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Indian Standard

SPECIFICATION FOR OIL AND SOLVENT RESISTING HOSE OF RUBBER WITH WOVEN REINFORCEMENT

(Revised)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Indian Standard

SPECIFICATION FOR OIL AND SOLVENT RESISTING HOSE OF RUBBER WITH WOVEN REINFORCEMENT

(Revised)

0. FOREWORD

0.1 This Indian Standard (Revised) was adopted by the Indian Standards Institution on 24 December 1964, after the draft finalized by the Rubber Products Sectional Committee had been approved by the Chemical Division Council.

0.2 Oil and solvent resisting type of hoses are suitable for conveying lubricating oils, transformer oils, vegetable oils, non-edible oils and solvents having low aromatic content. The type of hose prescribed in this standard is recommended as suitable for working pressure up to 7 kg/cm^2. For good service and long life, it is recommended that this hose be used only for the specific application to which it is individually designed although of course many dual purposes may be met with. In addition to the general requirements for hoses and their basic components, swelling test prescribed in this standard ensures that undue penetration of the liquids into hose does not take place at pressures specified in the standard.

0.3 This standard was originally published in the year 1955. In view of the experience gained during its use, the Rubber Products Sectional Committee, decided to revise this standard. In the revision rationalized metric dimensions have been given, the requirements for tensile strength, adhesion test and hydraulic test modified; tests for accelerated ageing test and resistance to lubricating oils at high temperature, have been deleted.

0.4 Taking into consideration the views of producers, consumers and technologists the Sectional Committee felt that this standard should be related to the prevailing manufacturing and trade practices followed in the country in this field and to consult other overseas standards on this subject. These considerations led the Sectional Committee to base this standard on G/Misc 112A ' Specification for oil resisting hose for the conveyance and general lubricating oils, transformer oils and vegetable oils ' issued by the Directorate General of Supplies & Disposals and to consult various overseas standards related to the subject.

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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for oil and solvent resisting hose of rubber with woven fabric reinforcement and built on mandrels. The hose is suitable for conveying lubricating oils, transformer oils, vegetable oils, non-edible, and solvents having low aromatic content.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in **2** of IS : 443-1963† shall apply.

3. REQUIREMENTS

3.1 Construction

3.1.1 *Rubber Lining* — The rubber lining shall be made of oil and solvent resisting rubber compound. The lining shall be seamless, reasonably uniform and free from air blisters, porosity and other surface defects.

3.1.2 *Reinforcement* — The reinforcement shall consist of plies of woven cotton fabric (*see* Note) applied on bias at approximately 45° angle. The woven fabric shall be well-frictioned or suitably spread on both sides with oil resisting rubber compound. The finishing end of the last ply shall overlap the start of the first ply by a minimum of 6 mm.

NOTE — Fabrics of rayon, polyamide, polyester or other equivalent fabrics may be used for reinforcement provided test requirements specified in the standard are complied with.

3.1.3 *Rubber Cover* — The cover shall be made of oil, solvent and abrasion resisting rubber compound and shall be reasonably uniform and free from air blisters, porosity and other surface defects. The cover shall have a cloth mark finish, and the whole shall be consolidated by wrapping or otherwise and uniformly vulcanized.

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*Rules for rounding off numerical values (*revised*).

†Methods of sampling and test for rubber hoses (*revised*).

3.2 Dimensions and Tolerances

3.2.1 *Diameters and Number of Plies* — The internal and external diameters of the hose and the minimum number of fabric plies shall be as specified in Table 1.

TABLE 1 INTERNAL AND EXTERNAL DIAMETERS AND NUMBER OF PLIES FOR OIL AND SOLVENT RESISTING HOSE OF RUBBER WITH WOVEN REINFORCEMENT

Sl No.	Internal Diameter	Tolerance on Internal Diameter	Minimum Number of Fabric Plies	External Diameter	Tolerance on External Diameter
(1)	(2)	(3)	(4)	(5)	(6)
	mm	mm		mm	mm
i)	5·0	±0·75	2	12·5	±1·0
ii)	6·3	±0·75	2	14·0	±1·0
iii)	8·0	±0·75	3	16·5	±1·0
iv)	10·0	±0·75	3	18·5	±1·0
v)	12·5	±0·75	3	23·0	±1·0
vi)	16·0	±0·75	3	27·0	±1·0
vii)	20·0	±0·75	4	32·0	±1·0
viii)	25·0	±1·25	4	37·0	±1·5
ix)	31·5	±1·25	4	43·5	±1·5
x)	38·0	±1·5	5	51·0	±1·5

3.2.2 *Thickness of Lining and Cover* — The thickness of lining and cover of the hose shall be not less than 1·5 mm and 1·0 mm respectively for sizes up to and including 10·0 mm internal diameter, and 2·0 mm and 1·5 mm respectively for sizes over 10·0 mm internal diameter.

3.2.3 *Length* — The standard length of the hose shall be 15 m.

3.2.3.1 The tolerance on standard or any specified length of the hose shall be ± 1 percent.

3.3 The tensile strength and elongation at break of the rubber used for lining and cover of the hose shall be as specified in Table 2.

3.4 Swelling — The increase in volume of the lining and cover after immersion in the test liquid shall not exceed 75 percent of the original volume for each.

TABLE 2 TENSILE STRENGTH AND ELONGATION AT BREAK OF LINING AND COVER FOR OIL AND SOLVENT RESISTING HOSE OF RUBBER WITH WOVEN REINFORCEMENT

(*Clause* 3.3)

Sl No.	Characteristic	Requirements for	
		Lining	Cover
(1)	(2)	(3)	(4)
i)	Tensile strength, kg/cm², *Min*	55	55
ii)	Elongation at break, percent, *Min*	250	250

3.5 Adhesion — The adhesion shall be such that the rate of separation does not exceed 25 mm per minute for the following under the specified load:

	Specified Load
a) Between fabric plies	4 kg
b) Between lining and fabric	3·5 kg
c) Between cover and fabric	3·5 kg

3.6 Bursting Pressure (Hydraulic Test) — The bursting pressure for all hose sizes shall be not less than 21 kg/cm².

3.6.1 The recommended working pressure shall be one-third of the minimum bursting pressure specified in **3.6.**

4. MARKING

4.1 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, and type and grade of hose; and

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

4.2 Each length of the hose may also be 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.

5. SAMPLING AND CRITERIA FOR CONFORMITY

5.1 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 in **3** of IS : 443-1963*.

6. TEST METHODS

6.0 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.

6.1 Tests regarding diameter, tensile strength, elongation at break, swelling, adhesion and bursting pressure (hydraulic test) shall be done in accordance with the methods prescribed in IS : 443-1963*.

*Methods of sampling and test for rubber hoses (*revised*).

INDIAN STANDARDS
ON
Rubber Hoses

IS:		Rs
443-1963	Methods of sampling and test for hoses (*revised*)	3·50
444-1964	Specification for hose of rubber, low pressure, with woven reinforcement (*revised*)	2·00
445-1964	Specification for water hose of rubber, high pressure with woven reinforcement (*revised*)	1·50
446-1964	Specification for air hose of rubber, light duty, with woven reinforcement (*revised*)	1·50
447-1964	Specification for welding and cutting hose of rubber with woven reinforcement (*revised*)	1·50
635-1964	Specification for oil and solvent resisting hose of rubber with woven reinforcement (*revised*)	1·50
636-1962	Specification for fire fighting hose (rubber lined woven-jacketed) (*revised*)	2·50
911-1963	Specification for braided air hose of rubber, heavy duty (*revised*)	1·50
912-1963	Specification for braided air hose of rubber, light duty (*revised*)	1·50
913-1963	Specification for braided water hose of rubber, high pressure (*revised*)	1·50
914-1963	Specification for braided water hose of rubber, low pressure (*revised*)	1·50
1677-1963	Specification for braided spray hose of rubber, high pressure (*revised*)	1·50
2396-1963	Specification for braided hose of rubber for petrol and diesel fuels	1·50
2410-1963	Specification for suction hose of rubber for fire services ...	1·50
2482-1963	Specification for water suction hose of rubber, light duty ...	1·50
2765-1964	Specification for radiator hose	2·50