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SPECIFICATION FOR WATER SUCTION HOSE OF RUBBER, LIGHT DUTY

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MANAK BHAVAN, 9 MATHURA ROAD
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0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 2 May 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 had to be given to the need for international coordination among standards prevailing in different countries of the world. These considerations led the Sectional Committee to consult B.S. 1102 : 1958 Natural Rubber Suction and Discharge Hose with Woven Fabric and Wire Reinforcement, issued by the British Standards Institution.

0.3 It was considered desirable to include maximum discharge pressure and vacuum for various sizes of hose in Appendix A for the guidance of the consumer.

0.4 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.

0.5 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.

0.6 This standard is intended chiefly to cover the technical provisions relating to water suction hose of rubber, light duty; and it does not include all the necessary provisions of a contract.

1. SCOPE

1.1 This standard prescribes the requirements and methods of test for water suction hose of rubber, light duty, with woven cotton fabric and wire reinforcement.

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

2. TERMINOLOGY

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

3. TYPES

3.1 The hose shall be of the following types:

a) *Type* 1 — smooth bore, and
b) *Type* 2 — rough bore (semi-embedded).

4. REQUIREMENTS

4.1 Construction

4.1.1 The rubber hose shall consist of the following:

Type 1	*Type* 2
a) A rubber lining,	a) semi-embedded internal wire,
b) one ply of rubber impregnated fabric,	b) rubber lining,
c) spiral wire,	c) plies of rubber impregnated fabric, and
d) rubber filler,	d) rubber cover.
e) plies of rubber impregnated fabric, and	
f) rubber cover.	

4.1.2 *Inner Rubber Lining and Cover* — These shall be free from air blisters, porosity and other defects. The rubber lining shall be seamless in all hoses having an internal diameter of 50 mm or less. In case of larger hose, the lining may be built up from calendered sheet.

4.1.3 *Reinforcement Plies* — These shall be of woven cotton fabrics (*see* Note under **1.1**).

4.1.3.1 For cotton fabric, a weight of 275 ± 5 g/m² and a minimum breaking load (strength) of 15 kg/cm width of strip in warp and weft are recommended.

4.1.4 The mild steel wire shall be galvanized and shall conform to IS : 280-1951 Specification for Mild Steel Wire (*Tentative*), with an ultimate tensile strength of not less than 55 kg/m².

4.2 Dimensions and Tolerances — The internal diameters, and the minimum number of fabric plies shall be as specified in Table I.

TABLE I INTERNAL DIAMETERS AND NUMBER OF PLIES FOR WATER SUCTION HOSE OF RUBBER, LIGHT DUTY

Sl No.	Internal Diameter	Tolerance on Internal Diameter	Minimum Number of Plies
(1)	(2)	(3)	(4)
	mm	mm	
i)	25·0	± 1·5	3
ii)	31·5		3
iii)	38·0		3
iv)	45·0		3
v)	50·0		3
vi)	56·0		3
vii)	63·0		3
viii)	75·0	± 2·0	3
ix)	100·0		4
x)	125·0		4
xi)	150·0		4

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

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

4.3.1 The thickness shall be measured according to the method prescribed in **8** of IS : 443-1963.

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

TABLE II THICKNESS OF LINING, FILLER AND COVER OF WATER SUCTION HOSE OF RUBBER, LIGHT DUTY

(*Clause* 4.3)

Sl No.	Internal Diameter	Lining	Filler	Cover
(1)	(2)	(3)	(4)	(5)
	mm	mm	mm	mm
i)	25·0	1·5	1·0	1·5
ii)	31·5	1·5	1·0	1·5
iii)	38·0	1·5	1·0	1·5
iv)	45·0	1·5	1·0	1·5
v)	50·0	2·0	1·0	1·5
vi)	56·0	2·0	1·0	1·5
vii)	63·0	2·0	1·0	1·5
viii)	75·0	2·5	1·0	1·5
ix)	100·0	2·5	1·5	1·5
x)	125·0	2·5	1·5	1·5
xi)	150·0	2·5	1·5	1·5

TABLE III THICKNESS AND PITCH OF WIRE USED FOR WATER SUCTION HOSE OF RUBBER, LIGHT DUTY

(*Clause* 4.4)

Sl No.	Internal Diameter	Thickness of Wire, *Min*		Pitch	Tolerance on Pitch
(1)	(2)	(3)		(4)	(5)
	mm	SWG	mm	mm	mm
i)	25·0	14	2·00	12	±1
ii)	31·5	14	2·00	12	±1
iii)	38·0	14	2·00	12	±1
iv)	45·0	12	2·50	16·0	±1·5
v)	50·0	12	2·50	16·0	±1·5
vi)	56·0	12	2·50	16·0	±1·5
vii)	63·0	12	2·50	16·0	±1·5
viii)	75·0	12	2·50	16·0	±1·5
ix)	100·0	10	3·15	20	±3
x)	125·0	10	3·15	20	±3
xi)	150·0	8	4·00	20	±3

4.5 Lengths — Unless otherwise specified, the hose shall be supplied in the following lengths which should be a multiple of 1·5 m:

Up to 75·0 mm	6 m to 15 m
Above 75·0 mm	3 m to 6 m

4.6 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 lining, filler and cover of the hose shall be not less than 55 kg/cm² and 250 percent respectively.

4.7 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 ±25 percent of the corresponding value obtained before ageing.

5. MARKING

5.1 Each length of the hose shall be indelibly marked at each end with:

a) the nominal diameter of the hose;

b) hose nomenclature;

c) manufacturer's name or his trade-mark or both; and

d) month and year of manufacture, if specified by the purchaser.

5.1.1 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.

6. PACKING

6.1 The hose shall be packed in rolls of suitable size, covered with double gunny or hessian cloth, wrapped and sealed against pilferage in transit and enclosed in a strong wooden crate if specified by the purchaser. Each crate shall contain note of contents.

7. SAMPLING AND CRITERIA FOR CONFORMITY

7.1 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.

NOTE — 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 hose by the purchaser.

APPENDIX A

(*Clause* 0.3)

RECOMMENDED DISCHARGE PRESSURE AND VACUUM OF WATER SUCTION HOSE OF RUBBER, LIGHT DUTY

INTERNAL DIAMETER	DISCHARGE PRESSURE *Max*	VACUUM, *Max*
mm	kg/cm²	mm Hg
25·0, 32·0, 38·0	2·0	
45·0, 50·0, 56·0	1·5	762
63·0, 75·0, 100·0, 125·0, 150·0	1·0	