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SPECIFICATION FOR SUCTION HOSE OF RUBBER FOR FIRE SERVICES

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Indian Standard

SPECIFICATION FOR SUCTION HOSE OF RUBBER FOR FIRE SERVICES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 March 1963, after the draft finalized by the Rubber Products Sectional Committee had been approved by the Chemical Division Council.

0.2 Taking into consideration the views of producers, consumers and technologists, the Sectional Committee responsible for the preparation of this standard felt that it should be related to the prevailing manufacturing and trade practices in the country in this field. Furthermore, due consideration has been given to the need for international co-ordination among standards prevailing in different countries of the world. These considerations led the Sectional Committee to base this standard on B. S. 3165 : 1959 Rubber Suction Hose for Fire Fighting Purposes issued by the British Standards Institution.

0.3 Wherever a reference to any Indian Standard appears in this specification, it shall be taken as a reference to the latest version of the standard.

0.4 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.

0.5 This standard is intended chiefly to cover the technical provisions relating to suction hose of rubber for fire services, and it does not include all the necessary provisions of a contract.

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1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for suction hose of rubber for fire services with woven cotton fabric and wire reinforcement. This suction hose is intended for a

working pressure up to 8 kg/cm² and a working vacuum down to 762 mm of mercury.

NOTE — Fabric, such as rayon, nylon or any other equivalent fabric may be used for reinforcement provided test requirements specified in this standard are complied with.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given under **2** of IS : 443-1963 Methods of Sampling and Test for Rubber Hoses (*Revised*) shall apply.

3. SAMPLING AND CRITERIA FOR CONFORMITY

3.1 For the purpose of ascertaining the conformity of the hose in a consignment to this specification, the scale of sampling and the criteria for conformity shall be as prescribed under **3** of IS : 443-1963.

4. CONSTRUCTION AND MATERIALS

4.1 The rubber hose fitted with couplings, male/female, of the type and sizes as prescribed by the purchaser, shall consist of the following:

a) Semi-embedded internal spiral wire,

b) A rubber lining,

c) A rubber-topped fabric strip laid between spiral wires,

d) Plies of rubber impregnated fabric,

e) Embedded spiral wire,

f) A rubber filler,

g) One ply of fabric impregnated with rubber, and

h) A rubber outer cover.

4.2 *Inner Rubber Lining and Cover* — The inner rubber lining and the cover shall be free from air blisters, porosity and other surface defects.

4.3 *Reinforcement Plies* — The reinforcement plies shall be of woven cotton fabric (*see* Note under **1.1**).

4.3.1 For cotton fabric, a weight of 340 ± 5 g/m² and a minimum breaking load (strength) of 16 kg/cm width of strip in warp and weft are recommended.

4.4 All constructional wires shall be galvanized and shall conform to IS : 280-1962 Specification for Mild Steel Wire for General Engineering Purposes (*Revised*) with an ultimate tensile strength of not less than 55 kg/mm².

4.5 The whole assembly shall be consolidated by wrapping and then vulcanized properly.

4.6 Enlarged Ends — If required, the enlarged ends may be specified by the purchaser, and the tolerances for the internal diameter of such hose shall apply to the enlarged ends. The construction of the ends shall be such that it takes into account the enlarged diameter in respect of the performance of the hose.

4.6.1 In case the hose is required to be supplied with couplings attached, the enlarged ends shall be secured with couplings by binding with wire (2·00 mm galvanized) in close spacing.

4.6.2 The shanks of the couplings shall fit into the ends of the hose to their full length. The binding wire (2·00 mm galvanized) shall then be wound tightly over the ends of the hose covering the shanks making the joints watertight. After binding, the loose ends shall be turned in and the entire binding shall be soldered along the place where the ends are turned in.

5. DIMENSIONS AND TOLERANCES

5.1 The internal diameters and the minimum number of reinforcement plies shall be as specified in Table I.

TABLE I INTERNAL DIAMETERS AND NUMBER OF PLIES FOR SUCTION HOSE OF RUBBER FOR FIRE SERVICES

Sl No.	Internal Diameter	Tolerance on Internal Diameter	Minimum Number of Plies
(1)	(2)	(3)	(4)
	mm	mm	
i)	75·0	± 1·5	4
ii)	100·0	± 2·0	4
iii)	*140·0	± 2·0	5

*This unrecommended size had to be included to meet the existing demand. The question of deletion of this size will be reviewed when the standard is due for revision.

5.1.1 The diameters shall be measured by the method prescribed under **9** of IS : 443-1963 Methods of Sampling and Test for Rubber Hoses (*Revised*).

5.2 Thickness of Lining, Filler and Cover — The thickness of the lining, filler and cover shall be not less than that specified in Table II.

TABLE II MINIMUM THICKNESS OF LINING AND COVER OF SUCTION HOSE OF RUBBER FOR FIRE SERVICES

(Clause 5.2)

Sl No.	Internal Diameter	Lining	Filler	Cover
(1)	(2)	(3)	(4)	(5)
	mm	mm	mm	mm
i)	75·0	2·5	1·0	1·5
ii)	100·0	2·5	1·5	1·5
iii)	140·0	3·0	1·5	2·0

5.2.1 The Thickness shall be measured by the method prescribed under **8** of IS : 443-1963 Methods of Sampling and Test for Rubber Hoses (*Revised*).

5.3 Thickness and Pitch of Wire — Thickness and pitch of mild steel wire shall be as specified in Table III.

TABLE III THICKNESS AND PITCH OF WIRE USED FOR SUCTION HOSE OF RUBBER FOR FIRE SERVICES

Sl No.	Internal Diameter	Minimum Thickness of		Pitch for Both	Tolerance on Pitch
		Internal Wire	Embedded Wire		
(1)	(2)	(3)	(4)	(5)	(6)
	mm	mm	mm	mm	mm
i)	75·0	3·15	2·50	20	± 2
ii)	100·0	3·15	3·15	20	± 2
iii)	140·0	4·00	3·15	25	± 2

6. LENGTHS

6.1 Unless otherwise specified, the hose shall be supplied in lengths of 2·5 m and 5·0 m (including coupling ends). In each case, the length of soft ends (ends free of wire) shall be as follows:

Internal Diameter of Hose	*Length of Soft Ends*
mm	mm
75·0	80 ± 5
100·0	105 ± 5
140·0	145 ± 5

7. TESTS

7.0 Unless otherwise agreed to between the purchaser and the supplier, all tests shall be carried out within three months of the date of receipt of the material by the purchaser.

7.1 Tensile Strength and Elongation at Break — When tested according to the method prescribed in **4** of IS : 443-1963 Methods of Sampling and Test for Rubber Hoses (*Revised*), the tensile strength and elongation at break of the rubber used for the lining, filler and cover of the hose shall be not less than 90 kg/cm² and 300 percent respectively.

7.2 Accelerated Ageing Test — After ageing as prescribed in **7** of IS : 443-1963, the tensile strength and elongation at break of the rubber used for the lining, filler and cover shall not vary by more than ± 15 percent of the corresponding value obtained before ageing.

7.3 Hydrostatic Proof Test

7.3.1 Each length of hose fitted with couplings shall be subjected to an internal hydraulic pressure of 8 kg/cm² for a period of three minutes and then examined. There shall be no sign of leakage or failure. *Water shall be used for this test.*

7.3.2 Each length of hose (not fitted with couplings) shall also be capable of withstanding the test specified in **7.3.1**.

8. MARKING

8.1 Each length of the hose shall be indelibly marked adjacent to each end with:

a) the manufacturer's name or his trade-mark, if any, hose denominations; and

b) the month and year of manufacture, if required by the purchaser.

8.1.1 Each length of the hose may also be suitably marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that Standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the Standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

INDIAN STANDARDS

ON

Rubber Products

IS :		Rs
443-1963	Methods of Sampling and Test for Rubber Hoses (*Revised*) ...	3·50
444-1953	Water Delivery Hose	1·50
445-1953	Water Hose, High Pressure, for Washing and Spraying ...	1·00
446-1953	Air Hose for Pneumatic Tools	1·00
447-1953	Welding Hose, Oxy-Acetylene	1·00
635-1955	Oil Resisting Hose	1·00
636-1963	Fire Fighting Hose (Rubber Lined Woven-Jacketed) (*Revised*)	2·50
637-1955	Plain Rubber Tubing	1·50
638-1955	Rubber and Insertion Jointing	1·50
911-1963	Braided Air Hose of Rubber, Heavy Duty (*Revised*) ...	1·50
912-1963	Braided Air Hose of Rubber, Light Duty (*Revised*)	1·50
913-1963	Braided Water Hose of Rubber, High Pressure (*Revised*) ...	1·50
914-1963	Braided Water Hose of Rubber, Low Pressure (*Revised*) ...	1·50
1677-1963	Braided Spray Hose of Rubber, High Pressure (*Revised*) ...	1·50
1867-1961	Rubber Hot-Water Bottles	2·50
2396-1963	Braided Hose of Rubber for Petrol and Diesel Fuels ...	1·50
2410-1963	Suction Hose of Rubber for Fire Services	1·50