built up to 7 kgf/cm² (70 N/cm²) steadily over a period of two minutes. After the hose has been at pressure 7 kgf/cm² (70 N/cm²) for a period of 5 minutes, a visual inspection is made of the length to ascertain the evenness and degree of wetting out along the complete length of hose and at least 75 percent of the hose jacket shall be evenly and consistently wetted out in this manner.

10 HYDROSTATIC PROOF PRESSURE

10.1 Full length of hose shall be subjected to an internal hydraulic pressure of 2.1 MPa (21.4 kgf/cm²) at the rate of 1 MPa (10.2 kgf/cm²)/minute in accordance with 8.3 of IS 443 : 1975 and maintained for a period of one minute. During this test, the hose shall not show breakage of yarn.

NOTE — The hose without breakage of yarn is not considered as defect.

11 HYDROSTATIC BURSTING PRESSURE

11.1 A test length of hose 3 m clear of couplings, shall be thoroughly wetted out when subjected to an internal hydraulic pressure in accordance with 8.2 of IS 443 : 1975, increasing it at the rate not exceeding 1 MPa (10.2 kgf/cm²) per minute shall not burst before a pressure of 3.5 MPa (35.7 kgf/cm²) is reached.

12 FLAMMABILITY

12.1 The length of the hose which shall be 3 m is connected to a pump, filled with water and pressure built up to 7 kgf/cm² (70 N/cm²) steadily over a period of 2 minutes. The discharge end should be blocked by means of a clamp or blank cap. A blow-lamp, inclined type of 500 ml capacity be held, fixed at any one point of hose with the hottest portion of the flame in direct contact for a period of 3 minutes. Thereafter, the pressure should be

built up to 18 kgf/cm² (180 N/cm²) and maintained for a period of 1 minute. During this test the hose shall not show breakage of yarn.

13 KINK TEST

13.1 Connect a 3 m length of hose with suitable hydraulic pump. Blank the free end of hose pipe with a suitable coupling having arrangement to bleed out entrapped air with the help of suitable stopcock or petcock. Fill the hose with water and raise the pressure to 70 kPa (0.7 kgf/cm²). Allow all air from hose to escape through stopcock by raising the free end of the hose and again rebuild the pressure to 70 kPa (0.7 kgf/cm²). Now kink the hose through 180° at approximately 50 cm from the free end by tying the hose back against itself as close to the fitting as practicable. Increase the pressure at a rate not exceeding 1 MPa (10.2 kgf/cm²) per minute to 2.1 MPa (21.1 kgf/cm²). When maximum pressure is attained, retain it for 30 seconds, release the pressure, examine it for sign of leakage and damage. There shall be no sign of leakage or rupture and no thread in the jacket shall break.

14 CHANGE IN SIZE

14.1 Connect the hose to a suitable pump and raise the pressure to 70 kPa (0.7 kgf/cm²) ensuring that all the entrapped air has been forced out. Mark two points not less than 100 cm apart. Raise the pressure to 1 MPa (10.2 kgf/cm²) and maintain for a minimum of 2 minutes and measure the distance between the two markings again. Similarly also measure the diameter at these two stages.

14.2 Change in diameter and length shall not be more than 10 percent when tested in accordance with 14.1.

15 SAMPLING AND CRITERIA FOR CONFORMITY

15.1 The sampling and criteria for conformity shall be as given in Annex A.

16 PACKING AND MARKING

16.1 The inside of the hose shall be thoroughly dusted with French chalk (conforming to IS 380 : 1978) and then the hose shall be packed in specified lengths in neat, clean and dry condition.

16.2 Beginning at a point not less than one metre from each end, each length of the hose shall be marked with indelible letters at least 2 cm in height indication:

- a) Type of hose (see 3.1);
- b) Diameter of the hose;

- c) Manufacturer's name or his trade-mark or both, nomenclature, and
d) Month and year of manufacture

16.3 The hose may also be marked with the Standard Mark

16.3.1 The use of Standard Mark is governed by the provisions of Bureau of Indian Standards

Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards

ANNEX A (Clause 15 I)

SAMPLING AND CRITERIA FOR CONFORMITY

A-1 SCALE OF SAMPLING

A-1.1 Lot

In any consignment, all the fire fighting hoses of the same type, diameter and length produced under essentially similar conditions of manufacture shall be separated into groups of 100 lengths or less and each such group shall constitute a lot

A-1.2 Tests for the determination of the conformity of a lot to the requirements of this specification shall be carried out for each lot separately. The number of length of hoses to be selected for this purpose shall be in accordance with col 1 and 2 of Table 3

Table 3 Scale of Sampling

Lot Size (In Length)	Sample Size (In Length)	Permissible Number of Defective Lengths
(1)	(2)	(3)
Up to 15	All	0
16 to 25	15	0
26 to 50	20	0
51 to 100	32	1

A-1.3 The required number of lengths of hoses shall be selected at random from among the lengths in the lot. For this purpose, suitable random number tables shall be used. In case such tables are not available, the procedure as given in A-1.3.1 for selection may be adopted.

A-1.3.1 Starting from any hose in the lot, count them as 1, 2, 3, ..., up to r and so on in one order, where r is the integral part of N/n (N being the lot size and n being the sample size). Every r th hose thus counted shall be withdrawn to give sample for inspection and testing.

A-2 NON-DESTRUCTIVE TYPE OF TESTS

A-2.1 The sample of hoses selected according

to A-1.2 and A-1.3 shall be inspected for general requirements except for PCPL (*see 3*), diameter (*see 4*), length (*see 5*), coil diameter (*see 6*), and mass (*see 7*). Any sample found to be unsatisfactory with regard to one or more of these characteristics shall be considered as a defective

A-2.1.1 If the number of defectives found is not greater than the corresponding number of defectives given in col 3 of Table 3, the lot shall be declared as conforming to the requirements of these characteristics. Only such lots shall be further considered for the destructive type of tests as given in A-3

A-3 DESTRUCTIVE TYPE OF TESTS

A-3.1 From the sample of the hoses already inspected under A-2.1 and having been found conforming to the requirements specified in this clause, two samples shall be tested for evenness of wetting (*see 9*), two for the change in size one for diameter and one for length (*see 14*), one for percolation, bursting pressure, flammability and PCPL (*see 8, 11, 12, 3*), after cutting suitable length from either end of the hose, one for proof and kink (*see 10 and 13*). The lot shall be considered to satisfy the requirements of the specification if sample hoses satisfy these tests.

A-3.1.1 The lot shall be declared as conforming to the requirements of these characteristics, if the test results for determination of different characteristics are all found satisfactory. In case the test result for any characteristic fails to meet the relevant requirement of the specification, two more tests shall be conducted for that characteristics on two other different lengths of hoses chosen from the lot and only on finding these two satisfactory, the lot shall be considered as conforming to the requirements of that characteristic, otherwise not.

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Fire Fighting Sectional Committee, CED 22

<i>Chairman</i>	<i>Representing</i>
FIRE ADVISER	Ministry of Home Affairs
<i>Members</i>	
ASSISTANT INSPECTOR GENERAL (RPSF)	Ministry of Railways
ASSISTANT SECURITY OFFICER (Alternate)	Tariff Advisory Committee, Madras
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SHRI S. M. DESAI	Municipal Corporation of Delhi, Delhi
SHRI D. P. DHATRAK	Bhabha Atomic Research Centre (Fire Service), Bombay
SHRI S. K. DHARI	Home Department (Fire Service), Government of Tamil Nadu
SHRI R. C. SHARMA (Alternate)	National Airport Authority, New Delhi
SHRI RAMFISH R. DHOBLAY	Home (Police Department), Government of Andhra Pradesh, Hyderabad
DIRECTOR	CPWD (Electrical), New Delhi
DEPUTY DIRECTOR (Alternate)	J-1916 Chitranjan Park, New Delhi
DIRECTOR OF EQUIPMT	Steelage Industries Ltd (Minimax Division), Bombay
SENIOR FIRE OFFICER (Alternate)	Ministry of Defence (DIFR)
DIRECTOR GENERAL OF FIRE SERVICE	Jaya Shree Textiles & Industries Rishra
DEPUTY DIRECTOR (Alternate)	Municipal Corporation of Greater Bombay (Bombay Fire Brigade), Bombay
SHRI C. P. GOSAIN	Fire & Safety Appliances Co, Calcutta
SHRI P. N. GHOSH	Avon Services (Production and Agencies) Pvt Ltd, Bombay
SHRI J. S. JAMSHEDJI	In personal capacity (C-231 Samachar Apartments, Mayur Vihar, Phase I, New Delhi)
SHRI C. GNANRAJ (Alternate)	Steel Authority of India (Bokaro Steel Plant), New Delhi
MAJ GEN B. S. KATARIA	Central Industrial Security Force, Ministry of Home Affairs
SHRI A. K. SURI (Alternate)	West Bengal Fire Services, Calcutta
SHRI P. KHANNA	Institution of Fire Engineers (India), New Delhi
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(Alternate)	Surex Production & Sales Pvt Ltd, Calcutta
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(Continued on page 3)

*(Continued from page 4)***Water Fittings for Fire Purposes Subcommittee, CED 22 : 1**

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BUREAU OF INDIAN STANDARDS

Headquarters

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones 323 01 31, 323 33 75, 323 94 02

Telegrams Manaksanstha
(Common to all offices)

Regional Offices

Telephone

Central Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110 002

{ 323 76 17
323 38 41

Eastern 1/14 C I T Scheme VII M, V I P Road Maniktola
CALCUTTA 700 054

{ 337 84 99, 337 85 61
337 86 26, 337 91 70

Northern SCO 335 336, Sector 34 A, CHANDIGARH 160 022

{ 60 38 43
60 20 25

Southern C I T Campus, IV Cross Road, CHENNAI 600 113

{ 235 02 16, 235 04 42
235 15 19, 235 23 15

Western Manakalaya, E9 MIDC, Marol, Andheri (East)
MUMBAI 400 093

{ 832 92 95, 832 78 58
832 78 91, 832 78 92

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